



**2016-2017**

**Department of  
Veterinary Science  
Periodic Program Review**

**Submitted August 2017**

# Self Study



College of Agriculture,  
Food and Environment  
Department of Veterinary Science

## Department of Veterinary Science

### Self-Study Report

### 2016-17 Program Review

#### **Degree Programs under Review**

Master's Degree in Veterinary Science

PhD Degree in Veterinary Science

#### **Submitted to:**

Nancy Cox, Ph.D., Dean

College of Agriculture, Food and Environment | University of Kentucky

(859) 257-4772 | [nancy.cox@uky.edu](mailto:nancy.cox@uky.edu)

#### **Submitted by:**

Dr. David W. Horohov

Department Chair and Jes E. & Clementine M. Schlaikjer Endowed Chair

Department of Veterinary Science

College of Agriculture, Food and Environment

University of Kentucky

(859) 218-1085 | [dwhoro2@uky.edu](mailto:dwhoro2@uky.edu)

#### **Date Submitted:**

September 29<sup>th</sup>, 2016

## **EXECUTIVE SUMMARY**

**Self-Study Process.** The generation of this self-study document for the University of Kentucky's Department of Veterinary Science involved members of the Department of Veterinary Science's Advisory and Planning, Internal Review and Curriculum committees. Additional input was solicited from faculty, staff and students where appropriate. Departmental vision, faculty recruitment and overall program direction and goals were discussed at faculty meetings leading up to this self-study. There was discussion of the process and the content of the self-study document at the regular faculty meeting in September. A mini-retreat was also held near the end of September to discuss the draft version of this document. The final version was distributed to faculty in October of 2016.

### **Review Committee Member Names and Affiliations**

Chris Schardl, Chair, UK Dept. of Plant Pathology  
Karyn Malinowski, Rutgers University  
Charles Czuprynski, University of Wisconsin  
Martha Peterson, UK College of Medicine  
Cindy Gaskill, UK VSC faculty  
Martin Nielsen, UK VSC faculty 859-368-1740  
Debbie Mollett, UK VSC staff 859-684-0080  
Deborah Maples, UK VSC staff  
Sarah Elzinga, UK VSC grad student  
Steve Reed, Rood and Riddle

**Overview of Progress Since Last Self-Study.** The Department of Veterinary Science performed a self-study in 2011 under the direction of then chair, Dr. Mats Troedsson. That self-study was the result of discussions during a faculty retreat for researchers at the Gluck Equine Research Center in November 2009. UK Veterinary Diagnostic Laboratory (UKVDL) faculty were not included in this self-study as the focus was on the research and graduate programs at the Gluck Equine Research Center (GERC). Following the retreat, subcommittees were formed to develop a strategic plan for the Gluck Center. This document was distributed to a review committee consisting of three external reviewers (Doug Antczak, Cornell; Don Knowles, USDA-ARS; and Ed. Robinson, Michigan State University). The committee was asked to give recommendations regarding the scientific direction, appropriateness and performance of current research programs and their overall contributions to the veterinary community and the equine industry. They were also asked to assess the quality of the graduate program. Following their visit to the Gluck Center, the committee provided its comments and recommendations to the Chair and Dean of the College. Though the report was generally complimentary of the research program, the committee did identify several areas for improvement. While a written response to the committee's report was generated, an Implementation Plan was not developed until 2014. At that time, nine specific Action Items were generated in response to the committee's recommendations. These included (1) advancing the mission and goals of the Gluck Equine Research Center, (2) increase collaboration between VDL and Gluck Center faculty, (3) improve communications between the Gluck Center and equine industry and stakeholders, (4), strengthen the graduate program, (5) increase faculty involvement in graduate and undergraduate teaching, (6) hold faculty accountable to productivity standards for the department, (7) increase faculty participation in Equine Program activities, (8) upgrade Veterinary Science animal facilities, and

(9) develop a strategic plan for recruitment of new faculty. The annual report for this implementation plan is included in Appendix A. Assessment and reflection of each action item is ongoing and summarized in this document.

**Major Recommendations and Areas of Concern.** We have made significant progress addressing most of the areas of concern identified in the previous review. This effort is detailed in subsequent sections of this document. Even though we have made progress, work remains to be done in other areas. While faculty involvement in graduate and undergraduate teaching has increased, this involvement involves relatively few faculty members. Likewise, faculty participation in Equine Program activities remains limited. Most importantly, little additional effort has been expended on upgrading our research facilities. There is also the pressing need to upgrade and expand our technical capabilities through the purchase of new equipment. This is of particular concern as we recruit new faculty into our program now and in the future. The overall seniority of our faculty, particularly those in GERC portends a significant turnover of faculty in the near future. This represents both an opportunity and a concern for our program. While it is important to continue to provide the expertise necessary to address pertinent and pressing equine health issues, we must also develop our capabilities as a research center, particularly in terms of increasing competitiveness for external funding. We have begun to take the initial steps in this process. The purpose of this current review is to provide a new assessment of the progress our program, in its entirety, has made towards reaching its goals. We also solicit comment on our current strategy for moving this program forward.

## **List of Tables**

Table 1. Benchmark Programs.....	24
Table 2. Faculty Attrition.....	28
Table 3. Faculty FTEs.....	36
Table 4. Post-Doctoral Scholars and Graduate Students .....	49
Table 5. Grants.....	49
Table 6. Veterinary Science Course Offerings, Fall 2016.....	55
Table 7. Veterinary Science Course Offerings, Spring 2016 .....	56
Table 8. Veterinary Science Graduate Student Enrollment.....	58
Table 9. Graduate Student Placement.....	65-66
Table 10. Publications & Presentations .....	67
Table 11. Departmental Budget (State and Federal Funds).....	69
Table 12. Endowment Income .....	69
Table 13. Gift Support .....	70
Table 14. Extramural Funding .....	70
Table 15. Personnel Summary .....	74
Table 16. Funds Provided by College.....	75
Table 17. UK@Work Survey Results.....	76

## **List of Figures**

Figure 1. Faculty Distribution by Years of Service.....	29
Figure 2. Faculty Publications per Research FTE .....	47
Figure 3. Faculty Publications by CAFÉ Department.....	49
Figure 4. Faculty Publications 5-Year Trend.....	49
Figure 5. Operational Costs .....	71
Figure 6. Departmental Expenses .....	71
Figure 7. VDL Organizational Structure .....	79
Figure 8. Locations of Clients Submitting Accessions to UKVDL .....	97
Figure 9. UKVDL Cases by Calendar Year .....	97

## **List of Appendices**

- Appendix A. Implementation Plan
- Appendix B. Copenhagen Dual Degree Agreement
- Appendix C. LMU Cooperative Agreement – Vet Science
- Appendix D. LMU Cooperative Degree Agreement
- Appendix E. LMU Cooperative Agreement – VDL
- Appendix F. List of AGTRL Breed Registries
- Appendix G. Vet Science Rules of Procedure
- Appendix H. Vet Science Evidences of Activity
- Appendix I. Publications
- Appendix J. SLO Master's Degree Assessment
- Appendix K. SLO PhD Degree Assessment
- Appendix L. Presentations
- Appendix M. Graduate Student Welcome Comments
- Appendix N. Graduate Student Course Comments
- Appendix O. Equipment
- Appendix P. VS Teaching Committee Report
- Appendix Q. UKVDL KAES Report
- Appendix R. International Collating Center Reports
- Appendix S. TOBA Infectious Disease Report
- Appendix T. Bluegrass Equine Digest
- Appendix U. Equine Disease Quarterly
- Appendix V. Vet Science Equine Diagnostic & Research Seminar Series



College of Agriculture, Food and Environment  
Periodic Program Review  
Educational Unit and  
Academic Program  
2016-2017 Self-Study Report Checklist

Academic units and degree programs undergoing a periodic program review should make use of this checklist.

This checklist is provided as a guideline for items that should be included in a self-study, as required by the Council on Postsecondary Education (CPE) and Southern Association of Colleges and Schools, Commission on Colleges (SACSCOC), as well as by UK's *Governing Regulations, Administrative Regulations, and Senate Rules*. Additional information may be added to the reports as needed.

AR 1:4 states: "The purpose of the program review is to improve the quality and effectiveness of teaching and learning, research, public service, and operations. It does so by systematically examining missions, goals, objectives, resources, activities, processes, and outcomes of programs and services." All data is to be collected in the unit under review unless otherwise noted in parenthesis below.

---

### Organization of the Self-Study Report

The self-study document is the primary resource used by review committees to complete the second phase of the periodic program review process.

#### Cover Page

- Unit Information:
  - Unit Name (including degree programs under review)
  - Year Periodic Review Process Started
  - Name of Accreditation Agency and Last Accreditation visit (if applicable)
- Submitted by: Name of appropriate designee(s) (include titles and contact information)
- Submitted to: List the appropriate person(s) the report will be submitted to for approval (Dean/Provost)
- Date Report is Submitted:

#### Executive Summary

- Brief account of self-study process
- Committee member names and affiliations
- Overview of progress since last Self-Study (attention to last Implementation Plan/current Annual Progress Reporting)
- Major recommendations and areas of concern

**The Unit Self-Study Report Checklist** indicating what pages of the self-study narrative or appendix the items of the checklist are addressed and can be found.

**Unit Self-Study Report:** This narrative must describe, analyze and synthesize information about the academic department/educational unit and associated degree programs. The report should include the components detailed below. Some documents may be tabled features within the text. Others may be featured as appendices. An electronic version of the report and supporting documentation is required for archival purposes. Please note that the structure of the narrative need not follow the structure of the checklist.

**Appendices:** The supporting documentation of the narrative. This is the section in which the unit provides additional materials as evidence in support of the narrative (e.g., organizational charts, tables, reports, etc.).

If you need assistance, please contact:  
Betsy Kephart, Administrative Research Assistant  
[betsy.kephart@uky.edu](mailto:betsy.kephart@uky.edu) or 7-7041  
L-104 Ag North

**College of Agriculture, Food and Environment  
Educational Unit and Degree Program Self-Study Report Checklist**

**This narrative must describe, analyze and synthesize information about the unit and its subunits, as appropriate. The report should include the components detailed below. Some documents may be tabled features within the text. Others may be featured as appendices. An electronic version of the report and supporting documentation is required for archival purposes.**

Please note that the structure of the narrative need not follow the structure of the checklist.

**Part 1: Academic Department/ Educational Unit**

	<b>Academic Department/Educational Unit Overview</b>	<b>Included</b>  ✓	<b>Narrative Page(s)</b>	<b>Page Number(s) of appropriate Evidence/ Supporting Documents</b>
1	<p>Explain how your department's goals are consistent with and demonstrate a strong contribution to UK's mission and strategic plan. There should be a clear connection between the department and the institutional, college, and state goals (where applicable). Focus on each of the following:</p> <ul style="list-style-type: none"> <li>• Consistency with UK mission and priorities</li> <li>• How the program contributes to <a href="#">CPE--Stronger by Degrees</a></li> <li>• How the program aligns with the CPE statewide strategic implementation plan (Stronger by Degrees)</li> </ul>	<b>CPE Requirement</b>	<b>14</b>	
2	<p>Consortial Relations: The SACS accreditation process mandates that we "ensure the quality of educational programs/courses offered through consortial relationships or contractual agreements and that the institution evaluates the consortial relationship and/or agreement against the purpose of the institution." Please list any consortium or contractual relationships your department has with other institutions in Kentucky, as well as the mechanism for evaluating the effectiveness of these relationships.</p>	<b>SACS-COC Requirement</b>	<b>18</b>	<b>Appendices B, C, D, E</b>
3	<p>Articulate primary departmental/unit strategic initiatives for the past 5 years and the department's progress towards achieving the university and college/school initiatives (be sure to reference <a href="#">Unit Strategic Plan</a>, <a href="#">Annual Progress Report</a>, and most recent <a href="#">Implementation Plan</a>)</p>		<b>19-23</b>	<b>Appendix F</b>
4	<p>Department benchmarking activities: Provide a summary of benchmarking activities, including institutions benchmarked against and comparison results tracked against:</p> <ul style="list-style-type: none"> <li>• Promotion and tenure expectations</li> <li>• Annual evaluation expectations</li> <li>• Faculty mentoring expectations</li> <li>• Budget</li> <li>• Number of faculty</li> </ul>		<b>23-25</b>	<b>Appendices G, H</b>

	<b>Department Faculty and Research Support</b>			
5	Describe primary faculty contributions to the 3-4 strongest research and creative areas in the department.		<b>25-27</b>	
6	Describe primary faculty contribution to teaching and service at the department level that has enhanced college and university strategic initiatives.		<b>27-28</b>	
7	Describe the attrition (cumulative number not tenured, resigned, retired, or other) of the program faculty over the past three years. Discuss the expected effect on program(s) under review and other issues related to ability to retain qualified faculty (5-year review). Including a table is recommended.		<b>28-29</b>	
8	List current number of unfilled lines and discuss current actions or plans to fill lines. Include general descriptions of start-up packages.		<b>29-31</b>	
9	Department level GTA and GRA information: List the salary range (based on semester .50 FTE/20 hour-per week contract) for GTAs and GRAs and list the number on fellowships for the current or most recent fall semester.		<b>31-32</b>	
10	Describe the reasons students reject fellowships or assistantships offered from the university, college, or department.		<b>32</b>	
11	Unit Faculty Research (if applicable) <ul style="list-style-type: none"> <li>• Overview of current research program and plans for each of the last 5 years</li> <li>• Number of research FTE faculty for each of the last 5 years</li> <li>• Summary of research programs by topic for each of the last 5 years</li> <li>• Fellowships for each of the last 5 years</li> <li>• Honors and recognitions for each of the last 5 years</li> <li>• Publications (such as books, book chapters, refereed journal articles, non-refereed articles, reviews) for each of the last 5 years</li> </ul>		<b>32-35</b> <b>36</b> <b>37-45</b> <b>45</b> <b>45-47</b> <b>47-48</b>	<b>Appendix I</b>
12	Number of postdoctoral fellows and scholars, graduate research and teaching assistantships for each of the last 5 years	<b>CPE Requirement</b>	<b>49</b>	
13	List of grants and contracts for the period of review, including funding amounts from the <a href="#">OSPA Web site</a> for each of the last 5 years	<b>CPE Requirement</b>	<b>49-54</b>	

	<b>Documentation of Policies and Procedures Implementation:</b> Identify the educational policies and procedures established through faculty governance and responsible parties for implementation (e.g., admission criteria and procedure, academic performance standards, equivalency credits, course transfers, course substitutions)	<b>Included</b> ✓	<b>Narrative Page(s)</b>	<b>Page Number(s) of appropriate Evidence/ Supporting Documents</b>
14	Evidence of adherence to educational policies and procedures established through the faculty governance process, including consistency in applying policies related to grading, probation, admissions, termination	<b>SACS-COC Requirement</b>	<b>54</b>	
15	Evidence of consistent review and monitoring of course substitution, course equivalency credits, course transfers toward degree completion, and vetting of exceptions, degree requirements, and drop, fail and withdraw (DEW) rates	<b>SACS-COC Requirement</b>	<b>54</b>	
16	Evidence of adherence to unit procedures on faculty personnel actions (e.g., appointment, promotion and tenure) and budget request preparation		<b>54-55</b>	
17	Evidence of course scheduling and teaching assignment		<b>55-58</b>	
18	Evaluation of course grade distribution by level and discussion of strategies to monitor grade deflation/inflation		<b>58</b>	
19	Dissemination and transparency of all the above		<b>58</b>	
<b>Part 2: Degree Program(s)</b>				
<b>COMPLETE FOR EACH DEGREE PROGRAM (as applicable)</b>				
<b>i.e., one for Bachelor's, Master's, and Doctoral</b>				
	<b>Academic (Degree) Program Description</b>	<b>Included</b> ✓	<b>Narrative Page(s)</b>	<b>Page Number(s) of Appropriate Evidence/ Supporting Documents</b>
	<b>Program Demand/Unnecessary Duplication</b>			
20	Number of students enrolled, number of graduates, and credit hour production for each of the last 5 years, including summer, fall, and spring. Credit hour production refers to the number of credit hours produced by program faculty: <ul style="list-style-type: none"> <li>• Student credit hour per instructional faculty FTE for the past 5 years</li> <li>• <u>Include Institution's definition of Instructional FTE:</u> Student credit hour per instructional FTE is defined as credit hours taught by program faculty in a unit, department, or discipline, divided by the number of instructional FTE (as defined by the institution) of those program faculty.</li> </ul>	<b>CPE Requirement</b>	<b>58</b>	
21	Number of degrees conferred for each of the last 5 years. Number of enrollees and degrees conferred includes totals from summer, fall, and spring semesters.	<b>CPE Requirement</b>	<b>58</b>	
22	Explanation of how curriculum is different from existing programs at Kentucky institutions or that access to these	<b>CPE</b>	<b>58-59</b>	

	programs is limited	<b>Requirement</b>		
23	Explanation of pursuit of collaborative opportunities with similar programs at other Kentucky institutions and how collaboration will increase effectiveness and efficiency	<b>CPE Requirement</b>	<b>59</b>	
24	Program history and background/organizational structure: Critical events/background information which will help in understanding the program currently.		<b>59-61</b>	
25	Program uniqueness: Unique components, distinctive innovations; is the program a response to changes in the discipline or other academic necessities? How is this program different from similar programs at other Kentucky institutions? Is access to other institutions limited?	<b>CPE Requirement</b>	<b>61</b>	
26	Describe how the program is administered (e.g., is there a program coordinator and/or program committee? What is their role or function? How do they operate? How are appeals handled? Etc.)		<b>61</b>	
27	Describe the recruitment and development plan for the program (include attention to faculty, staff, and students)		<b>61</b>	
28	Program delivery: Review of distance learning course offerings, services and outcomes to ensure compliance with best practices, SACS policies, federal rules, and University Senate and college curriculum committees. Describe flexibility of program delivery: classes available at convenient times, in convenient formats for non-traditional students, etc.	<b>SACS-COC and CPE Requirements</b>	<b>61-62</b>	
29	Program Contributions to undergraduate general education or UK General Education Core		<b>N/A</b>	
	<b>Program Quality and Student Success:</b> The curriculum should be structured to meet the stated objectives and student learning outcomes of the program.	<b>Included</b> ✓	<b>Narrative Page(s)</b>	<b>Page Number(s) of appropriate Evidence/ Supporting Documents</b>
30	Student Learning Outcomes Assessment <ul style="list-style-type: none"> <li>Briefly describe comprehensive assessment results from the past 5 years and explain how these results have been used to make improvements to the program. Provide at least two examples.</li> <li>Results reports and findings for improvement (include evidence) for each of the last 5 years</li> <li>State all learning outcomes of the program</li> <li>Explain how outcomes were evaluated (i.e., assessment plan), citing benchmarks and targets</li> <li>Briefly summarize the results of each SLO</li> </ul>	<b>CPE Requirement</b>	<b>62</b>	<b>Appendices J, K</b>
31	Explain the program's measures of teaching effectiveness and what efforts to improve teaching effectiveness have been pursued based on these measures	<b>CPE Requirement</b>	<b>62</b>	
32	External awards or other recognition of the students, faculty, and/or program for each of the last 5 years	<b>CPE</b>	<b>62-64</b>	

		<b>Requirement</b>		
33	Average time and credits to degree for each of the last 5 years	<b>CPE Requirement</b>	<b>64</b>	
34	Post-Graduation Student Success: <ul style="list-style-type: none"> <li>• Employer satisfaction with graduates as measured by surveys and/or alumni satisfaction for each of the last 5 years</li> <li>• Job placement (undergraduate and graduate) for each of the last 5 years</li> <li>• Graduate school admission for each of the last 5 years</li> </ul>	<b>CPE Requirement</b>	<b>65-67</b>	
35	Pass rates on licensure/certification (if applicable) for each of the last 5 years	<b>CPE Requirement</b>	<b>N/A</b>	
36	Identify the number of students in each program that have participated in an internship and/or co-op for each of the last 5 years		<b>N/A</b>	
37	Student involvement in research and Initiatives for each of the last 5 years: <ul style="list-style-type: none"> <li>• Graduate student and undergraduate student publications and presentations</li> </ul>	<b>CPE Requirement</b>	<b>67-68</b>	<b>Appendices I, L</b>
38	Describe processes used to ensure currency of curriculum (industry advisory boards, pass rates on licensure, standardized tests, etc.)		<b>68</b>	
39	Describe quality of orientation, advising, other student services/developmental programs, effectiveness of advising, innovations in advising and efforts to improve		<b>68</b>	<b>Appendices M, N</b>
40	Discuss program qualifications/standards for incoming students, program admission		<b>68-69</b>	
	<b>Program Resources</b>	<b>Included</b> ✓	<b>Narrative Page(s)</b>	<b>Page Number(s) of appropriate Evidence/ Supporting Documents</b>
41	Cost and Funding of Program: The resource requirements and planned resources of funding of the program must be detailed in order to assess the adequacy of the resources to support a quality program. <ul style="list-style-type: none"> <li>• Budget summary information (including extramural funding, gifts, grants) and adequacy</li> </ul>	<b>CPE Requirement</b>	<b>69-70</b>	
42	Operational costs: <ul style="list-style-type: none"> <li>• Facilities summary information and adequacy</li> <li>• Equipment (including IT capacity) summary information and adequacy</li> </ul>		<b>71-73</b>	<b>Appendix O</b>
43	Personnel summary information and adequacy (including faculty and staff numbers, salaries, demographics)		<b>74</b>	

44	Describe financial support from other university units (college, research, administration, human resources, development and alumni affairs, etc.)		75	
	<p style="text-align: center;"><b>Input from Affected Constituents</b> (e.g., surveys, focus groups, interviews, etc.)</p> <p>Information to be gathered from accreditation visit/external reviewers and progress updates since last program review (append external review comments for accredited reviews).</p>	Included ✓	Narrative Page(s)	Page Number(s) of appropriate Evidence/ Supporting Documents
45	Evaluation data from faculty for each of the last 5 years		75-76	
46	Evaluation data from staff for each of the last 5 years		75-76	
47	Evaluation data from students for each of the last 5 years		75-76	
	<p style="text-align: center;"><b>Evidence of Program Quality and Productivity</b></p>	Included ✓	Narrative Page(s)	Page Number(s) of appropriate Evidence/ Supporting Documents
48	Operations: Quality of faculty and staff communications and interactions, such as awards/recognitions, opportunities for input, unit meeting schedule, unit retreat schedule, opportunities for faculty and staff to interact		76-77	
49	<p>Instruction: Overview of current instructional program(s) and plans; describe measures of teaching effectiveness and efforts to improve (e.g., faculty development initiatives for instruction, teacher mentor programs)</p> <ul style="list-style-type: none"> <li>• Class sizes and faculty nucleus for program instruction</li> <li>• Instructional equipment</li> <li>• Faculty credentialing to support core/elective course offerings</li> </ul>		77	<b>Appendix P</b>
50	Program research activities and initiatives		19-23	
51	Overview of current research program and plans by topic for each of the last 5 years; number of research FTE faculty for each of the last 5 years		32-36	
52	Number of postdoctoral fellows and scholars, graduate research and teaching assistantships (Chair) for each of the last 5 years		49	
53	Fellowships for each of the last 5 years		45	
54	Honors and recognitions for each of the last 5 years	<b>CPE Requirement</b>	45-47	
55	Publications (such as books, book chapters, refereed journal articles, non-refereed articles, reviews) for each of the last 5 years		47-48	

	<b>Service, Extension and Non-Extension Programs</b>	<b>Included</b> ✓	<b>Narrative Page(s)</b>	<b>Page Number(s) of appropriate Evidence/ Supporting Documents</b>
56	Summary of quantity and quality of outreach and community service; interrelationship of public service with research and other aspects of the program; nature and quality of service to the university and discipline	<b>CPE Requirement</b>	<b>77-82</b>	<b>Appendix Q</b>
57	Summary of Extension and community activities: <ul style="list-style-type: none"> <li>• Summary of extension programs by topic</li> <li>• Summary of county-level programs</li> <li>• Summary of youth programs</li> <li>• Summary of community-based programs and training</li> <li>• Extension publications and videos</li> <li>• Number of clientele served; programs and training opportunities</li> <li>• Description and evaluation of outreach, service, and engagement activities</li> <li>• Evidence of public service activities such as congressional testimony, service on boards</li> </ul>		83-93 93 94 94-96 96 97-98 98-103  103-104	<b>Appendices I, L, R, S, T, U, V</b>
58	Number of FTE extension faculty and extension specialists		<b>36</b>	
	<b>Other Areas</b>	<b>Included</b> ✓	<b>Narrative Page(s)</b>	<b>Page Number(s) of appropriate Evidence/ Supporting Documents</b>
59	Quality Enhancement Plan (Multimodal Communications Across the Discipline): Please indicate program contribution to the goals of the QEP. See <a href="http://www.uky.edu/SACS/QEP_themes.html">http://www.uky.edu/SACS/QEP_themes.html</a>		<b>104</b>	
60	University Diversity Plan: Please indicate ways in which the program contributes to the university's Diversity Plan. See <a href="http://www.uky.edu/DiversityPlan/diversity_plan.html">http://www.uky.edu/DiversityPlan/diversity_plan.html</a>		<b>104</b>	

Please include a copy of your department's most current departmental report as an appendix. See <http://administration.ca.uky.edu/content/departmental-statistical-reports> for the most recent report.

**DEPARTMENT MISSION, VISION, AND GOALS.** The Department of Veterinary Science is one of 14 academic departments in the College of Agriculture, Food and Environment (CAFE). The overall mission is scientific discovery, education, and dissemination of knowledge, through service and outreach, for the benefit, health, and welfare of animals and humans—with an emphasis on the horse. This mission is based on the University’s and the College’s Land Grant responsibilities dedicated to improving people's lives through excellence in education, research and creative work, service, and health care.

Departmental strategic goals are grounded and framed in the Stronger by Degrees initiative of the Council on Postsecondary Education (CPE), focusing on preparing Kentuckians for life and work, and on benefiting Kentucky’s communities and economy. Specifically, they are to (1) Prepare Graduate Students for Leading Roles in an Innovation-driven Economy and Global Society, (2) Promote Research and Creative Work to Increase the Intellectual, Social and Economic Capital of Kentucky and the World Beyond, (3) Develop the Human and Physical Resources of the University to Achieve the Institution’s Top 20 Goals, (4) Promote Diversity and Inclusion, and (5) Improve Quality of Life of Kentuckians and animals throughout the commonwealth through Engagement, Outreach and Service.

The mission and strategic goals of the Department of Veterinary Science are also fully consistent with the CAFE 2015-2020 Strategic Plan, which is to serve the people of the Commonwealth and across the world through education, outreach, service, and research by finding solutions to improve lives today and creating a sustainable future. The veterinary and equine industries are global in their reach, and our activities through teaching, research and service likewise impact the well-being and economy of the Commonwealth of Kentucky and beyond.

The Department of Veterinary Science is organized into three collaborative units; the Maxwell H. Gluck Equine Research Center (GERC), the University of Kentucky Veterinary Diagnostic Laboratory (UKVDL), and the Animal Genetics Testing & Research Laboratory (AGRTL). The GERC strives to be an international leader in equine research as well as provide the equine industry and veterinary community with information to improve health and well-being of the horse. UKVDL strives to provide the very best and timely diagnostic services in support of the practicing veterinary profession, food animal agriculture, the signature equine industries, companion animals, wildlife, and public health. AGRTL offers a variety of genetic testing services to horse owners and individual breed registries, while also maintaining an active research program dedicated to genetic research of the horse.

A list of current departmental faculty follows.

## **Faculty Profiles**

Amanda A. Adams, Assistant Professor – PhD, University of Kentucky

Michelle Arnold, Associate Professor – DVM, University of Tennessee, Knoxville

Ernest Bailey, Professor - MS, University of California, Davis; PhD, University of California, Davis

Udeni B. Balasuriya, Professor – BVSc, University of Peradeniya, Sri Lanka; MS, University of California, Davis; PhD, University of California, Davis

Barry A. Ball, Professor, Albert G. Clay Chair in Equine Reproduction - DVM, University of Georgia; PhD, Cornell University; DACT

David C. Bolin, Associate Professor - DVM, Purdue University; PhD, Purdue University; DACVP

Uneeda K. Bryant, Associate Professor - DVM, Tuskegee University

Craig N. Carter, Professor - DVM, Texas A&M University; MS, Texas A&M University; PhD, Texas A&M University; DACVPM  
Director, Veterinary Diagnostic Laboratory

Lynne M. Cassone, Assistant Professor - DVM, Texas A&M University

Thomas M. Chambers, Professor – PhD, University of Notre Dame

R. Frank Cook, Associate Professor – PhD, University of Warwick

Erdal Erol, Associate Professor - DVM, Firat University, Turkey; MS, University of Missouri-Columbia; PhD, Texas A&M University

Alejandro Esteller-Vico, Assistant Professor – DVM, University of Leon; PhD, University of California, Davis

Cynthia Gaskill, Associate Professor - DVM, Colorado State University; PhD, University of Prince Edward Island, Canada; DABVT

K.A. Graves, Associate Professor - PhD, Cornell University  
Director, Animal Genetics Testing & Research Laboratory

David W. Horohov, Professor, Schlaikjer Chair in Equine Infectious Diseases – MS, Purdue University; PhD, University of Tennessee  
Chairman, Department of Veterinary Science; Director, Gluck Equine Research Center

Daniel K. Howe, Professor - MS, Western Illinois University; PhD, Purdue University

Charles J. Issel, Professor, Wright-Markey Chair in Equine Infectious Diseases – DVM, University of California, Davis; MS, University of Wisconsin, Madison; PhD, University of Wisconsin, Madison; DACVM

Carney Jackson, Professor - DVM, Oklahoma State University; DACVP; DACVPM

Jennifer Janes, Assistant Professor - DVM, University of Tennessee; PhD, University of Kentucky

Laura Kennedy, Assistant Professor - DVM, Michigan State University; DACVP

Alan T. Loynachan, Associate Professor - DVM, Iowa State University; PhD, Iowa State University, DACVP

Eugene T. Lyons, Professor - MS, Kansas State University; PhD, Colorado State University

James N. MacLeod, Professor, Knight Chair in Equine Veterinary Science – VMD, University of Pennsylvania; PhD, University of Pennsylvania

Karen J. McDowell, Associate Professor - MS, University of Tennessee; PhD, University of Florida

Martin K. Nielsen, Associate Professor - DVM, Royal Agriculture University, Denmark; PhD, University of Copenhagen; DEVPC; DACVM

Thomas W. Swerczek, Professor - DVM, Kansas State University; MS, University of Connecticut; PhD, University of Connecticut

John Timoney, Professor Emeritus – MVB, National University of Ireland; MRCVS, Royal College of Veterinary Surgeons; MS, University of Wisconsin; PhD, National University of Ireland; DSc, National University of Ireland

Peter J. Timoney, Professor, Frederick Van Lennep Chair in Equine Veterinary Science – MVB, National University of Ireland; MS, University of Illinois; PhD, The University of Dublin; FRCVS

Thomas Tobin, Professor – MVB, National University of Ireland; MSc, The University of Guelph; PhD, University of Toronto; DABT

Mats H.T. Troedsson, Professor - DVM, University of Stockholm; PhD, University of California, Davis; DACT; DECAR

### **Adjunct Faculty**

Stephen M. Reed, Adjunct Professor - DVM, Ohio State University; DACVIM

Pawel Slusarewicz, Adjunct Assistant Professor – PhD, University of London

Edward L. Squires, Adjunct Professor – MS, West Virginia University; PhD, University of Wisconsin; DACT (hon.)

Walter W. Zent, Adjunct Professor – DVM, Cornell University

**CONSORTIAL RELATIONS.** While our program does not have contractual relationships with other institutions in Kentucky, informal relationships with other universities in this state do exist and include a toxicology internship program with Eastern Kentucky University (EKU) Forensic Sciences and Chemistry undergraduate programs since 2009. There are similar informal relationships between pathology faculty and Murray State University, Asbury College, and Morehead State University. Likewise, infectious disease and immunology faculty have research and collaborative relationships with faculty and students at Asbury College and Morehead State University. Each of these interactions entails providing undergraduate students with laboratory experiences both at UKVDL and GERC.

We do have contractual relationships with the Department of Large Animal Sciences at University of Copenhagen in Denmark and the College of Veterinary Medicine at Lincoln Memorial University (LMU-CVM) in Harrogate, TN. Each is designed to provide research opportunities for students with an interest in equine science. They also provide our faculty access to promising young scientists with similar research interests. The agreement with Copenhagen is manifested as a dual degree program where participants fulfill the admission and graduation requirements for both universities (Appendix B). These students will have supervisors at both institutions, as well as two graduate advisory committees. The students will spend a minimum of 2 years at the University of Kentucky and a minimum of 6 months and up to two years at the University of Copenhagen. As such, these students will complete all necessary requirements for both programs and produce a dissertation that is acceptable to both institutions. The specific terms and conditions of this agreement have been approved by both universities. It was determined that this agreement did not need to be proposed to Southern Association of Colleges and Schools (SACS) as a new degree, since the students would be completing all standard University of Kentucky degree requirements. A letter of notification was sent through the University of Kentucky's Office of Institutional Effectiveness and acknowledged by SACS Commission on Colleges (COC). There is currently one student enrolled in this program who is working in the laboratory of Dr. James MacLeod.

The Department of Veterinary Science has two Cooperative Agreements with the College of Veterinary Medicine at Lincoln Memorial University. The specific terms and conditions of these agreements have been approved by both universities (Appendix C). One provides the opportunity for veterinary students to work in research labs during the summers following their first two years. Funding for stipends and research support is provided by LMU-CVM to this department. To date, a total of 15 students have participated in this program working in eight different laboratories. There is a formal review of the students at the completion of the summer program and each is expected to produce a poster or oral presentation for the LMU CVM Research Day. There is also a provision to accept two students into a DVM-PhD program. This dual-degree proposal was approved by the faculty and the graduate school and the corresponding document is included in the Appendix D. While no students are currently enrolled at this time, we expect to recruit two students from those that have participated in the summer research experiences and have shown an interest in pursuing research as a career option. The second agreement involves providing LMU veterinary students educational experiences at the UKVDL during their fourth year. This includes their participation in gross necropsy and clinical laboratory rotations. This activity will be coordinated by two UKVDL faculty hired for this purpose using funds provided by LMU (Appendix E).

**STRATEGIC INITIATIVES.** The overall mission of the Department of Veterinary Science is scientific discovery, education, and dissemination of knowledge, through service and outreach, for the benefit, health, and welfare of animals and humans—with emphasis on the horse. Departmental strategic goals that emphasize this mission are to (1) Prepare Graduate Students for Leading Roles in an Innovation-driven Economy and Global Society, (2) Promote Research and Creative Work to Increase the Intellectual, Social and Economic Capital of Kentucky and the World Beyond, (3) Develop the Human and Physical Resources of the University to Achieve the Institution’s Top 20 Goals, (4) Promote Diversity and Inclusion, and (5) Improve Quality of Life of Kentuckians and animals throughout the commonwealth through Engagement, Outreach and Service. These goals are consistent with the University of Kentucky’s stated mission:

*The University of Kentucky is a public, land grant university dedicated to improving people's lives through excellence in education, research and creative work, service, and health care. As Kentucky's flagship institution, the University plays a critical leadership role by promoting diversity, inclusion, economic development, and human well-being*

Our efforts are also consistent with the College of Agriculture, Food and Environment ‘s 2009-2014 Strategic Plan, which is to promote research and creative work to increase the intellectual, social and economic capital of Kentucky and the world beyond its borders. The veterinary and equine industries are global in their reach, and our activities through teaching, research and service likewise impact the well-being and economy of the Commonwealth of Kentucky commonwealth and beyond.

**Intradepartmental Relations.** The Department of Veterinary Science has looked to strengthen collaborations between its three units; the University of Kentucky Veterinary Diagnostic Laboratory (UKVDL), the Gluck Equine Research Center (GERC), and the Animal Genetics Testing & Research Laboratory (AGTRL). In the past, differences in overall missions and the physical separation of the UKVDL from the GERC and the AGTRL somewhat hindered the interactions and collaborations of faculty in these units. During the review period, the department has undertaken several initiatives to increase interaction between faculty in all three units. These include having regular faculty meetings across the three units and alternating the meeting sites between the UKVDL and the GERC building. Additionally, faculty have undertaken several collaborative research projects between the units. These ongoing collaborations include the Equine Sport Science Initiative (a collaboration between the UKVDL pathology section and the musculoskeletal working group at the GERC), multiple equine infectious disease projects (collaboration between the UKVDL pathology section and the infectious disease working group at the GERC), and veterinary parasitology (collaboration between the UKVDL clinical pathology section and the infectious disease working group at the GERC). Further and continued interactions and collaborations amongst faculty and staff throughout the department are encouraged.

**Diversity and Equal Opportunity.** The department strives to maintain a diverse and highly qualified workforce of faculty and staff members, and aims to promote diversity and equality in adherence with university and college strategies. The department currently comprises a female to male faculty ratio of 1:2. The majority of departmental faculty and staff are white with

limited representation by minorities of various racial and cultural backgrounds. The department will continue to provide equal opportunity for all current and future faculty and staff.

The departmental graduate student population is quite diverse and is described under graduate education.

**Philanthropy and Fundraising.** In collaboration with the College, the department has recently described and advertised for an Executive Director of the Gluck Equine Research Foundation and Equine Development Director for the UK Ag Equine Programs. This position will be funded in part by the Gluck Equine Research Foundation and will be based in the Gluck building. A candidate has been identified and will join our program in November.

**Contribution to UK Ag Equine Programs.** A subset of faculty members has been involved with various aspects of UK Ag Equine Programs during the evaluation period. One faculty member served as the Director of the program until 2013, and two other faculty members, a student, and one staff representative currently serve on the board of directors. Furthermore, veterinary science faculty and students participate in various committees and the monthly Equine Forum meetings. While some faculty actively participate in these programs, the majority do not, based on recent attendance numbers at Equine Forum meetings. Veterinary Science attendance appears to increase at events that have a research focus. In recent years, more Equine Forum meetings have had a research focus with good departmental participation, and the first Equine Summit held in October 2015 had a clear research focus and demonstrated great participation and support from Veterinary Science faculty. The Veterinary Science Department will continue to encourage participation in these efforts, both by stressing the importance of faculty participation at college-wide meetings and by encouraging the Equine Programs to continue to include a research focus in their array of activities.

## **Research**

Research remains the primary mission of the Gluck Equine Research Center, and all faculty members of the Department of Veterinary Science are involved in research to some degree. The following section describes new strategic initiatives taken during the evaluation period.

### ***New Faculty Positions (see also pages 29-31)***

The department has taken the initiative to create two new faculty positions to address emerging and reemerging diseases and bioinformatics; both of which are research fields and disciplines not covered by existing programs. A third faculty position was created for an immunologist to address a need for veterinary immunology research within the department. While Dr. Horohov has maintained a productive program in equine immunology over the past decade, his recent appointment to department chair and Director of the Gluck Equine Research Center has created a need for recruiting a new immunologist. These newly created positions will build research capacity and strengthen collaborative efforts in the Veterinary Science department, between other departments and colleges within the university, and amongst other state, national, and international institutions.

Emerging and Reemerging Disease. This position was advertised in the spring and summer of 2016, and 56 applications were received. These are currently being evaluated, and selected candidates will be invited for interview during the fall of 2016.

Bioinformatics. This position has been created and has recently received college approval. It is expected to be advertised in the near future.

Immunology. The position has been created and received approval from the College, and will be advertised in the near future.

***Equine Sports Science Initiative.*** This initiative was launched by Dr. James MacLeod. It is a multidisciplinary collaboration aiming at advancing the health and wellbeing of the equine athlete. The initiative utilizes scientists, clinicians, pathologists, regulatory veterinarians and others to evaluate underrepresented disciplines important to the equine athlete, such as bone density studies, articular cartilage repair research, genomics, transcriptomics, proteomics, and metabolomics. Recently, the Equine Sports Science Initiative became affiliated with the Equestrian Sports Research Initiative, which is a campus-wide program focused on maximizing both horse and rider safety.

***Research Farms.*** Equine herds are maintained at three university farms (North, Woodford and South), though the South Farm is used primarily as an isolation facility. These equine herds remain a fundamental and important research resource within the department. Funds for farm activities are provided from departmental resources and faculty extramural funding with the majority (80%) cost borne by the department. During the evaluation period, several initiatives have been taken to enhance the farms' financial situation. Efficiency has been improved by adjusting herd sizes and reorganizing herds and staff between the two research farms (Woodford and North Farm). Further, facilities and infrastructure have been gradually upgraded during the evaluation period. A new reproduction research facility was opened in 2012, and a fully operational BSL2 facility has been established on the North Farm. In addition, several sheds, barns and fences have been updated and remodeled during the past five years. However, other parts of the farm infrastructure are still in need of upgrading and remodeling. These updates will be addressed as funding sources are identified and become available.

## **Teaching**

***Undergraduate Teaching.*** In the past five years, faculty members have gradually increased their involvement in undergraduate teaching within Veterinary Science and other curricula. In addition to VS 350 (Introductory Anatomy, Physiology, and Animal Hygiene) and VS 351 (Principles of Animal Hygiene and Disease Control) that have been offered for several decades, Veterinary Science faculty have developed several new courses in the evaluation period. These include VS 597 (Special Course: Equine Infectious Diseases in the Genomic Era), VS 777 (Current Literature in Equine Reproduction), VS 500 (Advanced Equine Reproduction), and VS 307 (Genetics of Horses). As well, Veterinary Science faculty members have provided guest lectures in a number of courses including EQM 351 (Equine Health and Disease) and EQM 399 (Equine Science and Management Internship). One faculty member, Dr. Roberta Dwyer, left the department within the past year. This departure left courses VS350 and VS351 without a primary

course instructor. Identification of a replacement instructor and the future direction of those courses is likely to be an area for discussion by the faculty going forward.

***Graduate Education.*** The department strives to recruit a talented and diverse group of graduate students and post-doctoral scholars. Twenty-four students are currently enrolled in the graduate program and consist of four males and 20 females. The graduate student population originates from ten countries on five different continents. The department currently has four post-doctoral scholars, of whom, three are international.

Several strategic initiatives have been taken within the past five years to increase graduate student stipends within the department. While this has resulted in more competitive stipends, it has led to a reduction in the total number of stipends available. Additional efforts to expand our graduate program have included:

Since 2011, an agreement with Zoetis has provided graduate fellowships to support two students with veterinary degrees and who are board-eligible in a discipline of veterinary medicine.

Establishment of a dual degree program with the University of Copenhagen in 2014. This program supports graduate students with a veterinary degree. Students spend time at both institutions during their training, of which, at least two years must be at the University of Kentucky. The first student was accepted into the program and started her studies in 2016.

Establishment of a PhD/residency programs in veterinary parasitology and toxicology in 2016. These programs are separately funded through the National Center for Veterinary Parasitology and the University of Kentucky Veterinary Diagnostic Laboratory (UKVDL). These programs provide advanced training for students with veterinary degrees. Residency training consists of diagnostic work at the UKVDL, and PhD research at the Gluck Equine Research Center or UKVDL. Students will be eligible to take their respective board examinations upon completion of their program of study

***Cooperative Agreement with Lincoln Memorial University.*** This five-year agreement was formed in 2013 between Lincoln Memorial University (LMU), a newly established veterinary school, and the Department of Veterinary Science. The department offers teaching services for LMU veterinary students. These activities are divided into two programs; 1) training of senior veterinary students in veterinary pathology at the UKVDL, and 2) research elective opportunities for LMU veterinary students at the Gluck Equine Research Center. A DVM\PhD program has also been initiated. Two new clinical-track faculty positions have been created to address teaching obligations created by the Cooperative Agreement with Lincoln Memorial University. This new positions will provide a dedicated pathology instruction for LMU veterinary students in order to avoid significant disruption of the substantial UKVDL diagnostic caseload. Additionally, these positions will expand the department's teaching mission and strengthen the collaborative efforts between the Veterinary Science department and the Lincoln Memorial University School of Veterinary Medicine. The position was advertised in the spring of 2016, and an offer was extended to the preferred candidate and accepted. The second position will be filled in 2017.

## Service

Faculty of the Department of Veterinary Science provide substantial diagnostic and consulting services to the equine industry. Additionally, two service units provide clinical advice and diagnostic services to local, regional, national, and international equine entities. The UKVDL provides diagnostic services and support to practicing veterinarians within the state and nation, Kentucky food animal agriculture, companion animals, wildlife, and public health. AGTRL provides genetic testing services to an international client base (Appendix F) and strives to offer the highest quality DNA testing combined with personalized customer service while discovering the genetic basis for traits and diseases in the horse.

Service oriented strategic initiatives strive to 1) develop and apply state-of-the-art and novel diagnostic technologies to improve animal health, preserve the human-animal bond, and protect the public health 2) provide outstanding customer service with timely and accurate diagnoses, diagnostic testing, and epidemiological services 3) collaborate with the USDA, Kentucky Office of the State Veterinarian, the Breathitt Veterinary Center and other diagnostic laboratories, other units within the College of Agriculture, Food, and Environment, and Kentucky Cabinet for Health and Family Services to aid economic development, emergency preparedness, and public and animal health, and 4) link disease discovery to applicable benchtop and clinical research to further scientific knowledge and provide practical solutions.

***Communication and Outreach.*** The department has maintained and expanded its communication strategy over the evaluation period. The department publishes between 5 and 15 press releases each year and the Equine Disease Quarterly, funded by the Kentucky agents and brokers of Lloyd's, London, is distributed to over 15,000 subscribers. Additionally, information generated within the department provides major contributions to the "Bluegrass Equine Digest", which is a monthly newsletter published by TheHorse.com. Furthermore, the department maintains active Facebook and Twitter accounts. In 2012, the Gluck Equine Research Center celebrated its 25-year anniversary and this involved organizing several events and creating a special logo. Keeneland Magazine and Lane Report wrote feature stories about the program in response to press releases about this anniversary.

**DEPARTMENT BENCHMARKING ACTIVITIES.** A review article written in 1994 by Glickman and Simmons,<sup>1</sup> describes the status of departments of veterinary science as generally possessing from 10 to 25 faculty members who are responsible for a broad scope of disciplines, with many discipline areas being supported by few faculty. Changes in funding sources, priorities and enrollment have led to the elimination of Veterinary Science programs or their fusion into veterinary colleges or with Departments of Animal Science or other disciplines. The four benchmark institutions that we have identified for the purpose of this review are most like our program in that they retain the structure, though not so much in program emphasis, of our department. Nevertheless, they do provide an opportunity for comparison. The Department of Veterinary Science at the University of Wyoming is associated with its state diagnostic laboratory and its focus is on diseases exchanged between wildlife and livestock, given the strong ranching tradition of Wyoming. Its mission is to help ensure that livestock, wildlife and companion animals in Wyoming and the region are healthy through a combination of teaching,

---

<sup>1</sup>(<http://scholar.lib.vt.edu/ejournals/JVME/V21-2/recruit2.html>)

professional service, extension and research activities and that spontaneous diseases are accurately diagnosed. The Department of Veterinary and Biomedical Sciences at South Dakota State University is also affiliated with an Animal Disease Research and Diagnostic Laboratory. Their mission is to protect and improve the health of animals, the viability of the SD agricultural industry, and the welfare of society through high quality diagnostic, analytical, research, extension and teaching activities. Their research program focuses on the pathogenesis, diagnosis, and prevention of infectious diseases of domestic animals and humans. The Department of Veterinary and Biomedical Sciences at Penn State is likewise associated with an Animal Diagnostic Laboratory. Faculty members conduct research in four primary areas: Animal Diagnostics, Immunology and Infectious Disease, Molecular Toxicology and Carcinogenesis, and Veterinary Extension. The Department of Pathobiology & Veterinary Science at University of Connecticut includes both undergraduate majors and a graduate degree programs (MS and Ph.D.) with concentrations in bacteriology, pathology and virology. Their research programs focus on infectious diseases of animals and humans, vaccines, veterinary pathology, and wildlife diseases. Summary information, when available on websites, is provided below for each program (Table 1). The number of publications over the five-year period for each program was determined using an online search strategy employing the address of each department. As this approach may underreport the actual number of publications, we include the results for our program using the same search strategy.

**Table 1. Benchmark Programs**

<b>Department</b>	<b>Faculty</b>	<b>Graduate Students</b>	<b>Publications (5yr)*</b>
Veterinary Science University of Wyoming	10	9	63
Veterinary and Biomedical Sciences South Dakota State University	12	30	91
Veterinary and Biomedical Sciences Pennsylvania State University	30	50	127
Pathobiology & Veterinary Science University of Connecticut	15	NR**	113
Veterinary Science University of Kentucky	33	18	299

\*Pubmed search, \*\*Not reported

**Promotion and Tenure Expectations.** Information regarding promotion and tenure expectations for each of the benchmarks was either provided directly by the program (SD State, U Conn) or obtained from information posted on their website. For each of these departments, the decision to tenure and promote to Associate Professor is based on a faculty member demonstrating significant accomplishments. This is evidenced when the candidate has made significant contributions in the quality and quantity of research, teaching and service, and shows likelihood of sustaining these contributions. Likewise, promotion to Full Professor is awarded to those faculty members who have clearly demonstrated leadership through significant accomplishments and contributions to scholarship, teaching and service. Scholarly works include the continual development and submission of competitive research grant proposals, publication of significant results in peer-reviewed, indexed journals relevant to the discipline, and

presentation of research results at appropriate to the discipline national and international meetings. Their contributions should include the conceptualization, implementation and analysis of research studies, including collaborative works. Faculty service includes service to the department, the university, and the profession including service on committees and organizations, acting as a reviewer for scientific journals, and as panel member on review committees and granting agencies. Service in diagnostic laboratories includes case coordination, integration of results from diagnostic testing, and timely reporting of results to clients. Promotion and tenure to faculty with service appointments in diagnostic laboratories requires faculty make contributions to the provision of timely and accurate diagnostic services. This may be evidenced or documented by regional and national recognition of performance. Supplemental evidences of achievement can include letters of support from veterinarians, research collaborators, and stakeholders. Other evidences include leadership roles, special awards and recognition for professional achievement and other indications of distinguished contribution to the profession. Excellence in teaching involves a combination of student and peer reviews of teaching activities. Continued professional development in terms of acquiring and enhancing teaching skills is also considered evidence of excellence in instruction. These criteria are directly in line with those established by the University of Kentucky as defined in (AR2:1 <http://www.uky.edu/regis/files/ar/ar2-1-1.pdf>) and the Department of Veterinary Science's as defined in our Rules of Procedures and Evidences of Activity documents (Appendices G and H).

**Budget.** Limited budget information was available. Owing to differences in how budgets are generated between different universities it is also difficult to make direct comparisons with our budget. For example, the UKVDL budget is separate from the Department of Veterinary Science whereas others included their diagnostic laboratory in their budget (SD State). In other cases faculty salaries were not included and only other expense categories were included (UConn). Two of the benchmarks provided no budget information (PSU, UWY). As such, any comparisons were difficult to make and therefore not included in this report.

### **PRIMARY FACULTY CONTRIBUTIONS - 3-4 STRONGEST RESEARCH & CREATIVE AREAS.**

The research programs within the department fall within 7 broad areas (number of faculty in each area): infectious disease (8), reproduction (6), genetics (4), parasitology (3), musculoskeletal (3), Immunology (2) and toxicology (2). While the primary research function of this department is located within the Gluck Center, faculty at the diagnostic laboratory and the Dimock building also contribute to this effort. Specific information on each group is also included in the research summary section of this report (page 32).

Historically, infectious disease has been one of the major strengths of this program with its faculty accounting for the majority of external funding and publications. While this trend has continued over the past five years, there has been a shift in productivity from more senior faculty to those more junior. In particular, Dr. Balasuriya has developed a very productive program in arteritis virus research, in collaboration with Dr. Peter Timoney. Dr. Balasuriya received significant funding from the USDA in support of his work in this area. There has also been the termination of some programs due to faculty retirement and passing. Dr. Balasuriya, along with Dr. Chambers, has also taken over some of the equine herpesvirus research that was once led by

Dr. George Allen (deceased) while Dr. Chambers continues his long-standing work on equine influenza virus and its vaccines. Likewise, Dr. John Timoney's retirement will certainly leave a void in his area of expertise. We are in the process of recruiting a faculty member with an interest in emergent and re-emergent diseases to fill that vacant position. At the same time, research activity on *Rhodococcus equi* and *Lawsonia intracellularis* has increased in the laboratory of Dr. Horohov with collaborative assistance of Drs. Loynachan and Bryant at UKVDL. The equine infectious anemia program is another program winding down as both Drs. Cook and Issel have announced their plans to retire in 2018. While this program has been highly successful, there are no immediate plans to recruit someone into this specific area as NIH no longer supports EIAV as a model for HIV. Dr. Carter at the diagnostic laboratory has a continued interest in disease surveillance and a particular interest in *Leptospira* infections, another area that Dr. John Timoney was working. Together, these efforts complement both the research and service missions of our department. The work of this group is supported by funding from USDA-AFRI, Morris Animal Foundation, Grayson Jockey Club Research Foundation, American Quarter Horse Foundation, the Kentucky Horse Racing Commission and the pharmaceutical industry (Pfizer/Zoetis, Merck, Boehringer-Ingelheim, Merial, Neogen) (see page 49 for details).

The past decade has seen a focus on increasing the reproduction program in this department. This expansion included the recruitment of 3 new faculty (Troedsson, Ball, Squires) in addition to the three faculty already present (Fitzgerald (deceased), McDowell, Swerczek). The recent retirement of Dr. Squires and Dr. Troedsson's temporary assignment in Qatar led to the recruitment of Dr. Esteller-Vico into a research track faculty position. The program continues its focus on both mare and stallion reproduction. A recent fund raising effort by this group procured \$150,000 in support for placentitis research. Dr. Ball also has received support from the Bureau of Land Management and the Kentucky Horse Racing Commission, as has Dr. Esteller-Vico. Given the importance of thoroughbred breeding in central Kentucky, the department's commitment to this area of research will likely continue into the future.

The genetics group in this department has played an important role in the characterization of the equine genome, the determination of the molecular basis of disease susceptibility and developmental regulation of gene expression. Dr. Bailey work has provided both key foundational discoveries as well as application-based tools. A number of genetic tests developed as the result of research activities in his laboratory have been incorporated into the testing services of the AGTRL laboratory. We recently lost the a key member of this group, Dr. Lear, to cancer. Dr. Lear provided cytogenetic testing to the equine industry and was a contributing member of the equine genomics community. Dr. MacLeod's group has a history of developing genomic- and transcriptomic-based approaches for investigating chondrocyte development. He has also worked closely with the biostatistics group on campus on the development of computational and statistical tools for big data analysis of RNAseq data. His work has been supported by NSF, Morris Animal Foundation and the American College of Veterinary Surgeons. We will soon be recruiting a faculty member with bioinformatics expertise who will complement these ongoing efforts, as well as those of other faculty with similar interests.

The parasitology group is composed of three faculty members, two of whom (Drs. Lyons and Nielsen) have research programs focused on helminth parasites. Dr. Howe, the third member of this group, has an interest in *Sarcocystis neurona*, the causative agent for equine protozoal

myeloencephalitis. Their efforts have focused on both improved methods of diagnoses and characterization of the host response to parasites. Dr. Nielsen's program has been particularly well-funded from a variety of source including both federal and industry funds. He also obtained crowd-sourced funding for one of his projects, a first for our college.

The musculoskeletal disease group includes Dr. MacLeod with his interest in cartilage repair. As mentioned above, his approach uses molecular approaches to characterize chondrocyte function as it relates to cartilage development and repair. This has also included recent work on regenerative medicine approaches using inter zonal stem cells. Dr. MacLeod is also the director of the Equine Sports Science Initiative which also includes Drs. Janes and Kennedy at the diagnostic laboratory. This initiative is also part of a developing multi-college Equestrian Sports Research Initiative which includes an emphasis on safety for both the human and equine athlete.

While the immunology and toxicology programs are smaller, by comparison, each also contributes to the overall research effort of the program. Dr. Adams' program is well supported by the equine industry and she has established herself as one of the key players in the interaction of the immune system and nutrition in the geriatric horse and in equine metabolic syndrome. She has received significant support from the equine industry including several large grants from nutritional and pharmaceutical companies, as well as the American Quarter Horse Foundation and Morris Animal Foundation. Dr. Horohov's program continues to focus on the role of the immune system in equine infectious diseases, as noted above. He is also working on the role of inflammatory gene expression as a predictor of injury risk for thoroughbred racehorses. This effort is directly supported by the equine industry through the Grayson Jockey Club and the Kentucky Horse Racing commission. The toxicology program is composed of two active faculty members. Dr. Gaskill at the diagnostic lab offers a variety of toxicology testing services and performs related research supported by a variety of agencies. Dr. Tobin continues to have an interest in the detection of performance enhancing drugs in equine athletes. His program is supported primarily by gifts from the horse racing industry.

## **FACULTY CONTRIBUTION TO TEACHING AND SERVICE.**

### **Teaching**

Numerous faculty members in Veterinary Science host undergraduate students in their labs and serve as mentors for student research experiences (e.g., ABT 395, VS 395). During the 2011-2016 review period, 9 faculty members have served as research mentors for 45 undergraduate students. Dr. Dan Howe is the current course coordinator for ABT 395 and ABT 399, the experiential learning courses that are required for students in the Agricultural and Medical Biotechnology (ABT) undergraduate degree program. Collectively, these activities represent important contributions to the University's strategic initiative to enrich undergraduate education by offering opportunities for undergraduate research and experiential learning. Dr. Howe is also an instructor for ABT 301, Writing and Presentation in the Sciences. ABT 301 is one of two courses that ABT students complete to satisfy the University of Kentucky's Graduation Composition and Communication Requirement (GCCR). The GCCR was implemented recently by the University of Kentucky to support the strategic objective of promoting undergraduate student success by ensuring that graduates communicate effectively. Finally, Dr. Roberta Dwyer and Dr. Melissa Newman (Animal and Food Sciences) developed a new distance-learning course

(ASC 209; Veterinary Medical Terminology), which addresses the CAFE strategic goal to triple distance-learning courses at the undergraduate level.

## Service

The Department of Veterinary Science supports OIE international reference laboratories for equine herpesvirus, equine influenza virus and equine arteritis virus. The activities of these laboratories include diagnostic service to the local, regional, and national horse industry, and applied research to improve diagnostics and vaccines. While this service activity has brought significant international recognition to our program, the long-term viability of this effort is in question due to increased oversight requirements from OIE and associated costs.

## FACULTY ATTRITION

**Table 2.**

	2013/2014		2014/15		2015/16	
	<u>Tenured</u>	<u>Non-Tenured</u>	<u>Tenured</u>	<u>Non-Tenured</u>	<u>Tenured</u>	<u>Non-Tenured</u>
<b>Resigned</b>	0	0	0	0	0	0
<b>Retired</b>	1	0	1	2	1	0
<b>Other</b>	0	0	0	0	1	1

In 2013/14, Dr. Mary Vickers retired

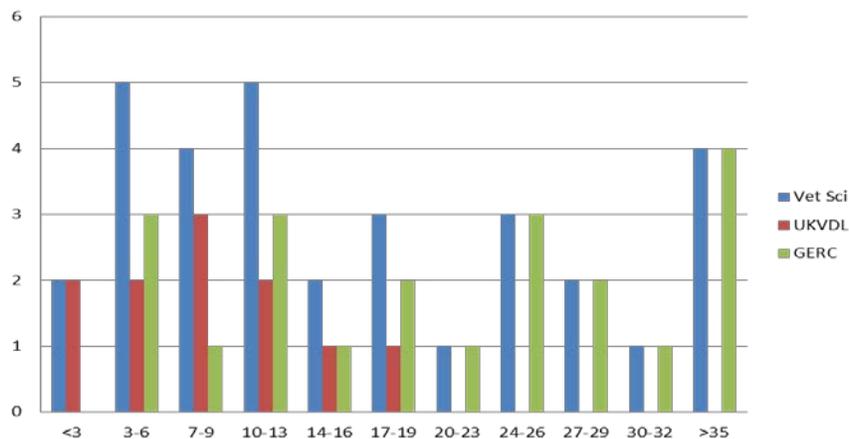
In 2014/15, Drs. Williams, Artiushin and Squires retired.

In 2015/16, Dr. John Timoney retired, Dr. Lear passed away, and Dr. Dwyer changed departments.

Over the past 5 years we have seen 4 faculty retirements, 2 at the UKVDL (Vickers, Williams) and 2 at GERC (Squires, J. Timoney). We've also lost Dr. Lear to cancer and Dr. Dwyer transferred to Animal and Food Sciences here at UK. The positions at the UKVDL have been replaced through the recruitment of a new faculty member (Dr. J. Janes for Dr. Williams) and the internal promotion of a staff member and the reorganization of that service to account for Dr. Vickers' position. There is currently a search underway for Dr. J. Timoney's position. Here we are looking for a candidate with experience in emerging and re-emerging diseases, preferably with a background in microbiology. Dr. Squires was initially recruited as the executive director of the UK Gluck Equine Research Foundation Board. As part of his appointment, he was also given a partial extension faculty appointment. Following his retirement, the executive director position was advertised and we are in the process of filling this position. The successful candidate will not have a faculty appointment as this position will be considered a staff position as originally developed and prior to Dr. Squires assuming that role. The extension portion of his position has been reclaimed by the college. Dr. Dwyer provided extension and instructional support to this program. Her extension activity focused primarily on biosecurity, primarily at the national preparedness level. She will continue these activities in her new department along with her pre-veterinary student advising activity. With the recent re-organization of student advising activities within the university and her own interest in being more connected with the other teaching faculty in the college, she requested and was granted a transfer of her position to Animal and Food Sciences. While this change was considered with the best interest of the

faculty member in mind, we are concerned about the loss of the extension positions from this department. Likewise, her instructional duties which included two service courses which are not currently being offered and the long-term plan for these courses has not been developed. While Dr. Peter Timoney continues to perform extension activity with a focus on the international movement of horses as part of his position, there is clearly the need for another equine extension position in this department. However, given the current state budget situation and its impact on extension programs, there are no immediate plans to expand the extension program within this department. Dr. Lear’s position was a non-tenured position that was created a number of years ago to address the needs for cytogenetic testing. While she provided exemplary service in this area, the overall need and financial support for this activity never reached the hoped for potential. As such, there are no plans presently to fill this position. We are in the process of evaluating the genetic testing services offered by this department and the possibility of expanding its current mission to include cytogenetics testing will likely be discussed.

In addition to these regular faculty lines, we currently have two endowed positions that are available; the Keeneland Chair and the William Robert Mills Chair in Equine Infectious Disease. Both positions are supported by endowments, however, neither is sufficient to cover the full expense of a new faculty line. While such prestigious positions can be used to recruit experienced faculty to our program, they are typically limited to more senior rank faculty. As detailed below (Figure 1), our department, and the Gluck Center in particular, has a disproportionate number of senior faculty already. In order to more effectively utilize these positions as a recruitment tool, several changes have been discussed. While these endowed positions have traditionally involved lifetime appointments, going forward we will likely limit the terms of these positions to renewable 5 year terms. Further, we will focus on using these positions to reward productive members of the current faculty and, when possible, use these endowment funds to free up portions of faculty salary lines so that additional junior faculty may be recruited in the future. We do reserve the option, however, to use these positions to recruit outstanding individuals to our program if the opportunity arises during our current searches.



**Figure 1. Faculty Distribution by Years of Service**

**UNFILLED LINES.** We currently have five unfilled faculty lines in our program. Two of these lines are to be used to hire clinical pathologists who will assist in the instruction of the LMU-CVM students during their rotations at UKVDL. The other three lines were created as part

of the negotiations when Dr. Horohov became chair. The lines are considered “borrowed” in the sense that they are in anticipation of faculty retirements in the near future. For example, Dr. John Timoney’s position will now be used for one of those lines following his retirement this past June. Three of the lines will have a research emphasis and were discussed at several faculty meetings and the overall consensus was for these positions to represent “concepts” rather than specific diseases or research topics. As such, none of the positions will be advertised as being equine-specific. In fact, we are encouraging application by individuals who do not have a current interest in equine research but possess a willingness to consider developing a program in this area. Each position is described below including information on the start-up packages that will be provided. One of the clinical pathologist positions is near to being filled. The Emergent and Re-emergent Infectious Disease position is currently being advertised, the others are expected to be advertised before the end of this year.

**Clinical Pathology Positions.** Two non-tenure track clinical pathologists (one board certified, one board eligible) will be hired to support the upcoming LMU student training program at UKVDL. Primary responsibility will be to develop a curriculum in pathology and ancillary diagnostic disciplines for senior students to be delivered in four-week blocks to fulfill the cooperative agreement between UKVDL and LMU. This agreement includes funding for a full-time ACVP board eligible veterinary pathologist and a full-time necropsy technician/student coordinator to assist in curriculum development and delivery to the students. These two positions will be filled at least three months prior to the start of LMU senior students’ four-week blocks to allow for familiarization with the facilities, caseload and curriculum. These positions will be primarily focused on instruction, but contribution to the research mission of the program will also be encouraged.

**Assistant/Associate Professor in Emergent and Re-Emergent Infectious Diseases:** Emergent and re-emergent infectious diseases pose significant threats to the health and well-being of animal and human populations throughout the world. Many such diseases are zoonotic. Given this omnipresent threat to animal and human health, the Department of Veterinary Science in the College of Agriculture, Food and Environment at the University of Kentucky is investing in cross-disciplinary research efforts by recruiting a faculty member at the assistant or associate professor level with a particular interest in the field of emerging and re-emerging microbial diseases. This position will expand the current internationally recognized infectious disease research programs in the Department of Veterinary Science that include studies on various viral, bacterial and parasitic infections. The successful candidate will be expected to develop a nationally and internationally recognized, externally funded research program utilizing interdisciplinary approaches (such as biochemical, cellular, immunological, microbial/host genomics, bioengineering, metagenomics and other areas of contemporary molecular biology) to investigate infectious animal and zoonotic diseases. Overall, the successful candidate is expected to complement existing equine infectious disease research programs and bring new research directions to the department in order to sustain national and international recognition of the Maxwell H. Gluck Equine Research Center and the University of Kentucky Veterinary Diagnostic Laboratory. Start-up funds for this position will be provided, in part, by the annual proceeds from the Koller Emergency Response Endowment (approximately \$75K per year for 4 years). Additional funds will be sought from the college to provide an overall start-up package of \$400-\$450,000. The renovation of a laboratory will also be performed as part of this start-up package. Anticipated start date is Spring 2017.

**Assistant/Associate Professor in Immunology:** The immune system plays a central role in the health and well-being of animals, including the horse. Faculty of the Department of Veterinary Science at the Maxwell H. Gluck Equine Research Center and the University of Kentucky Veterinary Diagnostic Laboratory have historically been recognized as world leaders in research focused on the characterization of the horse's immune system and its responses to pathogens and other disease conditions. To maintain and enhance its leadership in this field, the Department of Veterinary Science in the College of Agriculture, Food and Environment at the University of Kentucky is recruiting a faculty member at the assistant or associate professor level with particular interest and expertise in the field of immunology. This position will complement the current internationally-recognized research programs in the Department of Veterinary Science that include studies on various viral, bacterial and parasitic infections in horses, as well as diseases of the reproductive system and musculoskeletal injuries, and their associated immune responses. The successful candidate will be expected to develop a nationally and internationally-recognized, externally-funded research program utilizing contemporary immunological methods and resources to investigate fundamental and applied aspects of veterinary immunology. The successful candidate will be expected to apply their expertise to equine immunology, although expertise and continued research in other animal models besides the horse will be viewed favorably. There are \$170,000 in start-up funds available in the department for this position. Additional funds will be sought from the college in order to generate a start-up package of \$250,000 for this position. This position is being recruited into an existent immunology laboratory so that space renovation and equipment needs should be minimal. Anticipated start date is Fall 2017.

**Assistant/Associate Professor in Bioinformatics:** Biomedical informatics (bioinformatics) reflects an interdisciplinary area of expertise that assembles, studies, and utilizes very large biological datasets for discovery scientific research, knowledge accumulation, and applied decision making related to biomedical topics. Scientific opportunities in bioinformatics are growing rapidly and becoming an integral part of contemporary science and translational applications for virtually every biomedical discipline in this age of genomic, post-genomic, and other “-omic” analyses. Applications for bioinformatics are diverse, extending from very basic areas of biological research to more translational clinical research and health informatics. Large biological, biomedical, and clinical datasets are accumulating rapidly in public repositories with concurrent development of advanced data management and computational strategies for analyses. For ‘-omic’ and ‘big data’ strategies, there is an exciting convergence of technical feasibility at affordable costs with mathematical and computational resources that are enabling these transformative changes in biology and biomedicine. Recruitment of a new faculty member with expertise in bioinformatics and concurrently the potential and motivation to develop an exciting discovery biomedical research program will complement and extend existing areas of research expertise in the Department of Veterinary Science. Start-up funds for this position will be provided, in part, by the annual proceeds from the Koller Bioinformatics Endowment (approximately \$~50K per year for 4 years). Additional funds will be sought from the college to provide an overall start-up package of \$200-\$250,000. It is not anticipated that laboratory space renovation will be required for this position, though an enhancement of computational resources may be anticipated. Anticipated start date is Spring 2018.

**FELLOWSHIP AND RESEARCH ASSISTANT INFORMATION.** Research assistantships are based on a 0.5 FTE and provide a stipend, student health insurance, and full tuition support.

A student matriculating with a Bachelor's degree receives a stipend of \$10,000/semester. A student matriculating with a Master's degree receives a stipend of \$10,750/semester. A student matriculating with a Veterinary degree plus additional training (e.g., residency program) receives a stipend of \$13,000/semester. For PhD students, the stipend increases to \$11,500/semester (non-veterinary) or \$14,500/semester (veterinary) after 2 years in the program AND completion of the qualifying examination. For Fall 2016, Veterinary Science has 20 graduate students supported by fellowships/assistantships.

**OFFER REJECTIONS.** Rejection of offers for admission and an assistantship in our program have been infrequent. The most recent rejection of an offer our graduate program came from a student who completed her undergraduate training at the University of Kentucky. The applicant had offers from multiple graduate programs and decided it would be beneficial for her to pursue graduate training at an institution other than the University of Kentucky.

## **OVERVIEW OF CURRENT RESEARCH PROGRAM AND PLANS**

### **Infectious Disease Group (8 FTE)**

- Determine correlation between seasonally depressed levels of circulating testosterone and quantity of virus shed in semen or in promoting spontaneous clearance of the carrier state. (P. Timoney)
- Identification of the unique susceptibility of foals to *Rhodococcus equi* infections and the protective role of hyperimmune plasma in this infection. (Horohov)
- Investigations into the epidemiology and immunology of *Lawsonia intracellularis* infection in weanlings. (Horohov)
- Characterization of the maturation of the cell-mediated immune response to equine infectious anemia virus. (Horohov, Issel)
- Identification of the ability of equine herpesvirus-1 to suppress Type-1 interferon responses in the infected cell. (Chambers)
- Efficacy in horses of novel DNA and modified-live virus vaccines. (Chambers)
- Characterization of the interferon-lambda genes of the horse. (Chambers)
- Investigations into the role of the horse in interspecies transmission of influenza A viruses. (Chambers)
- Complete genomic sequences from equine infectious anemia virus (EIAV) field isolates. (Cook, Issel)
- Determine whether EIAV establishes serologically silent infections like Woodchuck Hepatitis Virus and Simian Immunodeficiency virus. (Cook, Issel)
- Identification of the genetic basis for the susceptibility of equine CD3+ T lymphocytes to equine arteritis virus infection and establishment of long-term persistent infection (carrier state) in the stallion reproductive tract. (Balasuriya, P. Timoney)
- Identification of the tissue and cellular localization of equine arteritis virus during long-term carrier state in the stallion reproductive tract and characterization of the local inflammatory response to the virus. (Balasuriya, P. Timoney)
- Investigation of the safety and efficacy of a MLV vaccine against equine viral arteritis in 6-12-month old colt. (P. Timoney)
- Identification of equine CXCL16 as one of the cellular receptors for equine arteritis virus and further characterization of its biological functions. (Balasuriya)

- First demonstration of lateral gene transfer between strains of *Streptococcus zooepidemicus* in the equine respiratory tract. (J. Timoney)
- Identification of proteins of *Leptospira interrogans* upregulated during equine infection of value in immunodiagnosis and protective host response. (J. Timoney)
- Determination of specificities of antibodies that differentiate equine infections caused by *S. zooepidemicus* and *S. equi*. (J. Timoney).
- First demonstration that binding region peptides of toxins of *Clostridium difficile* elicit neutralizing antibodies in mare's serum and colostrum. (J. Timoney)

### **Reproduction Group (4 FTE)**

- Demonstrated that acute phase proteins (serum amyloid A and haptoglobin) increase dramatically in the blood of mares with experimental placentitis. (Ball, Squires, Troedsson)
- Demonstrated that concentrations of serum estrogens in pregnant mares decline rapidly after experimental placentitis. (Ball, Squires, Troedsson)
- Demonstrated an increase in concentrations of fetal proteins (alpha-fetoprotein) in the blood of pregnant mares with experimental placentitis. (Ball, Squires, Troedsson)
- Characterized changes in small RNA molecules. (microRNA) in the blood of mares with experimental placentitis. (Ball, Squires, Troedsson)
- Demonstrated alterations in the protein composition of fetal fluids in mares with experimentally induced placentitis. (Ball, Squires, Troedsson)
- Demonstrated changes in the expression of inflammatory cytokines, prostaglandin receptors and enzymes responsible for prostaglandin synthesis in the cervix of mares with placentitis. (Ball, Squires, Troedsson)
- Identified major increases in pregnanes (progesterone-related molecules present in high concentration in late gestation) in mares with induced placentitis based upon analysis using mass spectrometry. (Ball, Squires, Troedsson)
- Identified potential biomarkers for abnormal pregnancies as well as characterization of the protein composition of the protein plug. (Ball)
- Further characterization of the effect of fescue endophyte toxicosis on mare reproduction. (McDowell)
- Characterized the local innate immune system in mares susceptible to persistent breeding-induced and infectious endometritis, and evaluated the effect of immune therapy in these mares. (Troedsson)
- Seminal plasma proteins (CRISP-3 and lactoferrin) have been identified for the first time to selectively promote transport of viable sperm to the oviduct, while eliminating dead sperm from the uterus. Ongoing studies will determine the role of these proteins in stallion fertility. (Troedsson)
- Is the incidence of Dystocia affected by season and reproductive status at the time of breeding. (Squires)
- Do foals born from mares suspected of having placentitis during pregnancy have similar athletic performance of foals from normal pregnancies? (Squires)
- What affect does age of stallion, season and breed have on the freezability of stallion semen? (Squires)

### **Parasitology Group (3 FTE)**

- Developed and validated a serum ELISA for detection of migrating larvae of the bloodworm, *Strongylus vulgaris*. (Nielsen)
- Documented that *Parascaris univalens* is misidentified as *Parascaris equorum* in veterinary literature. (Nielsen)
- Developed and validated an automated smartphone-based technique for determining fecal egg counts. (Nielsen)
- Production of an annotated genome for *Sarcocystis neurona*, the primary cause of equine protozoal myeloencephalitis (EPM). (Howe)
- Development of serologic assays and methodologies that provide an accurate antemortem diagnosis of EPM. (Howe)
- Further refinement of molecular genetic tools for studying *S. neurona*. (Howe)
- Documenting anthelmintic resistance in equine parasites in Central Kentucky. (Lyons)
- Investigating fecal egg count patterns in adult horses. (Lyons)
- Investigating the efficacy of piperazine alone and in combination against *Parascaris* spp. in foals. (Lyons)

### **Genetics Group (2 FTE)**

- Characterization of a horse gene determining the susceptibility or resistance of horses to clinical aspects of equine arteritis virus infection. (Bailey)
- Identification of genes causing dwarfism among miniature horses and development of diagnostic tests. (Bailey)
- Molecular characterization of the evolution and variation among horses. (Bailey, Lear, MacLeod)
- Generate a new and improved version of the equine genome assembly. (Bailey, Lear, MacLeod)
- Characterized chromosome abnormalities leading to repeated early embryonic losses (REEL) in mares. (Lear)
- Characterized chromosome abnormalities leading to disorders of sexual development in horses. (Lear)

### **Toxicology/ Pharmacology (2 FTE)**

- Development and validation of methods for quantification of anticoagulant rodenticides, ergovaline concentrations in tall fescue forage, moxidectin concentrations in brain of horses post-therapeutic dosing, bromethalin concentrations in various tissues, cyanide in forages and ergovaline concentrations in serum, urine and tissues from horses dosed with ergovaline. (Gaskill)
- Determination of liver trace mineral concentrations in equine fetal and neonatal liver tissue and ocular fluid nitrate and nitrite concentrations in equine fetal ocular fluid. (Gaskill)
- Investigations into serum and urine cobalt concentrations in racehorses and pharmacokinetics in equines dosed with cobalt. (Gaskill)
- Investigation of the current status of Kentucky county animal shelters and degree of compliance with state laws. (Gaskill)
- Investigations into novel compositions & methods for preventing & treating apicomplexan related disease. (Tobin)

- Development of certified reference standards and stable isotope internal standards for regulatory analytes for equine therapeutic medications and performance enhancing substances. (Tobin)
- Research concerning appropriate regulatory thresholds for Endogenous, Dietary and Environmental substances [EDEs] in racing horses. (Tobin)

### **Immunology (2 FTE)**

- Established a unique herd of geriatric and metabolic syndrome horses in order understand the impact of aging and obesity on immune responses. (Adams)
- Established seasonal reference ranges for a new diagnostic test advocated for early diagnosis of Pars Pituitary Intermedia Disease. (Adams)
- Determined the effects of stress on immune responses by characterization of models of both weaning and transport stress and understanding the impact of immunomodulation in the face of stress. (Adams)
- Characterization of the inflammatory response of racehorses in training as a novel biomarker for adaptation and injury predilection. (Horohov)

### **Musculoskeletal (1 FTE)**

- Demonstration that interzone cells can repair large articular defects and generate entirely new diarthrodial joints de novo in axolotl salamanders. (MacLeod)
- Comparison of the ability of different stem cell populations to differentiate into articular chondrocytes. (MacLeod)
- Characterization of gene expression patterns that are restricted to cartilaginous tissues.
- Description of skeletal pathology in equine cervical stenotic myelopathy. (MacLeod)

Table 3. Faculty FTEs

Last Name	First Name	Title Series	FY 2011-2012					FY 2012-2013					FY 2013-2014					FY 2014-2015					FY 2015-2016				
			T/I	R	A	Service	Prof Dev	T/I	R	A	Service	Prof Dev	T/I	R	A	Service	Prof Dev	T/I	R	A	Service	Prof Dev	T/I	R	A	Service	Prof Dev
Adams	Amanda	Research	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arnold	Laura M.	Clinical	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03	0.07	-	-	0.90	-	-	-	-	-	1.00
Artushin	Sergey	Research	-	1.00	-	-	-	-	-	1.00	-	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-
Bailey	Ernest	Regular	0.10	0.65	0.25	-	-	-	-	0.75	0.25	-	-	-	0.10	0.65	0.25	-	-	-	-	0.05	0.55	0.25	0.10	-	-
Balasuriya	Udemi	Regular	-	1.00	-	-	-	-	-	1.00	-	-	-	-	0.05	0.95	-	-	-	-	0.05	0.95	-	-	-	-	-
Ball	Barry	Regular	-	1.00	-	-	-	-	0.05	0.95	-	-	-	0.05	0.95	-	-	-	-	0.10	0.90	-	-	-	-	-	-
Bolin	David	Special	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00
Bryant	Uneeda	Special	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00
Carter	Craig	Special	-	0.27	-	0.73	-	-	-	0.13	-	-	-	-	0.10	0.40	0.50	-	-	-	0.10	0.40	0.50	-	-	-	-
Cassone	Lynne	Clinical	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00
Chambers	Thomas	Regular	-	1.00	-	-	-	-	-	1.00	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-
Cook	Frank	Research	-	1.00	-	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dwyer	Roberta	Regular	0.70	0.05	-	0.70	-	-	-	0.60	0.10	-	-	-	0.70	-	-	-	-	0.70	-	-	-	-	-	0.70	-
Erol	Erdal	Clinical	-	-	-	-	-	-	-	0.20	-	-	-	-	0.20	-	-	-	-	0.20	-	-	-	-	-	0.20	-
Esteller Vico	Alejandro	Research	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gaskill	Cynthia	Special	-	0.20	-	0.80	-	-	-	0.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00
Graves	Kathryn	Clinical	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00
Horohov	David	Regular	-	1.00	-	-	-	-	-	1.00	-	-	-	-	1.00	-	-	-	-	0.64	0.36	-	-	-	-	0.25	0.75
Howe	Daniel	Regular	0.10	0.65	0.25	-	-	-	-	0.10	0.65	0.25	-	-	0.10	0.65	0.25	-	-	-	0.10	0.65	0.25	-	-	-	-
Issel	Charles	Regular	-	1.00	-	-	-	-	-	1.00	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-
Jackson	Carney	Special	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00
Janes	Jennifer	Special	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.10	-	-	-	-	-	0.10	-
Kennedy	Laura	Clinical	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00
Lear	Ten	Research	-	1.00	-	-	-	-	-	1.00	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-
Loynachan	Alan	Special	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.00
Lyons	Eugene	Regular	-	1.00	-	-	-	-	-	1.00	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-
MacLeod	James	Regular	-	1.00	-	-	-	-	-	1.00	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-
McDowell	Karen	Regular	-	0.90	-	0.10	-	-	-	1.00	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-
Nielsen	Martin	Regular	-	1.00	-	-	-	-	-	1.00	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-
Swerczek	Thomas	Regular	-	0.90	-	0.10	-	-	-	0.90	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-
Timoney	Peter	Regular	-	0.40	-	0.60	-	-	-	0.24	-	-	-	-	0.24	-	-	-	-	0.24	-	-	-	-	-	0.05	0.71
Tobin	Thomas	Regular	-	1.00	-	-	-	-	-	1.00	-	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-
Troedsson	Mats	Regular	-	0.40	-	0.60	-	-	-	0.40	-	-	-	-	0.40	-	-	-	-	0.86	0.14	-	-	-	-	-	1.00
Vickers	Mary	Special	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Williams	Neil	Special	-	-	-	1.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Faculty Aggregate			0.90	15.42	0.50	12.63	0.00	0.75	15.52	0.50	12.43	0.00	1.00	15.14	0.90	12.96	0.00	1.00	16.19	1.40	12.36	0.00	1.10	14.76	1.81	13.31	1.00
Hale	Gracie	Librarian	0.79	0.10	-	0.08	0.03	0.79	0.10	-	0.08	0.03	0.89	-	-	0.08	0.03	0.87	0.10	-	0.03	-	-	-	-	0.10	0.03

**FACULTY RESEARCH SUMMARY.** Below is a summary of the research programs in the Department of Veterinary Science for the past five years. Research programs do not generally change much from year to year, so the following synopses span the five-year term except for the faculty that have retired or left the program:

In fiscal year 2014/15, Drs. Artiushin, Squires and Williams retired. Dr. Roberta Dwyer's appointment was moved to the Animal & Food Science Department in January 2016. Dr. Teri Lear passed away in May 2016, and Dr. John Timoney retired June 30, 2016.

## **Gluck Equine Research Center Programs**

### **Genetics & Genomics**

**Ernest Bailey**, Professor. A wide range of traits have been under study during the last 5 years with the commonality that they take advantage of the new tools available based on the whole genome sequence of the horse. The subject of the studies depended on the interests of collaborators and students, availability of research material and funding. Studies have included genetics of dwarfism, susceptibility genes for EAV, evolution of novel genes, extent of DNA variation among horse breeds, evolution of Equidae, genetic influences on influenza virus infection, and gene influencing performance in Saddlebred horses. Prior to this period, much of the work focused on development of genomic tools and testing their usefulness by investigations of coat color genes. Until recently we enjoyed a very effective collaboration with Dr. Teri Lear on cytogenetics of horses, including disorders of sexual development. We continue a project begun with Dr. Lear on congenital flexural deformities.

**K.A. Trembicki-Graves**, Associate Professor, Animal Genetics Testing & Research Laboratory. Research in the Animal Genetics Testing & Research Lab focuses on identifying coat color and heritable disease mutations. Currently we are working on a coat color mutation discovered in Tennessee Walking Horses and identifying the mutation or mutations responsible for inherited cataracts in dogs (Boston Terriers).

**Teri L. Lear**, Associate Professor. Cytogenetics: Discovery of rare Trisomy 26-associated Fetal Hydrops resulting in fetal death at about day 72 of gestation in a Thoroughbred.

Discovery of rare Trisomy X in a Thoroughbred mare and an Arabian mare resulting in infertility.

Genomics: Research on Severe Congenital Flexural Deformities in foals continues as we collect more samples from fresh tissues and paraffin-embedded tissue archived at UKVDL and test them on the Equine SNP array in order to identify causative genes.

### **Immunology**

**Amanda A. Adams**, Assistant Professor. My research interests are focused on equine immunology in three main areas of the following. First, characterizing and identifying mechanisms responsible for immunosenescence, inflamm-aging and altered immune responses to vaccination in geriatric horses, and to understand and identify interventions including nutrition and how it may affect the inflamm-aging process and immune response to vaccination. We are

also investigating how a common endocrine disease of aged horses, Pituitary Pars Intermedia Dysfunction (PPID), affects the immune response and resistance to infections of these aged horses. Moreover, we are working to further understand mechanisms responsible for PPID and to improve diagnostics of PPID. The second component to my research program is to further understand the effects of obesity on the inflammatory response of the horse, in particular the equine metabolic syndrome (EMS) horse and to understand how these inflammatory processes may contribute to laminitis. My goal is to identify potential treatments that target both the inflammatory and metabolic component of EMS in order to monitor and prevent endocrinopathy-associated laminitis. The third component of my research involves investigating models of 'stress' both weaning and transport stress, and to understand how they impact immune and metabolic functions. Lastly, a component of my research program involves post-licensing characterization of immune responses to vaccination in horses.

**David W. Horohov**, Professor, Jes E. & Clementine Mills Schlaikjer Chair in Equine Infectious Diseases. My group has developed a novel challenge model for *Rhodococcus equi*, a cause of pneumonia in foals less than 3 months old, which allows us to investigate the underlying immunological basis for the susceptibility of foals to this infection. We have also used this model to assess the contribution of maternal antibodies and the effectiveness of hyperimmune plasma in preventing *R. equi* pneumonia. We have also determined that maternal immune status does not impact the susceptibility of weanlings to *Lawsonia intracellularis*, the causative agent for equine proliferative enteropathy (EPE). As part of a larger project, we determined that the development of protective cell-mediated immune responses to equine infectious anemia virus (EIAV) is associated with a shift in recognition from the more variable regions of the envelope protein to more conserved regions which likely plays an important role in controlling viral replication and disease. I have also been involved in the characterization of inflammatory responses to exercise with the goal of identifying immunological markers for exercise-induced injury in the Thoroughbred racehorse.

### Infectious Diseases

**Sergey Artiushin**, Assistant Professor. My research mainly focused on development of diagnostic assays and vaccine for equine bacterial diseases. During recent years, novel more sensitive and specific real-time PCR assays for identification of *Taylorella equigenitalis*, *Taylorella asinigenitalis*, *Streptococcus equi* and pathogenic leptospira were developed. Evaluation of these assays on samples from horses is now in progress. In order to improve ELISA for detection of antibody to *S. equi*, recombinant oligopeptides of several proteins of *S. equi* were produced and tested for specificity. Evaluation of new ELISA based on these peptides is now performing in collaboration with Equine Diagnostic Solutions LLC. *E. coli* host-vector systems for production of recombinant antigens of *Clostridia difficile* (TcdA and B binding domains) and *Leptospira interrogans* (Hsp15, Lk73.5, LigA and LigB) were designed. Preparative quantities of these proteins were produced for evaluation as components of vaccines. Production of equine endothelial cells and T lymphocytes cDNA libraries that will be used for identification of cellular mechanism involved in pathogenesis of equine arteritis virus is now in progress.

**Udeni B. Balasuriya**, Professor. The major focus of my laboratory is to study the molecular biology and pathogenesis of equine arteritis virus (EAV) and equine herpesvirus-1 (EHV-1)

infections in horses using contemporary molecular biology and genomics techniques. Specifically, these studies are focused on identifying the cellular factors involved in EAV pathogenesis, as well as studying the interaction between equine CD3<sup>+</sup> T lymphocytes and EAV. Studies on EHV-1 are focused on identifying the determinants of virus neurovirulence and identifying the virus genotype found during outbreaks of EHV-1 induced neurologic disease. In addition, we have developed a number of real-time PCR assays to detect endemic (EAV, EHV-1, equine rhinitis A and B viruses, equine influenza virus) and exotic (African horse sickness, equine encephalosis virus, Rift Valley fever virus) equine viral pathogens, as well a number of emerging equine bacterial pathogens (*Streptococcus equi*, pathogenic leptospira and *Taylorella equigenitalis*).

**Thomas M. Chambers**, Professor. Research in my laboratory has focused upon mechanisms by which the leading equine respiratory viruses, influenza and equine herpesvirus-1 (EHV-1), avoid the innate immune system that is the horses' first line of defense against infection. We have found that influenza appears to suppress the Interleukin-23 cytokine response and this may contribute to its tendency to induce secondary bacterial infections of the lung, which can be more deadly than the virus infection itself. With EHV-1, our work indicates that the neuropathogenic T953 strain of EHV-1 modulates the Type-I interferon response, a key host antiviral response, at multiple levels. It is possible, though as yet undetermined, that this plays a role in the neuropathogenicity of that virus. The Type-III interferon response (IFN- $\lambda$ ) of the horse is very likely to be also relevant to innate immune responses to these infections, but has had no previous study. We have characterized four IFN- $\lambda$  genes and transcripts as expressed in equine cell culture, and begun analysis of their expression in equine respiratory and intestinal tissues. We are continuing work on improving equine influenza vaccines, including molecular characterization of circulating virus strains in the interest of updating vaccines and investigation of new vaccine technologies such as DNA vaccines. Finally, we retain a research interest in interspecies transmission of influenza viruses involving the horse.

**R. Frank Cook**, Associate Professor. In the case of highly mutable viruses such as Equine Infectious Anemia Virus (EIAV) the "country cousin" of human immunodeficiency virus (HIV), understanding molecular epidemiology is critical to the development of improved molecular diagnostics and vaccines. Collaborative research with scientists in different countries suggests this is likely to be very complex although only four complete genomic sequences of EIAV field isolates have been published to date. Consequently, research is currently focused on increasing this number using long-range PCR and next generation sequencing techniques. Recently collaboration with Argentinian researchers' have suggested that EIAV, like Simian Immunodeficiency Virus and Woodchuck Hepatitis Virus, may establish "serologically silent" infections. Studies are therefore in progress to establish the prevalence of such infections. In addition, research is underway with Gluck Center colleagues to investigate the mechanism(s) employed by Equine Arteritis Virus to establish persistent infection in the reproductive tract of stallions.

**Roberta M. Dwyer**, Professor. Dr. Roberta Dwyer is researching zoonoses of horses and their importance in global public health for a book chapter by Springer. The book will provide information on zoonoses by species, and in-depth chapters on specific pathogens. She is also working on updating the 2-day national course "Strengthening Community Agrosecurity Planning" to comply with the Department of Homeland Security training course requirements.

**Charles J. Issel**, Professor, Wright-Markey Chair in Equine Infectious Diseases. We continue our research on equine infectious anemia (EIA) on two major fronts: improving the diagnosis of EIA internationally and trying to understand “protective immunity” in this persistent lentivirus infection. Our work on diagnoses is bolstered by international collaboration in Europe, the Americas and in Asia. A recent publication in *The Veterinary Record* highlighted work with scientists in Italy demonstrating the value of a three-tiered diagnostic system for serodiagnosis of EIA.

**John Timoney**, Professor Emeritus, Keeneland Chair in Equine Veterinary Science. Recent research funded by the KY Horse Racing Commission in my laboratory has identified at least 4 proteins of *Streptococcus zooepidemicus* with potential for inclusion in a new generation vaccine to control/prevent respiratory disease caused by this organism in young horses. Some of these proteins stimulate responses that protect against different strains of *S. zooepidemicus*.

We are also field testing in collaboration with Equine Diagnostic Solutions an improved ELISA for assay of serum antibody to *Streptococcus equi*, the cause of equine strangles. Finally, we have recently obtained direct evidence of lateral gene transfer between different strains of *S. zooepidemicus* in the nasopharynx of weanlings coinfecting with equine herpes 1 virus. This may explain the enhanced virulence of single clones that expand and infect the lower airways.

**Peter J. Timoney**, Professor, Frederick Van Lennep Chair in Equine Veterinary Science. Research activities in my laboratory continue to focus on infection of the stallion with equine arteritis virus and other venereal pathogens of significance. The emphasis is on furthering our understanding of the factors underlying persistence in these different infections. Although not related to research, for several years I have been a member of an OIE ad hoc group charged with the task of developing an internationally accepted system to facilitate the safe movement of competition horses and enable expansion of the sports horse industry. The outcome is the “High Health High Performance horse” concept that provides a standard for the temporary movement of such horses to compete in international equestrian events.

### **Musculoskeletal Diseases**

**James N. MacLeod**, John S. and Elizabeth A. Knight Chair in Equine Veterinary Science. Recent efforts in my laboratory focus on two areas:

Tissue-restricted progenitor (stem) cells.

- Progenitor cells that form articular cartilage and other synovial joint tissues.
- Progenitor cells that form tendons and ligaments.

Improve the structural annotation of protein-coding genes in the horse.

- Characterize protein-coding gene structures missing from the current version of the equine genome assembly.
- Generate a new and improved version of the equine genome assembly [in collaboration with Ted Kalbfleisch (University of Louisville) and Ludovic Orlando (Denmark)].

## Parasitology

**Daniel K. Howe**, Professor. The complete genome of *Sarcocystis neurona* has been sequenced and annotated. This has generated a very large and valuable database of information that will be used to investigate the biology of this parasite and the pathogenesis of EPM. We continue to work with prominent clinicians to improve diagnosis of EPM and to better understand the disease.

**Eugene T. Lyons**, Professor. Parasite research continues in UK horse and pony closed herds maintained for over 40 years. This enables continuity data to be obtained on drug resistance, prevalence and transmission of equid parasites. Studies started over 50 years ago, continue on parasites in horses on local farms; recent research on over 1,100 Thoroughbred mares has shown that 2/3 were negative for strongyle worm egg counts in feces (EPGs) and the other 1/3 had low values. The object of this research resulted in indicating that horses with negative or low strongyle EPGs do not need treatment for parasites.

**Martin K. Nielsen**, Associate Professor. My laboratory has three major focuses; 1) developing new and refining existing tools for surveillance and diagnosis of equine parasite infections, 2) evaluating and developing anthelmintic treatment strategies for use in horses, and 3) studying mechanisms behind anthelmintic resistance in equine parasites. In recent years we have patented a novel diagnostic blood test for the equine bloodworm (*Strongylus vulgaris*) and developed a smartphone-based automated parasite egg counting technique for use in horses. We have evaluated several different deworming regimens using parasite egg counts, body condition, weight gain, and inflammatory markers as assessment parameters. We are evaluating the sustainability of combination deworming strategies, and we have collaborated on developing two computer simulation models for the development and propagation of anthelmintic resistance in equine strongyle and ascarid parasites, respectively. Current research projects include testing and evaluating a bacteriological agent with antiparasitic properties, using next generation sequencing for characterizing the equine strongyle species composition, and establishing transcriptomes for equine ascarid parasites.

## Pharmacology & Toxicology

**Thomas Tobin**, Professor. The Equine Pharmacology, Therapeutics and Toxicology Program contributes significantly in all three of these areas. In Pharmacology, the program researches, publishes and outreaches relationships between drug detection and administration time and pharmacological effect, a recent contribution in this area triggered a 20-fold adjustment in the official regulatory threshold for Xylazine in US racing, and other related contributions are in progress. In Forensic Toxicology, the program synthesizes and has licensed for commercial distribution a large number of certified reference standards for use in equine forensic chemistry, including a certified reference standard for ITPP whose application demonstrated the world-wide non-use of this supposedly performance enhancing drug in horse racing. In Therapeutics the program continues research in the area of the used of diclazuril and related agents in the treatment of apicomplexan diseases in horses and other species, and in 2014 the program licensed out a significant Intellectual Property in this area under the title “Novel Compositions & Methods for Preventing & Treating Apicomplexan Related Disease”.

## **Reproductive Physiology**

**Barry A. Ball**, Professor, Albert G. Clay Chair in Equine Reproduction. Our research program encompasses a number of diverse topics related to reproduction in the horse in an effort to address areas of concern to owners, farm managers and veterinarians in central Kentucky. In pregnant mares, we have research projects related to the pathogenesis of *Nocardioform* placentitis in mares, improved diagnostic methodology for ascending placentitis in mares, the role of abnormal luteal function in endometrial gene expression in early pregnancy, and the role of fetal-maternal estrogens in the physiology of late-term pregnancy in mares. In nonpregnant mares, we have research related to improved methods for diagnosis of ovarian tumors (granulosa-cell tumors) as well as methods to predict the reproductive lifespan (oocyte reserve). In the stallion, our current research is directed toward normal and abnormal formation of sperm DNA, down-regulation of the stallion's reproductive system using third-generation GnRH antagonists, and improved diagnostic methods for cryptorchidism.

**Alejandro Esteller-Vico**, Assistant Professor. Work in our laboratory is directed at early stages of gestation and on reproductive endocrinology in the mare. During early gestation we want to understand the dialogue between the early embryo and the mare in an attempt to improve fertility rates and prevent early pregnancy losses in the horse. For reproductive endocrinology, we have studied a number of different hormones such as progestogens, estrogens, and androgens. Our interest is to understand their roles in equine reproduction during normal physiological processes and during disease, and how we can use these as biomarkers of disease. Additionally, we are studying biomarkers of anabolic abuse, specifically how anabolic steroids affect endogenous steroids profiles and how can we use them to detect the abuse of anabolic androgenic steroids.

**Karen J. McDowell**, Associate Professor

- Demonstrated that endophyte infected fescue causes significant vasoconstriction in horses. Constriction of a large artery in the foreleg (the palmar artery) is a sensitive indicator of fescue alkaloid consumption by horses, which also causes reduced blood flow to the corpus luteum.
- Demonstrated that pregnant mares grazing a novel endophyte fescue foaled normally.
- Use of Doppler ultrasound to monitor the palmar artery of horses grazing E+ fescue can, for the first time, provide veterinarians, farm managers, and research scientists with a convenient and satisfactory response variable to determine premonitory signs of fescue toxicosis. With such a biomarker, decisions can be made to treat affected animals and/or remove them from undesirable pastures before problems associated with fescue toxicosis at parturition occur.

**Edward L. Squires**, Professor. We have used data generated on breeding farms to answer several important industry questions;

Do foals born from mares suspected of having placentitis during pregnancy have similar athletic performance of foals from normal pregnancies- The answer is yes and thus it is worth the effort to treat mares for placentitis in order to provide a healthy foal.

Is the incidence of Dystocia affected by season and reproductive status at the time of breeding? The incidence of dystocia was lower in maiden mares than barren or foaling and there was no effect of month of foaling on the incidence of dystocia.

What affect does age of stallion, season and breed have on the freezability of stallion semen? There are major differences in freezability of semen among breeds but freezability was not affected by age or season.

**Thomas W. Swerczek**, Professor. A suspect abortigenic agent has been isolated from mysterious fetal losses that are affecting all classes of livestock, including mares. The agent has also been isolated from the semen of stallions with fertility problems. Currently, the suspect agent has been isolated from fetal losses that are occurring throughout the USA, affecting primarily cattle and swine without any other known causes for the abortions. Seemingly, heifers are more commonly affected than older cows, suggesting that immune factors may be involved in protecting older animals.

The same suspect abortigenic agent has been isolated from the diet of affected animals. The suspect agent does not appear to be contagious, but animals appear to become infected through the diet. It appears that the agent is a commensal or parasite of a wide variety of microorganisms contaminating grains and forages. The agent is very unusual in that it is the size of some viruses, but appears morphologically to be a very minute bacteriologic or fungal agent that is infecting other microorganisms that are common in the environment. The suspect agent can only be seen with the transmission and scanning electron microscope.

**Mats H.T. Troedsson**, Professor. Endometritis: Characterized the local innate immune system in mares susceptible to persistent breeding-induced and infectious endometritis, and evaluated the effect of immune therapy in these mares. We found that susceptible mares fail to mobilize a modulatory immune response through anti-inflammatory cytokines during the early stages of the disease. Immune therapy (Dexamethazone, Settle and Platelet Rich Plasma) can counteract this deficiency by suppression of pro-inflammatory cytokines.

Seminal plasma proteins: Seminal plasma proteins (CRISP-3 and lactoferrin) have been identified for the first time to selectively promote transport of viable sperm to the oviduct, while eliminating dead sperm from the uterus. Ongoing studies will determine the role of these proteins in stallion fertility.

Placentitis (Collaboration with Dr. Ball): Identified potential markers in the blood circulation to screen for and diagnose early, subclinical cases of placentitis.

## **Veterinary Diagnostic Laboratory**

### **Epidemiology**

**Craig N. Carter**, Professor. Dr. Carter's recent equine research activity is in gaining a better understanding of the epidemiology and zoonotic potential of equine leptospirosis in the US. It is hoped that this work will help lead to the development of a vaccine for the horse. He has also recently researched the farm-based risk factors for Nocardioform placentitis and abortion and *Rhodococcus* pneumonia in foals and other infectious agents in various species. For over thirty years, he has research and developed clinical decision support systems in human and veterinary medicine. Over the last decade, he has co-developed epidemiological cluster detection systems to aid in the early identification of animal disease outbreaks. Finally, he has co-developed and led

projects on continuous animal health monitoring systems for the early identification of infectious diseases in feedlot cattle.

### **Microbiology**

**Erdal Erol**, Associate Professor. Dr. Erol's research interest lies in gaining a better understanding of the pathogenesis of abortive agents in the horse, specifically Nocardioform and Streptococcal organisms. He is also researching antibiotic susceptibility patterns in bacteria isolated from the horse.

### **Pathology**

**David C. Bolin**, Associate Professor. Dr. Bolin's research interest in the horse is on the pathogenesis and pathology of abortion and placentitis.

**Uneeda K. Bryant**, Associate Professor. Dr. Bryant's recent equine research has been focused on the development of a serological test to detect *Parascaris equorum* infection, pituitary and adrenal gland pathology, genetic analysis of Equine Protozoal Myeloencephalitis and the pathogenesis of Contracted Foal Syndrome.

**Lynne M. Cassone**, Assistant Professor. Dr. Cassone's research focus is on dermatopathology and laminitis in the horse and is working to help develop diagnostic methods and treatments for these problems.

**Carney Jackson**, Professor. Dr. Jackson's research focus is on the pathology of disease in the horse and in the development of a serological test to detect *Parascaris equorum* infections. He has also been providing GLP sheep necropsies for the UK Department of Surgery protocol, "Evaluation of Extracorporeal Circuits for Long-Term Cardiopulmonary Support as well as histopathology consulting for DLAR on selective cases.

**Jennifer Janes**, Assistant Professor. Dr. Janes' current research focus is equine musculoskeletal disease. She is a member of the Equine Sports Science Initiative whose focus is to advance the health and wellbeing of the equine athlete through data driven scientific inquiry. Ongoing projects include evaluation of bisphosphonates in equine catastrophic breakdown injuries, bone mineral density and bone strength assessments at skeletal sites predisposed to catastrophic injury and implementation of a database of equine athlete pathology. In addition, investigation of the role of genetic determinants in equine cervical stenotic myelopathy is ongoing.

**Laura Kennedy**, Assistant Professor. Dr. Kennedy is a key member of the Kentucky Horse Racing Commission Necropsy Research Committee, coordinating necropsies of horses that have suffered catastrophic injuries while racing, performance of detailed musculoskeletal examinations. Her work will lead to national recommendations to prevent horse race track breakdowns. Dr. Kennedy is also a collaborator on a research project to correlate blood copper and iron concentrations in relation to rupture of the uterine artery in horses.

**Alan T. Loynachan**, Associate Professor. Dr. Loynachan's research is broadly focused on the pathology and diagnosis of equine infectious disease. Recent projects have evaluated various *Rhodococcus equi* and equine herpes virus-1 vaccines and infection models, developed in situ

hybridization techniques for the diagnosis of equine viral arteritis, determined the tissue tropism of equine arteritis virus in persistently infected stallions, and assessed the local intestinal and systemic inflammatory responses associated with cyathostomiasis.

**Neil M. Williams**, Professor. Dr. Williams' current equine research is focused on orthopedic pathology and genetic associations related to Cervical Stenotic Myelopathy. He is internationally recognized for his research on reproductive pathology of the horse.

### **Ruminant Extension**

**Michelle Arnold**, Associate Professor. Dr. Arnold's research focuses on precision dairy technologies and reducing mastitis in the Southeastern United States. She is also examining the interaction of Bovine Viral Diarrhea virus, trace mineral deficiencies, and environmental stress in the development of bovine respiratory disease.

### **Toxicology**

**Cynthia Gaskill**, Associate Professor. Dr. Gaskill's research focuses on toxicants of veterinary interest in the southeastern US.

**FACULTY FELLOWSHIPS.** For the period 2011/12 – 2015/16, two faculty have received scholarships/fellowships, both awarded during the 2015/16 fiscal year:

Balasuriya, U. 2015. Founder Fellow of the Sri Lanka College of Veterinary Surgeons (SLCVS) by the Executive Council.

Horohov, D. 2015. Fulbright Scholarship Award (Warsaw, Poland).

## **FACULTY HONORS & RECOGNITIONS**

### **2011/12**

Bailey, E. 2009-2012. Member, and Chair, 2010-2012, Large Animal Advisory Board, Morris Animal Foundation.

Ball, B.A. 2005-2013. Senior Membership, Robinson College, University of Cambridge.

Dwyer, R.M. 2010-2011 Joe T. Davis Outstanding Advisor Award.

Gaskill, C. 2011. US Department of Interior Fish and Wildlife Service Regional Director's Award for service in diagnosing poisonings in wildlife.

Lear, T.L. 2011. Case report selected for presentation on the Kester News Hour. 2011 American Association of Equine Practitioners Conference. [Lear TL, Raudsepp T, Lundquist J, Brown S. A chromosome translocation [64,XX,t(2:13)] in a Thoroughbred mare with repeated early embryonic loss. Proceedings of the Equine Science Society Symposium, Murphreesboro, TN. Journal of Equine Veterinary Science 31:240 (2011).]

Tobin, T. 2011. Appointed to the Racing Medication and Testing Consortium (RMTC) Scientific Advisory Committee, 2011-2012.

Tobin, T. 2011. Member, Organizing and Fundraising Committee, 19<sup>th</sup> International Conference of Racing Analysts and Veterinarians.

Troedsson, M.H.T. 2011. Honorary Professorship of Reproduction and Obstetrics, University of Copenhagen.

### **2012/13**

Bailey, E. 2012. Editorial Consultant Board, Equine Veterinary Journal.

Bailey, E. 2012. Member, Plant and Animal Genome Conference Organizing Committee.

MacLeod, J. 2012. Morris Animal Foundation, Large Animal Scientific Advisory Board.

### **2013/14**

Balasuriya, U.B.R. 2013. Nominated for Internship Host of the Year Award. Equine Science and Management Program, College of Agriculture, Food and Environment.

Dwyer, R.M. 2013. University of Kentucky Great Teacher Award, UK Alumni Association.

Tobin, T. 2013. Date Research Advisor, Marmoom Equine Research Center, Dubai, United Arab Emirates.

### **2014/15**

Balasuriya, U.B.R. 2014 Bobby C. Pass Excellence in Grantsmanship Award, College of Agriculture, Food and Environment, University of Kentucky, Lexington, KY, USA

Bailey, E. 2014. Re-elected President of the International Society of Animal Genetics (Term 2014-2016).

Ball, B.A. 2014. Storer Lecturership, University of California, Davis.

Tobin, T. 2015. Member, Association of Racing Commissioners International Scientific Advisory Committee.

### **2015/16**

Adams, A. 2016-2019. Member, Research Grant Review Committee, Grayson-Jockey Club Research Foundation.

Arnold, M. 2015-2016. Ex-officio Member of the KY Farm Bureau Advisory Committee for dairy, beef and small ruminant committees.

Balasuriya, U. 2016. Nominated for the University Research Professorship.

Balasuriya, U. 2016. Awarded Jes & Clementine Schlaikjer Professorship.

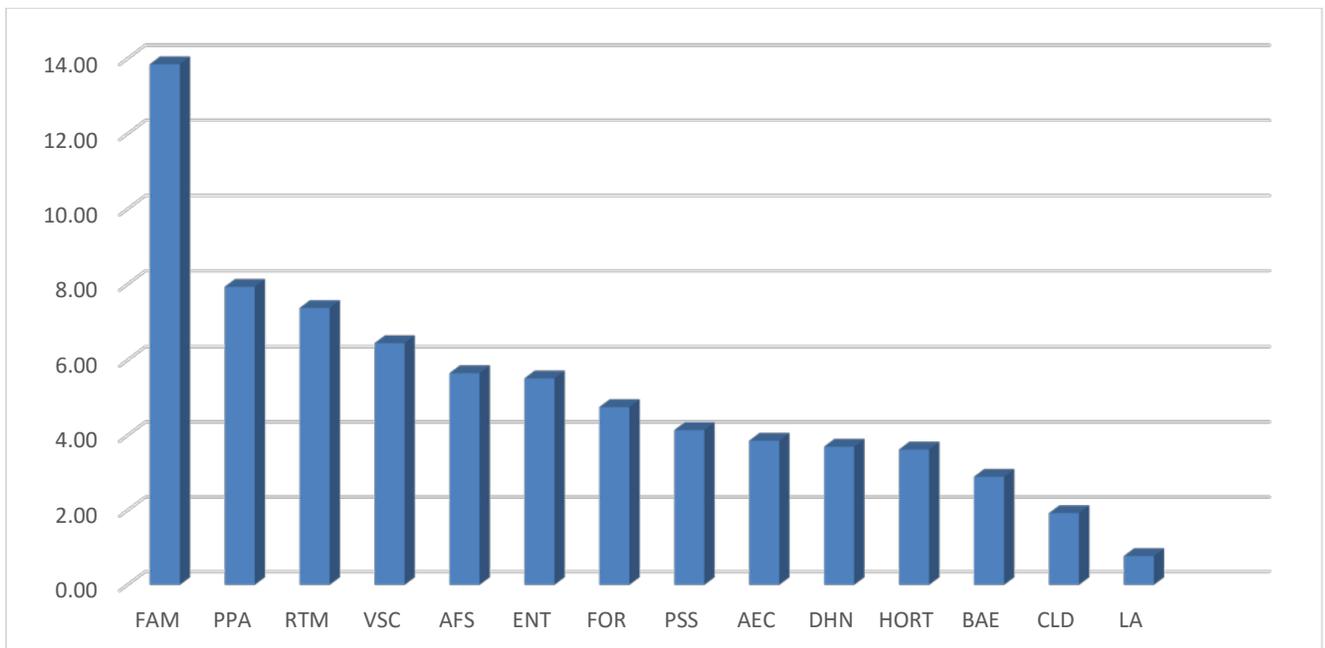
Carter, C. 2016. Epidemiology & Informatics Director Emeritus, Texas A&M University Diagnostic Laboratory.

Nielsen, M. 2016. Awarded Jes & Clementine Schlaikjer Professorship.

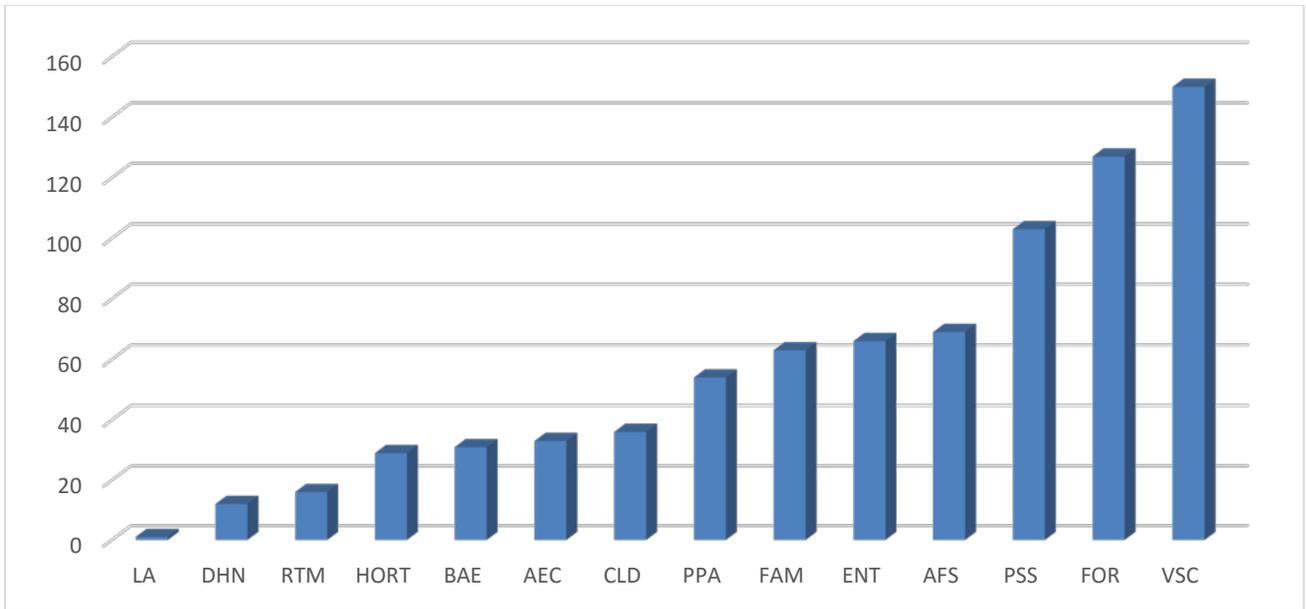
Tobin, T. 2016. Director, North American Association of Racetrack Veterinarians.

## FACULTY PUBLICATIONS

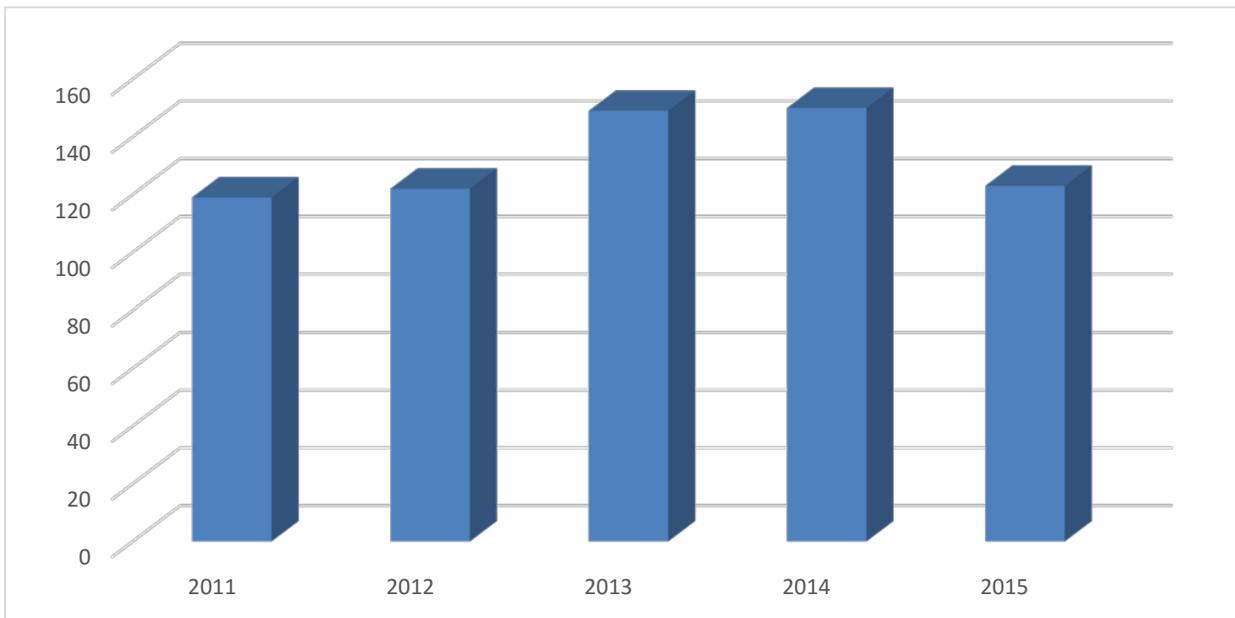
The following figures summarize faculty publications over the review period. A complete list of publications for period under review is available in Appendix I.



**Figure 2. College of Agriculture, Food and Environment faculty publications per research FTE for 2014/15 for all departments**



**Figure 3. Total 2014/15 faculty publications by department**



**Figure 4. Department of Veterinary Science 5-year trend for faculty publications**

**POST-DOCTORAL SCHOLARS AND GRADUATE STUDENTS . Table 4**

	2011/12	2012/13	2013/14	2014/15	2015/16
Post-Doctoral Scholars	9	9	9	10	6
Graduate Students	32	27	22	25	23
Visiting Scholars	5	4	7	6	5
Student Rotations	20	16	9	6	17

**GRANTS. Table 5. List of active grants during fiscal year 2011/12 through fiscal year 2015/16.**

	2011/12	2012/13	2013/14	2014/15	2015/16
Grants Awarded	16	19	24	15	24
Total Grant Dollars Awarded	\$855,043.00	\$3,837,186.00	\$1,407,841.00	\$1,007,106.00	\$1,285,026.70
Total Grant Dollars Available*	\$ 2,100,020.61	\$1,903,074.68	\$2,363,182.35	\$1,953,240.61	\$1,667,161.83

\*Includes not only grants awarded, but also active grants during period under review.

Title	Principal Investigator	Account	Project dates	
			Start	End
PROGRAM IN EQUINE MEDICAL GENETICS (SUBCONTRACT)	Bailey, EF	3048104576	1-Nov-07	31-Oct-12
GENES AND GENETIC MECHANISMS MODULATING MATURATION AND REPAIR OF ARTICULAR CARTI	MacLeod, JN	3048105919	30-Jun-08	31-Oct-12
PHASE 3: CONTINUATION OF SNP GENE MAPPING PROJECTS	Bailey, EF	3048105938	1-Apr-09	31-Oct-12
EIAV ENVELOPE VARIATION AND VACCINE EFFICACY	Issel, CJ	3048105557	1-Apr-09	31-Mar-14
REGIONAL ANIMAL HEALTH DATA WAREHOUSING AND DATA MINING SYSTEM	Carter, C	3048106590	1-Aug-09	31-Jul-12
ARRA: EXON SPLICE PATTERN CHARACTERIZATION OF THE WHOLE MRNA TRANSCRIPTOME	MacLeod, JN	3048106073	1-Aug-09	31-Jul-13
ARRA: EXON SPLICE PATTERN CHARACTERIZATION OF THE WHOLE MRNA TRANSCRIPTOME	MacLeod, JN	3049023523	1-Aug-09	31-Jul-13
ARRA: REU EXON SPLICE PATTERN CHARACTERIZATION OF THE WHOLE MRNA TRANSCRIPTOME	MacLeod, JN	3049023619	1-Aug-09	31-Jul-13
GENOME SEQUENCE FOR THE APICOMPLEXAN SARCOCYSTIS NEURONA	Howe, DK	3048106631	1-Sep-09	31-Aug-13
ORTHOPAEDIC PATHOLOGY AND GENETIC ASSOCIATIONS IN CERVICAL STENOTIC MYELOPATHY	MacLeod, JN	3048107114	1-Sep-09	31-Aug-12
MORRIS ANIMAL FOUNDATION (MAF) PFIZER ANIMAL HEALTH (PAH) VETERINARY FELLOWSHI	Troedsson, M	3048106104	1-Sep-09	31-Aug-14
ARS/SCA - CONSUMPTION OF ENDOPHYTE INFECTED TALL FESCUE SEED BY MARES CAUSES VAS	McDowell, KJ	3049023568	1-Oct-09	30-Apr-13
THE EFFECT OF AGE ON EQUINE DENDRITIC CELL INTERACTIONS WITH RHODOCOCCUS EQUI	Horohov, DW	3048106836	15-Feb-10	14-Feb-13
MOLECULAR CHARACTERIZATION OF NEUROVIRULENT EHV1 STRAINS	Balasuriya, U	3048107147	1-Apr-10	31-Mar-12

Title	Principal Investigator	Account	Project dates	
			Start	End
ORTHOPAEDIC PATHOLOGY AND GENETIC ASSOCIATIONS WITH CERVICAL STENOTIC MYELOPATHY	MacLeod, JN	3048107148	1-Apr-10	30-Jun-13
SEROPREVALENCE OF LAWSONIA INTRACELLULARIS IN CENTRAL KENTUCKY THOROUGHBRED WEAN	Horohov, DW	3048107218	26-May-10	31-Mar-12
SAFETY AND ANTI-INFLAMMATORY EFFICACY OF GLUCOCORTICOIDS FOR INTRA-ARTICULAR THE	MacLeod, JN	3048107238	26-May-10	31-Oct-12
METHODS TO SUPPRESS ESTRUS IN RACE MARES	Squires, EL	3048107217	26-May-10	31-Oct-12
MOBILE WIRELESS AND REMOTE DIAGNOSTIC COMPUTER APPLICATIONS AND ANIMAL HEALTH BR	Carter, C	3048107522	1-Jun-10	31-May-13
COMPARISON OF IN VITRO ANTIVIRAL ACTIVITY OF HERPESVIRUS DNA POLYMERASE INHIBITO	Balasuriya, U	3048107216	1-Jul-10	31-Oct-12
FURTHER CHARACTERIZATION OF THE IMMUNOLOGICAL RESPONSE OF HORSES TO VACCINATION	Chambers, TM	3048107817	14-Oct-10	14-Oct-13
CHARACTERIZATION OF THE INFLAMMATORY RESPONSE TO ANTHELMINTICS	Horohov, DW	3048107813	14-Oct-10	14-Oct-12
FURTHER CHARACTERIZATION OF THE IMMUNOLOGICAL RESPONSE OF HORSES TO METASTIM	Horohov, DW	3048107815	14-Oct-10	13-Oct-12
UNIQUE PATTERNS OF GENE EXPRESSION	MacLeod, JN	1215384660	29-Oct-10	28-Oct-15
RAPID DETECTION OF FOREIGN, EMERGING AND ZOO NOTIC PATHOGENS OF EQUINES	Balasuriya, U	3048108184	1-Jan-11	30-Jun-13
IMMUNOLOGICAL MEASUREMENTS FOR INFLUENZA INFECTION IN EQUINE MODELS	Chambers, TM	3048107928	11-Jan-11	30-Jun-12
ACQUITTION OF A FLUORCHEM A DIGITAL IMAGING SYSTEM FOR ARTERIVIRUS (PRRSV AND E	Balasuriya, U	3048107967	15-Feb-11	14-Feb-12
FUNDING REQUEST FOR XIITH INTERNATIONAL NIDOVIRUS SYMPOSIUM (NIDO2011)	Balasuriya, U	3048107979	15-Feb-11	14-Feb-12
THE NEW FORMULATION OF PURINA EQUINE SENIOR FEED IDENTIFICATION OF GENETIC FACTORS RESPONSIBLE FOR ESTABLISHMENT OF EAV CARRIER S	Horohov, DW	3048108527	14-Apr-11	13-Mar-13
POTENCY AND EFFICACY OF NOVEL LEPTOSPIRA VACCINE IN PREGNANT MARES	Squires, EL	1215501330	25-May-11	26-May-12
XIITH INTERNATIONAL NIDOVIRUS SYMPOSIUM SUPPORT PROPOSAL	Balasuriya, U	3048108291	1-Jun-11	31-May-12
BOVINE SPONGIFORM ENCEPHALOPATHY TESTING AND RELATED SERVICES	Carter, C	3048108351	1-Jul-11	31-Mar-12
DIAGNOSTIC LABORATORY SUPPORT OF NAHLN	Carter, C	3048108378	1-Jul-11	31-Mar-12
CLASSICAL SWINE FEVER SURVEILLANCE	Carter, C	3048108472	1-Jul-11	31-Mar-12
ROLE OF THE HORSE IN INTERSPECIES TRANSMISSION OF INFLUENZA VIRUSES	Chambers, TM	3048108383	1-Jul-11	30-Jun-12
ARTICULAR CARTILAGE STEM CELLS	MacLeod, JN	3048108313	1-Jul-11	30-Aug-13
RESEARCH FELLOWSHIP	Troedsson, M	3048108132	1-Jul-11	30-Jun-15
IN VIVO EVALUATION OF THE SAFETY AND EFFICACY OF EXTRACORPOREAL CIRCUITS	Troedsson, M	1215501730	10-Aug-11	9-Aug-12
IDENTIFYING THE ROLE OF A "METABOLIC MASTER SWITCH" IN EQUINE METABOLIC SYNDROME	Adams, AA	3048108797	1-Oct-11	31-Dec-12
EQUINE HERPESVIRUS-1 AND THE TYPE-I INTERFERON RESPONSE	Chambers, TM	3048108794	1-Oct-11	30-Sep-12

Title	Principal Investigator	Account	Project dates	
			Start	End
EVALUATION OF IMMUNOREACTIVE PROTIENS OF STREPTOCOCCUS ZOOEPIDEMICUS FOR POTENTI	Timoney, JF	3048108626	1-Nov-11	1-Sep-12
DEUTERATED INTERNAL STANDARDS FOR EQUINE THERAPEUTIC MEDICATION REGULATION	Tobin, T	3048108631	1-Nov-11	1-Sep-12
DETERMINING THE ROLE OF MATERNAL ANTIBODIES IN INFECTION AND IMMUNITY TO LAWSONI	Horohov, DW	3048108946	1-Mar-12	30-Jun-14
BOVINE SPONGIFORM ENCEPHALOPATHY TESTING AND RELATED SERVICES	Carter, C	3048109281	1-Apr-12	30-Jun-12
DO NSAIDS AFFECT THE IMMUNE RESPONSE OF HORSES TO VACCINATION?	Horohov, DW	3048109273	1-Apr-12	30-Jun-13
DIAGNOSTIC LABORATORY SUPPORT OF NAHLN	Carter, C	3048109283	15-Apr-12	31-Mar-13
DEVELOPMENT OF A GENETICALLY DEFINED LIVE ATTENUATED EQUINE HERPESVIRUS-1VIRUS.	Balasuriya, U	3048109317	27-Apr-12	10-May-14
BOVINE SPONGIFORM ENCEPHALOPATHY TESTING AND RELATED SERVICES	Carter, C	3048109768	1-Jul-12	31-Mar-13
ROLE OF THE HORSE IN INTERSPECIES TRANSMISSION OF INFLUENZA VIRUSES	Chambers, TM	3048109485	1-Jul-12	30-Jun-13
FDA VET-LRN VETERINARY DIAGNOSTIC LABORATORY COOPERATIVE AGREEMENT PROGRAM FUNDI	Gaskill, C	3048109770	1-Sep-12	31-Aug-13
SAFETY AND ANTI-INFLAMMATORY EFFICACY OF GLUCOCORTICOIDS FOR INTRA-ARTICULAR THE	MacLeod, JN	3048110113	1-Nov-12	30-Jun-13
UNIQUE PATTERNS OF GENE EXPRESSION IN ARTICULAR CHONDROCYTES: IMPORTANT INSIGHT	MacLeod, JN	3048111102	1-Dec-12	30-Jun-16
DEVELOPMENT OF RECOMBINANT VACCINES AGAINST PRRS: EAV-VECTORED CHIMERIC VACCINE	Balasuriya, U	3048110111	18-Dec-12	17-Mar-17
IDENTIFICATION OF GENETIC FACTORS RESPONSIBLE FOR ESTABLISHMENT OF EQUINE ARTERI	Balasuriya, U	3048110154	1-Jan-13	31-Dec-18
THE USE OF EXCEDE METAPHYLATICALLY TO PREVENT POST-INFLUENZAL RESPIRATORY INFECT	Horohov, DW	3048110350	1-Jan-13	30-Sep-14
OBJECTIVE EVALUATION OF DEWORMING REGIMENS IN HORSES - GROWTH RATES, DISEASE INC	Nielsen, MK	3048110360	1-Jan-13	30-Apr-15
THE INFLUENCE OF GENETIC DEFICITS IN AGGRECAN STRUCTURE (CARTILAGE) ON RACE TRAC	Bailey, EF	3048110270	15-Jan-13	30-Jun-14
INFLUENZA, SECONDARY BACTERIAL INFECTION, AND INTERLEUKIN-23.	Chambers, TM	3048110272	15-Jan-13	30-Jun-14
THE INTERACTION BETWEEN ANTHELMINTIC TREATMENT AND VACCINATION	Nielsen, MK	3048110347	1-Apr-13	30-Jun-14
THE EFFECT OF EXERCISE ON PRO-INFLAMMATORY CYTOKINE EXPRESSION IN THE YOUNG RACE	Horohov, DW	3048110505	15-Apr-13	15-Apr-15
CHARACTERIZATION OF CELL-MEDIATED AND HUMORAL IMMUNE RESPONSES TO A MULTI-VALEN	Adams, AA	3048110397	1-May-13	30-Jun-14
DO HORSES WITH PITUITARY PARS INTERMEDIA DYSFUNCTION (PPID) RESPOND AS WELL TO	Adams, AA	3048110398	1-May-13	30-Jun-14
USE OF RECOMBINANT PROTEINS TO IDENTIFY ANTIBODY RESPONSES ASSOCIATED WITH EQUIN	Horohov, DW	3048110257	1-May-13	30-Apr-16
PARASITE MATERIAL AGREEMENT	Nielsen, MK	3048110359	1-May-13	30-May-14
BOVINE SPONGIFORM ENCEPHALOPATHY	Carter, C	3048110486	10-May-13	31-Mar-14
DIAGNOSTIC LABORATORY SUPPORT OF NAHLN	Carter, C	3048110420	1-Jun-13	31-Mar-14
IS THERE A RELATIONSHIP BETWEEN THE STATUS OF CIRCULATING VITAMIN AND FATTY ACID	Adams, AA	3048111061	1-Jul-13	30-Jun-14

Title	Principal Investigator	Account	Project dates	
			Start	End
ARS/SCA: THE EFFECT OF ENDOPHYTE-INFECTED TALL FESCUE CONSUMPTION ON EPIGENETIC	Adams, AA	3049025302	1-Jul-13	29-Feb-16
ARS/SCA: FESCUE ASSOCIATED ALKALOIDS IN TISSUES & FORAGES	Gaskill, C	3049025287	1-Jul-13	29-Feb-16
ARS/SCA: EFFECT OF ENDOPHYTIE-INFECTED TALL FESCUE SEED ON EQUINE ENDOMETIRAL GE	McDowell, KJ	3049025243	1-Jul-13	29-Feb-16
CHARACTERIZING THE ROLE OF STRONGYLUS VULGARIS INFECTION IN REFERRED COLIC CASES	Nielsen, MK	3048110710	1-Aug-13	30-Jun-14
VALIDATION OF LC-MS/MS ANALYSES OF ANIMAL TISSUE AND FEED MATRICES FOR TOXICANTS	Gaskill, C	3048110849	1-Sep-13	31-Aug-14
FDA VET-LRN VETERINARY DIAGNOSTIC LABORATORY COOPERATIVE AGREEMENT PROGRAM FUNDI	Gaskill, C	3048110871	1-Sep-13	31-Aug-14
MAF FELLOWSHIP TRAINING GRANT - USE OF RECOMBINANT PROTEINS TO IDENTIFY ANTIBODY	Horohov, DW	3048110817	1-Sep-13	30-Apr-16
EFFECT OF AN IMMUNOSTIMULANT CONTAINING PROPIONIBACTERIUM ACNES (EQSTIMTM) ON CE	Adams, AA	3048111046	1-Oct-13	16-Jul-14
MOLECULAR DIAGNOSTIC ASSAYS FOR THE DETECTION AND CONTROL OF CONTAGIOUS EQUINE M	Artiushin, SC	3048111058	1-Oct-13	1-Jan-15
SUPPRESSION OF THE EQUINE TYPE-1 INTERFERON RESPONSE BY EQUINE HERPESVIRUS-1	Chambers, TM	3048111057	1-Oct-13	31-Mar-15
THE NEW FORMULATION OF PURINA EQUINE SENIOR FEED: TO DETERMINE THE EFFECT OF DIF	Adams, AA	3048111152	21-Oct-13	20-Oct-14
GERIATRIC HORSES (>20 YRS): DO THEY RESPOND IMMUNOLOGICALLY DIFFERENT TO ANTHELM	Adams, AA	3048111069	1-Nov-13	31-May-14
EVALUATING SEASONAL INFLUENCES ON HORMONE RESPONSES TO A DIAGNOSTIC TEST ADVOCAT	Adams, AA	3048111103	1-Dec-13	30-Nov-15
DO OLD HORSES (>20 YRS) HAVE DELAYED AND REDUCED CMI AND HUMORAL IMMUNE RESPONSE	Adams, AA	3048111183	1-Dec-13	1-Jun-15
SUBISOTYPIC DIFFERENCES IN THE IMMUNOGLOBULIN G RESPONSE TO LAWSONIA INTRACELLUL	Horohov, DW	3048111180	1-Jan-14	31-Dec-14
TRANSABDOMINAL ULTRASONOGRAPHY: A MONITORING TOOL FOR PARASCARIS EQUORUM BURDENS	Nielsen, MK	3048111198	1-Jan-14	31-Mar-15
STUDENT SPONSORSHIP BY ALLTECH FOR SARAH ELZINGA	Adams, AA	3048111323	15-Jan-14	15-Jan-17
IMMUNOGENICITY AND SAFETY OF RPLB VACCINE IN ADULT HORSE.	Horohov, DW	3048111266	1-Feb-14	1-Jul-14
EFFECT OF FEEDING DHA ON SPERM MOTION CHARACTERISTICS, SPERM VIABILITY AND FATT	Squires, EL	3048111262	1-Mar-14	31-Dec-15
POTENCY AND EFFICACY OF A NOVEL LEPTOSPIRA VACCINE IN PREGNANT MARES	Timoney, JF	3048111304	1-Mar-14	31-Dec-15
BOVINE SPONGIFORM ENCEPHALOPATHY TESTING AND RELATED SERVICES	Carter, C	3048111348	1-Apr-14	31-Mar-15
EFFECT OF ALLTECH ALGAE DERIVED FA SUPPLEMENTATION ON INFLAMMATION AND METAOBLIC	Adams, AA	3048111399	1-May-14	31-May-17
DIAGNOSTIC LABORATORY SUPPORT OF NAHLN	Carter, C	3048111402	1-May-14	31-Mar-15
USE OF EAR TAGS FOR EARLY DISEASE DETECTION IN CATTLE	Carter, C	3048111731	14-Jul-14	13-Feb-17
ZOETIS RESEARCH FELLOWSHIP AWARD WITH UK VETERINARY SCIENCE FERNANDA CESAR	Troedsson, M	3048112113	30-Jul-14	30-Jun-17
EVALUATION OF THE MUCOSAL INFLAMMATORY RESPONSE TO LARVICIDAL TREATMENT	Nielsen, MK	3048111791	1-Aug-14	31-Oct-15

**Principal**

**Project dates**

<b>Title</b>	<b>Investigator</b>	<b>Account</b>	<b>Start</b>	<b>End</b>
FDA VET-LRN VETERINARY DIAGNOSTIC LABORATORY COOPERATIVE AGREEMENT PROGRAM FUNDI	Gaskill, C	3048111817	1-Sep-14	31-Aug-15
VALIDATION OF LC-MS/MS ANALYSIS OF ANIMAL TISSUE AND FEED MATRICES FOR TOXICANTS	Gaskill, C	3048111840	1-Sep-14	31-Aug-15
THE EQUINE IMMUNE RESPONSE TO LEPTOSPIRAL INFECTION	Carter, C	3049025795	30-Sep-14	29-Sep-15
OPTIMIZING METHODS FOR PARASITE EGG ISOLATION AND DETECTION	Nielsen, MK	3048112029	1-Oct-14	30-Jun-15
DUAL ANTIGEN ELISA TO DISTINGUISH VACCINE FROM INFECTION ANTIBODY RESPONSES	Timoney, JF	3048112309	2-Feb-15	1-Sep-16
BOVINE SPONGIFORM ENCEPHALOPATHY TESTING AND RELATED SERVICES	Carter, C	3048112417	1-Apr-15	31-Mar-16
INHIBITION OF TYPE-1 INTERFERON RESPONSE BY EHV-1	Chambers, TM	3048112453	1-Apr-15	31-Mar-17
EVALUATION OF DRUG EFFICACY WITH COMBINATION DEWORMING AND THE LONG TERM CONSEQU	Nielsen, MK	3048112525	1-Apr-15	30-Jun-16
DIAGNOSTIC LABORATORY SUPPORT OF NAHLN	Carter, C	3048112469	15-Apr-15	31-Mar-16
ANIMAL HEALTH MONITORING FIELD TESTING	Carter, C	3048112488	22-Apr-15	21-Aug-16
LARVICIDAL EFFICACY OF MOXIDECTIN OR FENBENDAZOLE AGAINST EQUINE CYATHOSTOMINS #	Nielsen, MK	3048112755	1-Jun-15	1-Jun-16
NAHMS NATIONAL EQUINE ANTHELMINTIC RESISTANCE SURVEY	Nielsen, MK	3200000022	18-Jun-15	31-Dec-16
DETERMINATION OF AMINO ACIDS AT LOCI 78 AND 159 OF UP TO 50 EQUINE FLU ISOLATES	Chambers, TM	3048112871	1-Jul-15	31-Dec-16
AVIAN INFLUENZA SURVEILLANCE	Carter, C	3200000310	15-Jul-15	31-Mar-16
SBIR: DEVELOPMENT OF A SIMPLE AND RAPID ON-SITE VETERINARY FECAL EGG COUNT TEST	Nielsen, MK	3200000138	30-Jul-15	30-Jun-16
ARS/SCA: EFFECTS OF DIETARY CRUDE PROTEIN ON FERTILITY IN MARES	Ball, Barry	3210000104	1-Aug-15	29-Feb-16
VALIDATION OF LC-MS/MS ANALYSIS OF ANIMAL TISSUE AND FEED MATRICES FOR TOXICANTS	Gaskill, C	3200000252	1-Sep-15	31-Aug-16
FDA VET-LRN VETERINARY DIAGNOSTIC LABORATORY COOPERATIVE AGREEMENT PROGRAM FUNDI	Gaskill, C	3200000276	1-Sep-15	31-Aug-16
FDA VET-LRN VETERINARY DIAGNOSTIC LABORATORY COOPERATIVE AGREEMENT PROGRAM FUNDI	Gaskill, C	3210000153	1-Sep-15	31-Aug-16
DO HORSES WITH EQUINE METABOLIC SYNDROME (EMS) HAVE REDUCED IMMUNE RESPONSES TO	Adams, AA	3048112631	1-Oct-15	30-Sep-16
TUBO-OVARIAN LIGATION VIA COLPOTOMY AS A METHOD FOR STERILIZATION IN MARES.	Ball, Barry	3200000156	1-Oct-15	30-Sep-18
EQUINE INTERFERON-LAMBDA	Chambers, TM	3048112634	1-Oct-15	30-Sep-16
MERIAL ANTHELMINTIC EFFICACY STUDY, 2016	Nielsen, MK	3048112970	12-Jan-16	11-Jul-17
ENGINEERED PROBIOTICS FOR FARM ANIMAL AND HUMAN NEMATODES	Nielsen, MK	3200000538	1-Feb-16	31-Jan-17
ARS/SCA: THE EFFECT OF ENDOPHYTE-INFECTED TALL FESCUE CONSUMPTION ON EPIGENETIC	Adams, AA	3210000244	1-Mar-16	30-Apr-18
ARS/SCA: EFFECTS OF DIETARY CRUDE PROTEIN ON FERTILITY IN MARES	Ball, Barry	3210000235	1-Mar-16	30-Apr-18
ARS/SCA: FESCUE ASSOCIATED ALKALOIDS IN TISSUES & FORAGES	Gaskill, C	3210000246	1-Mar-16	30-Apr-18
ARS/SCA: EFFECT OF ENDOPHYTIE-INFECTED TALL FESCUE SEED ON EQUINE ENDOMETIRAL GE	McDowell, KJ	3210000248	1-Mar-16	30-Apr-18

**Principal**

**Project dates**

Title	Investigator	Account	Start	End
IGG(T) ANTIBODIES IDENTIFY FOALS AT RISK FOR R EQUI	Horohov, DW	3048113003	1-Apr-16	31-Mar-17
COMPARATIVE CHONDROGENIC POTENTIAL OF EQUINE FETAL PROGENITOR CELLS AND ADULT ME	MacLeod, JN	3048112976	1-Apr-16	31-Dec-16
EFFECT OF YEAST CELL WALL (ACTIGENTM) SUPPLEMENTATION ON METABOLIC, INFLAMMATORY	Adams, AA	3048112993	1-May-16	1-May-17
EVALUATION OF THE MUCOSAL INFLAMMATORY RESPONSES TO LARVICIDAL TREATMENT	Nielsen, MK	3048113045	1-May-16	30-Apr-17
DEVELOPMENTAL PROGENITOR CELLS OF ARTICULAR CARTILAGE	MacLeod, JN	3048113053	12-May-16	11-May-19
DIAGNOSTIC LABORATORY SUPPORT OF NAHLN	Carter, C	3200000569	15-May-16	14-May-17
BOVINE SPONGIFORM ENCEPHALOPATHY TESTING AND RELATED SERVICES	Carter, C	3200000575	20-May-16	31-Mar-17
AVIAN INFLUENZA SURVEILLANCE	Carter, C	3200000576	20-May-16	31-Mar-17
SMARTPHONE EGG COUNT VALIDATION STUDY	Nielsen, MK	3048113164	1-Jul-16	28-Feb-17
ZOETIS RESIDENT IN VETERINARY PARASITOLOGY	Nielsen, MK	3048113099	1-Jul-16	30-Jun-18
COMBINATION ANTHELMINTIC THERAPY # SHORT AND LONG TERM BENEFITS	Nielsen, MK	3048113157	15-Jul-16	31-Dec-17

**EVIDENCE OF ADHERENCE TO EDUCATIONAL POLICIES & PROCEDURES.** The College of Agriculture, Food and Environment, including the Department of Veterinary Science, adheres to all University Senate rules. The relevant rules, Section IV: Rules Relating to Admission to the University and [Section V: Rules Relating to Attending the University](#), may be found at the following link: [http://www.uky.edu/Faculty/Senate/rules\\_regulations/index.htm](http://www.uky.edu/Faculty/Senate/rules_regulations/index.htm)

**EVIDENCE OF CONSISTENT REVIEW AND MONITORING – COURSES, CREDITS & DEGREE REQUIREMENTS.** Course substitutions requested by students are reviewed by faculty members. Once approved by faculty member, the department chair or director of undergraduate study signs the course substitution form before it is submitted to the associate dean for instruction, where the request is further vetted. Equivalency credit and course transfers are reviewed by the director of undergraduate studies, with consultation of faculty when the requests are received from the registrar. The decision is forwarded to the registrar.

Degree requirements and vetting of exceptions are reviewed by faculty. When the faculty agrees to change course requirements, a program change proposal is submitted to the college undergraduate curriculum committee for review. After this review and approval by the associate dean for academic administration, the proposal is submitted for university approval.

**EVIDENCE OF ADHERENCE TO UNIT PROCEDURES - FACULTY PERSONNEL ACTIONS & BUDGET REQUEST PREPARATION.** The Department of Veterinary Science adheres to the Rules of Procedure as established and approved by the College of Agriculture, Food and Environment on February 18, 2013. The relevant rule may be found at the following link: [http://administration.ca.uky.edu/files/College\\_of\\_Agriculture\\_Rules\\_of\\_Procedure\\_2013.pdf](http://administration.ca.uky.edu/files/College_of_Agriculture_Rules_of_Procedure_2013.pdf). In

addition, the Department of Veterinary Science maintains internal Rules of Procedure, which were revised, approved by the faculty, and implemented in September 1995.

Regarding evidence of adherence to procedures on faculty personnel actions, the College and University provide detailed guidelines for promotion and tenure dossiers, which are double-checked by the Assistant Dean for Academic Administration. Similarly, detailed procedural requirements exist for faculty searches and appointments. Items such as position advertisements, EEO statements, procedures to encourage diversity, and offer letters are scrutinized at multiple levels within the College before implementation. Budget requests are made within the constraints of the unit budget provided by the College each fiscal year. An adequate recurring funding source must exist before the Dean will approve any new hires, and faculty promotion increases are funded by the University.

**EVIDENCE OF COURSE SCHEDULING AND TEACHING ASSIGNMENT.** The faculty schedules meetings to discuss scheduling and teaching of classes. All courses required for a degree are offered during a scheduled four-year plan.

**Table 6. Veterinary Science Course Offerings, Fall 2016**

<b>Course #</b>	<b>Section</b>	<b>Course Name</b>	<b>Instructor</b>
VS 307	Section 001	GENETICS OF HORSES	Ernest F Bailey
<p><b>GENETICS OF HORSES. (3 credit hours)</b>            This course covers the basic principles of genetics and genomics with specific applications to the horse including evolution, coat color genetics, hereditary diseases, cytogenetics, genetics of performance, pedigree studies, population genetics of horse breeds and the genetic relationship among members of the order Perissodactyla. Prereq: BIO 148, BIO 152, CHE 107, CHE 113 or consent of instructor.</p>			
VS 395	Section 001	SP PROBS IN VET SCIENCE	James N MacLeod
VS 395	Section 002	SP PROBS IN VET SCIENCE	Barry A Ball
<p><b>SPECIAL PROBLEMS IN VETERINARY SCIENCE. (1-4 credit hours)</b>            Prereq: VS 350, 351, and consent of instructor. May be repeated to a maximum of six credits.</p>			
VS 500	Section 001	ADVANCED EQUINE REPRODUCTION	Barry A Ball
<p><b>ADVANCED EQUINE REPRODUCTION. (3 credit hours)</b>            A study of reproductive anatomy and physiology of the horse with emphasis on normal and abnormal reproductive function in this species. Normal reproductive management and diseases affecting the reproductive system will be considered in detail. Prereq: ASC 364.</p>			
VS 748	Section 001	MASTER'S THESIS RESEARCH	Assorted Faculty
<p><b>VS 748 MASTER'S THESIS RESEARCH. (0 credit hours)</b>            Half-time to full-time work on thesis. May be repeated to a maximum of six semesters. Prereq: All course work toward the degree must be completed.</p>			

VS 767	Section 001	DISSERTATION RESIDENCY CREDIT	Assorted Faculty
<p><b>DISSERTATION RESIDENCY CREDIT. (2 credit hours)</b>  Residency credit for dissertation research after the qualifying examination. Students may register for this course in the semester of the qualifying examination. A minimum of two semesters are required as well as continuous enrollment (Fall and Spring) until the dissertation is completed and defended.</p>			
VS 770	Section 001	VET SCIENCE SEMINAR	Daniel K Howe
<p><b>VETERINARY SCIENCE SEMINAR. (1 credit hours)</b>  Required of graduate students in veterinary science. May be repeated to a maximum of six credits. Prereq: Consent of staff.</p>			
VS 777	Section 001	CURRENT LIT. IN EQUINE REPRODUCTION	Barry A Ball
<p><b>CURRENT LITERATURE IN EQUINE REPRODUCTION. (1 credit hours)</b>  Advanced study of current topics in equine reproduction. The course is comprised of student-led discussions based upon readings taken from current and classic literature in the discipline. Emphasis will be placed on the critical analysis and understanding of the experimental basis for current concepts in equine reproduction.</p>			
VS 791	Section 001	TECHNIQUES VET MICROBIO	Assorted Faculty
<p><b>TECHNIQUES IN VETERINARY MICROBIOLOGY. (1-9 credit hours)</b>  Independent research in veterinary microbiology. May be repeated to a maximum of 24 credits. Prereq: Consent of staff.</p>			
VS 792	Section 001	TECHS IN GEN VET PATHOL	Craig N Carter
<p><b>TECHNIQUES IN GENERAL VETERINARY PATHOLOGY. (1-9 credit hours)</b>  Independent research in veterinary pathology. May be repeated to a maximum of 24 credits. Prereq: Consent of staff.</p>			

**Table 7. Veterinary Science course offerings, Spring 2016**

Course #	Section	Course Name	Instructor
VS 597	001	SPEC CRSE: EQUINE INFECTIOUS DISEASES	Ernest Bailey (34%)/Udeni Balasuriya (33%)/Peter Timoney (33%)
<p><b>SPECIAL TOPICS IN VETERINARY SCIENCE. (1-3 credit hours)</b>  Special topical or experimental courses in Veterinary Science for graduate and advanced undergraduate students. Special subtitle required and must be approved by the chair of Veterinary Science. Students may not repeat under the same subtitle. Prereq: Determined by instructor.</p>			
S 395	001	SP PROBS IN VET SCIENCE	Ernest Bailey

VS 395	002	SP PROBS IN VET SCIENCE	Daniel Howe
VS 395	003	SP PROBS IN VET SCIENCE	Amanda Adams
VS 395	004	SP PROBS IN VET SCIENCE	Martin Nielsen
<b>SPECIAL PROBLEMS IN VETERINARY SCIENCE. (1-4 credit hours)</b> Prereq: VS 350, 351, and consent of instructor. May be repeated to a maximum of six credits.			
VS 600	001	ETHICS IN SCIENTIFIC RESEARCH	Isabel Mellon
<b>ETHICS IN SCIENTIFIC RESEARCH. (1-2 credit hours)</b> The course will commence with an overview of good laboratory practices and present them as the basis of good scientific research, along with an overview of quality assurance and appropriate practices in data analysis and data interpretation. The course will then move to the ethics of human and animal experimentation and discuss the concepts of data and intellectual property, their ownership and access to them. The problems of reviewing other workers' intellectual property such as grant applications, research papers and other intellectual property will be addressed. Prereq: Research experiences; consent of instructor. (Same as TOX 600.)			
VS 748	001	MASTER'S THESIS RESEARCH	Daniel Howe
<b>MASTER'S THESIS RESEARCH. (0 credit hours)</b> Half-time to full-time work on thesis. May be repeated to a maximum of six semesters. Prereq: All course work toward the degree must be completed.			
VS 767	001	DISSERTATION RESIDENCY CREDIT	Assorted Faculty
<b>DISSERTATION RESIDENCY CREDIT. (2 credit hours)</b> Residency credit for dissertation research after the qualifying examination. Students may register for this course in the semester of the qualifying examination. A minimum of two semesters are required as well as continuous enrollment (Fall and Spring) until the dissertation is completed and defended.			
VS 770	001	VET SCIENCE SEMINAR	Daniel Howe
<b>VETERINARY SCIENCE SEMINAR. (1 credit hours)</b> Required of graduate students in veterinary science. May be repeated to a maximum of six credits. Prereq: Consent of staff.			
VS 777	001	CURRENT LIT. IN EQUINE REPRODUCTION	Barry Ball
<b>CURRENT LITERATURE IN EQUINE REPRODUCTION. (1 credit hours)</b> Advanced study of current topics in equine reproduction. The course is comprised of student-led discussions based upon readings taken from current and classic literature in the discipline. Emphasis will be placed on the critical analysis and understanding of the experimental basis for current concepts in equine reproduction.			

VS 791	001	TECHNIQUES VET MICROBIO	Assorted Faculty
<b>TECHNIQUES IN VETERINARY MICROBIOLOGY. (1-9 credit hours)</b> Independent research in veterinary microbiology. May be repeated to a maximum of 24 credits. Prereq: Consent of staff.			
VS 792	001	TECHS IN GEN VET PATHOL	Craig Carter
VS 792	002	TECHS IN GEN VET PATHOL	Alan Loynachan
<b>TECHNIQUES IN GENERAL VETERINARY PATHOLOGY. (1-9 credit hours)</b> Independent research in veterinary pathology. May be repeated to a maximum of 24 credits. Prereq: Consent of staff.			

**COURSE GRADE DISTRIBUTION, MONITORING GRADE INFLATION, DISSEMINATION AND TRANSPARENCY.** All aspects of graduate student training, including course offerings, grading, and student expectations, are open for discussion during a spring semester meeting of the Veterinary Science Graduate Faculty.

#### **ENROLLMENT, GRADUATES, AND CREDIT HOUR PRODUCTION**

**Table 8. Information for Veterinary Science graduate student enrollment, graduation, student credit hours (SCH), and instructional full-time equivalent (iFTE); 2010-2015 (2015-2016 data were not available).**

Year	Enrollment		Graduates		SCH				iFTE	SCH/iFTE
	MS	PhD	MS	PhD	Fall	Spring	Summer	Total		
2010-2011	10	21	1	3	70	99	27	196	0.9	217.8
2011-2012	12	21	2	4	215	90	0	305	0.9	338.9
2012-2013	10	17	6	5	62	192	0	254	0.75	338.7
2013-2014	6	18	2	3	77	141	0	218	0.95	229.5
2014-2015	7	16	1	5	71	128	0	199	1.03	193.2

**DEGREE CONFERRAL.** As depicted in Table 8, the number of Master's degrees conferred in Veterinary Science between the academic years 2010-2011 and 2014-2015 were 1, 2, 6, 2, 1, respectively. The number of PhD degrees conferred in Veterinary Science between the academic years 2010-2011 and 2014-2015 were 3, 4, 5, 3, 5, respectively.

**CURRICULUM UNIQUENESS.** The Veterinary Science Master's and PhD programs are quite distinctive due to our nearly exclusive focus on the biology of the Equidae. The traditional classroom portion of our Master's and PhD curricula are fairly standard for graduate programs in the area of biomedical research (i.e., courses in molecular biology, cell biology, statistical analyses). However, experiential learning in research and the scientific process is the primary component of graduate training, and our graduate programs emphasize investigation of the

causes and mechanisms that impact the production and performance of the horse, regardless of breed. No other institutions in the Commonwealth of Kentucky have graduate programs that emphasize equids. Moreover, few institutions nationally and internationally have programs that focus on the horse, and none have the depth and breadth of expertise in equine-related research that is encompassed by the Department of Veterinary Science at the University of Kentucky.

**COLLABORATIVE OPPORTUNITIES.** We have hosted exceptional undergraduate student interns from other Kentucky Universities including Asbury University and Georgetown University. We have hosted 5 Asbury undergraduate interns since 2011. These Asbury students require an internship as part of their BIO400 course. As part of this internship, students are expected to develop and conduct their own research project with the help of their mentor. As part of the requirements of this course, they are expected to write a research paper describing the study design and results, as well as present their study and findings in PowerPoint form. These students are also supposed to present their research at the Kentucky Academy of Science meeting in Frankfort, Kentucky. The Georgetown undergraduate interns are Howard Hughes Scholars in the Department of Biology (<https://biology.georgetown.edu/undergraduate/hughes>) and have similar expectations from the internship as the Asbury interns.

The UKVDL Toxicology section has participated in an internship program with the Eastern Kentucky University (EKU) Forensic Sciences and Chemistry undergraduate programs since 2009. Students typically spend 3 months working in the UKVDL Toxicology section, learning basic analytical techniques and typically completing a project such as a method development or validation. Many interns continue to work for us part-time as paid part-time technical staff after the completion of their internship. We provide EKU with evaluations of the interns. During the last 5 years, we have hosted 10 EKU students in this internship program. This program has been very successful and many interns have gone on to graduate programs or obtained rewarding employment in their professional field.

Aside from ‘other Kentucky’ institutions, we have also hosted students as part of the Brazil Scientific Mobility Program (BSMP). This is a program funded by the Brazilian government and is a one-year, non-degree program for Brazilian students to study abroad in the United States. We have accepted 4<sup>th</sup> year Brazilian students from a Veterinary Medicine Degree. As part of their 1 year stay abroad, they are required to engage in Academic Training (e.g. internship, co-op, observership or practicum), paid or unpaid, that directly relates to his or her field of study during the summer.

**PROGRAM HISTORY.** The PhD program in Veterinary Science was established in 1970, with the Veterinary Science Master’s program following in 1975. At that time, the areas of specialization were immunology, virology, parasitology, comparative pathology, reproductive physiology, and pharmacology/toxicology. The latter specialization was part of the University’s Graduate Center for Toxicology. Funds to support graduate student stipends were very limited. At that time, student stipends were paid primarily through research grants obtained by individual faculty members. A limited amount of support was provided by the E.R. Doll Memorial Fellowship.

Through the 1980s, the Master’s and PhD programs typically had fewer than 10 students due to limited funds for research assistantships. In the early 1990s, however, several funding sources were established to better support the graduate program. Due in part to the efforts of Don

Robinson from Winter Quarter Farm, a proposal was submitted to the Geoffrey C. Hughes foundation in the early 1990s to provide funds for seven research assistantships. This annual request and donation from the Hughes Foundation continues to the present. Subsequently, three major endowment accounts have been established to support research assistants in Veterinary Science; the Gluck Fellowship endowment, the Mellon Fellowship endowment, and the Wright-Markey Trust endowment. Collectively, these three endowments generate approximately \$168,000 annually, which has added greatly to the strength of the current graduate programs in Veterinary Science and allows for a typical graduate student population of approximately 20-25 students.

**Pathology Residency Program.** The UKVDL pathology post-doctoral/residency program is designed to prepare candidates for a successful career in veterinary pathology and certification by the American College of Veterinary Pathologists. Training involves exposure to the extensive case material available through the necropsy and surgical pathology services and is augmented by seminars encompassing all portions of the board examination and rotations through the specialty sections of the laboratory if desired. Opportunities for graduate research training are available in the research department of the college including but not limited to, the Gluck Equine Research Center. Additionally, opportunities to interact with local equine referral hospitals are available and encouraged. During the period under review, UKVDL has trained 6 pathology residents.

**Toxicology Residency Program.** UKVDL just started a veterinary toxicology residency training program and has one resident in the program at this time. The program is a 3 year post-DVM graduate training program with yearly renewals based upon satisfactory performance as reviewed by UKVDL's Toxicologist. Residents wishing to pursue a graduate degree in toxicology/pharmacology are required to apply separately for that training. The overall goal of this program is to give the resident a well-rounded learning experience in veterinary toxicology so that the individual will eventually become a board-certified veterinary toxicologist and will be able to successfully and independently function in a variety of toxicology-related settings in academia, industry, or government. The resident will be expected to develop an entry-level, comparative toxicology expertise, both independently and with faculty mentor guidance, that will be sufficient to meet the requirements to sit for the certification examination of the American Board of Veterinary Toxicology (ABVT). In addition, some individuals elect to sit for the American Board of Toxicology Certification Examination (ABT).

**Residency Oversight Committee.** The residency program activities will be overseen by a three person committee of two UKVDL faculty and one independent member. The oversight committee will help the Resident prioritize activities and plan their program. All oversight decisions will be by consensus. The oversight committee will meet with the Resident at least twice yearly or at the request of the Resident.

**Program Outline and Resident Responsibilities.** The primary mechanism for gaining appropriate toxicology diagnostic expertise is via on-duty work as assigned. On-duty work will be shared with the UKVDL's Toxicologist and an on-duty calendar will be maintained on an internal website. The person on-duty is in charge of all incoming cases (from outside clients or UKVDL pathologists) and phone inquiries. The initial training will evolve over time as the resident develops the skills necessary to handle cases as either Case Coordinator or Discipline (i.e., Toxicology) Coordinator. Essential skills developed during training include a working

knowledge of toxicants relevant to veterinary medicine. A working knowledge includes the following aspects of each toxicant: uses, formulations, exposure scenarios, comparative toxicity, ADME, clinical signs, laboratory abnormalities, postmortem findings, differential diagnoses, and appropriate samples for toxicant testing.

**PROGRAM UNIQUENESS.** Both the Master's and PhD programs in Veterinary Science at the University of Kentucky represent the only graduate programs in the Commonwealth, and two of few internationally, that have a primary focus on the biology of equids. A major goal for both programs is to provide students with opportunities to become creative and critical thinkers with the contemporary skills and knowledge necessary to perform independent research and to effectively communicate their findings. The programs offer specialization in pathology, virology, microbiology, parasitology, immunology, genetics, reproductive physiology, pharmacology, and musculoskeletal sciences, with each subspecialty having a general emphasis on the horse.

**PROGRAM ADMINISTRATION.** The Veterinary Science Director of Graduate Studies (DGS) has primary responsibility for oversight of both the Master's and PhD programs in the department. The Veterinary Science DGS is the local representative for both graduate programs and acts as the official liaison with the Graduate School. The DGS is responsible to the Veterinary Science graduate faculty and to the Dean of the Graduate School for recruitment, admission, advising and examination of students in both the Master's and PhD programs. Oversight of graduate program funding sources is the responsibility of the Veterinary Science Department Chair and the DGS, with assistance from departmental administrative staff.

**RECRUITMENT AND DEVELOPMENT.** Our program's reputation for its intense focus on equine health and well-being is a major factor for recruiting new students into our Master's and PhD programs. Individual faculty members play a key role in student recruitment via scientific conferences, invited speaking engagements, etc. To aid faculty in recruitment efforts, an information card was produced for faculty members to post and disseminate at conferences. In addition to basic information about the graduate program, the card displays a QR code that prospective students can scan with a smartphone or similar device to launch a web browser at the URL of our graduate program webpage. The webpage (<http://www2.ca.uky.edu/gluck/EdGraduate.asp>) contains detailed information about graduate studies in Veterinary Science, with links to our graduate program guide, a list of suggested courses, and the Graduate School application webpage.

**PROGRAM DELIVERY.** The Veterinary Science graduate degree programs (Master's and PhD) are research driven and traditional classroom coursework is a lesser element of student training. Most Veterinary Science Master's and PhD students are supported by Research Assistantships, and the expectation is that the students should be fully engaged in the department on a daily basis either in class or in laboratories. Consequently, distance learning courses are not part of the Veterinary Science graduate program curricula.

Curricular changes are implemented according to college and university regulations. Changes are approved by the department's graduate faculty, followed by approval from the college's graduate curriculum committee, the UK Graduate Council, and the University Senate. Both the college's associate dean for instruction and the assistant dean for academic administration work

closely with UK's central administration to ensure compliance with SACS and state and federal regulations.

**STUDENT LEARNING OUTCOMES ASSESSMENT.** Independent assessment plans have been developed for the Master's and the PhD programs. The forms used for assessing student activities are available in Appendices J and K.

**TEACHING EFFECTIVENESS IMPROVEMENTS.** A meeting of the Veterinary Science Graduate Faculty is held at least once each year during the Spring semester, during which there is discussion about potential changes/enhancements to the Veterinary Science Master's and PhD programs. Based on assessment results obtained since 2011 when the current assessment plans were implemented, both Master's and PhD students in our programs are typically meeting or exceeding the benchmarks established for all Learning Outcomes. The 2014-2015 assessment results for PhD Learning Outcome #2 suggested that our PhD graduate program is accomplishing its mission in training a majority of students to identify research questions and formulate testable hypotheses, but it was apparent that some students were not sufficient competent in this area by the time they graduate. Based on this finding, Veterinary Science faculty advisors were encouraged to make students work more independently in the laboratory and to take a greater role in development of research projects, thus requiring that students learn to think independently. Veterinary Science faculty advisors have been asked to increase expectations and enforce greater rigor during the qualifying examination of PhD students. Students should not be allowed to advance past the qualifying exam if they do not show sufficient competence in these important skills.

## **EXTERNAL AWARDS FOR FACULTY AND STUDENTS**

**2011/12**

### **Faculty**

Carter, C. 2011. K.F. Meyer-James H. Steele Gold Headed Cane award for excellence in epidemiology and public Health, American Veterinary Medical Association.

Gaskill, C. 2011. US Department of Interior Fish & Wildlife Service Regional Director's Award for service in diagnosing poisonings in wildlife.

Nielsen, M.K. 2011. Diplomate, European College of Veterinary Parasitology

Tobin, T. 2011. Diplomate, American Board of Toxicology, Inc. 2011-2015.

### **Graduate Students / Post Docs**

Claes, A. 2012. First Place Award for Poster Presentation in Graduate Student Competition. 31<sup>st</sup> Annual Symposium in Reproductive Science and Women's Health, University of Kentucky, May 17<sup>th</sup>-18<sup>th</sup>, Lexington, KY.

Esteller-Vico, A. 2012. First Place Award for Post-Doctoral Trainee Poster Presentation Competition. 31<sup>st</sup> Annual Symposium in Reproductive Science and Women's Health, University of Kentucky, May 17<sup>th</sup>-18<sup>th</sup>, Lexington, KY.

Gautam, A. 2011. Examination of the surface antigen (SnSAG) gene family in *Sarcocystis neurona*. George R. LaRue award for best student presentation. 63<sup>rd</sup> Annual Midwestern Conference of Parasitologists, June 8<sup>th</sup>, Saint Mary's College, Notre Dame, Indiana.

Woodward, E.M. 2011. Susceptibility to delayed uterine clearance after breeding: relationship to endometrial biopsy score and age, and variations between seasons. Annual Conference for the Society of Theriogenology, August 8<sup>th</sup>-13<sup>th</sup>, Milwaukee, WI. 2<sup>nd</sup> Place for Competitive Abstract.

### **2012/13**

#### **Faculty**

Allen, G.P. 2012. Inducted into Equine Research Hall of Fame (posthumously).

Ball, B.A. 2012. Theriogenologist of the Year, American College of Theriogenology.

Chambers, T. 2012. Member, Program Committee and Session Chair, Ninth International Meeting on Equine Infectious Diseases.

Issel, Charles J. 2012. Alumni Achievement Award, University of California – Davis.

Lyons, E.T. 2012. Inducted into Equine Research Hall of Fame.

Timoney, P.J. 2012. Meritorious Service Award. National Institute for Animal Agriculture.

#### **Graduate Students**

Gautam, A. 2013. Honorable Mention for poster presentation. American Midwestern Conference of Parasitologists, June 6<sup>th</sup>-8<sup>th</sup>, Purdue University, West Lafayette, Indiana.

Page, A. 2012. Presented with the Equus Foundation Research Fellow Award. American Association of Equine Practitioner's 58<sup>th</sup> Annual Convention, Anaheim, CA.

Siard, M. 2013. 3<sup>rd</sup> Place Graduate Student Award, Nutrition Section. Equine Science Society Symposium, May 28<sup>th</sup>-31<sup>st</sup>, Mescalero, NM.

## 2013/14

### Faculty

Chambers, T.M. 2013. Member, Scientific Advisory Committee and Session Chair, 2<sup>nd</sup> ISIRV Symposium on Neglected Influenza Viruses.

Gaskill, C.L. 2014. Board Certified, American Board of Veterinary Toxicology (ABVT).

Nielsen, M.K. 2013. Board Certified, American College of Veterinary Microbiologists (ACVM).

### Graduate Students

Carossino, M. – Awarded Fulbright Scholarship.

## 2014/15

### Faculty

Bailey, E. 2014. Inducted into Equine Research Hall of Fame.

Timoney, P.J. 2014. Award from New Zealand Ministry of Primary Industries and Equine Health Association for contributions that led to eradication of Equine Viral Arteritis from New Zealand, November 2014.

## 2015/16

### Faculty

Carter, C. 2016. 12<sup>th</sup> International Veterinary Congress Prize, American Veterinary Medical Association.

Chambers, T.M. 2015. Co-Organizer, 3<sup>rd</sup> ISIRV International Symposium on Neglected Influenza Viruses.

### Graduate Students / Post Docs

Liang, B. 2015. American Association of Veterinary Laboratory Diagnosticians Trainee Award.

Scare, J. 2015. Burroughs-Wellcome Award.

**TIME AND CREDITS TO DEGREE.** During the 2011-2016 review period, Veterinary Science conferred 11 Master's degrees. These students required an average of 39.3 months (SD = 17.2) and 33.6 credit hours (SD = 18.2) to complete the degree. During the same period, 20 PhD degrees were conferred. These students completed the degree requirements in an average of 69.3 months (SD = 22.1) and 64.2 credit hours (SD = 19.5).

**POST-GRADUATION STUDENT SUCCESS.** Since 2011, the Veterinary Science Master's program has graduated 13 students (Table 9). Five have entered the workforce in a position consistent with their training (i.e., biomedical sciences, veterinary medicine), and six are pursuing additional training (veterinary school, graduate school, residency program). One is now in clinical practice. Information is unavailable for the most recent Master's graduate.

Since 2011, the Veterinary Science PhD program has graduated 23 students (Table 9). Six have pursued additional training as postdoctoral scientists. Four are employed in a scientific position in industry. Five are employed by a government agency in the U.S. or internationally. Seven have taken faculty positions at U.S. or international Universities. One is employed outside the sciences.

**Table 9. Veterinary Science Graduate Student Placement; 2011-present.**

<b>Degree Date</b>	<b>Degree</b>	<b>Advisor</b>	<b>Placement</b>	<b>Position</b>
5/8/2011	PHD	MacLeod, J.	University of Pennsylvania	Postdoctoral Scientist
5/8/2011	PHD	Chambers, T.	Pharmaron	Management, Lab Animal Medicine
2011, Summer	PHD	Troedsson, M.	College of Veterinary Medicine, University of Calgary, Canada	Assistant Professor
2011, Summer	MS	Lear/Bailey	St. Judes Childrens Hospital, Memphis, TN	Genetic Counselor
2011, Summer	PHD	Issel/Cook	LabTox Laboratories, Lexington, KY	Clinical Toxicology Laboratory Technician
12/16/2011	PHD	Balasuriya/Timoney	Korea Research Institute of Chemical Technology, Daejeon, Republic of Korea	Senior Research Scientist
12/16/2011	PHD	MacLeod, J.	Department of Animal Sciences, Colorado State University	Assistant Professor
5/6/2012	PHD	Timoney, P.	USDA, APHIS, Raleigh, NC	Area Veterinarian in Charge
5/6/2012	MS	McDowell, K.	Auburn University, Auburn, AL	Student in Vet. School
5/6/2012	PHD	Troedsson, M.	College of Veterinary Medicine, University of Pennsylvania	Postdoctoral Scientist
2012, Summer	MS	Timoney, P.	PGXL Laboratories	Medical Technologist
2012, Summer	MS	Squires, E.	Department of Animal Sciences, University of Kentucky	Graduate Student
2012, Summer	MS	Ball, B.	Oklahoma State University	Student in Vet. School
2012, Summer	MS	Squires, E.	Auburn University, Auburn, AL	Student in Vet. School

2012, Summer	PHD	Balasuriya, U.	Baker Institute, Cornell University	Postdoctoral Scientist
12/14/2012	MS	Balasuriya, U.	Veterinary practice, Florida	Veterinarian
12/14/2012	PHD	Horohov, D.	South China Agricultural University	Associate Professor
12/14/2012	PHD	Balasuriya, U.	Veterinary Medical Research and Development	Scientist
5/5/2013	MS	Howe, D.	Equine Diagnostic Solutions, Lexington, KY	Laboratory Technician
5/5/2013	PHD	Horohov, D.	University of Cincinnati, Children's Hospital	Postdoctoral Scientist
2013, Summer	MS	Timoney, J.	Florida Atlantic University	Research Assistant
2013, Summer	MS	Bailey, E.	Gluck Equine Research Center, University of Kentucky	Graduate Student
2013, Summer	PHD	Horohov, D.	USDA, Frankfort, Kentucky	Veterinary Medical Officer
12/20/2013	PHD	Chambers, T.	Gluck Equine Research Center, University of Kentucky	Postdoctoral Scientist
12/20/2013	PHD	Bailey, E.	Employed outside the sciences	
12/19/2014	PHD	MacLeod, J.	Department of Veterinary Science, University of Kentucky VDL	Assistant Professor
12/19/2014	PHD	Ball, B.	University of Illinois College of Veterinary Medicine	Assistant Professor
12/19/2014	PHD	Ball, B.	Utrecht University - Veterinary Medicine	Assistant Professor
12/19/2014	PHD	Horohov, D.	Washington State University	Assistant Professor
5/9/2015	PHD	Chambers, T.	Department of Microbiology, University of Kentucky Medical School	Postdoctoral Scientist
5/9/2015	PHD	Howe, D.	Central Research Institute, Kasauli, Ministry of Health and Family Welfare	Deputy Assistant Director
5/9/2015	MS	Squires, E.	Louisiana State University School of Veterinary Medicine	Large animal resident
12/18/2015	PHD	MacLeod, J.	American Journal Experts	Academic Translation Advisor
12/18/2015	MS	Bolin, D.	Central University of Ecuador, School of Veterinary Medicine	Pathologist
Summer, 2016	PhD	MacLeod, J.	Kentucky Horse Racing Commission and clinical practice	Veterinarian
Fall, 2016	MS	Squires, E.	Unknown	

UKVDL also trained six pathology residents from 2010-2015. Unfortunately, due to a lack of funding, this program has been suspended.

Dr. Jennifer Janes (2007-2010). Department of Veterinary Science faculty member in the pathology section at UK-VDL at the level of Assistant Professor in the Regular Title Series.

Dr. Molly Evely (2008-2011). Currently an Adjunct Professor at Midway College.

Dr. Veronica Boling (2009-2012). Assistant Professor of Pathology at the St. Mathew's School of Veterinary Medicine in 2013.

Dr. Vasu Bakthivactalu (2010-2013). Completed the Board Certification Examination of the American College of Veterinary Pathologists. Veterinary Pathologist in the Division of Comparative Medicine at the Massachusetts Institute of Technology.

Dr. Peter Chu (2011-2014). Veterinary Pathologist in the California, Health and Safety laboratory at Davis. Passed three of the four parts of the American College of Veterinary Pathologist certification examination.

Ana Gabriela Toro Mayorga (2012-2015). Central University of Ecuador School of Veterinary Medicine.

**STUDENT INVOLVEMENT IN RESEARCH AND INITIATIVES. Table 10.**

<b>Veterinary Science Publications &amp; Presentations</b>					
	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
<b>Faculty</b>					
Books/Chapters	22	12	6	12	12
Refereed Pubs	59	66	79	90	67
Non-Refereed Pubs	20	37	49	32	27
Extension Pubs	0	19	12	17	12
Presentations	99	140	93	91	47
<b>Grad Students/ Post-Doctoral Scholars</b>					
Books/Chapters	0	0	1	1	1
Refereed Pubs	23	27	33	34	28
Non-Refereed Pubs	0	0	0	2	0
Presentations	13	30	21	32	13
<b>Undergrad Students / Visiting Scholars</b>					
Presentations	4	0	2	6	0

For a listing of the publications and presentations, please see Appendices I and L.

In addition to the above publications and presentations, undergraduate students received the following awards pertaining to their research at the Gluck Equine Research Center:

Howe, D.K. 2014. A. Young. Raymond Cable Award (best undergraduate presentation). American Midwestern Conference of Parasitologists.

MacLeod, J.N. 2012. M. Richardson. Alltech Animal Science Award, Fayette County District Science Fair (Dunbar High School Student). Also placed 3<sup>rd</sup> at the Regional Level.

MacLeod, J.N. 2012. M. Richardson. First Place, Intel International Science and Engineering Fair.

Nielsen, M.K. 2014. M. Stephens. Honorable Mention, Best Student Competition, American Association for Veterinary Parasitologists.

**CURRENCY OF CURRICULUM.** Both the Master's and the PhD programs in Veterinary Science are highly individualized with a major emphasis on research. Traditional classroom learning is a minor component of graduate training in Veterinary Science, with only three core courses required in both programs. Two of the required courses are taught in the University of Kentucky's Integrated Biomedical Sciences (IBS) graduate program. These courses cover molecular biology and genetics, cell biology and cell signaling, and physiological communication. Statistics is the third required course in the Master's and PhD programs. All of the core courses are considered timely since they cover topics that are critical for contemporary scientific investigation. Further coursework is selected by the student and their major advisor or advisory committee. Potential changes and enhancements to the Veterinary Science Master's and PhD curricula are topics that are open for discussion at the annual spring meeting of the Veterinary Science Graduate Faculty.

**ORIENTATION, ADVISING, STUDENT SERVICES.** The Veterinary Science Director of Graduate Studies is responsible for the initial orientation and academic advising for new students in both the Master's and PhD programs. To aid in the orientation process, a Veterinary Science PhD student recently compiled information into two documents for dissemination to students entering the program (Appendices M and N). These documents provide extensive information about housing, employment forms, lab safety training, course enrollment, etc., as well as survey results from Veterinary Science graduate students on the value of courses offered at the University of Kentucky. Once a graduate student has identified a faculty member as their major advisor, most of the academic advising is assumed by that faculty member. For students in the PhD program, an advisory committee also provides advice on coursework and thesis/dissertation research objectives. Throughout a graduate student's tenure in the program, the DGS remains available to provide guidance to students and major advisors, as needed.

**ADMISSION STANDARDS.** All applicants meeting the minimum requirements of The Graduate School are considered for acceptance to the Master's or PhD programs in Veterinary Science. Each applicant is considered individually, and acceptance into the program depends a great deal on the background and interest of the applicant and our ability to provide a quality program in the area of interest. The admissions criteria are identical for the Master's and PhD programs.

Applicants need a strong academic background with undergraduate course preparation in biology, chemistry and mathematics. Students accepted into the program need a STEM degree from an accredited institution or appropriate post-baccalaureate coursework to bolster their

training in the natural sciences. A minimum grade point average (GPA) of 3.0 on a 4.0 scale and a combined score (verbal plus quantitative) on the Graduate Record Examination (GRE) of not less than 300 is required for a department-supported research assistantship/fellowship. Applicants with lesser qualifications can be accepted if they are endorsed by a graduate faculty member who is willing to support the student financially and serve as their research advisor and with approval from the Veterinary Science graduate faculty.

**COST AND FUNDING OF PROGRAM.** The operating budget for the Department of Veterinary Science is derived from three sources; state appropriations through the university and college, federal through the college, and the department’s endowment and gift income. The endowment and gift income can be further divided into those funds that are restricted and support specific programs (endowed chairs, visiting scholar program, library, etc.) and those that are unrestricted and available for general departmental support. All funds generated by the UKVDL are managed separately from the department at the college level.

**Table 11. Departmental Budget (State and Federal Funds)**

Source of Funds	2012	2013	2014	2015	2016
State Instruction	106,709.20	89,410.84	116,005.10	118,035.00	91,279.90
State Research Funds	1,859,707.76	1,669,175.60	1,868,306.75	1,967,570.90	2,033,426.27
Federal Animal Health Funds	45,308.00	64,409.00	56,303.00	56,303.00	47,059.00
Federal Hatch Funds	535,340.87	420,874.59	504,738.50	437,549.08	415,861.23
Total Funds Available	2,547,065.83	2,243,870.03	2,545,353.35	2,579,457.98	2,587,626.40

In terms of the state funds that are available for the department (research and instruction), approximately 98% are used to support faculty and staff salaries. The residual funds have been used in the past to support material expenses associated with our farm operations (notably the purchase of hay and feed). Of the federal funds, 94% are used for salaries and the residual used to support extension and outreach efforts of the program. Salary savings generated by faculty and returned to the department are used as a source of matching funds for equipment purchases. Currently there are no unfilled staff lines in the program nor are there funds to support such lines. This situation is not likely to improve in the future. Our current faculty recruitment effort is to use faculty lines that will become vacant in the near future.

**Table 12. Endowment Income**

Endowments					
Restricted	747,250.45	1,469,136.93	890,448.69	1,134,412.38	1,098,462.51
Unrestricted	574,545.85	617,596.01	410,937.76	557,911.51	666,144.31
Total	1,321,796.30	2,086,732.94	1,301,386.45	1,692,323.89	1,764,606.82

Of the endowment funds received by the department, 65% of those funds are restricted to specific usages (endowed chairs, student and post-doc support, library). The unrestricted funds are available for general use in the department. In the past, some of these funds were used to support the operations of AGTRL and some funds were also available for small equipment purchases. The majority of the funds were used to support the activity of our farm (\$536,131 for last fiscal year. This was an improvement over prior years when farm expenditures exceed \$1.2 million. Some of this savings was due to a reduction in the total size of our herd (520 down to 325). Some of this was due to increased support (per diem) provided by faculty research

programs. Additional savings were accrued by shifting 80% of the staff salary to state and federal sources. While the various endowments have provided the department with some financial cushion over the years, their yield and growth over the past five years has been negatively impacted by economic conditions. We are still in the process of recovering from the severe economic downturn in 2008-2012 which had a significant impact on our endowment base.

**Table 13. Gift Support**

Gift Support					
Research Activities	383,989.00	327,005.00	642,372.00	502,053.00	682,531.04
Gluck Foundation Fundraiser	0.00	36,882.41	0.00	0.00	400.00
Grad Student & Postdoc Support	254,000.00	50,000.00	537,138.00	271,804.11	0.00
Total Gifts	637,989.00	413,887.41	1,179,510.00	773,857.11	682,931.04

The majority of the gifts received by the department are in support of specific research programs. The department also receives an annual gift from the Geoffrey C. Hughes Foundation in support of our graduate student program. These funds are used to pay the stipend and tuition costs for those students who have passed their qualifying exam. It also pays for the insurance cost for all students in the program. The expected hiring of a new executive director for the Gluck Foundation is expected to see an increase in fundraising activity by that board.

**Table 14. Extramural Funding**

	2012	2013	2014	2015	2016
State:	245,584.55	91,757.17	185,020.24	158,543.78	47,070.13
Federal:	1,226,702.87	1,205,596.67	1,101,338.42	857,817.09	882,465.38
Pharm Industry	315,451.08	341,668.29	743,830.13	641,971.64	390,822.51
Foundations	312,282.11	264,052.55	332,993.56	294,908.10	346,803.81
Totals	2,100,020.61	1,903,074.68	2,363,182.35	1,953,240.61	1,667,161.83

The amount of research dollars available from extramural funding obtained by faculty over the review period is shown in Table 14. As detailed elsewhere (pp. 40-54), 18 of 34 faculty have been successful in obtaining 132 external grants from a variety of agencies. A subset of faculty (8) had more than 10 proposals funded during that 5-year timeframe. While there have been several large awards, much of the activity involved grants <\$100,000. These numbers do not include cash transferred from Lincoln Memorial University's College of Veterinary Medicine to our program (\$450,000 to date). These funds are in support of student internships and other research activities as part of the cooperative agreement between UK and LMU.

In general, the department's financial position can best be described as stable but likely to change. The uncertainties of state and federal budgets will lead to a greater reliance upon extramural funding for research programs. Limited opportunities for the funding of equine-specific projects will continue to be a challenge in that regard. Increased reliance upon gifts and endowments to maintain program momentum will likely be required, particularly in terms of supporting farm operations into the future.

## OPERATIONAL COSTS

The funds available for covering Departmental Expenses come from four sources (State, Federal, Endowments and Gifts) (Figure 5). The major departmental cost is personnel salaries which account for 86% of all departmental spending, exclusive of grant spending (Figure 5). Almost 90% of personnel costs are paid through state and federal funds. Other departmental support goes towards our farm operations for those costs not covered by investigator per diems and balancing the accounts for AGTRL. The majority of these funds are derived from unrestricted endowments. Departmental funds to purchase equipment are typically leveraged with those of individual investigators and the college. Service contracts are typically funded by the department using enrichment funds provided by the college, as discussed below. Travel and capital expenses account for less than 1% of our budget and most of those expenses are borne by endowments and gift accounts.

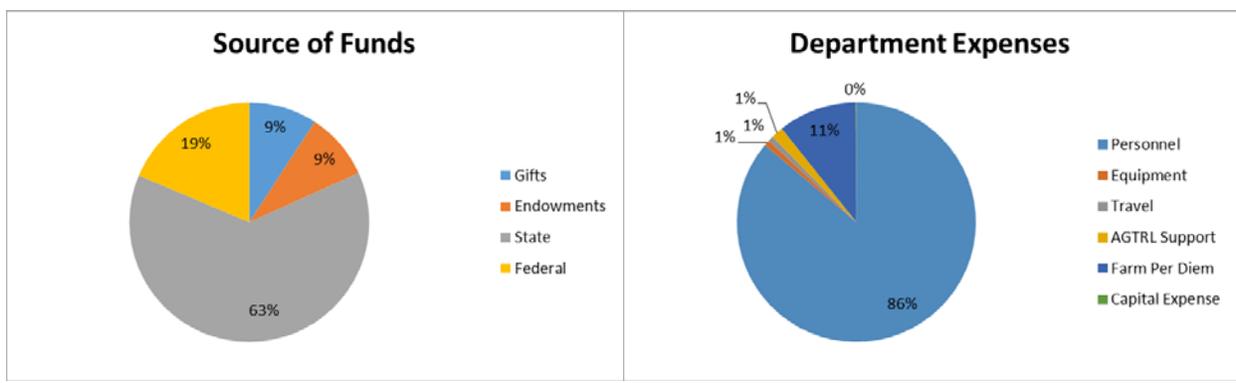


Figure 5. Operational Costs

Figure 6. Departmental Expenses

## Facilities Summary Information and Adequacy

### Maxwell H. Gluck Equine Research Center (GERC)

The four-story Gluck Center provides approximately 69,500 square feet of space comprising laboratories, offices, a small library, meeting rooms, a 130-seat auditorium, and an annex providing some animal accommodation facilities. With the exception of three laboratories on the first floor (rooms 112, 114, and 116), all of the research areas in the Gluck Center would benefit from capital investment to improve the physical space. In essentially every room, there is clear evidence of accumulated wear and age. Upgrades to laboratory bench surfaces, cabinets, shelving, lighting, etc., as well as the physical appearance of walls, floors, and ceilings would benefit substantially from upgrades and modernization. Much of this space is compartmentalized into small (<800sqft) laboratory areas necessitating the sharing of multiple, distant rooms by a laboratory group. Contemporary, multiuser laboratory space will greatly facilitate efforts to recruit new faculty. While some enhancements have been made recently to improve the work space environment, other improvements are still needed to improve temperature regulation and aesthetics. Similarly, the functionality of the animal annex is limited, e.g. four of its eight large-animal stalls are too small for adult horses, and renovations throughout the annex, including its ventilation, would enhance its capabilities. The addition of BSL3

capability to the annex would expand research and funding opportunities in infectious disease. Such improvements would also be helpful in our recruiting efforts for new faculty.

### **University of Kentucky Veterinary Diagnostic Laboratory (UKVDL)**

The UKVDL recently completed a \$28.5 million dollar renovation/expansion project that roughly doubled the total square footage to 66,671. Structural and functional status of the facility is excellent. The laboratory is fully accredited by the American Association of Veterinary Laboratory Diagnosticians (AAVLD) to ISO Standard 17025.

### **Dimock Building**

Laboratories and offices are primarily used for long-term storage. Substantial renovation would be required to achieve contemporary laboratory facilities. An old necropsy room on the ground floor that retains functional winches, dissection tables, and related equipment necessary for the postmortem processing of large animals continues to be used in the support of departmental research, though the college would prefer that this activity be transferred to UKVDL in the near future due to security concerns.

### **Farm Facilities**

The Department of Veterinary Science has approximately 325 horses on 440 acres (320 acres of Maine Chance farm, 120 acres at Woodford Farm, and a quarantine facility at the South farm). The structural and functional status of farm buildings and other infrastructure is variable. New infectious disease resources include a 12-stall biosecurity level 2 facility and a unit for *Streptococcus* (strangles) research. High quality theriogenology resources include separate mare and stallion facilities with renovated barn space (stalls and animal handling areas) and new laboratories, offices, and meeting rooms. The structural and functional status of other barns, shelter areas, fencing, animal handling areas, equipment areas, and personnel offices range from adequate to clearly in need of improvement and capital investment.

### **Equipment**

The Department of Veterinary Science conducts world-class equine research, and many of the faculty members are involved in multidisciplinary collaborative research projects that combine basic, applied and translational research. Laboratory equipment is necessary for training undergraduate and graduate students and postdoctoral scholars in the department. While the department does have the necessary equipment for most current research and clinical efforts, other items are needed (Appendix O). Most of the communal equipment located in the GERC is old and obsolete and requires replacement. Furthermore, the application of contemporary molecular and cellular biology research techniques requires state of the art instrumentation for research. Without this state-of-the-art technology and equipment, it is not possible to successfully compete for competitive grants. It is also important that backup emergency freezer space for faculty use in the event of -80°C freezer failure in order to avoid catastrophic loss of archived samples used for research and diagnostics. Investment in new equipment will increase productivity, enhance the quality of laboratory test results and provide security of research materials. Having state-of-the-art equipment will also help the new faculty recruitment effort.

During the past three years, a number of faculty members in the Department of Veterinary Science have contributed towards the purchase of several major pieces of equipment with matching funds provided by the college. However, there are several other additional items that are urgently needed. Being in an equine research institute, the faculty members are not eligible to apply for large federal grants given to investigators at biomedical research institutions that award doctoral degrees in the health sciences and sciences related to human health or at independent biomedical research centers (e.g. Centers of Biomedical Research Excellence [COBRE]) grants. Furthermore, in recent years there has been a decline in federal and private funding for equine research, particularly for purchase of equipment. While some faculty members have successfully obtained funding to purchase equipment, additional support is needed if the department is to remain competitive. It should also be noted that service contracts on new equipment are typically 10 – 20% of the purchase price and must be renewed annually. While the university does provide some assistance in this area, it still accounts for a significant portion of departmental spending each year (~\$26K).

**Table 15. Personnel Summary Info.**

	Salary Range	Age Range	Gender		Race			Ethnicity	
			M	F	White	Black/African American	Asian	Not Hispanic/ Latino	Hispanic/Latino
<b>Faculty</b>									
Asst. Professor	\$96,249 - \$110,950	36-47	1	4	5	0	0	4	1
Assoc. Professor	\$79,249 - \$127,332	38-62	5	5	9	1	0	10	0
Professor	\$91,189 - \$214,652	53-85	14	0	13	0	1	14	0
Librarian	\$66,809	57	0	1	1	0	0	1	0
<b>Clerical Staff</b>	\$14.44-\$19.87/hr	56-65	0	4	3	0	1	4	0
<b>Farm Staff</b>	\$12.68-\$28.95/hr.	33-60	7	1	7	0	1	8	0
<b>Administrative Staff</b>	\$42,511-\$61,698	33-56	0	3	3	0	0	3	0
<b>Research Staff</b>	\$12.81-\$23.80/hr.	26-69	2	7	8	0	1	9	0
<b>Graduate Students</b>	\$20,000-\$47,232	22-45	3	19	15	3	4	19	3
<b>Post-Doctoral Scholars</b>	\$39,264-\$47,476	32-35	2	2	1	1	2	4	0

**FINANCIAL SUPPORT FROM OTHER UNIVERSITY UNITS.** Table 16 contains information on the funds provided by the college for specific purposes. This includes both salary support for various individuals, start-up and retention package funds, capital expense funds and research activity awards to individual faculty members.

**Table 16. Funds Provided by College.**

	2012	2013	2014	2015	2016
Stallion Barn Renovation support	114,465.38	-	-	-	-
Startup for Martin Nielsen	75,000.00	-	-	-	-
Support for VSC salary due to reduction in force	-	25,946.00	-	-	-
Support for FY13 VSC Projected Deficit	-	134,270.50	-	-	-
Support for Multi-State Equip Funding (Bailey)	-	11,335.00	-	-	-
Support for Knight Endowment Shortfall	-	-	50,842.01	-	-
Support for Horohov Retention	-	-	25,000.00	-	-
Support for Gluck Security Project	-	-	-	33,000.00	-
Support for VSC Centrifuge	-	-	51,144.45	-	-
Support for Amanda Adams salary	-	-	-	114,577.20	114,437.34
Support for ESSI Director stipend - MacLeod	-	-	-	-	12,715.26
Research Activity Awards	17,213.00	7,625.00	6,599.00	1,250.00	11,500.00
<b>Totals</b>	<b>189,465.38</b>	<b>171,551.50</b>	<b>126,986.46</b>	<b>147,577.20</b>	<b>127,152.60</b>

The department has received a Kentucky opportunity fellowship from the graduate school each of the past five years. These funds include a tuition waiver, an annual \$15,000 stipend (recently increased to \$20,000), and health insurance premium for the student. The department also received a Lyman T. Johnson Diversity Award (\$7,500 stipend from the Graduate School and matched by the college with an additional \$7,500; 2011-2014) for one of our students and two Hutson Fellowships from the college which cover in-state tuition and \$1,000 for travel and supplies.

**45, 46, 47. EVALUATION DATA FROM FACULTY, STAFF AND STUDENTS.** In 2014 the University of Kentucky conducted the [UK@work Survey](#) (Table 17) designed to give useful information on many measures of job satisfaction at UK. Approximately 25% of departmental faculty and staff completed the survey. The results from Veterinary Science were separated into those faculty and staff at the Gluck Center and those at UKVDL. In general, average scores of job satisfaction (reported as a percentage) were lower for the Gluck Center faculty and staff (47.7%) compared to the college (70.2%) and the university (65.9%). The satisfaction scores for the UKVDL faculty and staff were higher than those of the Gluck Center. The lowest scores were in the areas of career development, (university) leadership, operating effectively and communication. While these areas were uniformly low across the college and university, they were especially low for this department. By contrast, the highest scores for this department were in direct supervision and performance evaluations exceeded those of the university and the college.

**Table 17. UK@Work Survey Results**

All Data	UK	CAFÉ	Vet Sci
Supervision	78	81	82
Perf Eval	73	77	76
Empowerment	67	72	55
Work Relationships	69	70	53
Engagement	82	85	64
Retention	66	70	50
Stress, Bal, Work	64	71	50
Pay & Benefits	58	58	37
Diversity & Inclusion	67	72	45
Univ Culture	64	70	42
Career Development	59	62	33
Leadership	56	63	26
Operating Effectively	57	63	26
Communication	62	69	28

While one should be cautious in interpreting survey results, particularly when participation level is low, a number of issues were identified. Several steps have been taken to address those specific areas of concern. It should be noted that “operating effectively” included work space comfort and prior to this survey, the Gluck building (and occupants) suffered the effects from an unusually cold winter. Steps have been taken to improve this with the help of physical plant division. These included the sealing of gaps and cracks in the outer envelope of the building and the correction of other structural issues, some of which are related to the age of this building and the building standards at the time it was constructed. Longer term solutions including improvement of the HVAC systems and replacement of energy inefficient windows will still be needed. To address the communication concerns, a newsletter has been produced and distributed to faculty, staff and students. “In the know at Gluck” provides monthly updates including a brief summary of faculty meeting minutes and other important information about the department, college and university. Additionally, a social committee has been engaged to begin the process of organizing departmental social functions. This includes a monthly coffee hour prior to the faculty meeting and a fall picnic at our farm. The question of career development, particularly how it relates to staff, needs to be addressed on an individual basis by the staff member and their supervisor. The department will provide every opportunity for development for each of its employees as these are identified. The low numbers for leadership are a concern, however, this survey was conducted at a time of leadership transition in the department and the scores may reflect anxiety on the part of the staff and faculty. It will be important to note what changes occur when the survey is repeated next year.

**OPERATIONS. FACULTY AND STAFF COMMUNICATIONS.** Faculty meetings are held on the first Tuesday of the month, and staff meetings are held quarterly. We also have a monthly coffee break (coffee and donuts) for the entire department for an hour prior to each faculty meeting. Last year, we initiated a departmental newsletter based on the minutes of faculty meetings and includes upcoming events as well as university notifications in an effort to

keep staff informed. The department hosts an annual fall picnic at the farm as well as a Christmas luncheon. All of these efforts help to facilitate interaction between faculty and staff.

**PROGRAM QUALITY AND PRODUCTIVITY, INSTRUCTION.** The Master's and PhD programs in Veterinary Science have been very effective in training students to be competitive in the current job market, as evidenced by alumni success in securing positions in industry, government agencies, and academia (see Table 9). Based on the success of our graduates, we believe that there is significant merit in the current content and structure of our graduate student training programs (MS and PhD). Graduate faculty discussions will continue to be the basis for enhancements to the Master's and PhD programs, but it is apparent that no large-scale changes should be considered at this time.

Historically, the faculty of Veterinary Science has emphasized research, service, and graduate-level training, with very modest participation in undergraduate education. In an effort to explore prospective undergraduate teaching opportunities for faculty in Veterinary Science, Dean Nancy Cox formed a Teaching Task Force in 2014 that was specifically charged with: 1) reviewing existing VS course offerings; 2) evaluating the potential for additional offerings; 3) assessing the capacity and willingness of faculty to teach more; 4) providing a cost/benefit assessment in the University's potential new budget model; 5) recommending a path forward (Appendix P). The overall conclusion of the Task Force was that there were several prospective courses Veterinary Science faculty could develop and offer that would be useful contributions to undergraduate curricula in CAFE. Although plans for new courses have not yet been established, the recommendations in the report are being considered by the Veterinary Science faculty.

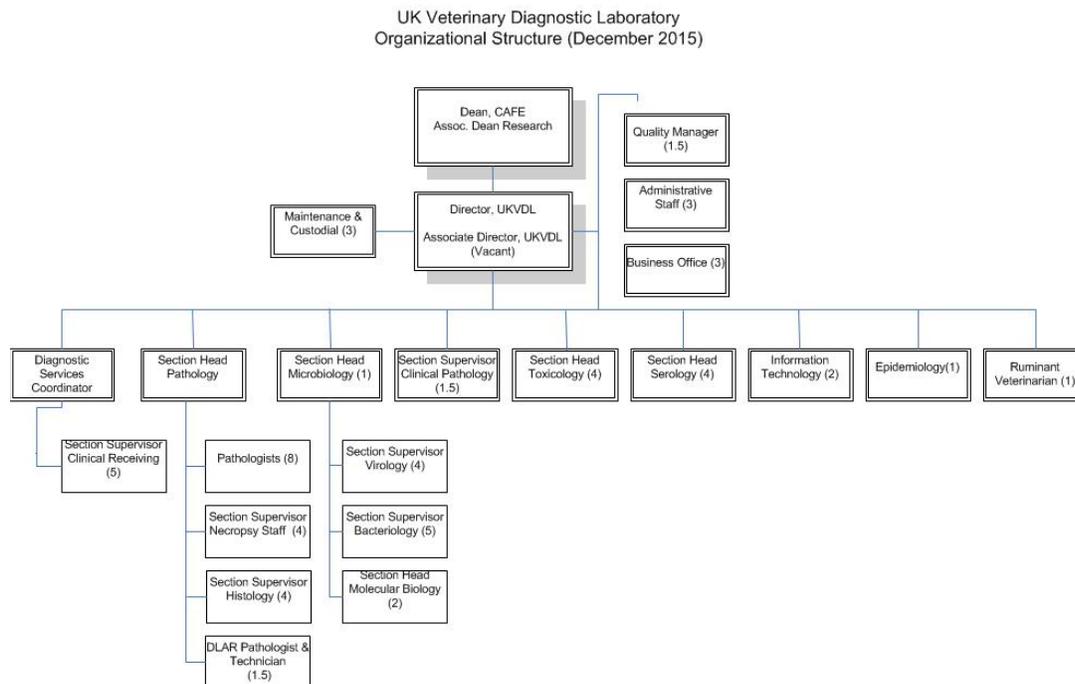
**EXTENSION/OUTREACH PROGRAMS.** The Extension/Outreach Programs of the Department of Veterinary Science are provided by the University of Kentucky Veterinary Diagnostic Laboratory (UKVDL) and the Maxwell H. Gluck Equine Research Center. Whereas all of the extension activities associated with ruminant species are offered by the UKVDL, the equine extension/outreach activities are offered by the UKVDL and the Gluck Center. The respective roles in providing this service to the equine industry both within and outside the state will become evident following review of the materials provided. This review will comprise individual reports from the UKVDL and the Ruminant Extension Veterinarian together with a report of the range of equine programs provided by UKVDL and the Equine Extension Veterinarian at the Gluck Center. Wherever relevant, appropriate supportive material or examples of various extension/outreach activities will be included in the overall report. The latter will be made up of the following three components:

1. Review of the service/extension/outreach programs provided by the UKVDL.
2. Review of the UKVDL extension/outreach programs provided by the Ruminant Extension Veterinarian.
3. Review of the equine extension/outreach program related activities provided by the Equine Extension/Outreach Veterinarian at the Gluck Center.

## **QUANTITY AND QUALITY OF OUTREACH AND COMMUNITY SERVICE.**

### **The University of Kentucky Veterinary Diagnostic Laboratory**

***Overview.*** The University of Kentucky Veterinary Diagnostic Laboratory (UKVDL) strives to be one of the premier veterinary diagnostic laboratories in the United States, providing timely and accurate services in support of the practicing veterinary profession, Kentucky animal agriculture, the signature equine industries, companion animals, and public health. As the state's flagship veterinary diagnostic laboratory, the University of Kentucky Veterinary Diagnostic Laboratory's primary goal is to develop, apply, and utilize state-of-the-art veterinary diagnostic testing methods and scientific knowledge to improve animal health and marketability, preserve the human-animal bond, and help protect and improve public health through the early and accurate identification of zoonotic diseases. The UKVDL laboratory is fully accredited by the American Association of Veterinary Laboratory Diagnosticians (AAVLD), and is a member of the USDA National Animal Health Laboratory Network (NAHLN) and the FDA Veterinary Laboratory Investigation Response Network (Vet-LIRN). In addition to its clinical diagnostic role, the UKVDL provides surveillance and regulatory testing for emerging and endemic diseases such as equine infectious anemia (EIA), equine viral arteritis, equine piroplasmiasis, West Nile virus, chronic wasting disease of deer, contagious equine metritis, bovine spongiform encephalitis (Mad Cow Disease), Johne's disease, bovine leukosis, avian influenza, rabies and many other diseases of agricultural, public health and companion animal importance. Furthermore, the laboratory continually monitors for the emergence of foreign animal diseases (FADs) such as foot and mouth disease, and classical swine fever. As part of the NAHLN, the UKVDL conducts ongoing Proficiency Testing (PT) to be prepared for any outbreak of a FAD in Kentucky and to assist other states as needed. Finally, UKVDL hosts a rich continuing education and outreach program for our clients and the public every year. The laboratory is composed of fifteen distinct sections as depicted in this organizational chart:



**Figure 7. UKVDL Organizational Structure**

Farmers and animal owners use the UKVDL’s services primarily through their practicing veterinarians. These professionals have expertise in selecting, preparing, shipping, and submitting the proper specimens for testing when needed to assist in making a clinical diagnosis. Laboratory findings are reported back to the submitting veterinarian who then consults with his or her clients to implement a treatment protocol or a prevention/management solution to disease problems on the farm. A state-of-the-art Laboratory Information Management System (LIMS) is utilized at the UKVDL which enables UKVDL to provide the most professional, accurate and timely accessioning, order entry, results capture and clinical case reporting for our clients.

UKVDL faculty, scientists, and technical staff are specialists in several diagnostic medical disciplines directly related to animal health to include bacteriology, clinical pathology, epidemiology, extension, molecular biology, pathology, serology, toxicology, virology and informatics. Funding to add metagenomics testing is being pursued to improve diagnostics in the future. The laboratory is also exploring the potential of supporting the Kentucky aquaculture industries, food safety, stem cell therapy and other emerging animal health technologies. As part of the cooperative agreement with the Lincoln Memorial University College of Veterinary Medicine, the Center for Animal Health in Appalachia (CAHA) was launched in 2015. Director, Dr. Craig Carter, is serving on the advisory board.

Disease diagnostic efforts are coordinated and handled by specialists in the appropriate disciplines. Complex clinical cases involving multiple sections are monitored by trained case coordinators. During surge testing periods and disease outbreaks, cross-trained technicians are redistributed across sections to assure that the surge in workload can be managed in a timely and accurate fashion.

**Vision.** The Veterinary Diagnostic Laboratory strives to be one of the premier veterinary diagnostic laboratories in the United States, providing the very best and timely services in support of the practicing veterinary profession, Kentucky animal agriculture, the signature equine industries, companion animals and public health. The Veterinary Diagnostic Laboratory (UKVDL) is a full-service laboratory and an administrative unit in the College of Agriculture, Food and the Environment (CAFE) at the University of Kentucky. The UKVDL was established in 1970 by the State Legislature of Kentucky and charged with the responsibility of provision of diagnostic assistance to veterinary practitioners, owners of animals in Kentucky, wildlife conservationists, scientists utilizing animals in their research throughout the university, and state-federal regulatory officials. The laboratory assists with safeguarding the health of animal agriculture in Kentucky via diagnostic testing and disease identification.

The UKVDL confirms infectious and parasitic diseases, chemical and other toxic contaminants that may harm animals or humans, nutritional diseases, regulatory diseases, provides the means to meet export sales and movement requirements, and provides an early warning system for impending epidemics. Emphasis is placed on quality assurance and control for all diagnostic and regulatory testing including new testing methods. Each employee of the UKVDL focuses on performance of all tasks according to protocol with total commitment to quality.

**Mission.** The UK Veterinary Diagnostic Laboratory's primary goal is to develop, apply and utilize state-of-the-art technology and scientific knowledge to improve animal health and marketability, preserve the human-animal bond, and to help protect the public health.

**Quality Philosophy and Objectives.** Every employee of the UKVDL is committed to quality, integrity and excellence in all work completed. In order to meet our mission and achieve our vision, we must:

- Ensure client satisfaction by consistently meeting or exceeding customer requirements.
- Demonstrate competence in accordance with AAVLD Essential Requirements through the performance of high quality diagnostic testing in accordance with ISO 17025 standards and guidelines.
- Continuously improve diagnostic information and dissemination processes.
- Integrate contemporary laboratory practices throughout the laboratories.
- Ensure employee health and safety.
- Provide employees with training and tools to facilitate our quality effort.

The Laboratory's success is measured by customer satisfaction, meeting professional standards, meeting the essential American Association of Veterinary Laboratory Diagnosticians (AAVLD) Accreditation requirements and our response to service demands. These quality objectives are reviewed for continuing compliance on a recurring basis. For supporting documentation for all UKVDL extension and outreach, please refer to KAES report 2015 (Appendix Q). Other KAES reports can be furnished upon request.

## **The Ruminant Extension Veterinarian**

The Ruminant Extension Veterinarian works closely with the College of Agriculture, Food and Environment (CAFE) faculty, UKVDL faculty and clients, county extension agents, producer organizations, state livestock commodity specialists, and state and federal regulatory agencies regarding all veterinary ruminant health issues. Perhaps most important is outreach to food animal veterinarians through regular continuing education programs, newsletters, and animal health bulletins. In addition, by developing this close working relationship between practicing veterinarians and UKVDL faculty, better diagnostic work-ups on challenging diagnostic cases and complex investigations result in more definitive answers for the producers of Kentucky. The entire network of industry stakeholders, in partnership with the Extension Veterinarian, are effectively lowering morbidity and mortality rates, attaining higher rates of production, and adding more pounds sold to return profits throughout the agricultural community. The Extension Veterinarian is also involved in collaborative research projects within the University with the dairy, beef and small ruminant industries, especially those involving diagnostic veterinary medicine. The livestock disease risk and occurrence, its diagnosis, treatment, prevention and control form the core of the information disseminated from this position. New University research, governmental directives, and other stakeholder concerns are also communicated broadly for discussion and action to benefit producers throughout Kentucky.

## **The Equine Extension/Outreach Veterinarian**

The equine extension/outreach programs of the Department of Veterinary Science comprise a broad and diverse range of activities whose focus is to meet the needs of the equine industry at state, national and international levels. In today's world, the horse has become an international commodity, inclusive of live animal movements within and between countries together with the trade in equine-derived products, e.g. germplasm (semen and embryos) and plasma. The international character of the industry is well illustrated by the changing demographics in the ownership of horse farms within Kentucky, an increasing number of which are the property of non-US nationals. Accordingly, and based upon the huge significance of the horse industry to the economy of the state, it behooves the department to recognize and respond to the needs of an industry that while it is based in Kentucky, extends to other states in the US and also to other countries.

While the primary emphasis of past and current extension/outreach programs is to provide support for and meet the needs of the equine industry within Kentucky, the benefits of many of the programs is more far-reaching, extending to the industry in other states and other countries. Among the more important outreach activities are the regular continuing education programs as exemplified by hosting of international conferences, the annual UK Equine Showcase Conference and the annual Kentucky Breeders Short Course, both of which are open to veterinarians, farm managers, horse owners and breeders. Of additional importance has been a series of USDA-supported symposia on various topics from equine infectious diseases to immunology to reproduction that have been held annually since 2013 and which are aimed primarily for the benefit of equine veterinary practitioners. Additional avenues of communication with equine stakeholders include the publication of newsletters and other written animal health materials, (e.g. Bluegrass Equine Digest, Lloyd's Equine Disease Quarterly,

Equine Research & Service Report), all of which have extensive circulation lists both within and outside the state as well as internationally.

The faculty veterinarian with significant extension/outreach responsibility liaises closely with other College of Agriculture, Food and Environment faculty especially those in the UKVDL, horse owners, breeders, equine related organizations including sales and shipping companies, and state and federal regulatory agencies concerning various issues pertaining to equine health.

Among the responsibilities of the faculty equine extension/outreach veterinarian are:

- Responding to phone, e-mail inquiries from veterinarians within the state, in other states, and internationally, for information and guidance on how to deal with disease outbreak situations, resolve difficulties over meeting regulations of importing countries and to seek advice on best preventative and control strategies for these and other infectious diseases of equids. The increasing demand for this activity is a measure of how increasingly valued it has become.
- Responding to requests from practitioner groups and veterinary biologic companies to give presentations to veterinarians in various states on a range of selected equine infectious diseases.
- Responding to requests from government regulatory authorities not only in the USA, but also overseas for input in formulating their respective import policies for specific diseases, e.g. EVA, CEM, equine rhinopneumonitis, West Nile encephalitis. The volume of these requests continues to increase, confirming the need to provide such a service for regulatory authorities in other countries.
- Responding to requests from equine industry representatives and shipping companies for assistance in resolving issues concerning international movement of horses and equine germplasm from the USA to other horse breeding/racing countries. This is an ongoing activity that provides important support for the equine industry.
- Involvement in a wide range of national and international committees, especially membership of the OIE ad hoc group on international movement of horses.
- Rapporteur for the USA in providing interim and quarterly reports to the International Collating Center, Newmarket, UK, on occurrences of selected equine infectious diseases in the USA.
- Veterinary representative to TOBA on matters of equine diseases, including the provision of an annual report on behalf of the association at meetings of the International Thoroughbred Breeders Federation. Also advisor to the Jockey Club on all issues pertaining to the international movement of racehorses within and outside the USA through service on the International Movement of Horses Committee of the IFHA.

The equine extension/outreach veterinarian is also involved in collaborative research projects in the department, the majority of which relate to the development of improved diagnostic tests and more effective strategies for the prevention and control of infectious diseases of greatest economic impact on the horse industry.

## **SUMMARY OF EXTENSION PROGRAMS BY TOPIC**

### **The University of Kentucky Veterinary Diagnostic Laboratory**

#### **Bacteriology/Mycolology-Dr. Erdal Erol, Section Head; Mr. Steve Locke, Section Supervisor**

The Bacteriology/Mycolology Section of the UKVDL receives specimens to culture for the isolation and identification of potentially pathogenic bacteria and fungi from livestock, companion and other animals. The section performs susceptibility testing on isolates for the treatment of specific pathogens to safeguard the health of animals in Kentucky and beyond. This section performs cultures for *Taylorella equigenitalis* and *T. asinigenitalis* for the federal/state CEM regulatory program in equines. Other specialized cultures and testing techniques include: anaerobic culture, mycoplasma culture, mastitis culture and fluorescent antibody testing for leptospires and clostridia (blackleg). This section also performs cultures for the National Poultry Improvement Plan (NPIP) In addition, Bacteriology/Mycolology section participates in annual proficiency testing for AAVLD, NPIP salmonella, FDA Vet-LIRN salmonella and Listeria. In April 2015, the bacteriology section put a MALDI-TOF biotyper into service a cutting edge instrument used for the quick identification of microorganisms. This equipment has already significantly decreased our turn-around time on the identification of many bacteria. We are confident that this new technology will increase client satisfaction with our microbiology service offerings.

#### **Virology-Dr. Erdal Erol, Section Head; Ms. Sharon K. Ray, Section Supervisor**

The Virology section aids veterinarians and animal owners to diagnose viral infections, treat and protect their animals. Our section also works closely with UKVDL Pathology section to test for evidence of viral infections in necropsy specimens. In addition, Virology performs a high volume of regulatory tests for national sales, and for both the national and international movement of animals. The Virology section provides information to the field veterinarians and animal owners regarding sample selection, preservation, shipping procedures and interpretation of results.

#### **Molecular Diagnostics-Dr. Erdal Erol, Section Head**

The primary mission of the Molecular Diagnostic Section at the UKVDL is to provide molecular testing on the clinical specimens submitted by animal owners, veterinarians and pathologists. A number of molecular assays, in the formats of gel-based PCR, real-time PCR, multiplex gel-based PCR or multiplex real-time PCR, are being utilized because of their speed, specificity and sensitivity. This section also analyzes specimens received from the Virology and Bacteriology sections to obtain a confirmatory diagnosis. In addition, Dr. Erol provides consultations to Kentucky veterinarians and animal owners on the areas of appropriate sample collection and submission, therapeutic advice, interpretation of test results, determination of appropriate tests and differential diagnosis. The molecular biology section personnel consist of Dr. Erdal Erol, two full-time technicians and one half-time technician.

**Pathology-Dr. David Bolin, Section Head**

The UKVDL pathology section is composed of seven faculty pathologists, a staff laboratory animal pathologist, one post-doctoral scholar (pathology residents), four histology technicians, four full-time necropsy technicians, and three part-time necropsy student workers. The pathologists perform complete necropsy examinations on animals, histopathology on necropsy cases, surgical biopsies, and cytological examinations, all submitted by veterinarians, producers, and pet owners. The pathologists are fully supported by the other laboratory sections in the necropsy investigations.

As part of the comprehensive necropsy examination, additional laboratory tests are ordered by the pathologist to aid in confirming a diagnosis. The abnormal findings on necropsy are correlated with other laboratory tests, including microscopic examination of the tissues, and a comprehensive report is prepared for every pathology case. Utilizing the abundant cases submitted to the VDL and the faculty expertise, the post-doctoral scholar (DVM) is trained in veterinary anatomic pathology in a three-year program. However, with the upcoming cooperative agreement to train Lincoln Memorial University DVM students, the post-doctoral residency program is being discontinued. Visiting senior veterinary students have extern rotations, and surgical residents visit to fulfill the pathology requirement for the American College of Veterinary Surgeons. The research animal pathology service sees mostly small rodents and a variety of other species, non-human primates, and pigs. In addition to research animal work, Dr. Coyle is handling the diagnostic pathology case load for the agricultural research animals housed at the various UK farms.

**Clinical Pathology Section-Bonnie L. Decker**

The primary mission of the Clinical Pathology is to provide chemistry, hematology, endocrine, urinalysis, fluid analysis, fecal parasite exams, and other testing to animal owners, veterinarians and the agriculture community. The section also provides support and testing to UKVDL's pathologists and testing related to necropsy as well as University of Kentucky equine and animal science researchers who can submit specimens to Clinical Pathology for monitoring various chemistry, hematology and endocrine levels in their research animals. Clinical Pathology hosts 2-3 Morehead State University veterinary technician students every year to help them complete their practicum. The Clinical Pathology section completes its testing same day as receipt with a few exceptions to get information to the submitting veterinarian as soon as possible to aid in the treatment of their client's animals. The department personnel consist of 1.50 FTE. A section chief with a BS MT (ASCP) and 40 years' experience in veterinary and human diagnostic laboratory testing works full time. A part time veterinary technician with 21 years' experience occupies the half-time position in the section. Other qualified UKVDL personnel are available for backup and consultation as needed. Clinical pathology is dedicated to meeting the current and future needs of the agriculture community, companion animal community and veterinarians.

**Quality Control/Quality Assurance-Mary Harbour**

The goal of the Quality Management System (QMS) is to ensure quality of all test results and continuous improvement of all services to clients. Our design of the QMS and Quality Assurance

program is based on American Association of Veterinary Diagnostic Laboratory (AAVLD) requirements, International Standards Organization (ISO) guidelines and Organization of International Epizootics (OIE). In addition to fulfilling meeting these requirements, the UKVDL QMS helps fulfill the university's mission of improving service delivery while achieving excellent human relations (internally and externally), sound leadership, and effective communications. The Quality Assurance Section now consists of two employees, a Quality Assurance Manager and full time Quality Assistant. The requirements for maintaining the QMS are continuously being updated. The Assistant Position was created to meet the increasing more stringent AAVLD Requirements, OIE, NAHLN and federal mandates. Since 2010 UKVDL has been a part of the National Animal Health Laboratory Network (NAHLN). QA maintains UKVDL information on the NAHLN Portal. This portal provides information to NAHLN about the capacity of national laboratories in the event of a food animal outbreak. The section continues to prepare Quarterly Reports to the NAHLN and maintains the NAHLN Policies and Procedures. To maintain conformance to all requirements, the QA Manager attended Quality Assurance Committee Meeting at the annual AAVLD meeting and also attended AAVLD auditor training. The QA Manager and Assistant attended a 4 day seminar at the USDA/NVSL facility about Quality Management Systems.

The Quality Assurance Section has implemented new Quality system software. This software has improved document control, streamlined internal audits, improved equipment inventory, improved Competency and Training Assessments and improved Corrective Action investigations. Quality Assurance will continue to monitor and update policies and procedures to meet the AAVLD Requirements. Two members of the AAVLD Accreditation team are scheduled to revisit UKVDL in 2016 to assure compliance with all findings from the 2014 full Accreditation team visit.

### **Serology-Meg Steinman, Section Head**

The mission of the Serology Section is to provide accurate and timely results for both diagnostic and regulatory testing. The results generated provide veterinarians and regulatory personnel with data upon which to base their decisions. This section offers a wide variety of tests by various types of methodologies.

**Poultry**: This section participates in annual USDA audits to maintain status as an NPIP approved laboratory. Personnel from this section have attended National Poultry Improvement Plan (NPIP) approved training courses. The serology laboratory tests for antibody to Avian Influenza, for antibody to *Salmonella pullorum*, for antibody to *Mycoplasma gallisepticum*, and for *Mycoplasma synoviae*.

**Equines**: This section successfully passed USDA-APHIS audits and proficiency tests to continue to offer Equine Infectious Anemia (EIA) antibody testing and piroplasmosis testing. The serology section continues to monitor equines moving through the state stockyards for EIA antibody. All employees of this section passed the required NVSL proficiency testing for piroplasmosis testing *Babesia caballi* and *Theileria equi*. We test for antibody to Contagious Equine Metritis (CEM-CF). Serology performs antibody screening tests for *Leptospira* in equines for diagnostic and regulatory purposes.

Bovines: The serology section offers a variety of antibody tests performed on serum from bovines and other ruminant species. We offer a serum test on ruminants to determine pregnancy status, tested for antibodies to *Anaplasma marginale*, for antibody to Bluetongue virus, for EHD antibody, for antibodies to the Bovine Leukemia Virus, for Johne's (*Mycobacterium paratuberculosis*) antibodies, for Leptospira antibodies, and for antibody to *Neospora caninum*. This lab is also active in regulatory screening for antibodies to *Brucella abortus*.

Small ruminants: The serology section runs testing on small ruminants, including *Brucella melitensis* and small lentivirus virus antibody.

Canine and feline: This section offers a variety of tests that can be run on dogs and cats. We offer a rapid test to determine pregnancy, detect antibodies to histoplasmosis and blastomyces, *Brucella canis* testing, Lyme Disease, Canine heartworm, Ehrlichia and Anaplasma. Feline testing offered includes FIP testing, FeLV, FIV, and Toxoplasmosis. This is just a subset of the tests available for these species.

Porcine: This section also offers regulatory testing for swine including Pseudorabies and *Brucella* antibodies.

**Toxicology**-Dr. Cynthia L. Gaskill, Section Head

The primary mission of the UKVDL Toxicology section is to provide toxicological diagnostic testing capabilities and consultations to Kentucky veterinarians, UKVDL pathologists, county extension agents, livestock producers, pet owners, state officials, and others. A large variety of toxicological tests are available, including analyses for metals and minerals; organic compounds including a multitude of pesticides, drugs and other chemicals; biological toxicants such as plant, insect, bacterial and fungal toxins; and numerous other toxicants. Tests are performed in tissues, gastrointestinal contents, biological fluids, baits, feeds, forages, water, soil, and many other substances. Consultation services include assistance with therapeutic advice, differential diagnoses, residue considerations, toxicological risk assessments, determination of appropriate tests, appropriate sample collection and submission recommendations, interpretation of analytical results, and other general toxicological information. Alerts, updates and toxicological information regarding cases of poisoning or contaminated animal feeds are also provided to the State Veterinarian's office. The Toxicology section personnel consist of Cynthia Gaskill, DVM PhD ABVT, clinical veterinary toxicologist and section head; Lori Smith, PhD, senior analytical chemist; Michelle Helm, BSc, technician; Kyle Francis, MSc, research analyst; Joseph Johnson, BSc, research analyst; Boying Liang, PhD, post-doctoral scholar, and student interns.

**Epidemiology**-Dr. Jacqueline L. Smith, Section Head

The UKVDL Epidemiology section plans and conducts veterinary epidemiological research experiments that lead to the earliest detection of animal disease outbreaks, with our primary mission being to provide animal disease surveillance, and assist veterinarians in the investigation of serious and unusual disease problems. Daily monitoring of finalized necropsy and lab testing data streams provide near real-time disease cluster analysis. The section also conducts data acquisition and statistical analysis in support of the Office of the State Veterinarian, USDA, and to provide animal health situational awareness for industry stakeholders. Many of these studies

lead to publication in peer-reviewed journals and lay publications. Disease reporting to the state veterinarian (reportable infectious diseases, disease of interest, emergency disease notification) is performed weekly for the typical endemic diseases, while unusual or emergency disease situations are reported immediately. In-depth field investigations to better characterize disease outbreaks for identifying causative etiology through the collection of diagnostic specimens and recommending diagnostic testing are provided free of charge to any farm/producer in the state of Kentucky at the request of a local client with the approval of the UKVDL administration.

### **The Ruminant Extension Veterinarian**

Master Cattlemen (2011-Present). The Master Cattleman program is the flagship educational program for Kentucky cattle producers. It incorporates all phases of beef production into an intensive educational effort challenging Kentucky beef producers to be competitive and successful. Participants receive 40 hours of classroom instruction divided equally among 10 topic areas: Management Skills for the Beef Business; Forage Production and Utilization; Nutrition for Optimum Production; Environmental Stewardship; Industry Issues; Genetics for the Beef Herd; Managing Reproduction; Herd Health; Understanding the End Product; and Marketing and Profitability. Further programs that build on the basics learned in Master Cattlemen include Advanced Master cattlemen, Cow College, and the Master Cattlemen Hands-On Field Day. Dr. Arnold completely developed and presented the herd health portion of the Master Cattlemen Program throughout the state; 7 locations in 2011, 6 venues in 2012, 7 in 2013, 1 in 2014 and 10 in 2015. These programs directly affect numerous farming enterprises by emphasizing practical, proven techniques to improve overall health and productivity through disease prevention and control at the cow/calf level of production

Master Stocker (2012-Present). Kentucky Beef Network (KBN), the University of Kentucky Beef Integrated Resource Management (IRM) team, and Cooperative Extension deliver this educational program that focuses specifically on the stocker and backgrounding segments of the industry. The program consists of multiple evening classroom sessions including the following topic areas: Introduction/Operation Demographics; Managing Economic Risk; Animal Health/Development of Health Protocol/ Assessing Treatment Success; Nutritional Considerations for Stocker cattle; Backgrounding Facilities/Site selection; Managing forages for stocker operations; Marketing/Retained ownership; Animal disposal/Welfare/Transportation; and Industry Challenges/Producer Input Session. Dr. Arnold completely developed and delivered the program 6 times in 2012 and twice in 2014.

Master Grazer (2011-Present). The Master Grazer program focuses on how to improve grazing management practices to extend the grazing season to 300 days. The Kentucky Grazing School is a two-day intensive grazing school that introduces key grazing concepts and provides hands-on learning opportunities. Classroom sessions and hands-on activities focus on increasing forage and livestock production, reducing feeding costs, and improving farm revenue. Dr. Arnold developed a “Forage Disorders” health module that she delivered three times in 2012, once in 2013 and 2014, and twice in 2015.

MILK Counts: Somatic Cell Count Reduction Workshop (2011). Market changes within the dairy industry renewed interest in lowering bulk tank somatic cell counts (SCC), particularly in the southeastern US states where the highest SCC in the country are observed. During the winter of 2011, a series of SCC reduction workshops were conducted across the state working with county extension agents and milk cooperative field people with over 100 producers attending these workshops. Dr. Jeffrey Bewley (UK Dairy Extension Specialist) and Dr. Arnold provided all technical content and delivery of information for these 7 meetings.

Cow Signals: Happy Cows, Happy Farmers, More Milk (2014-2015). This lecture series was presented in several dairy areas in Kentucky modeled on the popular training program from the Netherlands known as “Cow Signals”. The basic concept is to teach dairy farmers how to improve animal health and production by better understanding how to read the signals that cows give us. This program teaches keys to reduce stress and prevent disease. These meetings were conducted across the state working with county extension agents and milk cooperative field people with over 50 producers attending these workshops. Dr. Jeffrey Bewley and Dr. Arnold provided all technical content and delivery of information for these 3 meetings.

Small Ruminant Grazing Conference Co-Coordinator and FAMACHA trainer (2011-2014). The small ruminant industry (sheep and goat production) in Kentucky continues to grow and mature. An annual small ruminant conference was developed that was modeled on the successful Kentucky Grazing Conference for beef producers. It is rotated throughout the state in four regions to reach producers in all areas and is offered on Saturday to better meet the schedules of the small farmers. Continuing education credits are offered to any veterinarians in attendance. A producer panel was added to the program in 2012 in order to provide a forum for information exchange, share experiences, and network with other stakeholders. FAMACHA training on live animals for detection of anemia due to parasites is offered by a certified veterinarian at the end of each conference. Dr. Arnold served in this position annually for 4 years

Northern Kentucky (2012) and Eastern Kentucky (2015) Beef Reproductive Efficiency Programs. Dr. Arnold launched the new extension program “Improving Reproductive Efficiency in Beef Cattle in Northern KY” with Drs. Les Anderson, Jeff Lehmkuhler, and Darrh Bullock in 2012. A similar Eastern Kentucky IRM program was started in 2015. Each of these programs is designed to educate farmers on the importance of reproductive performance and the various factors that impact reproductive efficiency. UK Extension Specialists, Extension Agents, and KBN staff members work with demonstration herds to help identify reproductive efficiencies on farms in both Northern and Eastern Kentucky by establishing a calving window, narrowing a calving window, or utilizing artificial insemination depending on the specific needs of the farm. Field days are utilized to demonstrate the impacts of these management changes. The herd health portion is an in-depth examination of vaccination protocols, abortion diagnostics, and pre- and post- calving problems. This is a unique program of classroom sessions, field day demonstrations, and on-farm case studies. The herd health portion was delivered twice in 2012, twice in 2013 and once in 2015. Dr. Arnold participated in Field Day activities in 2013.

Pasture to Plate (2015-Present). Pasture to Plate is designed to help Kentucky producers capitalize on their increased investment through the finishing phase of production, through an increase in the knowledge base on all aspects of cattle production from genetics to final product. Three demonstration sites are being utilized for education and observation use (UK’s Princeton

Farm, KBN's Eden Shale Farm, and the Morgan County Extension Farm). Cattle finished at each site represent a wide variety showing the difference in purebred, crossbred, and dairy influenced cattle of different breeds and quality. Sites host four educational schools that cover receiving protocols, health, nutrition, environmental compliance, and live cattle evaluation and end with a taste evaluation of the different types of carcasses. This is a new demonstration/educational effort to increase the knowledge base of producers on all aspects of cattle production from genetics to consumers. The overall goal of this program is for cattlemen to learn and experience all phases of feeder calf growth from feeder through the eating experience. Dr. Arnold developed and presented the health modules for all sessions.

Cattle Handling and Care Certification (2014-Present). This educational program is designed to inform producers of best management practices for handling cattle and providing for their general well-being, while keeping farmers safe and continuing to supply healthy beef to consumers. The course is being offered through county extension programs utilizing a video developed by the University of Kentucky that includes educational information from Kentucky specialists and the National Cattleman's Beef Association Beef Quality Assurance Program. Upon successful completion of the course participants are certified in Cattle Handling & Care and receive a farm sign and other beneficial materials. This educational program was developed collaboratively with Dr. Phil Prater (Morehead State University). Drs. Arnold and Prater provided all veterinary content for the video on cattle handling and care in 2013 and early 2014. This included the management practices of dehorning, castration, vaccinations, treatment of eye disorders, and humane euthanasia. (For a list of extension presentations, please refer to Appendix L)

### **The Equine Extension/Outreach Veterinarian**

A wide range of topics (activities) make up the equine extension/outreach programs provided by the department. Although some of these activities can be categorized as providing support for stakeholders in the equine industry in Kentucky, others extend to horse industries in other states/countries. Among the most important is being able to provide instruction and advice on disease-related issues, and when and where indicated, to undertake investigation of disease outbreaks including visits to an infected premises with a view to establishing the cause of a problem and how it can best be contained and prevented in the future. Whereas the majority of requests for assistance under such circumstances come from managers and veterinary practitioners in Kentucky, others come from out of state. The program is committed to providing assistance, regardless of whether the problem is within the state or not.

**Publications.** The equine extension/outreach programs in the department are responsible for putting out a number of publications that are directed at increasing awareness and understanding of various health-related and other problems of horses among the horse-owning community. The goal is to provide a regular continuous source of educational materials that hopefully will lead to progressive enhancement of the health and well-being of the horse, regardless of the purpose for which it may be used. Although primarily targeted at equine stakeholders in Kentucky, nearly all the publications have both national and international exposure. The publications include the Lloyd's Equine Disease Quarterly, which has an extensive circulation within the state but also nationally and internationally, being received by over 100 countries. The continued success of the Quarterly is reflected in the fact that the equine industries in some countries translate each

issue into the language of the country before distributing the Quarterly among their membership. A second publication is the Bluegrass Equine Digest that is produced jointly by the Gluck Center and the University of Kentucky Ag Equine Programs. The Digest is a monthly electronic newsletter dedicated to providing up-to-date information on equine research conducted at the University of Kentucky's College of Agriculture, Food and Environment. It is published by TheHorse.com. The newsletter includes coverage not only of items on equine research but also tips on horse care, property care and business advice together with articles on current "hot" topics. It has a growing circulation within Kentucky but also nationally and internationally. A third publication that is produced by the Gluck Center is the UK Gluck Equine Research and Service Report. Published twice a year both in hard copy and online, the Report provides updates on all the research studies undertaken at the Gluck Center. Hard copies are mailed to stakeholders and each report is also posted online. It has some national and international exposure. A fourth and separate Research Report is also produced annually at the Gluck Center. This covers grant awards, scientific publications, books/book chapters by faculty and research personnel at the Center. It is posted online; whereas circulation is mostly within the state it also has some national exposure. (Please refer to Appendix I for publications)

**Presentations at Local, National and International Meetings.** An essential component of the department's equine extension/outreach program is the need to promote awareness of and provide information on health and welfare issues with reference to the horse. Because of the global nature of the horse industry today, this entails giving presentations before scientific audiences, meetings of veterinary practitioners and equine stakeholders both within Kentucky, but also nationally and internationally. It is incumbent on the department to reach out to these different but inter-related constituencies, more especially because of the continued growth in the industry of individuals with a defined interest in the horse as a recreational animal. Aside from giving presentations on equine health-related topics at formal scientific, veterinary or industry meetings, full advantage has been taken over the years to contribute to the monthly National Industry Conference Calls whenever there is an opportunity to address a specific disease topic or other issue of considered significance to the industry. (For presentations, please refer to Appendix L)

**Organizing Conferences and Seminars.** An integral and very important aspect of the equine extension/outreach program of the department is the organization and hosting of conferences and seminars that are primarily but not in every instance, entirely aimed at equine industry stakeholders inclusive of veterinary practitioners. Three of the conferences/seminars are held annually. These include the UKVDL-Gluck Center Seminar Series, the UK Equine Showcase Conference and the Kentucky Breeders Short Course. Additionally, a series of one-day symposia supported by a grant from the USDA have been held annually on a number of topics relating to the grant that is entitled "Identification of genetic factors responsible for establishment of equine arteritis virus carrier state in stallions." These symposia are scheduled to conclude in 2018. Aside from the fore-going, the equine extension/outreach program has also been responsible for organizing and hosting three regional/national scientific conferences/workshops, one the 66<sup>th</sup> Annual Midwestern Conference of Parasitologists in 2014, the second an Equine Protozoal Myeloencephalitis Workshop also in 2014, and the third, the 34<sup>th</sup> Annual Meeting of the Midwest Association of Veterinary Pathologists in 2015. Aside from the

foregoing, the equine extension/outreach program also organized a series of one-day mini-symposia between 2011 and 2014. Among the symposia topics were neurological diseases, enteric infections, endocrine and genetic disorders and racetrack breakdowns. Not to be overlooked is the fact that the department also took responsibility for the organization and hosting of two major scientific conferences since 2011; the first was the 9<sup>th</sup> International Conference on Equine Infectious Diseases in Lexington in 2012 and the second, the 8<sup>th</sup> International Symposium on Equine Embryo Transfer in Vancouver, Canada, also in 2012. It was also the principal organizer of the 10<sup>th</sup> International Conference on Equine Infectious Diseases that was held in Buenos Aires, Argentina in Spring 2016.

**Extension/Outreach Training Sessions.** Although relatively infrequent, there have been requests for participation in training sessions on specific equine diseases. The equine extension/outreach faculty member is recognized by the USDA as a subject matter expert on a number of equine diseases including but not exclusive of contagious equine metritis, equine herpesvirus 1 and 4 related diseases, equine viral arteritis and West Nile encephalitis. On occasion, this entails participation in specific workshops/training sessions to promote greater awareness and understanding of those diseases and how best to diagnose, prevent and control them.

**Assorted Requests for Assistance from State Veterinarians, Members of Academia, and Veterinary Biological Companies.** For many years, the department's equine extension/outreach program has supported and responded to requests for assistance from federal and state regulatory officials, personnel usually veterinarians in biological and pharmaceutical companies, and members of academia. While many of such requests pertain to aspects of specific equine infectious diseases, a significant number of others seek informational materials on diseases that can be shared with stakeholders in the equine industry, be they horse owners, breeders, trainers or veterinarians. Responding to such requests is considered an integral part of the outreach activities of the equine extension/outreach program whether they apply to the horse industry in Kentucky or in other states.

**Equine Disease Reports to the International Collating Centre, Animal Health Trust, Newmarket, UK.** For many years, an important part of the department's equine extension/outreach program is the continued monitoring and surveillance of equine disease events in the US and promptly reporting these to the International Collating Centre, Newmarket, UK as interim reports. Additionally, countries participating in this international surveillance program of selected equine diseases are also required to furnish quarterly reports to the Collating Centre of the disease situation in their country to include but not exclusive of OIE Listed equine diseases. The function of disease surveillance and reporting is of considerable importance to the US horse industry in that it can significantly influence the import requirements that countries can impose on the movement of live horses or trade in equine germplasm from the US, when major disease outbreaks occur in this country. (Appendix R)

**Requests for Assistance from Overseas Members of the Horse Industry.** In light of the global nature of the horse industry and the pre-eminent reputation of the Gluck Center in the field of equine infectious diseases, it is not surprising that requests for assistance are received from overseas stakeholders of that industry from time to time. The department's equine extension/outreach program is willing to entertain such requests since the individuals involved

may have direct or indirect interests in the industry in Kentucky or elsewhere in the US. In the majority of instances, the issues in question are regulatory in nature and have to do with problems encountered in exporting horses to the US or with disparity between diagnostic test results between the exporting and importing country. While the value of responding to such requests might be questioned since they do not directly relate to the domestic US equine population, this viewpoint is considered short-sighted. Such interactions with industry stakeholders in other countries are very important if we are to continue to be successful in maintaining our resident US equine population free from certain transboundary diseases of major potential economic impact.

**Requests for Assistance from National Animal Health Authorities of Overseas Countries.** The equine extension/outreach veterinarian at the Gluck Center receives requests from time to time from National Animal Health Authorities in different countries for guidance on their import policies with respect to specific equine infectious diseases. From the viewpoint of facilitation of international trade, such requests provide an opportunity for rationalizing and harmonizing unduly restrictive policies while at the same time aiding in the promotion of equine exports from the US. These activities are regarded as an extension of the department's domestic outreach programs insofar as they may indirectly benefit the domestic equine industry hopefully by increasing trade in live animals and animal products e.g. germplasm.

**Requests for Assistance from Overseas Shipping Companies.** The international movements of horses and trade in equine germplasm is made possible by ensuring that there is minimal associated risk of the spread of various equine infectious diseases. Problems arise from time to time however, with respect to the shipment of horses of questionable health status to certain countries. Over the years, this has resulted in requests for assistance from different shipping companies in resolving such problems. Mindful of the need to facilitate international trade and of the economic importance of the annual export trade in horses from the US, every effort is made to assist with these requests. This activity is considered an outreach function of the department's extension program as it relates to the global nature of the equine industry.

**Activities with Respect to the World Organization of Animal Health (OIE).** The equine extension/outreach veterinarian has for many years been designated by the OIE as an international reference specialist on two important equine diseases, equine viral arteritis and equine herpesvirus 1 and 4 related diseases. Aside from discharging the range of responsibilities that these designations entail, this faculty member was appointed to an OIE ad hoc group on International Horse Movement for Equestrian Sport in 2012. Under the aegis of the OIE, this group was entrusted with the task of developing the High Health-High Performance concept whose goal was to circumvent or overcome significant impediments to the movement of horses internationally for the purpose of competing in top caliber equestrian and racing events. Support for this initiative has been forthcoming from the International Equestrian Federation (FEI) and the International Federation of Horseracing Authorities (IFHA). The department has supported these activities since their goal is to benefit the equine sports and racing industries both in the US and abroad. As such they represent a component of the department's extension/outreach program.

**Advising Function to the Thoroughbred Owners and Breeders Association and to The Jockey Club.** The equine extension/outreach veterinarian in the Gluck Center has for some years served upon request as Veterinary Advisor to the Thoroughbred Owners and Breeders Association and The Jockey Club. Both industry groups wish to be kept updated on matters of equine infectious disease events for the US and abroad. This entails presenting reports at conference of the International Thoroughbred Breeders Federation and at meetings of the International Movement of Horses Committee that take place annually under the aegis of the International Federation of Horseracing Authorities. Both activities can be considered overseas extensions of the department's equine extension/outreach program. (Appendix S)

## **SUMMARY OF COUNTY-LEVEL PROGRAMS**

### **The Ruminant Extension Veterinarian**

Numerous county-level programs have been developed and delivered in the last 5 years with topics chosen by the county to address the specific needs within the area. Dr. Arnold has provided programs in 39 counties in KY from 2011-2015. Specifically, 13 programs in 2011, 14 in 2012, 10 in 2013, 20 in 2014, and 13 in 2015. A variety of topics were addressed from basic herd health management (vaccination and deworming protocols) to specific disease considerations (e.g. pinkeye, anaplasmosis, mastitis) to regulatory issues (animal disease traceability and the veterinary feed directive). Programs were developed specifically for the needs expressed by the Agriculture Extension Agent in that county. Ample time was allotted at the end of each program for question and answer sessions about any topics of interest to that specific group of producers.

Agriculture Extension Agents in all counties throughout the state had access to live "Lync" sessions which were informational programs delivered via the internet. Topics included Basic Herd Health Practices, Nitrate Toxicity (delivered during a severe drought), Animal Disease Traceability, and an Introduction to Health for new agents. These sessions were also recorded for later viewing if unable to watch live.

### **The Equine Extension/Outreach Veterinarian**

Although individualized county-based programs have not specifically been provided within the past five years, all of the department's equine extension/outreach publications such as the Bluegrass Equine Digest and Lloyd's Equine Disease Quarterly together with various newsletters are made available to every county within the state. Whereas much of the content of these publications is infectious disease oriented, coverage is also given to aspects of horse management and care. Agricultural Extension Agents throughout the state are encouraged to contact the UKVDL or the Gluck Center if they encounter specific equine health problems on which they require assistance. An additional benefit to equine stakeholders throughout the state is the opportunity to attend the annual UK Equine Showcase Conference and/or the Kentucky Breeders Short Course.

## **SUMMARY OF YOUTH PROGRAMS**

### **The Ruminant Extension Veterinarian**

Youth programs are generally held under the auspices of 4-H in the area of extension. However, all programs allow participation of youth and most meetings generally have several in attendance. Dr. Arnold delivered a Meat Quality Assurance lecture to a county level 4-H group in 2013. Multiple school groups visit the UKVDL each year and each receives a virtual tour of the facility and an overview of what the lab contributes to the animal health industry in KY. Although not technically “youth”, there have been two young dairy producer programs held at the UKVDL as well.

### **The Equine Extension/Outreach Veterinarian**

Youth programs are for the most part held under the auspices of 4-H as part of the College of Agriculture, Food and Environment’s overall extension program. That notwithstanding, multiple school groups, mostly from within Kentucky but some from out-of-state, visit the Gluck Center every year; the number averages 30-40 each year. Groups are given a guided tour of the facilities and an overview of the range and nature of the different research studies in progress, all of which have relevance to health-related problems in the horse.

## **SUMMARY OF COMMUNITY-BASED PROGRAMS AND TRAINING**

### **The Ruminant Extension Veterinarian**

#### Continuing Education Series for Food Animal Veterinarians (2011-Present)

Since 2011, the Ruminant Extension Veterinarian has offered a state-wide professional continuing education program for veterinarians. The teaching team includes UK Faculty members at the UK Veterinary Diagnostic Laboratory, UK Extension Specialists, distinguished lecturers sponsored by large pharmaceutical companies, faculty members from other land grant institutions, and current KY State and APHIS Federal Veterinary personnel. The curriculum is approved by the Kentucky Board of Veterinary Medical Examiners and is offered at no cost to food animal veterinary practitioners three times per year in order to meet the 15 continuing education credits required annually by law. Gifts from major pharmaceutical companies have almost completely covered the costs of this endeavor. The program began in 2011 with two meetings offered in March and August for a total of 13 continuing education (CE) hours available. In addition, a bovine liver biopsy wet lab for veterinarians was offered after classroom instruction. In 2012, a total of 22 hours of professional continuing education credits were offered specifically in livestock veterinary medicine from the teaching team. Fifteen hours were offered at the UKVDL and seven were presented at the Breathitt Veterinary Center in Hopkinsville to reach the underserved veterinary community in Western Kentucky. In 2013, 21 total CE hours were available. In 2014, 23 hours were available and attendance reached over 50 food animal veterinarians at each Lexington meeting. In 2015, a total of 24 hours of CE was available and an attendance of 80 was recorded for the summer Lexington meeting. Particular instruction on the current disease problems at the laboratories, new government regulations such as Animal Disease Traceability and FDA drug residue testing, emerging diseases and areas of concern for KY livestock, and federal accreditation training are the focus of the educational

programs. Proceedings of the meetings are made available on the web in order to save paper and reduce cost.

Concurrent with development of the continuing education series, a database of food animal veterinarians was created. This allows rapid communication in the event of an animal emergency situation or disease outbreak. This database is continually updated with email addresses and cell phone numbers to enhance the speed of communication and currently has approximately 400 veterinarians. Emphasis is placed on gathering email addresses to replace mail whenever possible.

#### Multi-Species Grazing Pasture Walk (2012-Present)

The goal of this walk is to show a low stress, low cost grazing operation that improves the environment and production, while being consistently profitable. The topics include: Soil Health, Stocking Rate, Drought and Winter forage management, Top third grazing, Grazing and Recovery periods, Stockpiling forage vs. buying hay, Birthing date for forage animal balance, Multi-species grazing, Forage disorders, Criteria for livestock selection, New circle Corral; Mowing cost, timing and benefits; Forage Options: grazing corn, sudex, rye and ryegrass for weed control, tall fescue, orchardgrass, bromegrass, bermuda, clovers, chicory, turnips, lespedeza, buckwheat, sunflowers, soil health cocktail mix, and others. The content is presented as an interactive discussion, with professional grazers and specialists. Dr. Arnold has participated in this walk since 2012 and serves as the specialist for animal health questions.

#### Other Community-based programs

A large percentage of the ruminant extension veterinarian's time is devoted to managing cases at the UK Veterinary Diagnostic Laboratory including recording in-depth histories, determining necessary tests, participating in complex disease investigations, and interpretation and communication of results to veterinarians and producers. Dr. Arnold worked collaboratively with other faculty and staff at the UKVDL to develop diagnostic test panels to test for multiple organisms from one sample. A neonatal calf diarrhea panel which is a PCR test for 5 of the major pathogens that cause diarrhea in the first 21 days of life and a bovine respiratory disease panel have been implemented. Plans for abortion panels and others are in the works.

Dr. Arnold has been invited to speak at numerous events outside of the cooperative extension service over the last 5 years. Examples include speaking for feed distributor meetings (Southern States, Burkmann Feeds), Veterinary meetings (KVMA, Buffalo Trace), Sheep and Goat Meetings (including FAMACHA training), and Dairy Meetings (Southeast Quality Milk Initiative, Milking School).

#### **The Equine Extension/Outreach Veterinarian**

For at least the past five years, the Department of Veterinary Science has offered a monthly diagnostic and research seminar series. The purpose is to provide a state-wide professional continuing education program for veterinarians. Featured speakers are drawn from a wide variety of backgrounds; some are faculty members of the UKVDL and the Gluck Center, whereas others are faculty members from other academic institutions or countries, state or federal animal health regulators and UK Extension Specialists. The curriculum is pre-approved

by the Kentucky Board of Veterinary Medical Examiners for continuing education credit for veterinarians. While the majority of seminars are hosted by the UKVDL, some are held at the Gluck Center. The series is filmed by The Horse and posted on their website as “Horse Courses.” These videos are available to everybody, equine stakeholders, veterinarians and anyone with an interest in the health and welfare of the horse.

Additional to the fore-going, the equine extension/outreach program organized a series of one-day mini symposia for veterinary practitioners between 2011 and 2014 on topics of considered significance to the breeding and performance horse industry. These included neurologic diseases, enteric diseases, endocrine and genetic diseases and racetrack breakdowns.

## **OUTREACH/SERVICE PUBLICATIONS AND VIDEOS**

### **The Ruminant Extension Veterinarian**

Dr. Arnold has written 13 and collaborated on 4 peer-reviewed Extension Factsheets for the university. She has written extensively on the subject of Forage-related disorders in cattle such as nitrate poisoning and fescue toxicosis. Dr. Phil Prater (Morehead State University) and Dr. Arnold provided all veterinary content for the UK video on cattle handling and care in 2013 and early 2014. This included the management practices of dehorning, castration, vaccinations, treatment of eye disorders, and humane euthanasia.

### **The Equine Extension/Outreach Veterinarian**

The equine extension/outreach veterinarian has written a series of non-refereed publications and book chapters on a number of disease topics and other issues. These range from the importance of disease monitoring and surveillance to international trade and the disease risks inherent in animal movements, to emerging and re-emerging diseases.

# NUMBER OF CLIENTELE SERVED

## The University of Kentucky Veterinary Diagnostic Laboratory

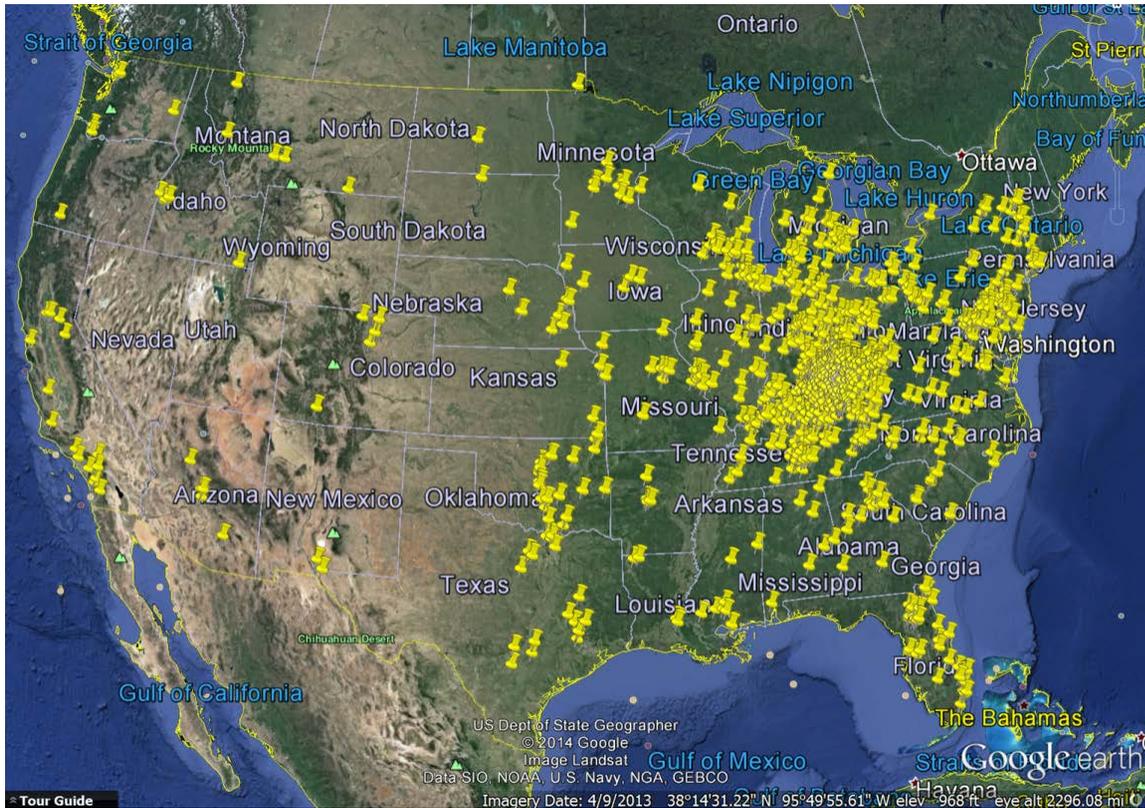


Figure 8. Locations of clients submitting accessions to UKVDL, 2010-2015

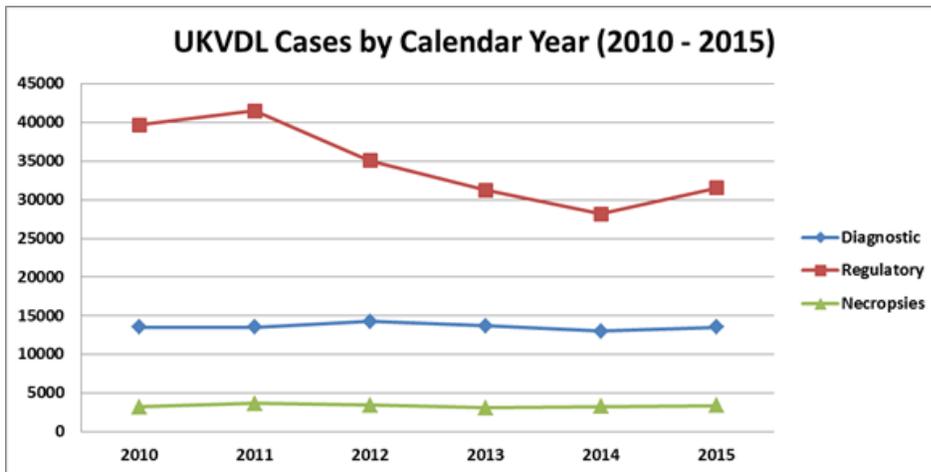


Figure 9. UKVDL Cases by Calendar Year

### **The Ruminant Extension Veterinarian**

Although the number of clientele is difficult to ascertain, at least 8630 face-to-face contacts have been made through the position of Ruminant Extension Veterinarian. An unknown number of people have listened to her presentations or read her publications that cannot be accurately quantified.

### **The Equine Extension/Outreach Veterinarian**

It is very difficult to determine the number of clientele served by the different and wide array of activities falling under the department's equine extension and outreach program. The number of persons who have read the publications, papers or in some way have been part of the various activities both domestic and overseas cannot even be estimated. Metrics are available however, for many of the conferences, symposia, seminars and for the circulation lists of the different publications.

## **DESCRIPTION AND EVALUATION OF OUTREACH, SERVICE AND ENGAGEMENT ACTIVITIES**

### **The University of Kentucky Veterinary Diagnostic Laboratory**

***Outreach.*** The UKVDL continues to build and enhance outreach programs around Kentucky. The Kentucky VetLabNet listserv continues to distribute animal health bulletins and has grown to a list to over 2000 UKVDL clients, scientists, farmers and stakeholders. The UKVDL Director and other faculty continue to contribute articles quarterly to the KVMA journal and the Kentucky Cattleman Association *Cow Country News*. The UKVDL Director, faculty and staff continue to deliver lectures at scientific and lay meetings and participate in the monthly Equine Diagnostic-Research Seminar Series at the UKVDL since 2006. These seminars are filmed by *The Horse magazine*, edited and made available as Webinars.

### **The Ruminant Extension Veterinarian**

Farm visits are an important element in extension because it engages the specialists with a producer in a problem that needs to be solved. Dr. Arnold has made 18 farm visits, usually at the request of either the local veterinarian or the county extension agent, to investigate and offer solutions to complex health-related disorders. Each visit is comprehensive in nature and is followed up with a written summary and a list of suggested management adjustments. Contact is maintained with the producer as needed as well as their local veterinarian as they try to reach their desired outcome.

A large part of outreach involves articles in lay publications. Dr. Arnold has written extensively for this audience on a wide variety of topics from 2011 to 2015. She has written 24 articles for the UK extension publication "KY Dairy Notes" (8 in 2011, 7 in 2012, 6 in 2013 and 3 in 2014). She has written 49 articles for the UK extension publication "Off the Hoof", a monthly electronic newsletter for cattle producers (8 in 2011, 10 in 2012, 12 in 2013, 10 in 2014 and 9 in 2015). She has contributed articles to the Goat Producer's Newsletter (6 articles), the KY Veterinary Medical Association Publication (6 articles), and the UK Grazing News (1 article). She has collaborated with the UK College of Agriculture Communication Department to issue 9 press

releases. Dr. Arnold has contributed significantly to industry magazine publications as well. She writes a regular health column for Cow Country News (CCN), the publication of the KY Cattlemen's Association (7 in 2012, 11 in 2013, 11 in 2014 and 12 in 2015). Her articles have been extensively reprinted including 7 times in Progressive Dairyman, a national dairy publication.

Although radio spots and interviews have declined in popularity in recent years, the extension service used to run educational spots on a variety of agriculture-related topics. Dr. Arnold made 6 of these recordings that reached an unknown number of listeners. More recently, she has participated in radio interviews on hot topics of interest such as what to do with livestock in extremely cold weather conditions. Another minor form of outreach includes working the UKVDL booth at the KY Cattlemen's Convention and UK Ag Roundup.

### **The Equine Extension/Outreach Veterinarian**

As previously indicated (line item 71) the range of outreach, service and engagement activities of the equine extension/outreach veterinarian is both significant and considerable. Over the years, clearly the most important of these is being available to veterinarians and equine stakeholders in Kentucky and also in other states who when confronted with a health-related problem in their horse(s), are in need of advice and guidance on how best to respond to such an event, be of an infectious nature or not. Depending on the particular disease in question and the severity of the event, a field investigation of the problem may be warranted. Some investigations may only require one premises visit, others several visits before an outbreak is finally brought under control. Aside from contacts and interactions with practicing veterinarians in Kentucky, there is a continuing need to provide support and advice to veterinarians, horse owners, breeders and equine stakeholders in general in other states and even in countries overseas in consideration of the global nature of the industry.

A significant component of the department's equine extension program is publications that enable those involved in the equine industry to become better educated on how best to manage and care for the horse(s) in their possession. The Bluegrass Equine Digest, Lloyd's Equine Disease Quarterly and the UK Gluck Equine Research and Service Report attest to the commitment of the program to provide educational materials on diseases and other issues of importance to the horse industry on a continuous, regular basis. An essential adjunct to the publication function of the outreach program is that of organizing seminars, symposia and conferences on topics of perceived significance to the health and well-being of the horse. This perhaps is best exemplified by the UKVDL-Gluck seminar series, annual UK Equine Showcase Conference and the Kentucky Breeders Short Course. Such outreach activities are additional to the publications published by the equine extension/outreach veterinarian.

Aside from the department's outreach service and engagement activities within Kentucky, there are a wide range of other activities at both national and international levels that confirm the global nature of the horse industry. Many of these have to do with elimination of unjustified impediments to international movement of horses that is critical to the economic well-being of the industry. These involve members of the industry overseas, national veterinary authorities and shipping agents. Of special mention have been the activities of the equine extension/outreach veterinarian on the ad hoc group on International Horse Movement for

Equestrian Sports since 2012. This has resulted in development of the High Health High Performance concept that has evolved into a global initiative under the aegis of the World Organization for Animal Health. Irrespective of whether the outreach/service activities of the program benefit the horse industry in Kentucky, in other states or internationally, each and all relate to the ultimate goal of focusing the program's efforts on improving the standard of management and care of the horse and in so doing, enhancing the health and well-being of the species and ensuring the continued economic vitality of the industry.

### **The Gluck Equine Research Center**

The department has also developed a number of outreach programs which address the college's Strategic Plan of "Build and nurture relationships with the people of the commonwealth and across the world" and UK's goal of "Leverage leading-edge technology, scholarship, and research in innovative ways to advance the public good and to foster the development of citizen-scholars." Our efforts in this regard include the development and publication of equine-related lay articles, press releases, public events, seminar series (Research and Diagnostic Seminars, UK Equine Showcase), webinars, and social media (Facebook, Twitter). These activities are summarized below.

#### **Publications**

##### Research Report (2011-2016)

*The Research Report covers Gluck Center awards and grants and scientific publications, including books/chapters in books and refereed journal articles. Circulation: 500, mostly nationally with some international exposure.*

##### Bluegrass Equine Digest (2011- 2016)

*The Bluegrass Equine Digest is a monthly electronic newsletter dedicated to providing up-to-date information on equine research from the University of Kentucky's College of Agriculture, Food and Environment. The Bluegrass Equine Digest brings together several entities as content is provided by the UK Ag Equine Programs and the Gluck Equine Research Center and published by TheHorse.com. Circulation: 32,000, internationally to 89 countries. (Appendix T)*

##### UK Gluck Equine Research & Service Report (2011-2016)

*The report is produced by the Gluck Equine Research Foundation and the Department of Veterinary Science. It is published twice a year on behalf of all equine researchers and veterinarians and others in the horse industry who are committed to the continued improvements in equine research and technology. Circulation: ~4,000, mostly nationally with some international exposure*

##### Equine Disease Quarterly (2011-2016)

*This quarterly publication is funded by the Underwriters at Lloyd's, Circulation: 17,000 internationally. (Appendix U)*

## **Special Events – Sponsor or Organizer**

### **Equine Research Hall of Fame**

*The Hall of Fame is located at the University of Kentucky's Maxwell H. Gluck Equine Research Center in Lexington, Kentucky. The Hall of Fame was established to honor those individuals who have dedicated their careers to expanding the body of knowledge in some field of equine science through their contributions to basic or applied research. The Hall of Fame is a lasting tribute to those internationally renowned for their endeavors as equine researchers. In 2012 and 2014 we inducted 6 new members*

**Gluck Center 25<sup>th</sup> Anniversary Celebration** September 25, 2012, 85 attendees including current and former faculty, staff, students, Gluck Foundation board members, area veterinary partners and major donors.

**9<sup>th</sup> International Equine Infectious Diseases Conference (IEIDC IV)**, October 21-26, 2012, Lexington, KY, 382 attendees from 29 countries. *This international meeting was organized and conducted by infectious disease faculty of the Department of Veterinary Science.*

### **Lloyd's of London Reception**

December 20, 2012, UK Main Building, Lexmark Room, Attendees: 12

*A small reception was held with UK President Eli Capilouto in celebration of Lloyd's of London donating more than \$1 million to the Department of Veterinary Science for the Equine Disease Quarterly.*

**Equine Reproduction Facilities Grand Opening**, February 2, 2012, 90 attendees

*This was the subsequent event to the groundbreaking ceremony. Many of the same individuals were invited, which included all the individual donors that made the facility possible.*

**Dr. Walter W. Zent Mare Reproductive Health Facility Renaming and Dedication**, October 15, 2013, 122 attendees

## **Mini Symposiums and Seminars**

### **Equine Showcase and KY Breeders' Short Course 2010-2016**

*Held annually in January, the Showcase and Short Course has attracted more than 400 unique attendees since its initial installment in 2010. The courses are offered by the UK Ag Equine Programs and the Gluck Equine Research Center. The showcase highlights the university's current equine programs and relevant industry findings while the short course is an in-depth program on equine reproduction and horse management issues.*

### **UK Department of Veterinary Science Equine Diagnostic and Research Seminar Series**

*The seminar series is held monthly at the UK Veterinary Diagnostic Laboratory and features speakers from universities and companies across the United States. It provides continuing education credit to veterinarians. Faculty, graduate students and horse owners and managers also frequently attend. The attendance ranges from 50-90 each month. The series is also filmed by The Horse and posted on their website as "Horse Courses." These videos are subsequently viewed by an international audience. In 2015, UK videos were viewed 19,154 times. (Appendix V)*

Mary Passenger Memorial Lecture on Equine Medicine and Surgery

*The memorial lecture honors Dr. Mary J. Passenger, one of the first female veterinarians in the area who died at age 28 in a work-related accident. The lectures occur every two years to coincide with the Equine Research Hall of Fame banquet. The presenters are that year's Hall of Fame Inductees. The lectures are held at the Gluck Center, and are co-sponsored by Hagyard Equine Medical Institute. ~75 attendees.*

Advances in Equine Neurological Diseases, December 6, 2011 at Embassy Suites, 126 attendees

*This mini symposium provided practitioners with the most up-to-date information about equine neurological diseases. Experts addressed the latest information on EPM, Wobbler Syndrome and the neurological form of herpes virus.*

Lawsonia intracellularis and Equine Proliferative Enteropathy Symposium, November 15, 2012

at UK Veterinary Diagnostic Laboratory, 87 attendees

*The symposium offered an in depth look at the latest information on the bacterium and the disease it causes in horses.*

Endocrine and Genetic Disorders Symposium, November 21, 2013 at UK Veterinary Diagnostic Laboratory, 44 attendees

*This symposium featured the latest information on recognizing genetic disorders in horses and the diagnosis and treatment of equine metabolic syndrome and cushing's disease.*

EVA grant symposiums (2013 – 2016)

*This one-day symposium at Embassy Suites each year is funded by a USDA-NIFA-AFRI grant titled "Identification of genetic factors responsible for establishment of equine arteritis virus carrier state in stallions." Dr. Udeni Balasuriya is the principal investigator of the grant.*

The 66<sup>th</sup> Annual Midwestern Conference of Parasitologists, June 5-7, 2014, A two-day conference was held at the Gluck Equine Research Center with 52 attendees.

Racetrack Breakdown Symposium, October 20, 2014 at UK Veterinary Diagnostic Laboratory, 68 attendees

*This symposium offered the latest information and data on racetrack breakdowns and injuries from multiple perspectives in the industry.*

EPM Workshop October 23-24, 2014, 45 attendees

*This two-day workshop was at Rood and Riddle Equine Hospital's conference center was "sponsored" by the Gluck Equine Research Foundation.*

Midwest Association of Veterinary Pathologists, August 6-7, 2015, 64 attendees

*This two-day conference was at the E.S. Good Barn and welcomed veterinary pathologists in all species of animals from several states. Conference and program chairs were Dr. Laura Kennedy and Dr. Uneeda Bryant.*

### **Advertisements**

#### *One-time advertisements and advertorials*

Kentucky Quarter Horse Association race meet

Lane Report Advertorial

The Blood-Horse Stallion Register

Keeneland Magazine

Kentucky Horse Council Directory

Thoroughbred Times TODAY for Short Course

Louisville Magazine Advertorial

Equestrian Magazine Advertorial

American Horse Council Directory

#### *Multiple-run advertisements*

Kentucky Thoroughbred Farm Managers' Club Directory (2011 - 2016)

### **Press Releases**

2011 - 2

2012 - 8

2013 - 5

2014 - 6

2015 - 3

2016 - 1

### **Social Media**

Facebook: Gluck Equine Research Center (*started in August 2010*)

Had 982 likes as of June 2016; Had 1,075 likes as of Sept. 2016)

Twitter: @UKGluckCenter (*started in February 2011*)

Had 566 followers as of June 2016; Had 599 followers as of Sept. 2016)

## **EVIDENCE OF PUBLIC SERVICE**

### **The Ruminant Extension Veterinarian**

Dr. Arnold has worked with the Office of the State Veterinarian (OSV) on numerous occasions over the past few years. She served on the KY Livestock Care Committee in 2011 and assisted in drafting the language for the KY standard of care. She has also been an active participant in state regulatory efforts involving Animal Disease Traceability (ADT), trichomoniasis testing of bulls, and detection of persistently infected BVD cattle. She is currently serving on the State Veterinarian's BVD Task Force.

Dr. Arnold has served on the KY Farm Bureau Small Ruminant Advisory Committee and the Beef Cattle Advisory Committee. These groups are responsible for reviewing and revising farm policy initiatives annually. She has also participated in a KY Beef Quality Assurance (BQA) advisory meeting when it was being updated.

### **The Equine Extension/Outreach Veterinarian**

The department's equine extension/outreach veterinarian has worked very closely with the Kentucky State Veterinarian of the day and the Equine Programs Manager since 1984. He has

served as an information resource person for a range of equine diseases including but not exclusive of Equine Viral Arteritis, Contagious Equine Metritis, Equine Herpesvirus 1 and 4 related diseases and West Nile virus infection. The same person has and currently is serving on a diverse number of national and international committees. In addition, he has been a member of the Board of Directors, National Institute for Animal Agriculture as well as the AAEP Task Force on Development of a National Equine Health Plan, together with serving as chair, panelist or presenter at the 9<sup>th</sup> and 10<sup>th</sup> International Conferences on Equine Infectious Diseases as well as having served on the International Organizing Committee for both conferences.

### **Morris Library Outreach Activities**

As part of the Department of Veterinary Science, the Morris Library provides information services to patrons outside of the University community. These library patrons are predominantly stakeholders such as veterinary practitioners and horse farm personnel. However, the Library also provides information services to researchers at other institutions, high school students, journalists and members of the general public. Numbers for reference questions received and document deliveries for each of the review years are provided.

Reference questions	Document Deliveries
2011 – 41	2011 – 193
2012 – 66	2012 – 194
2013 – 45	2013 – 193
2014 – 43	2014 – 322
2015 – 63	2015 – 313

**QUALITY ENHANCEMENT PLAN AND UNIVERSITY DIVERSITY PLAN.** The University of Kentucky's Quality Enhancement Plan (QEP) has a primary emphasis on improving student communication skills (e.g., writing, public speaking, etc.). To help accomplish this major goal, the Veterinary Science graduate program requires that all graduate students enroll in VS 770, Department Seminar and provide one of the regularly-scheduled seminars during the semester that they are registered for this course. Students in the Master's program are required to enroll in VS 770 at least once, while students in the PhD program must enroll at least twice in VS 770. Last year, we also initiated a 3-Minute Thesis (3-MT) competition to recognize academic achievement and outstanding leadership and professionalism of graduate students in the Department of Veterinary Science. All post-qualifying PhD students participate by putting together one slide and giving an oral, 3-minute synopsis of their research. The purpose of VS 770 and the 3-MT competition is to improve our students' ability to organize and present material on their research projects in a clear, concise and coherent manner. These activities help prepare students when presenting at regional, national and international scientific meetings and when they graduate from our program and are pursuing a career in their field of study.

**UNIVERSITY OF KENTUCKY DIVERSITY PLAN.** The University of Kentucky is committed to diversity as a vital characteristic of an optimal education and workplace. The University maintains a firm conviction that it must strengthen the diversity of its communities, support free expression, reasoned discourse and diversity of ideas; and take into account a wide range of considerations, including but not limited to, ethnicity, race, disability, and sex, when

making personnel and policy decisions. To increase diversity within the student, faculty, and staff populations, the Department of Veterinary Science established objectives in its 2009-2014 strategic plan to (1) maintain gender/ethnic/social diversity across faculty, staff and student groups. To accomplish these objectives, the department implemented the following strategies: targeted recruitment of student, faculty, and staff as a significant activity; and recruitment from diverse.

# Appendices

**Department of Veterinary Science  
Implementation Plan FY 2015 Annual Report**

(Implementation Plan developed from August 2011 Department of Veterinary Science  
Program Review which focused on the Gluck Equine Research Center)

**Action item #1: Advance the mission and goals of the Gluck Equine Research Center (GERC).**

**Assessment Method:** Monitor all measures of faculty productivity.

**Results:** For the reporting period, faculty produced 9 books or chapters, 92 refereed publications, 16 non-refereed publications, and 71 abstracts. The faculty gave 95 presentations and hosted 1 national, and 2 international meetings during this period. Additionally, a total of 11 accessions were made by GERC Veterinary Science faculty to GenBank. In the past year, faculty members submitted 29 extramural grants (8 Federal and 21 non-Federal) with a combined requested budget of \$7.4 million. A total of 9 grants were funded representing \$790,040 in total awards for FY 2015.

**Analysis of results and reflection:** The number of refereed publications, non-refereed publications and abstracts increased over the preceding period (13.6%, 100.0% and 22.4%, respectively). This increase is a continuing trend in the program. Presentations at meetings increased (102.1%) over the reporting period. This increase in non-refereed publications represents a greater emphasis by faculty on these types of publications. The increase in abstracts can be accounted for by the occurrence of major international conferences during the reporting period. The total number of grants submitted by faculty declined in FY 2015 to 29 (as compared to 38 in FY 2014). Total federal funds received in FY 2015 amounted to \$738,046 (2 projects funded) and \$356,071 (7 projects) was received from non-federal funds. This represents a decline in both Federal and non-federal extramural funding compared to FY 2014. This is due in part to both fewer submissions and a lower success rate (55.3% in 2014 vs 24.1% in 2015).

**Improvement actions:** Faculty and graduate students will be encouraged to publish their work in refereed journals. Faculty and graduate students will also be encouraged to continue to submit abstracts and present their findings at scientific meetings. Faculty will continue to be encouraged to seek extramural funding for their research and to apply for federal funds when possible.

**Action item #2: Increase collaboration between University of Kentucky Veterinary Diagnostic Laboratory (UKVDL) and GERC Veterinary Science faculty.**

**Assessment Method:** An increase in the number of collaborative projects, co-authorship on papers, and meetings sponsored by both units.

**Results:** Veterinary Science faculty from the GERC and UKVDL faculty continue to collaborate on a number of research projects involving infectious disease and equine reproduction. This has resulted in five co-authored refereed publications. UKVDL faculty members continue to serve on graduate student committees and participate in regional meetings hosted by GERC Veterinary Science faculty. A seminar program established in 2006, is held at the UKVDL and is jointly sponsored and hosted by the Veterinary Science Department and UKVDL.

**Analysis of results and reflection:** Significant collaborations between UKVDL faculty and GERC Veterinary Science faculty are in progress. UKVDL faculty provides important expertise to graduate student programs, as evidenced by their participation as committee members on graduate students who recently completed their programs.

**Improvement actions:** Faculty at both centers will be encouraged to enter into collaborative efforts, whenever possible. Any impediments to this effort will be identified and reduced.

**Action item #3: Improve communications between the GERC Veterinary Science Department and the equine industry and stakeholders.**

**Assessment Method:** Increase in outreach activities including press releases, lay publications, and web presence.

**Results:** The Department now produces a number of lay publications that are distributed to horse owners and veterinarians. These include the Bluegrass Equine Digest with more than 29,500 subscribers, the Equine Disease Quarterly (EDQ) with 16,500 subscribers, and the University of Kentucky Gluck Equine Research and Service report with more than 3,000 subscribers. The GERC has also established a Facebook page (GluckEquineResearchCenter) and a presence on Twitter (@UKGluckCenter). Veterinary Science faculty also participated in the organization and presentations at the UK Equine Showcase and Kentucky Breeders' Short Course, as well as the Department of Veterinary Science's Equine Diagnostic and Research Seminar Series presented at the UKVDL.

**Analysis of results and reflection:** Our program continues to make significant strides towards increasing our presence on the web and through various outreach efforts. As noted above, these efforts involve tens of thousands of direct subscribers and likely many more that receive the information via others. Our Research and Diagnostic seminar series is recorded by TheHorse.com and made available for web viewing by thousands of persons worldwide. Many of these seminars have attracted over 1,000 views according to metrics collected by TheHorse.com.

**Improvement actions:** The Veterinary Science Department will continue to grow our presence online and through our various publications. The content and appearance of our departmental webpage is currently being updated.

**Action item #4: Strengthen the graduate program by enhancing industry and academic partnerships and by increasing the competitiveness of graduate assistantships/fellowships.**

**Assessment Method:** Increase in graduate funding support from industry partners to support students with veterinary training. Increase in assistantship stipends. A benchmark of at least 1/4 of PhD students in the program should have a veterinary degree and board certification.

**Results:** Since 2011, an agreement with Pfizer/Zoetis Animal Health has provided graduate fellowships to support two students with veterinary degrees and board certification in a discipline of veterinary medicine. A dual-degree program leading to the PhD was established with the University of Copenhagen. The program is targeted for students with a veterinary degree who are board eligible or board certified in a veterinary discipline. Effective August 2014, stipends were increased for all department-supported research assistantships. Base stipends of \$18,000 (non-veterinary degree) and \$23,000 (veterinary degree) were increased to \$20,000 and \$26,000, respectively. A 2-year milestone was added that provides a further increase to \$23,000 and \$29,000, respectively. Since 2013, seven of 28 students in the PhD program had a veterinary degree and board certification in a veterinary discipline.

**Analysis of results and reflection:** New partnerships with industry (Pfizer/ Zoetis) and academia (University of Copenhagen) along with increased research assistantship stipends have enhanced our ability to recruit top-quality students to the program, including students with veterinary training and board certification.

**Improvement actions:** The Veterinary Science Department Chair and Director of Graduate Studies will continue to seek additional graduate fellowships from industry

partners. Graduate faculty will be encouraged to identify and recruit students with veterinary training and board certification (or board eligibility).

**Action item #5: Increase faculty involvement in graduate and undergraduate teaching efforts within the College.**

**Assessment Method:** Faculty participation in undergraduate and graduate courses.

**Results:** At the time of the program review (2010), most of the faculty members in the GERC Veterinary Science Department had 100% research appointments and relatively few faculty (3) were regularly involved in undergraduate instruction. Since then, additional faculty members have become actively engaged in teaching both Veterinary Science and other courses. In addition to VS 350 (Introductory Anatomy, Physiology, and Animal Hygiene) and VS 351 (Principles of Animal Hygiene and Disease Control) that have been offered for several decades, GERC faculty have developed several new courses. These include VS 597 (Special Course: Equine Infectious Diseases in the Genomic Era), VS 777 (Current Literature in Equine Reproduction), VS 500 (Advanced Equine Reproduction), and VS 307 (Genetics of Horses). As well, Veterinary Science faculty members have provided guest lectures in a number of courses including EQM 351 (Equine Health and Disease) and EQM 399 (Equine Science and Management Internship).

**Analysis of results and reflection:** GERC Veterinary Science faculty participation in undergraduate and graduate teaching efforts is increasing. Over the past several years, this has been well demonstrated by the creation of four new courses within the VS series.

**Improvement actions:** A teaching task force was formed in 2014 by Dean Cox to further examine Veterinary Science faculty participation in undergraduate and graduate courses. This group identified several new prospective VS courses that could contribute to degree program curricula.

**Action Item #6: Hold faculty accountable to productivity standards established for the program.**

**Assessment Method:** Compare individual faculty productivity measures (see Action Item #1) to Department expectations.

**Results:** The Departmental expectation for refereed publications is 3 per Research FTE. This goal was met or exceeded by 85% of the faculty. Similarly, the expectation for Abstracts was an average of 1 per faculty with Research FTE and 80% of the faculty meeting or exceeding that goal. Seventy-five percent of the faculty met or exceeded the goal of 1 presentation per year.

**Analysis of results and reflection:** Overall, the majority of the faculty (as identified by research FTE) met the minimum goals for publications, abstracts and presentations. The average number of publications over a longer interval than a single year is probably warranted.

**Improvement actions:** Faculty will continue to be encouraged to submit at least 3 papers and 1 abstract per year. Faculty will also be encouraged to attend and present at one meeting per year. Averaging of publications over a three year period will be monitored to provide a better measure of faculty productivity.

**Action item #7: Increase faculty participation in the Equine Initiative (now Ag Equine Programs).**

**Assessment Method:** Determine faculty participation in Ag Equine Programs

**Results:** Since the time of the review a number of faculty are currently involved in various aspects of the Ag Equine Programs, including two GERC Veterinary Science faculty serving as Directors of the program. This also includes participation in various committees, as well as participation in the regular Equine Forum meetings.

**Analysis of results and reflection:** While some faculty are actively participating in these programs, the majority of faculty are not (based on recent attendance numbers at Equine Forum meetings, for example).

**Improvement actions:** The Veterinary Science Department will encourage more faculty participation in these efforts, stressing faculty participation at departmental meetings.

**Action item #8: Upgrade GERC Veterinary Science lab animal and large animal (equine) facilities.**

**Assessment Method:** Evaluate the research capabilities and quality of animal care of the lab animal and equine facilities.

**Results:** Significant improvements to the large animal facilities at the North Farm have been completed. This includes the operation of a fully functional BSL2 facility and enhancements to equine reproduction facilities including improvements to both mare and stallion research areas using funds provided by the equine industry. An effort is currently underway to develop an equine performance laboratory on the North Farm

which will include installation of a high speed equine treadmill in a new purpose-built building. Renovations to adjoining pastures and an adjacent barn are also underway. It is expected that this new unit will be functional in Spring 2016.

**Analysis of results and reflection:** While some aspects of the large animal facility have been improved, others still require attention.

**Improvement actions:** A strategic plan for the North Farm and other large animal facilities is being developed. A new budget model for the equine facilities has been developed and submitted to the college for approval.

**Action item #9: Develop a strategic plan for recruitment of new faculty and development of research programs.**

**Assessment Method:** Use a strategic plan for faculty recruitment

**Results:** The Departmental committee structure has recently been reorganized and included the establishment of an Advisory and Planning Committee (APC) that replaces the current Advisory and Strategic Planning committee. This standing committee will take on the responsibility of planning for the next faculty hires and work with the chair on developing strategies and plans for equipment, facilities, and other departmental resources needed for faculty recruitment..

**Analysis of results and reflection:** While recent and ongoing financial constraints have limited the opportunities for faculty recruitment over the past several years, the recruitment of three new faculty within the next two years is planned.

**Improvement actions:** The APC committee will be charged with developing a strategic plan for faculty recruitment.



## Dual/Double PhD Degree Agreement

Between

**University of Copenhagen**, Faculty of Health Sciences,  
Located at Blegdamsvej 3b, 2200 Copenhagen N, Denmark  
Represented by Vice Dean for Research at Faculty of Health and Medical Sciences, Professor Birthe Høgh

and

**University of Kentucky**, M.H. Gluck Equine Research Center, Department of Veterinary Science  
Located at 108 Gluck Equine Research Center, Lexington, KY 40546-0099  
Represented by Associate Dean of Research, College of Agriculture, Dr. Nancy Cox

Considering the legal references for organizing university studies in both countries, i.e.:

For The Faculty of Health and Medical Sciences, University of Copenhagen

- Ministerial Order amending the Ministerial Order on the PhD Programme at the Universities (PhD order), 28 May 2010, which stipulates the regulations regarding double and joint PhD degrees
- The Ministerial Order on the PhD programme of 14 January 2008
- General rules and guidelines for the PhD programme at the University of Copenhagen, 21 May 2008

For Gluck Equine Research Center, University of Kentucky

- ... University of Kentucky Graduate School Bulletin, parts 1 and 2, January 2013
- ... Guidelines for the Dual Graduate Program Leading to the Doctor of Philosophy (PhD) Degree: University of Kentucky Department of Veterinary Science (VESC) and University of Copenhagen Faculty of Life Sciences (LIFE)

*The following measures have been agreed upon.*

### Article 1

The Faculty of Health and Medical Sciences, University of Copenhagen

and

Department of Veterinary Science, Gluck Equine Research Center, University of Kentucky

named hereinafter "the institutions" decide to organize a dual/double PhD degree program in accordance with the aims of this agreement.

## ***Chapter I: Administrative procedures and financing***

### Article 2

The admission to PhD studies must follow the rules and regulations in force in University of Kentucky.

The requirements of the University of Kentucky Veterinary Science Graduate Program must be fulfilled. This includes, but is not limited to

- Coursework
- Research
- Qualifying exam
- Dissertation.

Courses offered by the University of Copenhagen and approved by the University of Kentucky may be used to satisfy up to 25% of the 36 credit hour pre-qualifying examination residency requirement.

### Article 3

The student will be enrolled and employed at University of Kentucky and will spend a minimum of two years studying at Gluck Equine Research Center and a minimum of 6 months up to two years as a visiting student at the Department of Large Animal Sciences, University of Copenhagen.

The student will have a supervisor at both institutions. The main supervisor will be from University of Kentucky. The supervisor from University of Copenhagen will need to have an adjunct appointment at the University of Kentucky, Department of Veterinary Science, and be appointed to the graduate faculty.

During the stay at University of Kentucky the student will pay full-time tuition (plus fees) that covers 9-15 credits hours of coursework per semester until the student passes the qualifying exam. During the stay at the University of Copenhagen prior to passing the qualifying exam, the student may request a leave of absence from UK and not pay tuition to University of Kentucky during this time. Post-qualifying, the student will pay tuition to the University of Kentucky for a 2 credit hour Dissertation Residency Credit course VS-767 each fall and spring semester through to the defense (this requirement will also apply during time spent at University of Copenhagen). During stay at University of Copenhagen, the student will pay a tuition fee of 40.000 DDK per year. The tuition fees cover expenses for tuition, PhD courses at the institutions and abroad travel expenses (to a limited extent), administration and expenses for the defense of the dissertation. These expenses will be covered by the institution at which the student is staying at the given time. Students must maintain a minimum cumulative GPA of 3.00; receipt of a grade of C or lower in two or more courses may result in termination from the program. Credit-bearing experiences that receive a grade of C or lower cannot be counted toward the degree.

During his/her stay in the United States, international students are responsible for the International Student Services fee and for the costs of health and other insurance in line with current regulations in the University of Kentucky and as may be varied from time to time by the University of Kentucky. Students must comply with all Health Regulations currently in force in the University of Kentucky.

### Article 4

The normal duration of the PhD program is four years. The minimum requirements are that the student spends no less time than two years at University of Kentucky and no less than six months at University of Copenhagen. Ordinarily, the student will spend two years at each institution. The distribution of the

student's time at each institution must be approved by both institutions. The duration of the study period can be extended after approval of both institutions.

The research activity and the conduct of the dissertation will be carried out in both institutions, during alternative successive stay periods in both institutions, determined by both supervisors with the approval of the PhD student.

## ***Chapter 2: Scientific Terms***

### Article 5

The research works are carried out under the responsibility of both supervisors.

Both supervisors commit themselves to fully exercise their duties as supervisors for the student in accordance to the rules and regulations in each institution.

### Article 6

Each institution will arrange a dissertation defense according to its regulations. The committee evaluating the dissertation will be empanelled by common agreement with the persons responsible for the PhD program at each institution, in compliance with all legal measures and regulations regarding institutions.

The dissertation supervisor from each institution will be present at both defenses.

### Article 7

The dissertation is written in English.

The PhD dissertation defense is performed in English, in compliance with each institution's general regulations.

### Article 8

The student will need to fulfill all requirements of the University of Kentucky Veterinary Science Graduate Program and be required to take courses corresponding to 30 ECTS points. It is the responsibility of University of Copenhagen to calculate the ECTS value of courses taken outside University of Copenhagen.

### Article 9

The PhD dissertation defense will be presented in unique public sessions at each institution

In compliance with the regulation in each country, after the dissertation defense and under favorable approval of the respective committees,

the title of PhD in Health and Medical Sciences will be awarded by The University of Copenhagen

and the title of PhD in Veterinary Science will be awarded by the University of Kentucky,

and this by means of two separate diplomas.

Each committee will perform its review independently. Both committees must approve in order for both degrees to be awarded. The award of the University of Kentucky degree requires the approval of the

University of Kentucky committee. The award of the University of Copenhagen degree requires the approval of the University of Copenhagen committee.

The PhD diplomas will explicitly mention, if applicable, the grade awarded by the student in compliance with rules and regulations in force in each country.

A report of the public defense will be produced in English. This report will mention that the dissertation has been prepared in the framework of a double PhD degree.

### ***Chapter 3: Intellectual Property Rights***

#### Article 10

Any rights to results and inventions made by University of Copenhagen's supervisor within the scope of the PhD Project shall belong to University of Copenhagen pursuant to the Danish Act on Inventions at Public Research Institutions from time to time in force, provided that the provisions of the Act are met. Any agreement on the assignment of rights shall be negotiated with the management of University of Copenhagen and may only concern rights within the Field described in the PhD Project.

#### Article 11

Any rights to results and inventions made by University of Kentucky's supervisor within the scope of the PhD Project shall belong to University of Kentucky. Any agreement on the assignment of rights shall be negotiated with the management of University of Kentucky and may only concern rights within the Field described in the PhD Project.

#### Article 12

Any rights to results and inventions made by the PhD Student within the scope of the PhD Project shall belong to University of Kentucky pursuant to the Code of Federal Regulations Patents, Trademarks, and Copyrights from time to time in force, provided that the provisions of the Act are met and provided the PhD student is employed at the University of Kentucky. Any agreement on the assignment of rights shall be negotiated with the management of University of Kentucky and may only concern rights within the Field described in the PhD Project.

Any rights to results and inventions made by the PhD Student within the scope of the PhD Project described during the student's stay at University of Copenhagen shall be disclosed to the TT office of the University.

Rights to all such results and inventions, copyrightable materials, computer software, tangible research property, and trademarks conceived, invented, authored, or reduced to practice by the PhD-student, either (i) jointly with employees of University of Copenhagen, in the performance of the research defined under the Research Project or (ii) solely or jointly with others in the performance of the research defined under the Research Project with significant use of University of Copenhagen administered funds or University of Copenhagen facilities will be jointly and equally owned by the University of Copenhagen and University of Kentucky.

#### Article 12a

Where the parties have jointly generated results or inventions, the associated rights shall accrue to them jointly in proportion to each Parties intellectual contribution, unless otherwise agreed by the parties and unless the provisions of article 12 apply.

#### Article 12b

When the PhD Project has been completed, each university shall be entitled to use its own knowledge freely within any scientific area where the university might want to carry on research. This means that the university may further develop the results of the PhD Project without limitation, to any extent and within any scientific area, regardless of whether the parties' research results have been assigned or licensed in whole or in part.

#### Article 13

Results and empirical data, including inventions and other rights, that do not fall within the scope of this PhD Project shall belong to the Party producing them. This shall also apply in the event that the Danish Act on Inventions at Public Research Institutions does not apply.

### ***Chapter 3: Final measures***

#### Article 14

The student will respect all rules concerning PhD studies that are in force in the institutions. In particular, he/she will comply with all rules concerning the registration, description, and reproduction of the PhD dissertation.

The protection of the subject of the dissertation as well as the publication, the exploitation and the protection of the results of the research work of the student in both institutions are covered by the legislation in force in each country and institution.

The student commits himself/herself to respect these rules and regulations.

When required, the intellectual property rights can be detailed in specific documents.

#### Article 15

Both institutions, via the supervisors involved, commit themselves to communicate mutually all information and documentation useful to the settlement of the present joint PhD dissertation.

### ***Chapter 4: Validity***

#### Article 16

The present agreement is valid from the date of last signature of the representatives of both institutions and will be valid for five years. Provided, however, both parties acknowledge that the University of Kentucky's accreditation is from the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC), and that its ability to award any new dual program degree is strictly contingent upon SACSCOC approval. The University of Kentucky shall promptly submit a description of this proposed program to SACSCOC and shall keep the University of Copenhagen apprised of the status of that application. The parties acknowledge that the approval process requires a minimum of six months. Both parties commit to cooperate to satisfy any SACSCOC requirements.

The University of Kentucky is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award doctor of philosophy degrees. The University of Copenhagen is not accredited by SACS Commission on Colleges and the accreditation of the University of Kentucky does not extend to or include the University of Copenhagen or its students.

Further, although the University of Kentucky agrees to accept certain course work from the University of Copenhagen to be applied toward an award from the University of Kentucky, that course work may not be accepted by other colleges or universities in transfer, even if it appears on a transcript from the University of Kentucky. The decision to accept course work in transfer from any institution is made by the institution considering the acceptance of credits or course work. The agreement shall be reviewed, evaluated, and adjusted if necessary every five years. The possibility and the terms of a renewal of the agreement will be discussed by the representatives of the two universities no less than six months prior to the natural termination of the current agreement. If neither party wishes to terminate or amend the agreement, it will be extended for an additional five year term.

The agreement may be terminated, at the end of the academic year in progress, by either party, by official, written notification duly signed by the appropriate officer of the notifying party. This written notification to the other institution must be delivered before the end of October preceding the beginning of the next academic year. In case of termination, any students enrolled under the agreement will be allowed to finish their degree under the conditions set forth in this agreement.

#### Article 17

The person in charge of the administrative part of the dual PhD dissertation is:

For The Faculty of Health and Medical Sciences, University of Copenhagen:

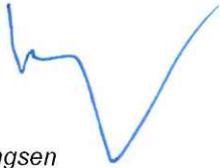
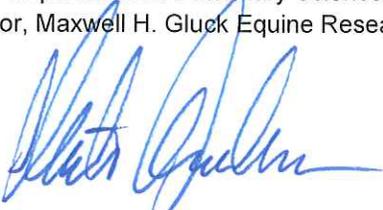
Ms. Tina Lewis, Head of Research and Business Relations, Faculty of Health Sciences, Panum Institute, room 33.4.10, Nørre Alle 20, DK-2200 Copenhagen N, Denmark. Email: [tina.lewis@sund.ku.dk](mailto:tina.lewis@sund.ku.dk)

For Gluck Equine Research Center, University of Kentucky:

Mats H.T. Troedsson, Professor and Chair, Department of Veterinary Science, and Director, Maxwell H. Gluck Equine Research Center, University of Kentucky, 108 Gluck Equine Research Center, Lexington, KY 40546-0099, USA. Email: [M.Troedsson@uky.edu](mailto:M.Troedsson@uky.edu)

Article 18

The present agreement is made in *three* originals.

<p>Copenhagen, on the .....</p> <p>For University of Copenhagen</p> <p>Rector</p>  <p>Ralf Hemmingsen</p>	<p>Lexington, on the <u>13 November 2013</u></p> <p>For Gluck Equine Research Center, University of Kentucky</p> <p>Chair, Department of Veterinary Science, and Director, Maxwell H. Gluck Equine Research Center</p>  <p>Dr. Mats H.T. Troedsson</p>
<p>The Head of the Graduate School of Health and Medical Sciences,</p>  <p>Professor Nils Billestrup</p>	<p>The Dean of the Graduate School,</p>  <p>Dr. Jeannine Blackwell</p>
<p>The Head of Department for Large Animal Sciences</p>  <p>Hans Henrik Dietz</p>	<p>The Associate Provost for International Programs,</p>  <p>Dr. Susan Carvalho</p>
	<p>Associate Dean for Research, College of Agriculture, Food and Environment,</p>  <p>Dr. Nancy M. Cox</p>

Examined for Form & Legality  
Office of Legal Counsel  
University of Kentucky

By:   
Attorney at Law

## COOPERATIVE AGREEMENT

between

*The Department of Veterinary Science  
College of Agriculture, Food and the Environment, University of Kentucky*

and

*The College of Veterinary Medicine  
Lincoln Memorial University*

This Cooperative Agreement (the "Agreement") is made and entered into on this the 4<sup>th</sup> day of March, 2014 by and between Lincoln Memorial University ("LMU"), a private university located in Harrogate, Tennessee, and the University of Kentucky, College of Agriculture Food and Environment (the "CAFE"), a public university located in Lexington, Kentucky.

### WITNESSETH

**WHEREAS**, LMU is launching a new College of Veterinary Medicine for the advancement of veterinary sciences in the Appalachian region and beyond, and has proposed to collaborate with the Department of Veterinary Science at the University of Kentucky (the "UKDVS") through which the UKDVS will provide services for training of their veterinary students and fulfilling the mutual mission in veterinary research;

**WHEREAS**, many areas in Kentucky, particularly Eastern Kentucky, and throughout Appalachia are underserved with regard to veterinary care, for both domestic and food animals and both LMU and the CAFE seek to promote access to post graduate veterinary education for students from Kentucky and Appalachia;

**WHEREAS**, advancement of veterinary research is central to the mission of both the UKDVS and LMU, with the UKDVS focused on equine basic and applied research that meets the needs of Kentucky and with international reach.

**WHEREAS**, LMU is an emerging private institution developing a record of impact in health professions, with a commitment to expand those efforts to the education of Doctors of Veterinary Medicine ("DVM");

**WHEREAS**, the Maxwell H. Gluck Equine Research Center ("GERC") in the UKDVS is a nationally and internationally recognized center for equine research with notable expertise and reputation for quality and productivity;

**WHEREAS**, LMU proposes to establish an innovative distributive model of veterinary education, which relies on collaboration with highly qualified off-campus practitioners and clinicians;

**WHEREAS**, LMU's financial and recruiting plans will not compete with, but will supplement, long-standing, highly-valued Kentucky partnerships with Auburn University and Tuskegee University for Kentucky residents seeking a veterinary education;

**WHEREAS**, the UKDVS seeks innovative partnerships to sustain its service to Kentucky stakeholders and expand its capacity and level of excellence in equine research; and

**WHEREAS**, LMU and the CAFE desire to work together to accomplish the following shared objectives:

- Expanding access to veterinary education for students from Kentucky and throughout Appalachia, a subset of whom are expected to return to practice in underserved areas;
- Promoting public access to animal health care services in Appalachia;
- Providing DVM candidates at LMU with experience in a world class research center.
- Expanding capacity and infrastructure in the UKDVS, including equipment and staff and the associated infrastructure; and
- Developing innovative models for integration of education, research and service through collaboration of LMU and CAFE faculty and staff.

**NOW, THEREFORE**, in consideration of the mutual covenants and promises set forth herein, the receipt and sufficiency of which are acknowledged, LMU and the CAFE mutually agree as follows:

**1. Obligations of the UKDVS:**

- 1.1 The UKDVS will provide LMU with priority access, subject to UKDVS's programmatic needs, for all research assets at the UKDVS funded by or provided under this Agreement.
- 1.2 UKDVS will serve as the major source of research expertise for the LMU College of Veterinary Medicine. As such the faculty will;
  - 1.21 Supervise LMU student research projects in their laboratories as part of 1) an elective rotation, or 2) programs such as the Merial summer research scholarship program; and
  - 1.22 Assist with and review student research project proposals, train students in proper research methods, and evaluate research reports and publications. More specifically:

- 1.22.1 Students will deliver case presentations at seminars with LMU faculty present at the GERC or through video conferencing.
  - 1.22.2 The research and seminar quality will be graded by LMU faculty in consultation with the UKDVS supervising faculty.
  - 1.22.3 LMU faculty and staff will record grades and manage any other student information. The course offering, academic credit, and all student recordkeeping will be the responsibility of LMU.
  - 1.22.4 The numbers of students and schedules will be determined by mutual agreement depending upon level of student interest, nature of the research projects, and availability of faculty.
- 1.3 The UKDVS faculty will also provide research leadership and mentoring (especially for junior faculty). LMU and UKDVS will provide access to their respective laboratories, animals, and infrastructure to facilitate collaboration by mutual agreement.
- 1.31 A mentoring program will be developed, reasonably acceptable to both parties, with a UKDVS faculty member being appointed to an LMU member who makes a request. All requests for mentors will be sought to be accommodated within the semester made, but may be subject to availability of certain disciplines and the mentoring program plan agreed to by the parties.
  - 1.32 The mentor is expected to develop collaborative research projects if suitable, be available to discuss the progress of LMU faculty research development, and serve as an advisory resource.
- 1.4 Faculty and students at LMU are invited to participate in weekly research seminars and dissertation seminars at the GERC.

**2. Obligations of LMU**

- 2.1 In consideration for the use of the UKDVS facilities, research leadership, and the services provided by UKDVS faculty and staff, LMU shall make a monetary investment on the following schedule:

2014-2015	\$100,000
2015-2016	\$200,000
2016-2017	\$300,000
2017-2018	\$500,000
2018-2019	\$500,000 Possible renewal of agreement

- 2.2 LMU will be invoiced for all payments due under this Agreement on a quarterly basis with payment due 30 days after the invoice.
- 2.3 LMU shall maintain general liability insurance for itself, agents, officers and employees in the amounts of not less than One Million Dollars (\$1,000,000.00) per claim and Three Million Dollars (\$3,000,000.00) aggregate per policy year, or such other minimum amounts as may be required from time to time by CAFE. The policy of insurance shall provide that such insurance shall not be canceled, modified or permitted to lapse without thirty (30) days prior written notice to UK. LMU shall promptly, following request by UK from time to time, provide evidence of such insurance acceptable to UK.
- 2.4 LMU shall ensure that its faculty and students maintain the confidentiality of all UKDVS records and information. LMU's staff and students shall not disclose such information to other persons unless the UKDVS has given its express written consent. Any breach of this confidentiality provision will result in removal of the students and/or staff member involved. This obligation to maintain the confidentiality of veterinary records and information shall survive the termination of this Agreement.

### **3. Additional terms:**

- 3.1 UKDVS may immediately remove from its premises any student who poses an immediate threat or danger to patients, staff, visitors or the premises or public, or who is in any way causing a disruption to the daily business operations of the UKDVS.
- 3.2 LMU shall inform all students placed at the UKDVS that that they are assigned to the UKDVS solely for the purpose of obtaining an educational experience and will not be considered employees of UK for the purpose of compensation, benefits, workers' compensation, taxes or any other purpose.
- 3.3 LMU will be invoiced on a quarterly basis for services rendered and expenses deemed reimbursable pursuant to this Agreement.
- 3.4 UKDVS will not use funds appropriated by the Kentucky legislature for any expenses related to the services contemplated by this Agreement.
- 3.5 Twenty-Five thousand dollars (\$25,000) per year of the fees received from this Agreement shall be used to promote and enhance the advising, recruitment and development of undergraduate pre-vet students at the University of Kentucky, regardless of their intentions to apply to LMU or other DVM programs.
- 3.6 LMU requests that a portion (approximately 20%) of LMU contributed funds be utilized for research projects. It is the desire of LMU that its faculty and students participate in this activity where appropriate.

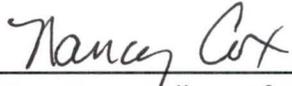
- 3.7 LMU shall not make any public references to this Agreement or the services rendered pursuant to same, including recruiting and marketing materials; or submit any documents to accrediting bodies or veterinary professional organizations which refer to the UKDVS, GERC or other CAFE programs, without the express, written consent of the CAFE, which consent shall not be unreasonably withheld.
- 3.8 This Cooperative Agreement can be cancelled by either party at any time with one year advance notice.
- 3.9 The Agreement is subject to renewal by mutual agreement in 2019.
- 3.10 The CAFE shall not be liable for any injury or damage, directly or indirectly caused by any act of LMU or arising from or related to its uses of UKDVS facilities. LMU agrees to defend and indemnify the CAFE for any claims which may be asserted against the CAFE if said claim(s) arise out of the exercise of rights granted to LMU herein.
- 3.11 LMU and the CAFE shall provide equal opportunity in employment for all qualified persons, shall prohibit discrimination in employment because of race, color, creed, national origin, sex, age, sexual orientation or gender identity, or handicap, shall promote equal employment through a positive, continuing program of equal employment, and shall notify each of its subcontracting agencies to do so. This program of equal opportunity shall apply to every aspect of its employment policies and practices.
- 3.12 If any term or provision of this Agreement is found to be illegal or unenforceable, this Agreement shall remain in full force and such terms or provision shall be deemed stricken.
- 3.13 This Agreement shall be governed in all respects by the laws of the Commonwealth of Kentucky and venue for all actions shall lie in Fayette County, Kentucky.
- 3.14 This Agreement constitutes the entire agreement between LMU and the CAFE and no representations, inducements, promises or agreements, oral or otherwise, which are not embodied herein, shall be effective for any purpose. This Agreement shall replace any previous agreement between the parties on the same subject.
- 3.15 The waiver by either party of any breach of any provision of this Agreement shall not constitute a continuing waiver of any subsequent breach by either party of either the same or another provision of this Agreement.

**HAVE SEEN AND AGREED:**

UNIVERSITY OF KENTUCKY

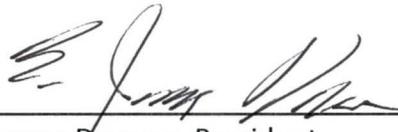
BY:   
Christine Riordan, Provost

March 4, 2014  
Date

BY:   
Nancy Cox, Dean College of Agriculture,  
Food and Environment

March 5, 2014  
Date

LINCOLN MEMORIAL UNIVERSITY

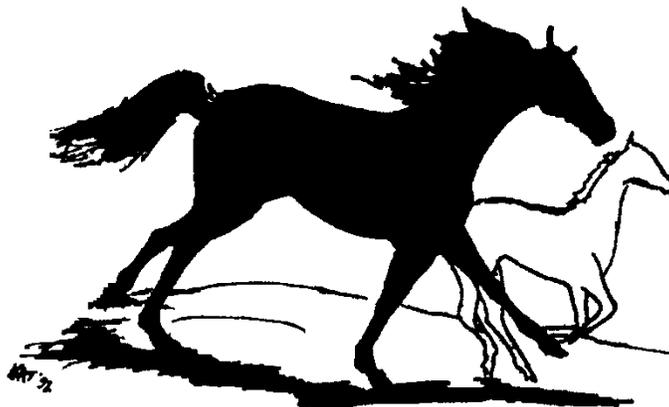
BY:   
B. James Dawson, President

3-17-14  
Date

# **Cooperative Program Leading to the Doctor of Veterinary Medicine (DVM) and Doctor of Philosophy (PhD):**

**University of Kentucky Department of  
Veterinary Science (UK-VESC) and Lincoln  
Memorial University College of Veterinary  
Medicine (LMU-CVM)**

**A Compilation of Philosophical Statements,  
Lists of Requirements  
and Suggested Timetables**



## **PROGRAM GOALS**

The primary goal of the UK-VESC/LMU-CVM cooperative program is to train top veterinary graduates to become leading PhD research scientists in the field of veterinary science and animal health. Emphasis is placed on investigating the causes and mechanisms that affect the production and performance of horses, regardless of breed. The program will provide opportunities for LMU-CVM graduates to develop the skills necessary to become creative and critical-thinking scientists with the contemporary skills and knowledge to perform independent research and to effectively communicate their findings. The VESC/LMU Program will lead to the Doctor of Philosophy degree in Veterinary Science with specialization in pathology, virology, microbiology, parasitology, immunology, genetics, reproductive physiology, pharmacology, or musculoskeletal sciences. Each of these subspecialties has a general emphasis on the horse.

The VESC/LMU Doctor of Philosophy program is research intensive, and enables the student to become a self-educating and creative scholar. This degree implies that the individual has demonstrated the capacity to frame an interrelated series of questions and to design and execute an appropriate series of investigations. Research projects are expected to either answer all of the questions or illuminate the area of inquiry in such a way that the resulting dissertation and publications will constitute a definitive contribution to science.

## **Admission and Financial Assistance**

Applicants to the VESC/LMU cooperative PhD program will hold a DVM from LMU-CVM, have a minimum grade point average (GPA) of 3.0 on a 4.0 scale, and a combined score (verbal plus quantitative) on the Graduate Record Examination (GRE) of not less than 300 (verbal and quantitative scores combined). Each applicant is considered individually, and acceptance into the program depends on the interests and academic credentials of the applicant, our ability to provide a quality program in the area of interest, and availability of funds to support the student. Participation in the VESC/LMU Summer Fellowship Program during the first two summers is strongly encouraged as a way to identify a suitable research topic and mentor.

Research Assistantships to support students in the VESC/LMU PhD program are awarded on a competitive basis. Assistantships provide a competitive stipend and cover tuition and student health insurance. Funds will be available to support up to two VESC/LMU assistantships concurrently. Students supported by the VESC/LMU assistantships will be expected to spend at least one semester at LMU-CVM participating in the preparation and delivery of courses in the veterinary degree curriculum.

Many of the requirements for applicants to the VESC/LMU PhD program are harmonious with the

Graduate School requirements as stated in **The UK Graduate School BULLETIN**. Students are expected to obtain a copy of the Bulletin, review its contents, and assume their responsibilities once accepted into the program. **The UK Graduate School BULLETIN** is available online at <http://www.research.uky.edu/gs/bulletin/bullinfo.shtml>.

## **Curriculum Requirements**

Students enrolled in the VESC/LMU PhD program must meet the **UK Graduate School residency credit requirement** of at least 36 credit hours of graduate coursework within five years of entry into the program (**see the Graduate Bulletin**); 12 credits must be at the 600 or 700 level and 9 of these 12 in VESC courses. **In recognition of the degree in veterinary medicine, up to 18 hours of the residency credit requirement may be waived at the discretion of the student's advisory committee, the VESC Director of Graduate Studies (DGS), and the Senior Associate Dean of the UK Graduate School.**

Students must take two semesters of graduate level biochemistry/molecular/cell biology (CHE550 & 552 OR IBS 601-606) and one semester of graduate level statistics (STA 570 or STA 580) or demonstrate equivalent coursework completed elsewhere. As well, a Scientific Ethics course is strongly recommended (TOX/VS 600). Additional curriculum requirements for each student will be designed in concert with the needs of the individual after discussion with the student's major advisor and advisory committee. Students must enroll in at least 2 semesters of Departmental Seminar (VS 770) and give presentations during enrollment.

Students must meet the standards of the UK Graduate School concerning grades to remain in good standing and to retain their stipends. After completing 12 credit hours, a student will be placed on scholastic probation if they have a cumulative GPA of less than 3.0. Students will have one full-time semester to remove the probation by attaining a 3.0 GPA. If probation is not removed, students will be dismissed from the UK Graduate School. **SEE THE BULLETIN for policy statements regarding probation, dismissal and retention.**

## **List of Procedures for Enrolled Students**

1. An orientation meeting should be scheduled with the UK-VESC Director of Graduate Studies. This person will guide students until the major advisor been appointed.
2. The student will work with the major advisor to form an advisory committee to approve the curriculum and help guide the research. This should be done as soon as practical, as the advisory committee is not obligated to accept coursework taken prior to its formation or to limit the student's curriculum to such courses. The composition of this committee must be **consistent with UK Graduate School guidelines.**

Submit the online request for formation of the advisory committee

([http://www.research.uky.edu/cfdocs/gs/DoctoralCommittee/Selection\\_Screen.cfm](http://www.research.uky.edu/cfdocs/gs/DoctoralCommittee/Selection_Screen.cfm))

3. The student should continue coursework, initiate research activities, and formulate a research plan for the dissertation.
5. Periodic meetings must be held with the advisory committee to ensure continuity in the program. These meetings must be held at least once a year. **As stipulated by the UK Graduate School, a record of the proceedings of each meeting must be filed by the major advisor with the Director of Graduate Studies and will become part of the permanent file of the student.** Students are encouraged to consult with members of the committee and the university-at-large for advice outside of the official meeting times.
6. When the majority of the scheduled courses have been completed and the student feels prepared, the major advisor and the advisory committee should be petitioned to schedule the Qualifying Examination. **Requirements are listed in the BULLETIN.** Regardless of the format used to administer the examination, the purpose of the PhD Qualifying examination **“is to verify that students have sufficient understanding of and competence in their fields to become candidates for the degree.”** If the advisory committee uses a grant proposal format for the qualifying examination, the following guidelines will apply:
  - a) The student will select and present potential research topics to the committee.
  - b) The committee chooses one of the above **or** presents an alternate topic for the student to develop into an NIH or USDA-style research proposal. Examples of proposals will be available for review through the Director of Graduate Studies.
  - c) The examination is based on: 1) the quality of the written proposal; 2) the oral presentation and defense of the proposal; and 3) demonstration of a comprehensive knowledge, ability and understanding of the scholarly subject matter in the area of concentration.

At least two weeks prior to the qualifying exam date, the online request to schedule the qualifying exam should be submitted ([http://www.research.uky.edu/cfdocs/gs/DoctoralCommittee/Selection\\_Screen.cfm](http://www.research.uky.edu/cfdocs/gs/DoctoralCommittee/Selection_Screen.cfm)). Scheduling and reporting requirements are described in the **BULLETIN.**
7. After successful completion of the qualifying exam, a student attains "candidate" status and the dissertation research is continued. Post-qualifying students need to enroll in 2 credit hours of VS 767 each semester until the dissertation defense is completed. Maintain close contact with the advisory committee which will

monitor your progress. Committee meetings should be scheduled **at least once a year.**

8. When the student and the major advisor/advisory committee agree that a point of conclusion has been reached in the research AND two semesters of post-qualifying residency have been completed, the student is eligible to schedule the final examination. See the **BULLETIN** for details and timetables which must be met. The online Notification of Intent to Schedule the Final Examination must be submitted at least 8 weeks prior to the anticipated defense date. The online Request for Final Examination must be submitted 2 weeks prior to the defense date ([http://www.research.uky.edu/cfdocs/gs/DoctoralCommittee/Selection\\_Screen.cfm](http://www.research.uky.edu/cfdocs/gs/DoctoralCommittee/Selection_Screen.cfm)).
9. After the final exam has been passed, the final copy of the dissertation should be turned in to the UK Graduate School **within 60 days.** Instructions for preparation and submission of the Electronic Dissertation are at [http://www.research.uky.edu/gs/CurrentStudents/theses\\_prep.html](http://www.research.uky.edu/gs/CurrentStudents/theses_prep.html).

**Recommended Courses**

**VESC/LMU PhD Program**

Curriculum - Each course described below may be taken as specifically directed by the student's Advisory Committee. Although students are not limited to these courses, total course requirement will be set forth by the Committee taking into account the background and special interests of the individual student.

**CREDITS**

**ANIMAL SCIENCE (ASC)**

601 Mammalian Endocrinology	3
660 Physiology of Reproduction	3

**BIOLOGY (BIO)**

494G Immunobiology	3
510 Recombinant DNA Techniques Laboratory	4
529 Developmental Biology	3
542 Histology	5
550 Comparative Physiology	5
615 Molecular Biology	3
685 Advanced Immunology (MI 685)	3
595 Immunology Laboratory (MI 595)	2
782 Virology (xlist VS782)	3
601 Special Topics in Molecular and Cellular Genetics	1

**BIOCHEMISTRY (BCH)**

607 General Biochemistry (same as IBS 601)	3
608 General Biochemistry (same as IBS 602)	3
610 Biochemistry of Lipids and Membranes	3
611 Biochem. Cell Biol. of Nucleic Acids	3
612 Structure function of proteins enzymes	3

**CHEMISTRY (CHE)**

550/552 Biochemistry (2 Semesters)	3 + 3
520 Radiochemistry	3
521 Radiochemistry lab	1-2

**ENTOMOLOGY (ENT)**

567 Applications of Genetics	4
------------------------------	---

**GRADUATE SCHOOL**

610 College Teaching	1
620 Teaching in the 21 <sup>st</sup> Century	1-2
630 Instructional Technology	1
640 Grant Writing	3
650 Preparing Future Faculty	2

**INTEGRATED BIOMEDICAL STUDIES (IBS)**

601 Biomolecules and Metabolism	3
602 Molecular Biology and Genetics	3
603 Cell Biology and Signaling	3
606 Physiological Communication	3
610 Critical Scientific Readings	2

**PHYSIOLOGY (PGY)**

502 Principles of Physiology	5
------------------------------	---

617 Physiological Genomics	2
630 Advanced Topics in Physiology	1-3
Experimental Design	
Biology of Aging	
Cell-Cell Communication	

**RADIATION MEDICINE (RM)**

545 Radiation Hazards and Protection	3
740 Mammalian Radiation Biology	2

**STATISTICS (STA)**

570 Basic Statistical Analysis	4
580 Biostatistics I	3
671 Regression and Correlation	2
672 Design and Analysis I	2
679 Design and Analysis II	3

**VETERINARY SCIENCE (VS)**

(All listed courses except those in the 300 series)

600 Ethics in Research (X-listed as TOX 600)	1-2
767 Dissertation Residency Credit	2
770 Veterinary Science Seminar	1
781 Correlative Pathology	1-3
782 Virology (X-listed as BIO 782)	3
785 Advanced Veterinary Parasitology	3
786 Advanced Veterinary Pathology	3
791 Tech. in Veterinary Microbiology	1-9
792 Tech. in General Veterinary Pathology	1-9

## COOPERATIVE AGREEMENT

between

*The Veterinary Diagnostic Laboratory  
College of Agriculture, Food and the Environment, University of Kentucky*

and

*The College of Veterinary Medicine  
Lincoln Memorial University*

This Cooperative Agreement (the "Agreement") is made and entered into on this the 4<sup>th</sup> day of March, 2013 by and between Lincoln Memorial University ("LMU"), a private university located in Harrogate, Tennessee, and the University of Kentucky, College of Agriculture, Food and the Environment (the "CAFE"), a public university located in Lexington, Kentucky.

### WITNESSETH

**WHEREAS**, LMU is launching a new College of Veterinary Medicine for the advancement of veterinary sciences in the Appalachia region and beyond, and has proposed to collaborate with the Veterinary Diagnostic Lab at the CAFE (the "UKVDL") through which the UKVDL will provide services for training of their veterinary students;

**WHEREAS**, many areas in Kentucky, particularly Eastern Kentucky, and throughout Appalachia are underserved with regard to veterinary care, for both domestic and food animals and both LMU and the CAFE seek to promote access to post graduate veterinary education for students from Kentucky and Appalachia;

**WHEREAS**, advancement of public health is central to the mission of both the UKVDL and LMU, with the UKVDL focused on animal and associated human health promotion in Kentucky and LMU dedicated to promotion of public health in the Appalachian region;

**WHEREAS**, LMU is an emerging private institution developing a record of impact in health professions, with a commitment to expand those efforts to the education of Doctors of Veterinary Medicine ("DVM");

**WHEREAS**, the UKVDL is a fully accredited, nationally recognized center for veterinary services with notable expertise and capacity in animal health, but has no current affiliation with a college of veterinary medicine;

**WHEREAS**, LMU proposes to establish an innovative distributive model of veterinary education, which relies on collaboration with highly qualified off-campus practitioners and clinicians;

**WHEREAS**, LMU's financial and recruiting plans will not compete with, but will supplement, long-standing, highly-valued Kentucky partnerships with Auburn University and Tuskegee University for Kentucky residents seeking a veterinary education;

**WHEREAS**, the UKVDL seeks innovative partnerships to sustain its service to Kentucky stakeholders and expand its capacity and level of excellence in veterinary health services; and

**WHEREAS**, LMU and the CAFE desire to work together to accomplish the following shared objectives:

- Expanding access to veterinary education for students from Kentucky and throughout Appalachia, a fraction of whom are expected to return to practice in underserved areas;
- Promoting public access to animal health care services in Appalachia;
- Providing DVM candidates at LMU with experience in a world-class pathology and veterinary diagnostic services facility;
- Expanding capacity and infrastructure at UKVDL, including equipment and staff and the associated emergency response resources; and
- Developing innovative models for integration of education, research and service through collaboration of LMU and CAFE faculty and staff.

**NOW, THEREFORE**, in consideration of the mutual covenants and promises set forth herein, the receipt and sufficiency of which are acknowledged, LMU and the CAFE mutually agree as follows:

**1. Obligations of the UKVDL:**

- 1.1 The UKVDL will provide LMU with priority access for all teaching assets at the UKVDL funded by or provided under this Agreement.
- 1.2 The UKVDL will host approximately eight fourth year students in 13 four-week blocks per year at the Lexington laboratory facility for the purpose of training LMU students in pathology and other diagnostic medical disciplines (approximately 85 DVM students for 2017-2018 and approximately 100 students per DVM class thereafter as mutually agreed).
- 1.3 The UKVDL will employ a board certified (ACVP) pathologist and a board-eligible (AVCP eligible) pathologist to serve as the LMU assigned pathologists ("LAP" or "LAPs").

- 1.4 The UKVDL will provide two weeks pathology and necropsy training, split between necropsy floor and classroom, research, grand rounds and presentation time.
- 1.41 UKVDL will provide access to the UKVDL necropsy facility for LMU students to include showers, lockers and restroom facilities, as well as a small work station in the UKVDL library/residency room.
  - 1.42 A mutually agreed upon staggered shift for class time in the necropsy room will be created for the LMU students.
  - 1.43 The UKVDL diagnostic pathologist-of-the-day will select necropsy cases to be assigned to the LMU group and will also cut-in tissues with high quality lesions for daily gross rounds for the LMU students.
  - 1.44 Case material permitting, LMU veterinary students will spend approximately three hours on the necropsy floor each day for the two week period.
  - 1.45 When not in necropsy, students will be assigned projects such as research and presentations on diseases seen to include gross & microscopic lesions, epidemiology, etiology, pathogenesis, diagnosis, treatment, prevention, zoonotic potential and public health implications.
- 1.5 The UKVDL will provide two-week training blocks in medical diagnostic disciplines, split between diagnostic laboratories and classroom/research/grand rounds/presentation time. These will be clinical case driven one-day rotations consisting of clinical receiving, bacteriology, clinical pathology, epidemiology, histology, molecular biology, serology, toxicology, virology, one optional day for an elective experience.
- 1.51 Each UKVDL Section Chief will provide an in-depth orientation of their section for the group of students.
  - 1.52 Each UKVDL Section Chief will deliver an overview lecture on their diagnostic medical discipline to the group of students in the auditorium.
  - 1.53 Each UKVDL Section Chief will provide redacted, high-quality clinical case reports from a pre-prepared library of cases relevant to each section to a LAP.
    - 1.53.1 The LAP will assign one or more of these clinical cases to each student for an in-depth research study.
    - 1.53.2 The UKVDL section chief will assist the LAP in the case selection as needed.

- 1.54 The UKVDL Section Chief will prepare an open-book essay exam with questions pertinent to each section and selected case reports along with appropriate answer sets to be administered by a LAP.
- 1.55 The UKVDL faculty/staff will provide input related to student performance, but will not have any responsibilities for student grading or record-keeping.
  - 1.55.1 Students will deliver case presentations to their group in a rounds format with a LAP present.
  - 1.55.2 The exam and rounds presentation will be graded by a LAP.
  - 1.55.3 A LMU Necropsy Technician (“LNT”) will record the attendance, grades and any other student information.
- 1.6 UKVDL faculty and professional staff who are contributing to the teaching program in any way may be invited to accept LMU adjunct faculty appointments. This applies to both clinical teaching as described in 1.4 and 1.5 and didactic teaching as described in 1.7. Accepting adjunct faculty appointments and teaching in the LMU program is voluntary and subject to agreement by individual faculty. It is LMU’s desire that most of the UKVDL faculty and professional staff will accept LMU adjunct appointments. UKVDL and LMU acknowledge and agree that acceptance of an adjunct appointment by UKVDL faculty and professional staff does not create an employment relationship between the adjunct and LMU.
- 1.7 Subject to all applicable University of Kentucky policies and regulations regarding to consulting and outside employment, faculty may also be invited to deliver lectures or oversee complete courses for first through third year students, on a consultancy basis.
  - 1.71 Any didactic teaching of LMU students by UKVDL faculty must be done on fully approved overload status.
  - 1.72 Faculty will be compensated at the rate of up to \$300/classroom hour.
  - 1.73 The didactic teaching of LMU students by UKVDL shall be delivered at LMU or from UKVDL via video conference as mutually agreed.
  - 1.74 LMU shall pay travel per diem and lodging for instruction taking place at its Harrogate campus.
  - 1.75 Adjunct faculty may earn up to 10 hours of “teaching” time for the development of a new course (one time only) as mutually agreed.

**2. Obligations of LMU**

2.1 In consideration for the use of the UKVDL facilities, teaching materials and the services provided by UKVDL faculty and staff, LMU shall provide the following:

2.11 LMU shall make a monetary investment on the following schedule:

2014-2015	\$100,000
2015-2016	\$200,000
2016-2017	\$300,000
2017-2018	\$500,000 (approximately 85 students)
2018-2019	\$500,000 (approximately 100 students/year)
2019-2020	Possible renewal of agreement

2.12 LMU shall further provide recurring funding for the following new faculty and staff as follows, including all costs associated with recruiting and hiring:

2.12.1 One full-time, board certified pathologist (one of the two LAPs referenced in para. 1.3), to be hired as on or before September 1, 2016, at the cost of \$125,000, inclusive of salary and benefits. This individual, who must be an employee of the UKVDL, shall be responsible for:

- Gaining knowledge regarding UKVDL general pathology operations and seasonal caseload;
- Overseeing curriculum preparation for student arrivals on September 2017; and
- Chairing the search for the second, board-eligible LAP and the LNT.

2.12.2 One full-time, board eligible pathologist (the second LAP referenced in para. 1.2), to be hired on or before June 1, 2017, at the cost of \$77,000, inclusive of salary and benefits. This individual must be an employee of the UKVDL.

2.12.3 One full time necropsy technician/student coordinator (the LNT referenced in para. 1.5.3) to be hired on or before June 1, 2017, at the cost of \$55,000, inclusive of salary and benefits. This individual, who must be an employee of LMU, shall be responsible for:

- Working with the LAPs to schedule and conduct all necropsy & other diagnostic discipline training,
- Performing case review & research;
- Grading and paperwork for the students; and
- Other duties as needed.

2.12.4 LMU shall maintain general liability insurance for itself, agents, officers and employees in the amounts of not less than One Million Dollars (\$1,000,000.00) per claim and Three Million Dollars (\$3,000,000.00) aggregate per policy year, or such other minimum amounts as may be required from time to time by CAFE. The policy of insurance shall provide that such insurance shall not be canceled, modified or permitted to lapse without thirty (30) days prior written notice to UK. LMU shall promptly, following request by UK from time to time, provide evidence of such insurance acceptable to UK.

2.12.5 LMU shall ensure that its faculty and students maintain the confidentiality of all UKVDL veterinary records and information. LMU's staff and students shall not disclose such information to other persons unless the UKVDL has given its express written consent. Any breach of this confidentiality provision will result in removal of the students and/or staff member involved. This obligation to maintain the confidentiality of veterinary records and information shall survive the termination of this Agreement.

2.13 LMU shall fund the following one-time facilities upgrades for the UKVDL:

- Additional washer/dryer capacity;
- Increase capacity of boot/shoe rack in necropsy; and
- Eight additional lockable lockers.

2.14 LMU shall provide as needed for the following miscellaneous supplies and ongoing expenses, prorated based on the number of pathologists and necropsy technicians, estimated at \$500/student/block:

- Disposable gloves;
- Clean room shoes;
- Scrubs;
- Lab coats;
- Jump suits;
- Boots;
- Necropsy instruments;
- Eye protection;
- Respirators;
- Detergent/soap; and
- Towels.

2.15 LMU will be invoiced for all payments due under this Agreement on a quarterly basis with payment due 30 days after the invoice.

### **3. Additional terms:**

- 3.1 UKVDL may immediately remove from its premises any student who poses an immediate threat or danger to patients, staff, visitors or the premises or public, or who is in any way causing a disruption to the daily business operations of the UKVDL.
- 3.2 LMU shall inform all students placed at the UKVDL that that they are assigned to the UKVDL solely for the purpose of obtaining an educational experience and will not be considered employees of UK for the purpose of compensation, benefits, workers' compensation, taxes or any other purpose.
- 3.3 LMU will be invoiced on a quarterly basis for services rendered and expenses deemed reimbursable pursuant to this Agreement.
- 3.4 UKVDL will not use funds appropriated by the Kentucky legislature for the education or training of LMU students or for any other expenses related to the services contemplated by this Agreement.
- 3.5 Twenty-Five thousand dollars (\$25,000) per year of the fees received from this Agreement shall be used to promote and enhance the advising, recruitment and development of undergraduate pre-vet students at the University of Kentucky, regardless of their intentions to apply to LMU or other DVM programs.
- 3.6 LMU requests that a portion (approximately 20%) of LMU contributed funds be utilized for clinical investigations. It is the desire of LMU that its faculty and students participate in this activity where appropriate.
- 3.7 LMU shall not make any public references to this Agreement or the services rendered pursuant to same, including recruiting and marketing materials; or submit any documents to accrediting bodies or veterinary professional organizations which refer to UKVDL or other CAFE programs, without the express, written consent of the CAFE and the UKVDL, which consent shall not be unreasonably withheld.
- 3.8 This Cooperative Agreement can be cancelled by either party at any time with one year advance notice.
- 3.9 The Agreement is subject to renewal by mutual agreement in 2019.
- 3.10 The CAFE shall not be liable for any injury or damage, directly or indirectly caused by any act of LMU or arising from or related to its uses of the UKVDL facility. LMU agrees to defend and indemnify the CAFE for any claims which may be asserted against the CAFE if said claim(s) arise out of the exercise of rights granted to LMU herein.
- 3.11 LMU and the CAFE shall provide equal opportunity in employment for all qualified persons, shall prohibit discrimination in employment because of race, color, creed,

national origin, sex, age, sexual orientation or gender identity, or handicap, shall promote equal employment through a positive, continuing program of equal employment, and shall notify each of its subcontracting agencies to do so. This program of equal opportunity shall apply to every aspect of its employment policies and practices.

3.12 If any term or provision of this Agreement is found to be illegal or unenforceable, this Agreement shall remain in full force and such terms or provision shall be deemed stricken.

3.13 This Agreement shall be governed in all respects by the laws of the Commonwealth of Kentucky and venue for all actions shall lie in Fayette County, Kentucky.

3.14 This Agreement constitutes the entire agreement between LMU and the CAFE and no representations, inducements, promises or agreements, oral or otherwise, which are not embodied herein, shall be effective for any purpose. This Agreement shall replace any previous agreement between the parties on the same subject.

3.15 The waiver by either party of any breach of any provision of this Agreement shall not constitute a continuing waiver of any subsequent breach by either party of either the same or another provision of this Agreement.

3.16 Additional and/or expanded collaborations between LMU and CAFE, including the Department of Veterinary Science in the Gluck Center are to be considered and reviewed as the partnership develops. The current Agreement with UKVDL is not contingent upon the execution and implementation of additional agreements.

**HAVE SEEN AND AGREED:**

UNIVERSITY OF KENTUCKY

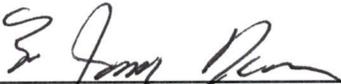
BY:   
Christine Riordan, Provost

March 4, 2014  
Date

BY:   
Nancy Cox, Dean College of Agriculture,  
Food and Environment

March 5 2014  
Date

LINCOLN MEMORIAL UNIVERSITY

BY:   
B. James Dawson, President

3-17-17  
Date

## Summary of the Estimated First LMU 5-Year Collaboration Expenses

LMU-UKVDL DVM Student Training Proposal (2014-2019):			
Recurring LMU Expenses		*One-time Estimated LMU Expenses	
UKVDL Remuneration, 2014-2015	\$100,000	Increased washer/dryer capacity	\$3,000
UKVDL Remuneration, 2015-2016	200,000	Boot/shoe rack capacity	2,000
UKVDL Remuneration, 2016-2017	300,000	Additional lockers	3,000
UKVDL Remuneration, 2017-2018	500,000		
UKVDL Remuneration, 2018-2019	500,000	Total one-time expenses →	8,000
UKY Pathologist, ACVP Boarded 2016-2019 (3 yrs @ 125k/yr)	375,000		
UKY Pathologist, ACVP Board Eligible 2017-2019 (2 yrs @ \$77k/yr)	144,000		
LMU Necropsy Technician/Student Coordinator 2017-2019 (2 yrs @ \$55k/yr) (LMU employee)			
Miscellaneous supplies (paid directly by LMU)			
Total 5-year agreement expenses →	\$2,119,000		
Average LMU investment/year during the first 5-year agreement	423.800		

## **Appendix F**

### **List of Registries – AGTRL**

Columbian Arabian Breeders Association  
American Cream Draft Horse Association  
Australasian Gypsy Horse Society  
United Mountain Horse Association  
Arabian Horse Association  
American Heritage Horse Association  
American Morgan Horse Association  
American Miniature Horse Registry  
Appalachian Purebred Gaited Horse Association  
Appaloosa Horse Club  
American Shagya Arabian Verband  
American Saddlebred Registry  
Australian Saddlebred Horse Society  
American Shetland Pony Club  
American Trakhener Association  
Akhal-Teke Association of America  
Canadian Arabian Horse Registry  
Canadian Livestock Registry  
Desert Jewel Gypsy Horses  
Dales Pony Association of North America  
Dartmoor Pony Registry of America  
Friesian Horse Association of North America  
Friesian Heritage Horse & Sporthorse International  
Friesian Horse Studbook of North America  
Gypsy Cob and Drum Horse Association  
Gypsy Horse Association  
Gypsy Horse Registry of America  
Gotlandruss Pony Preservation Society  
Gypsy Vanner Horse Society  
Hagyard Equine Institute  
International Andalusian and Lusitano Horse Association  
International Curly Horse Organization  
International Drum Horse Association  
Irish Draught Horse Society of Canada  
International Heritage Walking Horse Association  
Irish Draught Horse Society of North America  
Jamaican Racing Commission  
Kentucky Mountain Saddle Horse Association  
Kentucky Natural Gaited Horse Association  
Kentucky Mountain Saddle Horse Association- Spotted  
Lipizzan Association of North America  
Missouri Fox Trotting Horse Breed Association  
Mountain Pleasure Horse Association  
Mexican Sport Horse Association (Ccdm)

## **Appendix F**

North American Stud Book  
North American Spotted Draft Horse Association  
North American Shagya Arabian Society  
New Bolton Center  
North American Bucking Horse Association  
New Forest Pony Society of North America  
Nez Perce Horse Registry  
National Racking Horse Association  
National Show Horse Registry  
National Show Pony Registry  
National Walking Horse Association  
Panamanian Peruvian Paso Association  
Racking Horse Breeders' Association of America  
Rood and Riddle Equine Hospital  
Rocky Mountain Horse Association  
Spanish Barb Breeders Association  
Columbia Stud Book  
Stud Book De Costa Rica  
Stud Book De Venezuela  
Stud Book De Panama  
North American Spotted Haflinger Registry  
Single-Footing Horse Owners and Breeders Association  
Standardbred Canada  
Tennessee Walking Horse Breeders and Exhibitors Association  
United States Trotting Association

## RULES OF THE FACULTY

### DEPARTMENT OF VETERINARY SCIENCE

September 27, 1995

These Rules of Procedure are intended to be consistent with the Governing Regulations and the Administrative Regulations of the University of Kentucky and the laws of the Commonwealth of Kentucky and of the United States of America. In the event that these rules of procedure are inconsistent or contrary to the above-mentioned regulations and laws, then those regulations and laws control.

#### I. Organization

The Department of Veterinary Science is a department in the College of Agriculture of the University of Kentucky. The department consists of three operating units: the Maxwell H. Gluck Equine Research Center, the Livestock Disease Diagnostic Center, and the Blood Typing Laboratory.

The responsibilities of the department include undergraduate and graduate teaching, research, service, and extension.

**Faculty of the Department:** The faculty consists of the Chairperson and the members of the department who are members of the faculty of the College of Agriculture in the Regular Title, Special Title, Extension, and Research Title Series. Membership, with or without voting privileges, may be extended by the faculty to any staff member or individual assigned to the department for administration, teaching, service, or research. The faculty is charged specifically with establishing rules of procedure and a committee structure to deal with matters over which it has jurisdiction.

**Eligible Faculty:** Eligible faculty, for the purposes of considering appointment of new members of the department, promotions, reappointments, terminal appointments, decisions not to reappoint, post-retirement appointments, and the granting of tenure, will be defined as all full-time, tenured faculty members and those non-tenured faculty members who have held appointment in the department continuously for the last two years.

**Chairperson:** The Chairperson shall lead the faculty in the development of policies on academic requirements, courses of study, research, service, and extension activities except as otherwise delegated, and is an ex officio member of all departmental committees. The Chairperson has the responsibility for implementing the department's programs within the guidelines established by the Governing and/or Administrative Regulations of the University, policies of the University Senate, and the rules of the College of Agriculture.

The Chairperson is responsible for recommendations to the dean of the College of Agriculture on the appointment of new members of the department, promotions,

reappointments, terminal appointments, decisions not to reappoint, post-retirement appointments, and the granting of tenure. The Chairperson consults with the faculty in developing these recommendations as required by the Administrative Regulations and Governing Regulations. All eligible faculty are expected to participate in these evaluations.

Associate Chairperson : The Chairperson has the option to appoint a member of the faculty as Associate Chairperson to advise and assist in the implementation of the programs of the department.

Unit Directors:

Director, Livestock Disease Diagnostic Center: The director reports to the Chairperson of the department and is responsible for the administration and operation of the diagnostic laboratory with the concurrence and approval of the Chairperson. The director is further responsible for preparing recommendations to the Chairperson of the department for the appointment of new members of the diagnostic laboratory, promotions, reappointments, terminal appointments, decisions not to reappoint, post-retirement appointments, and the granting of tenure in the Special and Extension Title Series. The director is further responsible for the periodic evaluation of faculty according to the criteria established by the department, the University and the College of Agriculture. The director consults with the faculty in developing these recommendations. All eligible faculty are expected to participate in these evaluations.

Director, Blood Typing Laboratory: The director reports to the Chairperson and is responsible for the administration and operation of the laboratory with the concurrence and approval of the Chairperson.

Secretary to the Faculty: The secretary to the faculty is the Business Manager or other individual, appointed by the Chairperson. The secretary makes a record of departmental meetings, prepares the minutes, and makes them available to the faculty of the department at least 24 hours before the next scheduled meeting.

## II. Committees

Faculty appointments to all committees are made by the Chairperson in consultation with faculty. The Chairperson shall appoint faculty to standing and ad-hoc committees for specified periods of service, not to exceed 3 years and with the possibility of reappointment. Committee members will have staggered appointments so that individuals with experience on the respective committee will always be available for committee service. When students serve on committees, student appointment to committees will be made by the Chairperson in consultation with the student forum of the department. When staff members serve on committees, staff member appointments to committees will be made by the Chairperson in consultation with staff in the department. The Chairperson will serve ex-officio on all committees.

Advisory and Strategic Planning Committee: This committee advises the Chairperson

on the administrative, academic, extension, and service functions of the department. The committee includes the Associate Chairperson, the director of the diagnostic laboratory, the director of the blood typing laboratory, the director of graduate studies, a member of the extension committee, and a member of the curriculum committee. Other faculty shall serve as appointed by the Chairperson to represent all of the academic title series in the department.

**Curriculum Committee:** One faculty member appointed by the Chairperson shall direct this committee which also will have 2-3 other full time faculty members serving as pre-veterinary advisors appointed by the committee chair. The department Chairperson will appoint one student to the committee. The chairperson of this committee is responsible for departmental undergraduate teaching and for advising students in the pre-veterinary curriculum of the University of Kentucky. The chairperson serves on the Veterinary Advisory Committee of the Kentucky Council on Higher Education.

Student evaluations to assess the advising program are administered at Fall advising conferences using questionnaires developed by the committee. To evaluate the application process, questionnaires are administered to all Auburn and Tuskegee applicants in March when interviewing times are drawn.

Student evaluations for undergraduate courses are administered each semester through the Dean of Undergraduate Studies in the College of Agriculture.

**Graduate Committee:** This committee comprises the director of graduate studies as chairperson and the graduate faculty of the department. The director of graduate studies is appointed by the Graduate School Dean after consultation with graduate faculty and department administration and is responsible for the administration of the graduate and postdoctoral scholar programs of the department. The committee is responsible for advising the director of graduate studies on the administration of the graduate program and for the recruiting and evaluation of candidates for graduate work in the department. The committee functions by a set of guidelines and operating procedures first approved in 1993. The committee may modify these guidelines and operating procedures as needed. The director of graduate studies may appoint ad hoc sub-committees for specific purposes with the concurrence of the departmental graduate faculty.

**Extension Committee:** This comprises the members of the extension faculty. The committee is responsible for the development, implementation, and evaluation of the equine and other animal extension programs of the department.

**Animal Resource and Advisory Committee:** This committee consists of a chairperson and faculty members appointed by the Chairperson of the department. The committee is responsible for continuing review of the care and use of laboratory and farm animals by the department, in accordance with the requirements of federal agencies and humane considerations. They, also, review and report to the Chairperson of the department on the administration of the farm facilities and animals used by the department.

**Appointment and Promotion Committee:** This committee is charged with advising the Chairperson in all matters pertaining to the appointment, promotion and tenure, probationary status and termination of faculty. The Appointment and Promotion committee shall be

composed of faculty representative of all academic title series in the department selected by the Chairperson in consultation with the faculty. The procedures and criteria used in developing committee recommendations to the Chairperson shall be those established by the University, College of Agriculture and faculty of the Department of Veterinary Science as described in the documents “Criteria for Promotion and Tenure” for each of the respective academic title series (Regular title series; Special title series; Extension title series). Copies of each of the aforementioned documents will be maintained in the office of the Department Chairperson and are available to all faculty upon request.

**Faculty Performance Advisory Committee:** The committee shall be composed of tenured faculty members with at least two members from the Regular Title Series, two from the Special Title Series, and one from the Extension Title Series. The Director of the Livestock Disease Diagnostic Center serves on an ad hoc basis for evaluation of faculty assigned to the Livestock Disease Diagnostic Center. After receiving nominations from the entire faculty, the Chairperson shall appoint the committee members, and the Chairperson shall designate one of the members as Chairperson of the committee. The committee is responsible for reviewing and assessing the quantity and quality of each faculty’s performance in each of their major areas (determined by their Distribution of Effort). This evaluation shall be based on the information supplied in the faculty curriculum vita in a format approved by the Agriculture Faculty Council. The committee shall make recommendations to the Chairperson concerning the evaluation rating, strengths and weaknesses, and suggestions for improvements (if any) for each faculty member. The Chairperson shall report the recommendations of the committee as well as the recommendation of the Chairperson to the Dean and also a written statement of the recommended ratings in the faculty member’s file. The committee shall develop a set of criteria for each of the Title Series to be used for evaluating faculty. Until these criteria are developed and approved by majority of the entire faculty, the criteria provided by the University and College of Agriculture shall be used. The criteria approved by the departmental faculty can be revised by majority of the entire faculty.

**Other committees:** The Chairperson may appoint standing or ad hoc committees as occasion requires. New standing committees will be included in revisions of these Rules as applicable. Meetings of the faculty and faculty committees will be in compliance with the Open Meetings Law.

### III. Faculty Meetings

Departmental faculty meetings are held monthly. Special faculty meetings may be scheduled. The Chairperson prepares the agenda to include items requested by members of the faculty. Notices of meetings are posted on public bulletin boards at the LDDC, Gluck Building and Blood Typing Laboratory at least 24 hours in advance of meeting. A quorum consists of one more than half of the members of the faculty. One graduate student, and a staff member from each of the 3 units comprising the department, are appointed by the Department Chairperson following consultation with the graduate student forum and the staff. When required, *Robert’s Rules of Order* pertain.

#### IV. Appointments, Tenure, Promotions

Appointments, reappointments, terminal appointments, decisions not to reappoint, post-retirement appointments, the granting of tenure, and promotion of faculty are handled in accordance with the provisions of the Governing and/or Administrative Regulations of the University and in accordance with the policies and procedures of the College of Agriculture. Each faculty member operates under and is evaluated on the basis of a distribution of effort (DOE) document which is developed each year based on discussion between the faculty member and the administration.

#### V. Performance Evaluation

Performance evaluation of faculty is carried out in accordance with the policies and procedures of the College of Agriculture. Performance evaluation of all staff members is carried out in accordance with the appropriate policies and procedures relevant to specific positions.

#### VI. Budget

The Chairperson submits the budget request for federal and state funds to the Dean of the College of Agriculture. The Chairperson shall seek input from the faculty through the Advisory and Strategic Planning Committee for the purpose of identifying programs and specific activities for financial support. The Chairperson is responsible for administering the budget.

The Chairperson will consult with faculty on an annual basis in all matters pertaining to the development of a budget for non-dedicated funds received from the University of Kentucky Equine Research Foundation. Faculty input shall be in the form of recommendation of programs and specific activities for funding and the allocation of funds to individual faculty, hiring of new personnel and for equipment through the Advisory and Strategic Planning Committee. The Chairperson is responsible for administration of the budget. In the event that the opinion of the Chairperson differs from that of the Advisory & Strategic Planning Committee in regard to areas targeted for financial support, the Chairperson shall notify the faculty of this opinion, stating reasons for differing from the opinion of the faculty at a departmental faculty meeting.

These rules of procedure have been created and approved by the faculty of this department/school/or college, pursuant to the authority granted by the Administrative and Governing Regulations of the University of Kentucky. These rules do not become effective until and unless approved by the Dean and Chancellor as indicated by their signatures below. Any modifications to these rules must also be approved by the Dean and Chancellor before the modifications take effect. These rules contain a total of 6 pages, each of which are initialed and dated by the undersigned persons. A current copy of the approved rules for this department/school/or college is available in the office of the Chairperson for the Department, the Director of the School, the Dean of the College, and the Chancellor's office.

---

Chairperson (indicating approval by the faculty)

---

Date

---

Dean

---

Date

---

Chancellor, University of Kentucky  
Lexington Campus

---

Date

### **College of Agriculture, Food and Environment Department of Veterinary Science Evidences of Activity and Evaluation Criteria Applicable to Promotion and Tenure December 18, 2009**

#### **General Expectations**

The Department of Veterinary Science consists of the Gluck Equine Research Center, the Livestock Disease Diagnostic Center, and the Animal Genetic Testing and Research Laboratory. The mission of the Gluck Equine Research Center is scientific discovery, education, and dissemination of knowledge for the benefit of the health and welfare of horses. The mission of the Livestock Disease Diagnostic Center (LDDC) is to develop, apply and utilize state-of-the-art technology and scientific knowledge to improve animal health and marketability, preserve the human-animal bond, and to protect the public health. The mission of the Animal Genetic testing and Research laboratory is to develop genetic tests and to provide service on parentage and genetic testing to the horse industry. Faculty in the Department of Veterinary Science at the University of Kentucky pursue the goals of their missions through their research, service, extension, and instructional efforts. These efforts are consistent with the overall goals and strategic plans of the college and university. While individual appointments may reflect differences in time commitment to each of the mission areas of the department, the overall expectation of faculty is that there is evidence of career achievement, sustained scholarly record, and documented impact in an area of biomedical relevance to equine science. The following narrative provides general guidelines in terms of the expectations for faculty in the Department of Veterinary Science.

#### **Scholarly Productivity**

Faculty with research appointments are expected to develop productive and sustained research programs. This is most easily documented through their publication and funding record. Publication of original research articles in peer-reviewed journals that are appropriate to the research area is considered a primary metric for research productivity. Highest recognition is earned when the faculty member is corresponding (first or senior) author of publications in their primary area of research. Co-authorship on collaborative works is also considered evidence of productivity, as long as the faculty member's contribution to that work is clear and consistent with their overall research efforts. The authorship of scholarly reviews either in the form of individual articles, book chapters, books or other formats may also be considered as evidence of the faculty member's overall productivity and accomplishment provided that they are also consistent and reflective of their research effort. Abstracts and presentations at meetings can be viewed as indicators of developing and ongoing research productivity, but are expected to lead to refereed publications in the future. The publication of non-reviewed and lay articles can be considered as evidence of productivity, but they may not provide sufficient rigor to be considered scholarly. Non-peer reviewed publications can also be reflective of the outreach activity of the faculty. Nontraditional scholarly formats such as web-based or electronic records may also be considered as evidence of scholarly productivity if they provide evidence of peer-review or other form of rigorous qualification.

The attainment of extramural funding is considered an essential component of a successful research program. Grant reviews can also be a valuable source of constructive feedback. Preparation and submission of grant proposals is a required step in securing extramural support and should be recognized as a measure of productivity even in the absence of a positive funding decision by the granting agency. More specifically, an ongoing effort to secure extramural grants and substantive attempt to constructively revise unfunded proposals is an expectation of all faculty with effort distributions that include research. Sources of funding may vary for specific individuals depending upon their programmatic focus and the limited amount of available extramural funds for equine research should be considered. The awarding of highly competitive extramural grants to a faculty member listed as Principal Investigator should be considered clear evidence of scholarly productivity and accomplishment.

For those faculty with extension appointments, most forms of information delivery, including educational meetings, workshops, field days, even individual responses and contacts, are considered evidence of activity. Documentation of these activities is required for subsequent evaluation and assessment. Specific information regarding content, audience and assessment should be provided. The performance of specific service activities in support of scientists, veterinary practitioners, and/or other stakeholders is an important and necessary component of the overall service mission of the department. Evidence of activity in this capacity may require specific quantitation of assays performed, materials provided, or numbers of reports.

Faculty with predominately service appointments (LDDC), will be evaluated primarily based on their professional medical involvement with clinical cases. Secondly, service faculty will also be evaluated based on the following scholarly activities: 1) Publishing in peer-reviewed scientific journals and in lay publications to disseminate knowledge of veterinary diagnostic medicine, 2) Creative use of diagnostic case material on collaborative, applied research projects. 3) Participation in state, regional and national scientific organizations.

All faculty are expected to participate at some level in university administrative, regulatory, and governance activities through active participation on university/college and department level committees.

For instruction, evidence of productivity can include both didactic and experiential learning. Didactic instruction includes delivery of formal courses and lectures. Individual appointments and job descriptions may dictate specifics regarding courses and other formalized instruction expectations. Experiential teaching activity can include individual student (graduate, undergraduate, post-doctoral and high school) contact, as well as other forms of student engagement (e.g. journal clubs), and advising. Since the training of graduate students and post-doctoral scholars is considered a vital part of the educational mission of the department, all faculty with research appointments are expected to participate in the mentoring of graduate students and/or post-doctoral scholars. Specifically, this should include serving either as the 'major professor' or by serving on graduate student committees or providing individualized instruction in

relevant areas of expertise. The mentoring of post-doctoral fellows and the hosting of visiting scientists and students provides additional evidence for experiential teaching activity.

### **Quality, Innovation and Impact**

The publication record and history of funding of a research program can establish that a program has direction, focus, originality, and impact. Research faculty are generally expected to establish a coherent body of work, focused on one or a small number of significant topics, as opposed to an unrelated collection of articles or materials. Publication in *highly* selective, rigorously refereed journals can be an important metric of quality of scholarly works. A demonstrated record of sustaining scholarly productivity through extramural funding or other support can be viewed as a measure of programmatic quality and impact. In some cases, particularly for applied research, a diverse portfolio of projects is justified on the basis of responsiveness to critical needs. Likewise, the development of intellectual property and the attainment of licensure, patents, and technology transfer can serve as evidence of innovation. Peer-recognition is considered as evidence of quality and can be documented by invitations to present seminars and lectures, receipt of awards and other honors, and election to leadership positions in professional societies.

Quality extension programs are characterized by responsiveness, direction, and relevance; as well as being science and research based. Such programs employ creative, effective methods of education and communication. Extension programs should be associated with high quality materials or works in relevant, appropriate, and accessible outlets including web and other electronic media. The quality of service functions in the program can be reflected by depth and breadth of client base, timely and accurate diagnosis for submitting veterinarians and farmers (LDDC), evidence of continuous external support, and/or publication of results. When they are available, documented benefits to stakeholders, e.g., changed practice, profit, or quality of life can be important measures for all faculty activities.

Success and achievement of graduate students and post-docs are considered an important measure of success in experiential teaching. Achievement can include publication of results in refereed journals, presentations and scientific meetings. Success can include attainment of independent funding or receipt of awards or other prizes. Long-term success can include the students' subsequent development as independent and productive scientists. Student teaching evaluations are considered to be a valid, if approximate, index of didactic instruction quality, particularly when considered in conjunction with other measures.

### **Collaborative Efforts, Recognition, Professional Service and Leadership**

Faculty in the Department of Veterinary Science should be expected to engage in collaborative work as appropriate to the advancement of their individual programs. Such collaborations in research may be evidenced by co-authorships on publications, presentations and funding applications. In instruction, contributions to student success beyond formal classroom success (e.g., advising, activities, and positive interaction) can

be important evaluation factors. Consistent with the overall service mission of the department, faculty are expected to be highly accessible, responsive and interactive with peers, students and constituents.

Documentation of peer recognition may include significant awards, invitations to make presentations, service on national panels or committees, editorial appointments, leadership positions in professional societies, and other indicators. Attainment of competitive grants may be significant evidence of peer- recognition in many fields. Exceptional individual performance is typically associated with notable positive impact on the success of students, colleagues, and the department, through leadership and professional service.

**2011**

**BOOKS/CHAPTERS**

1. **Bailey, E.** 2011. Parentage testing. In: McKinnon, A.O., **E.L. Squires**, W.E. Vaala, and D.D. Varner (eds.), Equine Reproduction, 2nd Ed. Wiley-Blackwell Publishing, Chapter 297, pp 2820-2826.
2. **Bailey, E.** 2011. Relevance of genomics to equine reproduction. In: McKinnon, A.O., **E.L. Squires**, W.E. Vaala, and D.D. Varner (eds.), Equine Reproduction, 2nd Ed. Wiley-Blackwell Publishing, Chapter 298, pp 2827-2831.
3. **Ball, B.A.** 2011. Embryonic loss. In: McKinnon, A.O., **E.L. Squires**, W.E. Vaala, and D.D. Varner (eds.), Equine Reproduction, 2<sup>nd</sup> Ed. Wiley-Blackwell Publishing, Chapter 239, pp 2327-2338.
4. **Ball, B.A.** 2011. Oxidative stress in sperm. In: McKinnon, A.O., **E.L. Squires**, W.E. Vaala, and D.D. Varner (eds.), Equine Reproduction, 2<sup>nd</sup> Ed. Wiley-Blackwell Publishing, Chapter 98, pp 991-995.
5. **Ball, B.A.** 2011. Sperm-oviduct interactions. In: McKinnon, A.O., **E.L. Squires**, W.E. Vaala, and D.D. Varner (eds.), Equine Reproduction, 2<sup>nd</sup> Ed. Wiley-Blackwell Publishing, Chapter 103, pp 1085-1091.
6. **Lear, T.L.**, and D.A.F. Villagomez. 2011. Cytogenetic evaluation of mares and foals. In: McKinnon, A.O., **E.L. Squires**, W.E. Vaala, and D.D. Varner (eds.), Equine Reproduction, 2nd Ed. Wiley-Blackwell Publishing, Chapter 207, pp 1951-1962.
7. **Lyons, E.T.**, M. Ionita, and S.C. Tolliver. 2011. Important gastrointestinal parasites. In: McKinnon, A.O., **E.L. Squires**, W.E. Vaala, and D.D. Varner (eds.), Equine Reproduction, 2<sup>nd</sup> Ed. Wiley-Blackwell Publishing, Chapter 30, pp 292-301.
8. McKinnon, A., **E.L. Squires**, W. Vaala, and D. Varner. 2011. Equine Reproduction, 2<sup>nd</sup> Ed. Wiley-Blackwell Publishing.
9. **Powell, D.G.** 2011. Mare reproductive loss syndrome. In: McKinnon, A.O., **E.L. Squires**, W.E. Vaala, and D.D. Varner (eds.), Equine Reproduction, 2<sup>nd</sup> Ed. Wiley-Blackwell Publishing, Chapter 248, pp 2410-2417.
10. **Squires, E.L.** 2011. Gonadotropin releasing hormones. In: McKinnon, A.O., **E.L. Squires**, W.E. Vaala, and D.D. Varner (eds.), Equine Reproduction, 2<sup>nd</sup> Ed. Wiley-Blackwell Publishing, Chapter 190, pp 1820-1824.
11. **Squires, E.L.** 2011. Progesterone. In: McKinnon, A.O., **E.L. Squires**, W.E. Vaala, and D.D. Varner (eds.), Equine Reproduction, 2<sup>nd</sup> Ed. Wiley-Blackwell Publishing, Chapter 184, pp 1778-1982.

12. **Squires, E.L.** 2011. Reproduction parameters from light horse stallions. *In:* McKinnon, A.O., **E.L. Squires**, W.E. Vaala, and D.D. Varner (eds.), Equine Reproduction, 2<sup>nd</sup> Ed. Wiley-Blackwell Publishing, Chapter 135, pp 1367-1376.
13. **Squires, E.L.**, and B.W. Pickett. 2011. Factors affecting sperm production and output. *In:* McKinnon, A.O., **E.L. Squires**, W.E. Vaala, and D.D. Varner (eds.), Equine Reproduction, 2<sup>nd</sup> Ed. Wiley-Blackwell Publishing, Chapter 133, pp 1344-1362.
14. **Squires, E.L.**, and P.M. McCue. 2011. Superovulation. *In:* McKinnon, A.O., **E.L. Squires**, W.E. Vaala, and D.D. Varner (eds.), Equine Reproduction, 2<sup>nd</sup> Ed. Wiley-Blackwell Publishing, Chapter 193, pp 1836-1845.
15. **Timoney, J.F.** 2011. Strangles. *In:* McKinnon, A.O., **E.L. Squires**, W.E. Vaala, and D.D. Varner (eds.) Equine Reproduction, 2<sup>nd</sup> Ed. Wiley-Blackwell Publishing, Chapter 77, pp 704-709.
16. **Timoney, P.J.** 2011. Contagious equine metritis. *In:* McKinnon, A.O., **E.L. Squires**, W.E. Vaala, and D.D. Varner (eds.), Equine Reproduction, 2<sup>nd</sup> Ed. Wiley-Blackwell Publishing, Chapter 247, pp 2399-2409.
17. **Timoney, P.J.** 2011. Diseases potentially transmissible with frozen or cooled semen. *In:* McKinnon, A.O., **E.L. Squires**, W.E. Vaala, and D.D. Varner (eds.), Equine Reproduction, 2<sup>nd</sup> Ed. Wiley-Blackwell Publishing, Chapter 321, pp 3015-3028.
18. **Timoney, P.J.** 2011. Equine herpesvirus. *In:* McKinnon, A.O., **E.L. Squires**, W.E. Vaala, and D.D. Varner (eds.), Equine Reproduction, 2<sup>nd</sup> Ed. Wiley-Blackwell Publishing, Chapter 245, pp 2376-2390.
19. **Timoney, P.J.** 2011. Equine viral arteritis. *In:* McKinnon, A.O., **E.L. Squires**, W.E. Vaala, and D.D. Varner (eds.), Equine Reproduction, 2<sup>nd</sup> Ed. Wiley-Blackwell Publishing, Chapter 246, pp 2391-2398.
20. **Troedsson, M.H.T.** 2011. Endometritis. *In:* McKinnon, A.O., **E.L. Squires**, W.E. Vaala, and D. Varner (eds.), Equine Reproduction, 2<sup>nd</sup> Ed. Wiley-Blackwell Publishing, Chapter 271, pp 2608-2619.
21. **Troedsson, M.H.T.**, and M.L. Macpherson. 2011. Placentitis. *In:* McKinnon, A.O., **E.L. Squires**, W.E. Vaala, and D.D. Varner (eds.), Equine Reproduction, 2<sup>nd</sup> Ed. Wiley-Blackwell Publishing, Chapter 242, pp 2359-2367.
22. **Troedsson, M.H.T.**, and **P.J. Timoney**. 2011. Contagious equine metritis. *In:* Wilson, D.A. (ed.), Clinical Veterinary Advisor: The Horse, Saunders Elsevier, pp 124-126.

## **REFEREED PUBLICATIONS**

1. **Adams, A.A., T.L. Sturgill**, C.C. Breathnach, **T.M. Chambers**, L. Siger, J.M. Minke, and **D.W. Horohov**. 2011. Humoral and cell-mediated immune responses of old horses following recombinant canarypox virus vaccination and subsequent challenge infection. *Veterinary Immunology and Immunopathology* 139:128-140.
2. Almeida, J., A.J. Conley, L. Mathewson, and **B.A. Ball**. 2011. Expression of steroidogenic enzymes during equine testicular development. *Reproduction* 141:841-848.
3. Almeida, J., **B.A. Ball**, A.J. Conley, L. Mathewson, N.J. Place, I.K.M. Liu, E.L. Scholtz, S.D. Stanley, and B.C. Moeller. 2011. Biological and clinical significance of anti-Müllerian hormone determination in blood serum of the mare. *Theriogenology* 76:1393-1403.
4. **Artiushin, S.**, Y. Tong, **J. Timoney**, B. Lemieux, A. Schlegel, and H. Kong. 2011. Thermophilic helicase-dependent DNA amplification using the IsoAmp™ SE experimental kit for rapid detection of *Streptococcus equi* subspecies *equi* in clinical samples. *Journal of Veterinary Diagnostic Investigation* 23(5):909-914.
5. Broaddus, C.C., **U.B.R. Balasuriya**, J. Richards, **P.J. Timoney**, R.A. Funk, and **G.R. Holyoak**. 2011. Evaluation of the safety of vaccinating mares against equine viral arteritis in mid or late pregnancy or during the immediate postpartum period. *Journal of the American Veterinary Medical Association* 238:741-750.
6. Broaddus, C.C., **U.B.R. Balasuriya**, J. White, **P.J. Timoney**, C. Makloski, K. Torrisi, and **G.R. Holyoak**. 2011. Infection of embryos following insemination of donor mares with equine33 arteritis virus infective semen. *Theriogenology* 76(1):47-60.
7. Cappelli, K., S. Capomaccio, **R.F. Cook**, M. Felicetti, M.L. Marenzoni, G. Coppola, A. Verini-Supplizi, M. Coletti and F. Passamonti. 2011. Molecular detection, epidemiology and genetic characterization of novel European field isolates of equine infectious anemia virus. *Journal of Clinical Microbiology* 49:27-33.
8. Casagrande Proietti, P., A. Bietta, G. Coppola, M. Felicetti, **R.F. Cook**, M. Coletti, M.L. Marenzoni and F. Passamonti. 2011. Isolation and characterization of  $\beta$ -haemolytic-*Streptococci* from endometritis in mares. *Veterinary Microbiology* 152:126-130.
9. Clavijo, A., **E. Erol.**, F. Sung., L. Sneed, and A. Swinford. 2011. Evaluation of sample transport conditions and further validation a real-time PCR assay for *Tritrichomonas fetus*. *Journal of Veterinary Diagnostic Investigation* 23(5) 982-985.
10. **Cosden, R.S.**, C. Lattermann, S. Romine, J. Gao, S.R. Voss, and **J.N. MacLeod**. 2011. Intrinsic repair of full-thickness articular cartilage defects in the axolotl salamander. *Osteoarthritis and Cartilage* 19:200-205.

11. **Dangoudoubiyam, S.**, J.B. Oliveira, C. Viquez, A. Gómez-García, O. González, J.J. Romero, O.C.H. Kwok, J.P. Dubey, and **D.K. Howe**. 2011. Detection of antibodies against *Sarcocystis neurona*, *Neospora* spp., and *Toxoplasma gondii* in horses from Costa Rica. *Journal of Parasitology* 97(3):522-524.
12. Davidson, J.M., J.D. Ondrak, A.A. Anderson, A.K. Swinford, and **E. Erol**. 2011. Evaluation of effects of high incubation temperatures on results of protozoal culture and real-time PCR testing for *Tritrichomonas foetus* inoculated in a commercially available self-contained culture media system. *Journal of the American Veterinary Medical Association* 239(12) 1589-1593.
13. DeLuca, C.A., P.A. McCue, M.L. Patten, and **E.L. Squires**. 2011. Effect of a nonsurgical embryo transfer procedure and/or altrenogest therapy on endogenous progesterone concentration in mares. *Journal of Equine Veterinary Science* 31:57-62.
14. Doty, A, W.C. Buhi, S. Benson, K.E. Scoggin, M. Pozor, M. Macpherson, M. Mutz, and **M.H.T. Troedsson**. 2011. Equine crisp3 modulates interaction between spermatozoa and polymorphonuclear neutrophils. *Biology of Reproduction* 85(1):157-164.
15. Evely, M.M., J.D. Donahue, S.F. Sells, and **A.T. Loynachan**. 2011. Ocular mycobacteriosis in a Red-bellied Piranha (*Pygocentrus nattereri*). *Journal of Fish Diseases* 34(4):323-6.
16. Firth, A.E., J.C. Zevenhoven-Dobbe, N.M. Wills, **Y.Y. Go**, **U.B.R. Balasuriya**, J.F. Atkins, E.J. Snijder, and C.C. Posthuma. 2011. Discovery of a small arterivirus gene that overlaps the GP5 coding sequence and is important for virus production. *Journal of General Virology* 92(5):1097-1106.
17. Fog, P., H. Vigre, and **M.K. Nielsen**. 2011. Strongyle egg counts in Standardbred trotters: Are they associated with race performance? *Equine Veterinary Journal* 43:89-92.
18. Furr, M., **D. Howe**, S. Reed, and M. Yeargan. 2011. Antibody coefficients for the diagnosis of Equine Protozoal Myeloencephalitis. *Journal of Veterinary Internal Medicine* 25:138-142.
19. **Gautam, A.**, J.P. Dubey, W.J. Saville, and **D.K. Howe**. 2011. The SnSAG merozoite surface antigens of *Sarcocystis neurona* are expressed differentially during the bradyzoite and sporozoite life cycle stages. *Veterinary Parasitology* 183:37-42.
20. **Go, Y.Y.**, **U.B.R. Balasuriya**, and **E. Bailey**. 2011. Genome wide association study for susceptibility of horses for *in vitro* infection with equine arteritis virus. *Journal of Equine Veterinary Science* 31(5):244-245.

21. **Go, Y.Y., E. Bailey, D.G. Cook, S.J. Coleman, J.N. MacLeod,** K.C. Chen, **P.J. Timoney** and **U.B.R. Balasuriya**. 2011. Genome-wide association study among four horse breeds identifies a common haplotype associated with in vitro CD3(+) T cell susceptibility/resistance to equine arteritis virus infection. *Journal of Virology* 85(24):13174-13184.
22. **Go, Y.Y.,** E.J. Snijder, **P.J. Timoney,** and **U.B.R. Balasuriya**. 2011. Characterization of equine humoral antibody response to the nonstructural proteins of equine arteritis virus. *Clinical and Vaccine Immunology* 18:268-279.
23. Guiterrez, J., R. Eisenberg, G. Herrensmitth, **T. Tobin,** and A.M. Craig. 2011. Solvatomorphism in (E)-2-(2,6-dichloro-4-hydroxybenzylidene)hydrazinecarboximidamide. *Acta Crystallographica Section C – Crystal Structure Communications*. 67:0310-0314.
24. **Horohov, D.W., A.T. Loynachan, A.E. Page,** K. Hughes, **J.F. Timoney,** M. Fettingler, T. Hatch, J.G. Spaulding, and J. McMichael. 2011. The use of streptolysin O (SLO) as an adjunct therapy for *Rhodococcus equi* pneumonia in foals. *Veterinary Microbiology* 154(1-2):156-162.
25. Hudgens, E., D. Tompkins, P. Boyd, J.K. Lunney, **D. Horohov,** and C.L. Baldwin. 2011. Expressed gene sequence of the IFN $\gamma$ -response chemokine CXCL9 of cattle, horses, and swine. *Veterinary Immunology and Immunopathology* 141:317-321.
26. Ijaz, M., **S. Velineni,** and **J.F. Timoney**. 2011. Selective pressure for allelic diversity in SEM of *Streptococcus equi* does not affect immunoreactive proteins SzPSe or Se18.9. *Infection, Genetics and Evolution* 11:1159-1163.
27. Kikuchi, M., Y. Nakano, Y. Nambo, S. Haneda, M. Matsui, Y. Miyake, **J.N. MacLeod,** K. Nagaoka, and K. Imakawa. 2011. Production of calcium maintenance factor Stanniocalcin-1 (STC1) by the equine endometrium during the early pregnant period. *Journal of Reproduction and Development* 57:203-211.
28. **Klein, C.,** K.E. Scoggin, and **M.H.T. Troedsson**. 2011. The expression of interferon-stimulated gene 15 in equine endometrium. *Reproduction in Domestic Animals* 46(4):692-698.
29. Kuskie, K.R., J.L. Smith, N. Wang, **C.N. Carter,** M.K. Chaffin, R.S. Stepusin, A.E. Cattoi, S. Takai, and N.D. Cohen. 2011. Effects of farm location and time of day on airborne concentrations of virulent *Rhodococcus equi* at two horse breeding farms. *American Journal of Veterinary Research* 72:73-79.
30. Kuskie, K.R., J.L. Smith, S. Sinha, **C.N. Carter,** M.K. Chaffin, N.M. Slovis, S.E. Brown II, R.S. Stepusin, S. Takai, N.D. Cohen. 2011. Associations between the exposure to airborne virulent *Rhodococcus equi* and the incidence of *R. equi* pneumonia among individual foals. *Journal of Equine Veterinary Science*, 31 (2011) 463-469.

31. Kuzmina, T.A., S.C. Tolliver, and **E.T. Lyons**. 2011. Three recently recognized species of cyathostomes (Nematoda: Strongylidae) in equids in Kentucky. *Parasitology Research* 108:1179-1184.
32. Kyvsgaard, N.C., J. Lindbom, L.L. Andreasen, L.A. Luna-Olivares, **M.K. Nielsen**, and J. Monrad. 2011. Prevalence of strongyles and efficacy of fenbendazole and ivermectin in working in El Sauce, Nicaragua. *Veterinary Parasitology* 181:248-254.
33. Larsen, M.L., C. Ritz, S.L. Petersen, and **M.K. Nielsen**. 2011. Determination of ivermectin efficacy and egg reappearance period on horse farms using selective therapy. *Veterinary Journal* 188(1):44-47.
34. Lehner, A.F., J.A. Hitron, J. May, C. Hughes, R. Eisenberg, N. Schwint, D.P. Knowles, **P. Timoney**, and **T. Tobin**. 2011. Evaluation of mass spectrometric methods for detection of the anti-protozoal drug imidocarb. *Journal of Analytical Toxicology* 35:199-204.
35. Lehner, A.F., J.M. Durringer, C.T. Estill, **T. Tobin**, and A.M. Craig. 2011. ESI-Mass spectrometric and HPLC elucidation of a new ergot alkaloid from perennial ryegrass hay silage associated with bovine reproductive problems. *Toxicology Mechanisms and Methods* 21(8):606-621.
36. **Liu, C.**, A. Betancourt, D.A. Cohen, **A.A. Adams**, L. Sun, and **D.W. Horohov**. 2011. Granzyme B-mRNA expression by equine lymphokine activated killer (LAK) cells is associated with the induction of apoptosis in target cells. *Veterinary Immunology and Immunopathology* 143:108-115.
37. **Lyons, E.T.**, R.L. DeLong, S.A. Nadler, J.L. Laake, A.J. Orr, B.L. DeLong, and C. Pagan. 2011. Investigations of peritoneal and intestinal infections of adult hookworms (*Uncinaria* spp.) in northern fur seal (*Callorhinus ursinus*) and California sea lion (*Zalophus californianus*) pups on San Miguel Island, California (2003). *Parasitology Research* 109:581-589.
38. **Lyons, E.T.**, S.C. Tolliver, and S.S. Collins. 2011. Reduced activity of moxidectin and ivermectin on small strongyles in young horses on a farm (BC) in Central Kentucky in two field tests with notes on variable counts of eggs per gram of feces (EPGs). *Parasitology Research* 108:1315-1319.
39. **Lyons, E.T.**, S.C. Tolliver, S.S. Collins, M. Ionita, T.A. Kuzmina, and M. Rossano. 2011. Field tests demonstrating reduced activity of ivermectin and moxidectin against small strongyles in horses on 14 farms in Central Kentucky in 2007-2009. *Parasitology Research* 108(2):355-360.
40. **Lyons, E.T.**, S.C. Tolliver, T.A. Kuzmina, and S.S. Collins. 2011. Further evaluation in field tests of the activity of three anthelmintics (fenbendazole, oxibendazole, and pyrantel pamoate) against the ascarid *Parascaris equorum* in horse foals on eight farms in Central Kentucky (2009-2010). *Parasitology Research* 109:1193-1197.

41. **Lyons, E.T.**, T.A. Kuzmina, S.C. Tolliver, and S.S. Collins. 2011. Observations on development of natural infection and species composition of small strongyles in young equids in Kentucky. *Parasitology Research* 109:1529-1535.
42. **Lyons, E.T.**, T.R. Spraker, R.L. De Long, M. Ionita, S.R. Melin, S.A. Nadler, and S.C. Tolliver. 2011. Review of research on hookworms (*Uncinaria lucasi* Stiles, 1901) in northern fur seals (*Callorhinus ursinus* Linnaeus, 1758). *Parasitology Research* 109:257-265.
43. Mérant, C., A. Sheoran, and **J.F. Timoney**. 2011. Association of *Streptococcus equi* with equine monocytes. *Veterinary Immunology and Immunopathology* 143(1-2):83-86.
44. Miszczak, F., K.M. Shuck, **Z. Lu**, **Y.Y. Go**, **J. Zhang**, S. Sells, A. Vabret, S. Pronost, G. Fortier, **P.J. Timoney**, and **U.B.R. Balasuriya**. 2011. evaluation of two magnetic bead-based viral nucleic acid purification kits and three real-time RT-PCR reagent systems in two TaqMan assays for equine arteritis virus detection. *Journal of Clinical Microbiology* 49(10):3694-3696.
45. Natarajaseenivasan, K., K. Vedhagiri, V. Sivabalan, S.G. Prabakaran, S. Sukumar, **S.C. Artiushin**, and **J.F. Timoney**. 2011. Seroprevalence of *Leptospira borgpetersenii* serovar javanica infection among dairy cattle, rats and humans in the cauvery rive valley of southern India. *Southeast Asian Journal of Tropical Medicine and Public Health*. 42(3):679-686.
46. Natarajaseenivasan, K., S. Shanmughapriya, **S. Velineni**, **S.C. Artiushin**, and **J.F. Timoney**. 2011. Cloning, expression, and homology modeling of Gro EL protein from *Leptospira interrogans* Serovar Autumnalis strain N2. *Genomics, Proteomics and Bioinformatics* 9:151-157.
47. Natarajaseenivasan, K., **S.C. Artiushin**, **S. Velineni**, K. Vedhagiri, P. Vijayachari, and **J.F. Timoney**. 2011. Surface-associated Hsp60 chaperonin of *Leptospira interrogans* serovar Autumnalis N2 strain as an immunoreactive protein. *European Journal of Clinical Microbiology and Infectious Diseases* 30(11):1383-1389.
48. **Page, A.E.**, **A.T. Loynachan**, **U. Bryant**, H.F. Stills, Jr., **A.A. Adams**, C.J. Gebhart, N. Pusterla, and **D.W. Horohov**. 2011. Characterization of the interferon gamma response to *Lawsonia intracellularis* using an equine proliferative enteropathy challenge (EPE) model. *Veterinary Immunology and Immunopathology* 143:55-65.
49. **Page, A.E.**, H.F. Stills, Y. Chander, C.J. Gebhart, and **D.W. Horohov**. 2011. Adaptation and validation of a bacteria-specific enzyme-linked immunosorbent assay for determination of farm-specific *Lawsonia intracellularis* seroprevalence in central Kentucky Thoroughbreds. *Equine Veterinary Journal* 43(Supplement 40):25-31.

50. Perglione, C.O., M. Cordoba, G. Echeverria, **P.J. Timoney**, S. Tordoya, F. Darqui, G. Metz, S. Mino, L. Becerra, M. Serena, A. Vissani, T. Gonzalez, M. Silvestrini, S. Corva, L. Uncal, J. Dayraut, A. Badaracco, and M. Barrandeguy. 2011. Equine viral arteritis outbreak in Argentina. Proceedings of the 114th Annual Meeting of the USAHA, pp. 320-329.
51. Pozor, M.A., J. Muehlhaus, A. King, M.L. Macpherson, **M.H. Troedsson**, and C.S. Bailey. 2011. Effect of pentoxifylline treatment on testicular perfusion and semen quality in miniature horse stallions. Theriogenology 76(6):1027-1035.
52. Roser, J.F., **M.H.T. Troedsson**, P.M. McCue, **A.N. Claes**, M.A. Colgin, R.A. Ferris, **C. Klein**, A.R. Lindholm, G.A. Meyers-Brown, M. Morganti, A.R. Peters, D.B. Scofield, and R.L. Wetzel. 2011. Induction of ovulation in seasonally anestrous mares using recombinant equine FSH. American Association of Equine Practitioners 57:231.
53. Soboll Hussey, G., S.B. Hussey, B. Wagner, **D.W. Horohov**, G.R. Van de Walle, N. Osterrieder, L.S. Goehring, S. Rao, and D.P. Lunn. 2011. Evaluation of immune responses following infection of ponies with an EHV-1 ORF1/2 deletion mutant. Veterinary Research 42:23.
54. **Sturgill, T.L.**, D. Strong, C. Rashid, A. Betancourt, and **D.W. Horohov**. 2011. Effect of Propionibacterium acnes-containing immunostimulant on interferon-gamma (IFN $\gamma$ ) production in the neonatal foal. Veterinary Immunology and Immunopathology 141:124-127.
55. Summers-Lawyer, A.K., **Y.Y. Go**, **Z. Lu**, **P.J. Timoney**, P.M. McCue, **J. Zhang**, K.M. Shuck, and J. Bruemmer. 2011. Response of stallions to primary immunization with a modified live equine viral arteritis vaccine. Journal of Equine Veterinary Science 31:129-138.
56. Sun, L., **A.A. Adams**, A.E. Page, A. Betancourt, and **D.W. Horohov**. 2011. The effect of environment on interferon-gamma production in neonatal foals. Veterinary Immunology and Immunopathology 143:170-175.
57. **Timoney, J.F.**, N. Kalimuthusamy, **S. Velineni**, J.M. Donahue, **S.C. Artiushin**, and M.A. Fettinger. 2011. A unique genotype of Leptospira interrogans serovar Pomona type kennewicki is associated with equine abortion. Veterinary Microbiology 150(3-4):349-353.
58. Vanderman, K.S., M. Tremblay, **W. Zhu**, M. Shimojo, **M.J. Mienaltowski**, **S.J. Coleman**, and **J.N. MacLeod**. 2011. Brother of CDO (BOC) expression in articular cartilage. Osteoarthritis and Cartilage 19:435-438.
59. Waller, A.S., R. Paillot, and **J.F. Timoney**. 2011. Streptococcus equi: a pathogen restricted to one host. Journal of Medical Microbiology 60(Pt 9):1231-1240.

60. Yeargan, M.R., and **D.K. Howe**. 2011. Improved detection of equine antibodies against *Sarcocystis neurona* using polyvalent ELISAs based on the parasite SnSAG surface antigens. *Veterinary Parasitology* 176:16-22.

### **NON-REFEREED PUBLICATIONS**

1. **Adams, A.A.** 2011. Weaning stress and nutritional influences. *The Horse*, September 14<sup>th</sup>, Article# 18822.
2. **Bailey, E.** 2011. Screening for foal immunodeficiency syndrome. *Veterinary Record* 169(25):653-654.
3. Camargo, F.C., K.A. Summers, and **P. Timoney**. 2011. Fact sheet: Equine viral arteritis. Cooperative Extension Service ID-197.
4. **Carter, C.N.** 2011. Editor, Diagnostic Laboratory Rounds. *Kentucky Veterinary News*, Spring, Summer, Fall, and Winter editions.
5. **Carter, C.N.** 2011. From the Diagnostic Laboratory, *Cattle Country News* (September).
6. **Carter, C.N.** 2011. From the Diagnostic Laboratory, *Cattle Country News* (March).
7. **Dwyer, R.M.** 2011. Biosecurity during horse event. *Lloyd's Equine Disease Quarterly* 20(3):3.
8. **Dwyer, R.M.** 2011. Commentary. *Lloyd's Equine Disease Quarterly* 20(1):1.
9. **Erol, E.** 2011. Antimicrobial susceptibility test. *Equine Disease Quarterly* 20(3).
10. **Gaskill, C.L.** 2011. Research update: Ocular fluid nitrate concentrations in aborted, stillborn, and newborn foals. *University of Kentucky Bluegrass Equine Digest* (November) <http://www2.ca.uky.edu/equine/bed>.
11. **Gaskill, C.L.** 2011. Toxin topic: Landscaping for horse farms. *University of Kentucky Bluegrass Equine Digest* (May) <http://www2.ca.uky.edu/equine/bed>.
12. **Gaskill, C.L.** 2011. Common poisons in beef cattle. *University of Kentucky Agriculture and Natural Resources Update*, Winchester Kentucky, October <http://www.ca.uky.edu/ANR/Agent%20Resources/2011%20Updates/Web%20Agendas%20EAST.htm>.
13. **Gaskill, C.L.** 2011. Toxin topic: Snakebite in horses. *University of Kentucky Bluegrass Equine Digest*. (July) <http://www2.ca.uky.edu/equine/bed>.
14. **Issel, C.** 2011. New control strategies for equine infectious anemia (Commentary). *The Horse* (accessed at: <http://cs.thehorse.com/blogs/across-the-fence/archive/2011/07/28/new-control-strategies-for-equine-infectious-anemia-commentary.aspx>).

15. **Issel, C.** and **P.J. Timoney.** 2011. The changing face of mosquito-borne diseases: 2010. *Equine Disease Quarterly* 20(1):4.
16. **Lear, T.L.** 2011. Congenital flexural limb deformities in foals. *Bluegrass Equine Digest* <http://www.thehorse.com/ViewArticle.aspx?ID=18727>, August.
17. **MacLeod, J.N.** 2011. Stem cells and regenerative medicine – Pay attention. *Equine Disease Quarterly* 20(4):1.
18. **Nielsen, M.K.** 2011. Horses in the morning. Live appearance on radio show 10/19/11.
19. **Nielsen, M.K.** 2011. Safer deworming. *Equus* 9:48.
20. **Tobin, T.**, and K. Brewer. 2011. Lasix and bleeders: A classic American horsemen's story. *The Horsemen's Journal* (Winter)  
<http://www.hbpa.org/Horsemen'sJournalDisplay.asp?section=9&key1=13886>.

## **2012**

### **BOOKS/CHAPTERS**

1. Aurich, C., T. Katila, and **E.L. Squires.** 2012. 6<sup>th</sup> International symposium on stallion reproduction. *Journal of Equine Veterinary Science* 32:423-518.
2. Faaberg, K.S., **U.B.R. Balasuriya,** M.A. Brinton, A.E. Gorbalenya, F.C.-C. Leung, H. Nauwynck, E.J. Snijder, T. Stadejek, H. Yang, and D. Yoo. 2012. Family *Arteriviridae*. *In: King, A.M.Q., M.J. Adams, E.B. Carters, and E.J. Lefkowitz (eds.), Virus Taxonomy, Ninth Report of the International Committee on Taxonomy of Viruses.* London: Elsevier Academic Press, pp 796-805.
3. **Gaskill, C.** 2012. Phenobarbital: Adverse effects/toxicosis. *In: Cote, E (ed.), The Clinical Veterinary Advisor: Dogs and Cats. 3<sup>rd</sup> Ed. Saunders, St. Louis, MO, pp 844-848.*
4. **Gaskill, C.L.** 2012. Basic treatment of poisoned horses. *In: Wilson, D. (ed.), The Clinical Veterinary Advisor: the Horse. Saunders, St. Louis, MO. Section II; pp 804-806.*
5. **Gaskill, C.L.** 2012. Edited toxicology-related chapters. *In: Wilson, D. (ed.), The Clinical Veterinary Advisor: the Horse. Saunders, St. Louis, MO. 1078 pp*
6. **Gaskill, C.L.** 2012. Toxicological differential diagnoses. *In: Wilson, D, (ed.), The Clinical Veterinary Clinical Advisor: the Horse. Saunders, St. Louis MO, Section III; pp 885-897.*

7. Kaplan, R.M., and **M.K. Nielsen**. 2012. Special Issue: Equine parasite drug resistance plenary papers presented at the Equine Parasite Drug Resistance Workshop in Copenhagen, July/August 2008 Preface. Special Editors. *Veterinary Parasitology* 185(1).
8. **Loynachan, A.T.** 2012. Diseases of the cardiovascular system. *In: Zimmerman, J., L. Karriker, A. Ramirez, K. Schwartz, and G. Stevenson. Diseases of Swine, 10<sup>th</sup> Ed.* John Wiley & Sons, Inc., Hoboken, pp 189-198.
9. McCue, P.M., and **E.L. Squires**. 2012. 8<sup>th</sup> International symposium on equine embryo transfer. *Journal of Equine Veterinary Science* 32(7):367-422.
10. Reinemeyer, C.R., and **M.K. Nielsen**. 2012. Handbook of equine parasite control. Wiley-Blackwell, John Wiley & Sons, Oxford, United Kingdom.
11. **Timoney, P.J.** 2012. Equine viral arteritis. *In: OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals. 7<sup>th</sup> Edition.* Paris, Office International des Epizooties, pp 899-912.
12. **Tobin, T.**, K.H. Stirling, and K. Brewer. 2012. World rules for equine drug testing and therapeutic medication regulation: 2012 policy of the national Horsemen's Benevolent and Protective Association, Inc. Wind Publications, Nicholasville, KY, 289 pp.
13. **Williams, N.M.** 2012. Equine abortion. *In: Njaa, B. (ed.), Kirkbride's Diagnosis of Abortion and Neonatal Loss in Animals, 4<sup>th</sup> Ed.* Wiley, 2012, pp 147-171.

### **REFEREED PUBLICATIONS**

1. Almeida, J., A.J. Conley, L. Mathewson, and **B.A. Ball**. 2012. Expression of anti-mullerian hormone, cyclin-dependent kinase inhibitor (cdkn1b), androgen receptor, and connexin 43 in equine testes during puberty. *Theriogenology* 77(5):847-857.
2. Andrews, E.S., P.R. Crain, Y. Fu, **D.K. Howe**, and S.L. Dobson. 2012. Reactive oxygen species production and *Brugia pahangi* survivorship in *Aedes polynesiensis* with artificial Wolbachia infection types. *Public Library of Science Pathogens* 8(12): e1003075. doi:10.1371/journal.ppat.1003075.
3. Arias, M., M. Yeargan, I. Francisco, **S. Dangoudoubiyam**, P. Becerra, R. Sánchez-Andrade, A. Paz-Silva and **D.K. Howe**. 2012. Exposure to *Sarcocystis* spp. in horses from Spain determined by Western blot analysis using *Sarcocystis neurona* merozoites as heterologous antigen. *Veterinary Parasitology* 185(2-4):301-304.
4. Ault, A., A.M. Zajac, W.P. Kong, J.P. Gorres, M. Royals, C.J. Wei, S. Bao, S.Y. Yang, S.E. Reedy, **T.L. Sturgill**, **A.E. Page**, J. Donofrio-Newman, **A.A. Adams**, **U.B.R. Balasuriya**, **D.W. Horohov**, **T.M. Chambers**, G.J. Nabel, and S.S. Rao. 2012. Immunogenicity and clinical protection against equine influenza by gene-based DNA vaccination of ponies. *Vaccine* 30(26):3965-3974.

5. Bailey, C.S., L. Fallon, W. Wang, L. Borst, and **J. Timoney**. 2012. Serum and colostral antibody responses of pregnant mares to salmonella bacterins and colostral antibody transfer to their foals. *Journal of Equine Veterinary Science* 32(9):575-578.
6. Barbacini, S., and **E.L. Squires**. 2012. Factors affecting the uterine inflammatory response to semen. *Pferdeheilkunde* 28(1):18-20.
7. Binns, M.M, D.A. Boehler, **E. Bailey, T.L. Lear**, J.M. Cardwell, and D.H. Lambert. 2012. Inbreeding in the Thoroughbred horse. *Animal Genetics* 43(3):340-342.
8. Bracken, M.K., C.B.M. Wøhlk, S.L. Petersen, and **M.K. Nielsen**. 2012. Evaluation of conventional PCR for detection of *Strongylus vulgaris* on horse farms. *Veterinary Parasitology* 184:387-391.
9. **Bryant, U.**, L. Fallon, M. Lee, and R. Pool. 2012. Congenital aneurysmal bone cyst in a foal. *Journal of Equine Veterinary Science* 32(6):320-323.
10. Capomaccio, S., K. Cappelli, **R.F. Cook**, F. Nardi, R. Gifford, M.L. Marenzoni, and F. Passamonti. 2012. Geographic structuring of global EIAV isolates: a single origin for New World strains? *Virus Research* 163(2):656-659.
11. Capomaccio, S., Z.A. Willand, S.J. Cook, **C.J. Issel**, E.M. Santos, J.K.P. Reis and **R.F. Cook**. 2012. Detection, molecular characterization and phylogenetic analysis of full-length equine infectious anemia (EIAV) *Gag* genes isolated from Shackleford Banks wild horses. *Veterinary Microbiology* 157(3-4):320-332.
12. **Cerny, K.L., S. Hughes, J.R. Campos**, R.J. Coleman, **M.H.T. Troedsson**, and **E.L. Squires**. 2012. Fertility of mares inseminated with frozen-thawed semen processed by single layer centrifugation through a colloid. *Journal of Equine Veterinary Science* 32(5):289-291.
13. Christoffersen, M., **E. Woodward**, A.M. Bojesen, S. Jacobsen, M.R. Petersen, **M.H.T. Troedsson**, and H. Lehn-Jensen. 2012. Inflammatory responses to induced infectious endometritis in mares resistant or susceptible to persistent endometritis. *BMC Veterinary Research* 8:41 (DOI:10.1186/1746-6148-8-41).
14. Christoffersen, M., **E.M. Woodward**, A.M. Bojesen, M.R. Petersen, **E.L. Squires**, H. Lehn-Jensen, and **M.H.T. Troedsson**. 2012. Effect of immunomodulatory therapy on the endometrial inflammatory response to induced infectious endometritis in susceptible mares. *Theriogenology* 78(5):991-1004.
15. Cohen, N.D., K.R. Kuskie, J.L. Smith, N.M. Slovis, S.E. Brown, R.S. Stepusin, M.K. Chaffin, S. Takai, **C.N. Carter**. 2012. Association of airborne concentrations of virulent *Rhodococcus equi* with location (foaling stall versus paddock) and month (January through June) at 30 breeding farms in central Kentucky. *American Journal of Veterinary Research* 73(10):1603-1609.

16. **Cosden-Decker, R.S.**, M.M. Bickett, C. Lattermann, and **J.N. MacLeod**. 2012. Structural and functional analysis of intra-articular interzone tissue in axolotl salamanders. *Osteoarthritis and Cartilage* 20(11):1347-1356.
17. da Silva, M.A.C., G. Seidel, **E.L. Squires**, J. Graham and E. Carnevale. 2012. Effects of components of Semen extenders on the binding of stallion spermatozoa to bovine or equine zona pellucidae. *Reproduction* 143(5):577-585.
18. **Dirikolu, L., W. Karpiesiuk**, A.F. Lehner, and **T. Tobin**. 2012. Toltrazuril sulfone sodium salt: synthesis, analytical detection, and pharmacokinetics in the horse. *Journal of Veterinary Pharmacology and Therapeutics* 35(3):265-274.
19. Donahue, J.M., **P.J. Timoney**, C.L. Carleton, J.V. Marteniuk, S.F. Sells, and **B.J. Meade**. 2012. Prevalence and persistence of *Taylorella asinigenitalis* in male donkeys. *Veterinary Microbiology* 160(3-4):435-442.
20. Dong, J.-B., W. Zhua, **R.F. Cook**, Y. Goto, Y. Horii, and T. Haga. 2012. Development of a nested PCR assay to detect equine infectious anemia proviral DNA from peripheral blood of naturally infected horses. *Archives of Virology* 157(11):2105-2111.
21. **Erol, E., N.M. Williams**, S.F. Sells, **L. Kennedy**, S.J. Locke, J.M. Donahue, and **C.N. Carter**. 2012. Antibiotic susceptibility patterns of *Crossiella equi* and *Amycolatopsis* species causing nocardioform placentitis in horses. *Journal of Veterinary Diagnostic Investigation* 24(6):1158-1161.
22. **Erol, E.**, S. Locke, J. Donahue., M. Mackin, and C. Carter. 2012. Beta-hemolytic streptococci in horses: a retrospective study between 2000 and 2010. *Journal of Veterinary Diagnostic Investigation* 24(1):142-147.
23. **Erol, E.**, S.F. Sells, **N.M. Williams**, **L. Kennedy**, S.L. Locke, D.P. Labeda, J.M. Donahue, and **C.N. Carter**. 2012. An investigation of a recent outbreak of Nocardioform placentitis caused abortions in horses. *Veterinary Microbiology* 158(3-4):425-430.
24. **Go, Y.Y., E. Bailey**, K.M. Shuck, **P.J. Timoney**, and **U.B.R. Balasuriya**. 2012. Evidence that *in vitro* susceptibility of CD3<sup>+</sup> T lymphocytes to equine arteritis virus infection reflects genetic predisposition of naturally infected stallions to become carriers of the virus. *Journal of Virology* 86(22):12407-12410.
25. **Go, Y.Y., R.F. Cook**, J.Q. Fulgencio, **J.R. Campos**, P. Henney, **P.J. Timoney**, and **U.B.R. Balasuriya**. 2012. Assessment of correlation between *in vitro* CD3<sup>+</sup> T cell susceptibility to EAV infection and clinical outcome following experimental infection. *Veterinary Microbiology* 157(1-2):220-225.
26. **Horohov, D.W.**, S.T. Sinatra, R.K. Chopra, S. Jankowitz, A. Betancourt, and R.J. Bloomer. 2012. The effect of exercise and nutritional supplementation on proinflammatory cytokine expression in young racehorses during training. *Journal of Equine Veterinary Science* 32(12):805-815.

27. **Klein, C.**, and **M.H.T. Troedsson**. 2012. Equine pre-implantation conceptuses express neuraminidase 2-a potential mechanism for desialylation of the equine capsule. *Reproduction in Domestic Animals* 47(3):449-454.
28. **Klein, C.**, J.M. Donahue, S.F. Sells, **E.L. Squires**, **P.J. Timoney**, and **M.H.T. Troedsson**. 2012. Effect of antimicrobial-containing semen extender on risk of dissemination of contagious equine metritis. *Journal of the American Veterinary Medical Association* 241(7):916-921.
29. Kuzmina, T.A., O.I. Lisitsyna, **E.T. Lyons**, T.R. Spraker, and S.C. Tolliver. 2012. Acanthocephalans in northern fur seals (*Callorhinus ursinus*) and a harbor seal (*Phoca Vitulina*) on St. Paul Island, Alaska: species, prevalence, and biodiversity in four fur seal subpopulations. *Parasitology Research* 111(3):1049-1058.
30. Kuzmina, T.A., **E.T. Lyons**, S.C. Tolliver, I.I. Dzeverin, and V.A. Kharchenko. 2012. Fecundity of various species of strongylids (Nematoda: Strongylidae)-parasites of domestic horses. *Parasitology Research* 111(6):2265-2271.
31. Kydd, J., **D. Horohov**, and EIDIX LIOC. 2012. Equine infectious diseases IX symposium. *Equine Veterinary Journal* 44:250.
32. **Lear, T.L.** and **R.B. McGee**. 2012. Disorders of sexual development in the domestic horse, *Equus caballus*: a review. *Sexual Development* 6:61-71.
33. **Lear, T.L.**, J. Lundquist, J.A. Fronczek, S.J. Charter, and **T.V. Little**. 2012. Trisomy-associated hydrops fetalis in a horse fetus. 2012. *Cytogenetic and Genome Research* 136(4):349.
34. Lehner, A.F., J.M. Durringer, C.T. Estill, **T. Tobin**, and A.M. Craig. 2012. Esi-mass spectrometric and Hplc elucidation of a new ergot alkaloid from perennial ryegrass hay silage associated with bovine reproductive problems (Vol 21, Pg 606, 2011). *Toxicology Mechanisms and Methods* 22(3):242.
35. **Liu, C.**, **R.F. Cook**, S.J. Cook, J.K. Craigo, D.L. Even, **C.J. Issel**, R.C. Montelaro, and **D.W. Horohov**. 2012. The determination of *in vivo* envelope-specific cell-mediated immune responses in equine infectious anemia virus-infected ponies. *Veterinary Immunology and Immunopathology* 148(3-4):302-310.
36. **Lu, Z.**, **P.J. Timoney**, J. White, and **U.B.R. Balasuriya**. 2012. Development of one-step TaqMan<sup>®</sup> real-time reverse transcription-PCR and conventional reverse transcription PCR assays for the detection of equine rhinitis A and B viruses. *BMC Veterinary Research* 8:120.
37. **Lu, Z.C.**, **J.Q. Zhang**, C.J.M. Huang, **Y.Y. Go**, K.S. Faaberg, R.R.R. Rowland, **P.J. Timoney**, and **U.B.R. Balasuriya**. 2012. Chimeric viruses containing the n-terminal ectodomains of gp5 and m proteins of porcine reproductive and respiratory syndrome virus do not change the cellular tropism of equine arteritis virus. *Virology* 432(1):99-109.

38. **Lyons, E.T.**, and S.C. Tolliver. 2012. Macrocyclic lactones for parasite control in equids. *Current Pharmaceutical Biotechnology* 13(6):1070-1077.
39. **Lyons, E.T.**, S.C. Tolliver, and T.A. Kuzmina. 2012. Investigation of strongyle EPG values in horse mares relative to known age, number positive, and level of egg shedding in field studies on 26 farms in Central Kentucky (2010–2011). *Parasitology Research* 110(6):2237-2245.
40. **Lyons, E.T.**, T.A. Kuzmina, S.C. Tolliver and T.R. Spraker. 2012. Update on the prevalence of the hookworm, *Uncinaria lucasi*, in northern fur seals (*Callorhinus ursinus*) on St. Paul Island, Alaska, 2011. *Parasitology Research* 111(3):1397-1400.
41. **Lyons, E.T.**, T.A. Kuzmina, T.R. Spraker, N. Jaggi, D.P. Costa, D.E. Crocker, and M.S. Tift. 2012. Parasitological examination for presence of hookworms (*Uncinaria* Spp.) in northern elephant seals (*Mirounga angustirostris*) at Año Nuevo State Reserve, California (2012). *Parasitology Research* 111(4):1847-1850.
42. Magee, C., J.E. Bruemmer, T.M. Nett, **E.L. Squires**, and C.M. Clay. 2012. Kisspeptide in the estrous mare: Is it an appropriate ovulation-inducing agent? *Theriogenology* 78(9):1987-1996.
43. Marenzoni, M.L., E. Lepri, C. Proietti, A. Bietta, M. Coletti, **P.J. Timoney**, and F. Passamonti. 2012. Causes of equine abortion, stillbirth and neonatal death in central Italy. *Veterinary Record* 170(10):262.
44. McCue, M.E., D.L. Bannasch, J.L. Petersen, **E. Bailey**, E. Binns, O. Distl, G. Guerin, T. Hasegawa, E.W. Hill, T. Leeb, G. Lindgren, M.C.T. Penedo, K.H. Roed, O.A. Ryder, J.E. Swinburne, T. Tozaki, S.J. Valberg, M. Vaudin, K. Lindblad-Toh, C.M. Wade, and J.R. Mickelson. 2012. A high density SNP array for the domestic horse and extant perissodactyla: utility for association mapping, genetic diversity and phylogeny studies. *Public Library of Science Genetics* 8(1):January.
45. Mischczak, F., L. Legrand, **U.B.R. Balasuriya**, B. Ferry-Abitbol, **J. Zhang**, A. Hans, G. Fortier, S. Pronost, and A. Vabret. 2012. Emergence of novel equine arteritis virus (EAV) variants during persistent infection in the stallion: origin of the 2007 French EAV outbreak was linked to an EAV strain present in the semen of a persistently infected carrier stallion. *Virology* 423:165-174.
46. Molento, M.B., **M.K. Nielsen**, and R.M. Kaplan. 2012. Resistance to avermectin/milbemycin anthelmintics in equine cyathostomins – current situation. *Veterinary Parasitology* 185(1):16-24.
47. **Mondal, S.P.**, Y. Chang, and **U.B.R. Balasuriya**. 2012. Sequence analysis of infectious bronchitis virus isolates from the 1960s in the United States. *Archives of Virology* 158(2):497-503.

48. Montgomery, J.B., J.J. Wichtel, M.G. Wichtel, M.A. McNiven, J.T. McClure, F. Markham, and **D.W. Horohov**. 2012. Effects of selenium source on measures of selenium status and immune function in horses. *Canadian Journal of Veterinary Research* 76:281-291.
49. Montgomery, J.B., J.J. Wichtel, M.G. Wichtel, M.A. McNiven, J.T. McClure, F. Markham, and **D.W. Horohov**. 2012. The effects of selenium source on measures of selenium status of mares and selenium status and immune function of their foals. *Journal of Equine Veterinary Science* 32(6):352-359.
50. Mozzaquatro, F.D., J.P. Verstegen, R.H. Douglas, **M.H.T. Troedsson**, F.D. DeLaCorte, C.A.M. Silva, and M.I.B. Rubin. 2012. Progesterone production in mares and echographic evaluation of the corpora lutea formed after follicular aspiration. *Reproduction in Domestic Animals* 47(2):288-292.
51. **Nielsen, M.K.** 2012. Sustainable equine parasite control – perspectives and research needs. *Veterinary Parasitology* 185(1):32-44.
52. **Nielsen, M.K.**, A.N. Vidyashankar, S.N. Olsen, J. Monrad, and S.M. Thamsborg. 2012. *Strongylarus vulgaris* associated with usage of selective therapy on Danish horse farms – is it reemerging? *Veterinary Parasitology* 189:260-266.
53. **Nielsen, M.K.**, S.N. Olsen, **E.T. Lyons**, J. Monrad, and S.M. Thamsborg. 2012. Real-time PCR evaluation of *Strongylus vulgaris* in horses on farms in Denmark and Central Kentucky. *Veterinary Parasitology* 190(3-4):461-466.
54. **Page, A.E.**, L.H. Fallon, **U.K. Bryant**, **D.W. Horohov**, T.W. Luna, P.S. Marsh, N.M. Slovis, K.A. Sprayberry, and **A.T. Loynachan**. 2012. Acute deterioration and death with necrotizing enteritis associated with *Lawsonia intracellularis* in 4 weanling horses. *Journal of Veterinary Internal Medicine* 26(6):1476-1480.
55. Patterson, A.L., **E.L. Squires**, T.R. Hansen, G.J. Bouma, and J.E. Bruemmer. 2012. Gene profiling of inflammatory genes in day 18 endometria from pregnant and non-pregnant mares. *Molecular Reproduction and Development* 79(11):777-784.
56. **Smith, K.L.**, **Y. Li**, P. Breheny, **R.F. Cook**, P.J. Henney, S. Sells, S. Pronost, **Z. Lu**, B.M. Crossley, **P.J. Timoney**, and **U.B.R. Balasuriya**. 2012. New real-time PCR assay using allelic discrimination for detection and differentiation of equine herpesvirus-1 strains with A<sub>2254</sub> and G<sub>2254</sub> polymorphisms. *Journal of Clinical Microbiology* 50(6):1981-1988.
57. **Sun, L.S.**, **A.A. Adams**, A. Betancourt, J.C. Stewart, **C. Liu**, and **D.W. Horohov**. 2012. The role of proliferation in the regulation of interferon gamma (Ifn gamma) expression in foals. *Developmental and Comparative Immunology* 36(3):534-539.

58. Tadros, E.M., N. Frank, K.M. Newkirk, R.L. Donnell, and **D.W. Horohov**. 2012. Effects of a "two-hit" model of organ damage on the systemic inflammatory response and development of laminitis in horses. *Veterinary Immunology and Immunopathology* 150(1-2):90-100.
59. **Verma, A.**, J. Matsunaga, **S. Artiushin**, M. Pinne, D.J. Houwers, D.A. Haake, B. Stevenson, and **J.F. Timoney**. 2012. Antibodies to a novel leptospiral protein, LruC, in the eye fluids and sera of horses with Leptospira-associated uveitis. *Clinical and Vaccine Immunology* 19(3):452-456.
60. **Williams, N.M.** and **U.K. Bryant**. 2012. Periparturient arterial rupture in mares: a postmortem study. *Journal of Equine Veterinary Science* 32:281-284.
61. Witt, M.C., H. Bollwein, J. Probst, C. Baackmann, **E.L. Squires**, and H. Sieme. 2012. Doppler sonography of the uterine and ovarian arteries during the superovulatory program in horses. *Theriogenology* 77(7):1406-1414.
62. **Woodward, E.M.**, M. Christoffersen, **D. Horohov**, **E.L. Squires**, and **M.H.T. Troedsson**. 2012. The effect of immune modulation on endometrial cytokine expression in mares susceptible to persistent breeding induced endometritis. *Reproduction in Domestic Animals* 47:560-561.
63. **Woodward, E.M.**, M. Christoffersen, **J. Campos**, **D.W. Horohov**, K.E. Scoggin, **E. Squires**, and **M.H.T. Troedsson**. 2012. An investigation of uterine nitric oxide production in mares susceptible and resistant to persistent breeding induced endometritis, and the effects of immunomodulation. *Reproduction in Domestic Animals* 48(4):554-561.
64. **Woodward, E.M.**, M. Christoffersen, **J. Campos**, **E.L. Squires**, and **M.H. Troedsson**. 2012. Susceptibility to persistent breeding-induced endometritis in the mare: Relationship to endometrial biopsy score and age, and variations between seasons. *Theriogenology* 78(3):495-501.
65. **Zhang, J.Q.**, **Y.Y. Go**, C.J.M. Huang, **B.J. Meade**, **Z.C. Lu**, E.J. Snijder, **P.J. Timoney**, and **U.B.R. Balasuriya**. 2012. Development and characterization of an infectious cDNA clone of the modified live virus vaccine strain of equine arteritis virus. *Clinical and Vaccine Immunology* 19(8):1312-1321.

### **NON-REFEREED PUBLICATIONS**

1. **Adams, A.** 2012. The 'older' horse: An immunological perspective. *Equine Disease Quarterly* 21(2):5-6.
2. **Arnold, M.**, and **C.L. Gaskill**. 2012. Mycotoxins and their effects on cattle. *Kentucky Veterinary News*, (Winter) pp 26-27.
3. **Arnold, L.M.** 2012. Animal disease traceability: Knowing where animals are, where they've been, and when. *Cow Country News* (May).

4. **Arnold, L.M.** 2012. Calf diarrhea-new research into oral electrolyte therapy. Kentucky Dairy Notes (December).
5. **Arnold, L.M.** 2012. Fast facts on pinkeye for producers. Cow Country News (July).
6. **Arnold, L.M.** 2012. Management of the dry cow to prevent mastitis. Kentucky Dairy Notes (August).
7. **Arnold, L.M.** 2012. Strategic management of anaplasmosis in KY. Cow Country News (September).
8. **Arnold, L.M.** 2012. The new animal disease traceability proposed rule: The interstate certificate of veterinary inspection (ICVI). Cow Country News (June).
9. **Arnold, L.M.** 2012. The U.S. Food and Drug Administration (FDA) and cephalosporin use: How will this new rule affect KY dairy producers? Part II Kentucky Dairy Notes (May).
10. **Arnold, L.M.** 2012. The U.S. Food and Drug Administration (FDA) and cephalosporin use: How will this new rule affect KY dairy producers? Kentucky Dairy Notes (March).
11. **Arnold, L.M.** 2012. What is a “zero detectable level” of a drug and why is it important? Kentucky Dairy Notes (October).
12. **Arnold, L.M.** 2012: The new animal disease traceability proposed rule: The interstate certificate of veterinary inspection (ICVI). KY Veterinary News (Summer).
13. **Arnold, L.M.**, and **C. Gaskill.** 2012. Mycotoxins and their effects on dairy cattle. Kentucky Dairy Notes (November).
14. **Bailey, E.** 2012. Across the fence: Genomics and infectious disease. The Horse 29(1):58.
15. Bewley, J.M., **M. Arnold**, and D. Amaral-Phillips. 2012. Are you using the DHI “Hot Sheet” to manage your herd somatic cell count? Kentucky Dairy Notes (December).
16. **Carter, C.N.** 2012. Editor, Diagnostic Laboratory Rounds. Kentucky Veterinary News, Spring, Summer, Fall, Winter editions.
17. **Carter, C.N.** 2012. From the diagnostic laboratory. Cattle Country News (September).
18. **Chambers, T.M.** 2012. Conclusions and Recommendations of the OIE Expert Surveillance Panel on equine influenza vaccine composition. OIE Bulletin 2012-2, pp. 46-47.
19. **Dwyer, R.M.** 2012. Commentary. Lloyd’s Equine Disease Quarterly 21(1):1.
20. **Dwyer, R.M.** 2012. Commentary. Lloyd’s Equine Disease Quarterly 21(4):1.

21. **Dwyer, R.M.**, and M. Newman. 2012. Being prepared for weather disasters. Lloyd's Equine Disease Quarterly 21(1):3.
22. **Gaskill, C.L.** 2012. Fluoridate water and horses. Equine Disease Quarterly 21(4):4-5.
23. **Gaskill, C.L.** 2012. Toxin topic: Blue-green algae poisoning. Bluegrass Equine Digest (July) pp 6-7.
24. **Gaskill, C.L.** 2012. Toxin topic: Ionophore intoxication in horses. Bluegrass Equine Digest (March) pp 1-2.
25. **Gaskill, C.L.**, and M. Arnold. 2012. Mycotoxins and their effects on cattle. Cow Country News, (November) p. 34.
26. **Kennedy, L.**, and **C.L. Gaskill**. 2012. Chlorate poisoning in cattle. Kentucky Veterinary News Spring, pp. 19-20.
27. Kydd, J.H., J. Slater, N. Osterrieder, D.P. Lunn, D.F. Antczak, W. Azab, **U. Balasuriya**, C. Barnett, M. Brosnahan, C. Cook, A. Damiani, D. Elton, A. Frampton, J. Gilkerson, L. Goehring, **D. Horohov**, L. Maxwell, J. Minke, P. Morley, H. Nauwynck, R. Newton, G. Perkins, N. Pusterla, G. Soboll-Hussey, J. Traub-Dargatz, H. Townsend, G. R. Van de walle and B. Wagner. 2012. Third International Havemeyer Workshop on Equine Herpesvirus type 1. Equine Veterinary Journal 44:513-517.
28. **Nielsen, M.K.** 2012. Are natural dewormers effective? [www.horsetalk.co.nz](http://www.horsetalk.co.nz), 03/23/2012.
29. **Nielsen, M.K.** 2012. Deworming – concerns about bots. Equus 419:72-73.
30. **Nielsen, M.K.** 2012. Evolution in equine parasite control. Equine Disease Quarterly 21(2):4.
31. **Nielsen, M.K.** 2012. What is this worm? [www.horsetalk.co.nz](http://www.horsetalk.co.nz), 03/15/2012.
32. **Nielsen, M.K.** 2012. Worming a mare soon after birth. [www.horsetalk.co.nz](http://www.horsetalk.co.nz), 03/07/2012.
33. Smith, R., J. Lehmkuhler, **C. Gaskill** and **L.M. Arnold**. 2012. Nitrate poisoning in livestock. Cow Country News (August).
34. **Timoney, P.J.** 2012. Contagious equine metritis: An insidious and potentially pervasive disease. Equine Disease Quarterly 21(4):3.
35. Tiwari, A., S.E. Reedy, **D.W. Horohov**, and **T.M. Chambers**. 2012. Mechanism of influenza A virus mediated inhibition of IL-23 expression in macrophage cells. Journal of Equine Veterinary Science 32(10):S16.

36. Vincelli, P., D. Johnson, and **C.L. Gaskill**. 2012. Options for mycotoxin analysis in corn and feed. University of Kentucky Cooperative Extension Service Plant Pathology Fact Sheet. PPFs-MISC-01. (November).
37. **Williams, N.M.** 2012. Potomac Horse Fever. Equine Disease Quarterly 21:4.

### **EXTENSION PUBLICATIONS**

1. **Arnold, L.M.** 2012. Animal disease traceability: Knowing where animals are, where they've been, and when. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (March).
2. **Arnold, L.M.** 2012. Bovine trichomoniasis-Should you be concerned? University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (February).
3. **Arnold, L.M.** 2012. Fast facts on pinkeye for producers. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (June).
4. **Arnold, L.M.** 2012. New research in the diagnosis and treatment of neonatal calf diarrhea. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (December).
5. **Arnold, L.M.** 2012. Salt toxicity: A consequence of too much salt and not enough water. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (January).
6. **Arnold, L.M.** 2012. The new animal disease traceability proposed rule: The interstate certificate of veterinary inspection (ICVI). University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (May).
7. **Arnold, L.M.** and **C. Gaskill**. 2012. Mycotoxins and their effects on cattle. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (November).
8. **Arnold, L.M.**, and J.M. Bewley. 2012. Management of the Dry Cow to Prevent Mastitis. University of Kentucky Cooperative Extension Service Factsheet. ID-209.
9. **Arnold, L.M.**, **C. Gaskill**, R. Smith, and G. Lacefield. 2012. Cyanide poisoning in ruminants. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (October).
10. **Arnold, L.M.**, **C. Gaskill**, R. Smith, G. Lacefield, J. Lehmkuhler, and R. Burris. 2012. Partridge pea-is it safe? University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (September).

11. **Arnold, M.** and **C.L. Gaskill.** 2012. Cyanide poisoning in ruminants. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (October) pp 5-6.
12. **Arnold, M.** and **C.L. Gaskill.** 2012. Mycotoxins and their effects on cattle. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (November) pp 6-8.
13. **Arnold, M., C.L. Gaskill,** and R. Smith. 2012. Beware of cyanide (prussic acid) poisoning. University of Kentucky Cooperative Extension Service Forage News (October) p 2.
14. **Arnold, M., C.L. Gaskill,** R. Smith, G. Lacefield, J. Lehmkuhler, and R. Burris. 2012. Partridge pea – is it safe? University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (September) pp 6-7.
15. **Arnold, M.** and **C.L. Gaskill.** 2012. New research in the diagnosis and treatment of neonatal calf diarrhea. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (December) pp 8-10.
16. Bewley, J.M., and **L.M. Arnold.** 2012. Recommended milking procedures for maximum milk quality. University of Kentucky Cooperative Extension Service Factsheet. ID-208.
17. **Gaskill, C.L.** 2012. University of Kentucky study to evaluate conditions of county animal shelters and county compliance with Kentucky animal control laws. Kentucky Veterinary News (Summer) pp 7-8.
18. Smith, R., J. Lehmkuhler, **C. Gaskill,** and **L.M. Arnold.** 2012. Nitrate poisoning in livestock. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (July).
19. Smith, R., J. Lehmkuhler, **C.L. Gaskill,** and **M. Arnold.** 2012. Nitrate poisoning in livestock. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (July) pp 3-5.

## **2013**

### **BOOKS/CHAPTERS**

1. **Balasuriya, U.B.R.** 2013. Arteriviridae and Roniviridae (Chapter 63). In: McVey, D.S., M. Kennedy, and M.M. Chengappa (eds), Veterinary Microbiology, 3rd Ed. Wiley-Blackwell, Ames, IA. pp 474-490.
2. **Balasuriya, U.B.R.** 2013. Coronaviridae (Chapter 62). In: McVey, D.S., M. Kennedy, and M.M. Chengappa (eds), Veterinary Microbiology, 3rd Ed. Wiley-Blackwell, Ames, IA. pp 456-473.

3. **Balasuriya, U.B.R.** and MacLachlan, N.J. 2013. Equine viral arteritis. *In:* Sellon, D.C. and M.T. Long (eds), Equine Infectious Diseases, 2<sup>nd</sup> Ed. Saunders Elsevier, St. Louis, MO. pp 169-181.
4. **Coleman, S.J., M.J. Mienaltowski,** and **J.N. MacLeod.** 2013. Functional Genomics. *In:* Chowdhary, B.P. (ed.), Equine Genomics. Blackwell Publishing Ltd., Oxford, UK. doi: 10.1002/9781118522158. Chapter 8.
5. **Nielsen, M.K.,** C.R. Reinemeyer, and D.C. Sellon. 2013. Nematodes. *In:* Sellon, D.C. and M.T. Long (eds.), Equine Infectious Diseases, 2<sup>nd</sup> Ed. Saunders Elsevier, St. Louis, MO. pp 475-490.
6. **Timoney, J.F.** 2013. Salmonella infections in horses. *In:* Barrow, P.A. and U. Methner (eds). Salmonella in Domestic Animals, 2<sup>nd</sup> Ed. CABI, Wallingford, UK. Chapter 15, pp 305-317.
7. **Timoney, P.J.** 2013. Infectious diseases and international movement of horses. *In:* Sellon, D.C. and M.T. Long (eds.), Equine Infectious Diseases, 2<sup>nd</sup> Ed. Saunders Elsevier, St. Louis, MO. pp 544-551.

#### **REFEREED PUBLICATIONS**

1. Ababneh, M., and **M.H.T. Troedsson.** 2013. Ovarian steroid regulation of endometrial phospholipase A2 isoforms in horses. *Reproduction in Domestic Animals* 48(2):311-316.
2. Ababneh, M.M., and **M.H.T. Troedsson.** 2013. Endometrial phospholipase A2 activity during the oestrous cycle and early pregnancy in mares. *Reproduction in Domestic Animals* 48:46-52.
3. **Adams, A.A.** and **D.W. Horohov.** 2013. The effect of an immunomodulator (parapoxvirus ovis) on cell-mediated immunity (CMI) in abruptly weaned foals. *Veterinary Immunology and Immunopathology* 153:118-122.
4. **Adams, A.A., M.H. Siard,** S.E. Reedy, C. Stewart, A. Betancourt, **M.G. Sanz** and **D.W. Horohov.** 2013. Identifying the role of a “caloric restriction mimetic”, resveratrol, in Equine Metabolic Syndrome and its implications for targeted therapy. Equine Science Society Symposium, May 28<sup>th</sup>-31<sup>st</sup>, Mescalero, New Mexico. *Journal of Equine Veterinary Science* 33(5): 346.
5. Almeida, J., A.J. Conley, and **B.A. Ball.** 2013. Expression of anti-mullerian hormone, cdkn1b, connexin 43, androgen receptor and steroidogenic enzymes in the equine cryptorchid testis. *Equine Veterinary Journal* 45(5):538-545.
6. Andersen, U.V., **D.K. Howe,** **S. Dangoudoubiyam,** N. Toft, C.R. Reinemeyer, **E.T. Lyons,** S.N. Olsen, J. Monrad, P. Nejsum, and **M.K. Nielsen.** 2013. SvSXP: a *Strongylus vulgaris* antigen with potential for prepatent diagnosis. *Parasites and Vectors* 6:84. Doi 10.1186/1756-3305-6-84.

7. Andersen, U.V., **D.K. Howe**, S.N. Olsen, and **M.K. Nielsen**. 2013. Recent advances in diagnosing pathogenic equine gastrointestinal helminths: The challenge of prepatent detection. *Veterinary Parasitology* 192(1-3):1-9.
8. Andersen, U.V., I.T. Haakansson, T. Roust, M. Rhod, K.E. Baptiste, and **M.K. Nielsen**. 2013. Developmental stage of strongyle eggs affects the outcome variations of real-time PCR analysis. *Veterinary Parasitology* 191:191-196.
9. **Artiushin, S.C., J.F. Timoney**, M. Fettinger, L. Fallon, and R. Rathgeber. 2013. Immunisation of mares with binding domains of toxins A and B *Clostridium difficile* elicits serum and colostral antibodies that block toxin binding. *Equine Veterinary Journal* 45(4):476-480.
10. Awinda, P.O., R.H. Mealey, L.B.A. Williams, P.A. Conrad, A.E. Packham, K.E. Reif, J.F. Grause, A.M. Pelzel-McCluskey, C. Chung, R.G. Bastos, L.S. Kappmeyer, **D.K. Howe**, S.L. Ness, D.P. Knowles, and M.W. Ueti. 2013. Serum antibodies from a subset of horses positive for *babesia caballi* by competitive enzyme-linked immunosorbent assay demonstrate a protein recognition pattern that is not consistent with infection. *Clinical and Vaccine Immunology* 20(11):1752-1757.
11. **Balasuriya, U.B.R., Y.Y. Go**, and N.J. MacLachlan. 2013. Equine arteritis virus. *Veterinary Microbiology* 167 (1-2): 93-122.
12. **Ball, B.A.**, J. Almeida, and A.J. Conley. 2013. Determination of serum anti-mullerian hormone concentrations for the diagnosis of granulosa-cell tumours in mares. *Equine Veterinary Journal* 45(2):199-203.
13. **Ball, B.A.**, K.E. Scoggin, **M.H.T. Troedsson**, and **E.L. Squires**. 2013. Characterization of prostaglandin e-2 receptors (ep2, ep4) in the horse oviduct. *Animal Reproduction Science* 142(1-2):35-41.
14. Brummer, M., S. Hayes, **A.A. Adams, D.W. Horohov**, K.A. Dawson, and L.M. Lawrence. 2013. The effect of selenium supplementation on vaccination response and immune function in adult horses. *Journal of Animal Science* 91(8):3702-3715.
15. **Canisso, I.F., B. Ball**, K. Scoggin, and **M. Troedsson**. 2013. Alpha-fetoprotein is highly expressed and appears to be increased in the foetal fluids of mares with placentitis. *Reproduction in Domestic Animals* 48:116.
16. **Canisso, I.F., B.A. Ball, M.H. Troedsson**, E.S.M. Silva, and **G.M. Davolli**. 2013. Decreasing ph of mammary gland secretions is associated with parturition and is correlated with electrolyte concentrations in prefoaling mares. *Veterinary Record* 173(9):218.

17. Cao, X., A.N. Vidyashankar, and **M.K. Nielsen**. 2013. Association between large strongyle genera in larval cultures - using rare-event poisson regression. *Parasitology* 140(10):1246-1251.
18. Carstensen, H., L. Larsen, C. Ritz, and **M.K. Nielsen**. 2013. Daily variability of strongyle fecal egg counts in horses. *Journal of Equine Veterinary Science* 33(3):161-164.
19. Cauchard, S., S. Giguere, M. Venner, G. Muscatello, J. Cauchard, N.D. Cohen, A. Haas, S.A. Hines, M.K. Hondalus, **D.W. Horohov**, W.G. Meijer, J.F. Prescott, and J. Vazquez-Boland. 2013. *Rhodococcus equi* research 2008-2012: Report of the fifth international havemeyer workshop. *Equine Veterinary Journal* 45(5):523-526.
20. **Chambers, T.M., U.B.R. Balasuriya**, S.E. Reedy, and **A. Tiwari**. 2013. Replication of avian influenza viruses in equine tracheal epithelium but not in horses. *Influenza and Other Respiratory Viruses* 7:90-93.
21. Chu, P.D. and **A.T. Loynachan**. 2013. Congenital glycogen storage disease in a South American coati (*Nasua nasua*). *Journal of Wildlife Diseases* 44(3):769-772.
22. Chung, C., C. Wilson, **P. Timoney, U. Balasuriya, E. Adam**, D.S. Adams, J.F. Evermann, A. Clavijo, K. Shuck, S. Rodgers, S.S. Lee, and T.C. McGuire. 2013. Validation of an improved competitive enzyme-linked immunosorbent assay to detect equine arteritis virus antibody. *Journal of Veterinary Diagnostic Investigation* 25(6):727-735.
23. Chung, C.W., C. Wilson, **P. Timoney, E. Adam**, D.S. Adams, J.S. Chung, J.F. Evermann, K. Shuck, S.S. Lee, and T.C. McGuire. 2013. Comparison of an improved competitive enzyme-linked immunosorbent assay with the world organization for animal health-prescribed serum neutralization assay for detection of antibody to equine arteritis virus. *Journal of Veterinary Diagnostic Investigation* 25(2):182-188.
24. **Claes, A., B.A. Ball**, C.J. Corbin, and A.J. Conley. 2013. Age and season affect serum testosterone concentrations in cryptorchid stallions. *Veterinary Record* 173(7).
25. **Claes, A., B.A. Ball**, J. Almeida, C.J. Corbin, and A.J. Conley. 2013. Serum anti-mullerian hormone concentrations in stallions: Developmental changes, seasonal variation, and differences between intact stallions, cryptorchid stallions, and geldings. *Theriogenology* 79(9):1229-1235.
26. **J.J. Kalmar**, Z. Zeng, **M.S. Hestand**, J.Z. Liu, and **J.N. MacLeod**. 2013. Analysis of unannotated equine transcripts identified by mRNA sequencing. *Public Library of Science One* 8(7): e70125. doi: 10.1371.
27. **Cook, R.F.**, C. Leroux and **C.J. Issel**. 2013. Equine infectious anemia and equine infectious anemia virus 2013: a review. *Veterinary Microbiology* 167(3-4):181-204.

28. Craigo, J.K., C. Ezzelarab, S.J. Cook, **C. Liu**, **D. Horohov**, **C.J. Issel**, and R.C. Montelaro. 2013. Ancestral vs. Consensus vs. Polyvalent: Envelope effects on vaccine efficacy in an equine lentiviral attenuated vaccine model. *Aids Research and Human Retroviruses* 29(11):A33-A34.
29. Craigo, J.K., C. Ezzelarab, S.J. Cook, L. Chong, **D. Horohov**, **C.J. Issel**, and R.M. Montelaro. 2013. Envelope determinants of equine lentiviral vaccine protection. *Public Library of Science One* 8(6):e66093. (doi:10.1371/journal.pone.0066093)
30. **Dirikolu, L.**, J.H. Foreman, and **T. Tobin**. 2013. Current therapeutic approaches to equine protozoal myeloencephalitis. *Javma-Journal of the American Veterinary Medical Association* 242(4):482-491.
31. Dong, J.-B., W. Zhu, **R.F. Cook**, Y. Goto, H. Horii, and T. Haga. 2013. Identification of a novel equine infectious anemia virus (EIAV) field strain isolated from feral horses in Southern Japan. *Journal of General Virology* 94:360-365.
32. **Erol, E.**, **C. Jackson**, Y. Bai, S. Sells, S. Locke, and M. Kosoy. 2013. *NBartonella bovis* isolated from a cow with endocarditis. *Journal of Veterinary Diagnostic Investigation* 25(2):288-290.
33. Gould, J.C., M.G. Rossano, L.M. Lawrence, S.V. Burk, R.B. Ennis and **E.T. Lyons**. 2013. The effects of windrow composting on the viability of *Parascaris equorum* eggs. *Veterinary Parasitology* 191:73-80.
34. Gurel, V., K. Lambert, A.E. Page, **A.T. Loynachan**, **J.F. Timoney**, M. Fettingler, **D.W. Horohov**, and J. McMichael. 2013. Streptolysin-O/antibiotics adjunct therapy modulates site-specific expression of extracellular matrix and inflammatory genes in lungs of *Rhodococcus equi* infected foals. *Veterinary Research Communications* 37(2):145-154.
35. Gurel, V., K. Lambert, **A.E. Page**, **A.T. Loynachan**, K. Huges, **J.F. Timoney**, M. Fettingler, **D.W. Horohov**, and J. McMichael. 2013. Streptolysin-o/antibiotics adjunct therapy modulates site-specific expression of extracellular matrix and inflammatory genes in lungs of *Rhodococcus equi* infected foals. *Veterinary Research Communications* 37(2):145-154.
36. Hansen, S., L.S. Sun, K.E. Baptiste, J. Fjeldborg, and **D.W. Horohov**. 2013. Age-related changes in intracellular expression of ifn-gamma and tnf-alpha, in equine lymphocytes measured in bronchoalveolar lavage and peripheral blood. *Developmental and Comparative Immunology* 39(3):228-233.
37. Holl, H.M., **T.L. Lear**, R.D. Nolen-Walston, J. Slack, and **S.A. Brooks**. 2013. Detection of two equine trisomies using snp-cgh. *Mammalian Genome* 24(5-6):252-256.
38. Huang, Y., Y. Hu, C.D. Jones, **J.N. MacLeod**, D.Y. Chiang, Y.F. Liu, J.F. Prins, and J.Z. Liu. 2013. A robust method for transcript quantification with RNA-seq data. *Journal of Computational Biology* 20(3):167-187.

39. **Issel, C.J.**, M.T. Scicluna, S.J. Cook, **R.F. Cook**, A. Caprioli, I. Ricci, F. Rosone, J.K. Craigo, R.C. Montelaro, and G.L. Autorino. 2013. Challenges and proposed solutions for more accurate serological diagnosis of equine infectious anaemia. *Veterinary Record* 172(8):210-U239.
40. Keith, L., **B.A. Ball**, K. Scoggin, **A. Esteller-Vico**, **E.M. Woodward**, **M.H.T. Troedsson**, and **E.L. Squires**. 2013. Diestrus administration of oxytocin prolongs luteal maintenance, alters PGFM concentrations, and decreases endometrial COX-2 expression in mares. *Theriogenology* 79:616-624.
41. **Klein, C.** and **M.H.T. Troedsson**. 2013. Macrophage migration inhibitory factor is expressed by equine conceptuses and endometrium. *Reproduction in Domestic Animals* 48:297-304.
42. **Klein, C.** and **M.H.T. Troedsson**. 2013. Oxytocin-induced prolonged dioestrus does not downregulate the expression of prostaglandin-endoperoxidase synthase 2 or oxytocin receptor in equine endometrium. *Reproduction Fertility and Development* 25:208.
43. **Klein, C.**, **M.H.T. Troedsson**, and J. Rutlant. 2013. Region-specific expression of aquaporin subtypes in equine testis, epididymis, and ductus deferens. *Anatomical Record-Advances in Integrative Anatomy and Evolutionary Biology* 296:1115-1126.
44. **Klein, C.**, **M.H.T. Troedsson**, and J. Rutlant. 2013. Expression of aquaporin water channels in equine endometrium is differentially regulated during the oestrous cycle and early pregnancy. *Reproduction in Domestic Animals* 48(4):529-537.
45. Kuzmina, T.A., Y.I. Kuzmin, V.V. Tkach, T.R. Spraker, and **E.T. Lyons**. 2013. Ecological, morphological and molecular studies of *Acanthocheilonema odendhali* (Nematoda:Filarioidea) in northern fur seals (*Callorhinus ursinus*) on St. Paul Island, Alaska. *Parasitology Research*. 112:3091–3100.
46. **Lyons, E.T.**, and S.C. Tolliver. 2013. Further indication of lowered activity of ivermectin on immature small strongyles in the intestinal lumen of horses on a farm in Central Kentucky. *Parasitology Research* 112:889-891.
47. Marenzoni, M.L., A. Bietta, E. Lepri, P.C. Proietti, P. Cordioli, E. Canelli, V. Stefanetti, M. Coletti, **P.J. Timoney**, and F. Passamonti. 2013. Role of equine herpesviruses as co-infecting agents in cases of abortion, placental disease and neonatal foal mortality. *Veterinary Research Communications* 37(4):311-317.
48. **McDowell, K.J.**, E.S. Moore, A.G. Parks, L.P. Bush, **D.W. Horohov**, and L.M. Lawrence. 2013. Vasoconstriction in horses caused by endophyte-infected tall fescue seed is detected with Doppler ultrasonography. *Journal of Animal Science* 91:1677-1684.

49. Meyers-Brown, G.A., P.M. McCue, **M.H.T. Troedsson**, **C. Klein**, W. Zent, R.A. Ferris, A.R.G. Lindholm, D.B. Scofield, **A.N. Claes**, M. Morganti, M.A. Colgin, R.L. Wetzel, A.R. Peters, and J.F. Roser. 2013. Induction of ovulation in seasonally anestrous mares under ambient lights using recombinant equine fsh (refsh). *Theriogenology* 80(5):456-462.
50. **Mondal, S.P.**, **U.B.R. Balasuriya**, and M. Yamage. 2013. Genetic diversity and phylogenetic analysis of highly pathogenic avian influenza (hpa1) h5n1 viruses circulating in bangladesh from 2007-2011. *Transboundary and Emerging Diseases* 60(6):481-491.
51. Morrell, J.M., **P. Timoney**, **C. Klein**, K. Shuck, **J. Campos**, and **M. Troedsson**. 2013. Single-layer centrifugation reduces equine arteritis virus titre in the semen of shedding stallions. *Reproduction in Domestic Animals* 48(4):604-612.
52. Nadler, S.A., **E.T. Lyons**, C. Pagan , D. Hyman, E.E. Lewis, K. Beckmen, C.M. Bell, A. Castinel, R.L. DeLong, P.J. Duignan, C. Farinpour, K.B. Huntington, T. Kuiken, D. Morgades, S. Naem, R. Norman, C. Parker, P. Ramos, T.R. Spraker, B. Berón-Vera. 2013. Molecular systematics of pinniped hookworms (Nematoda: *Uncinaria*): species delimitation, host associations and host-induced morphometric variation. *International Journal for Parasitology* 43(14):1119-1132.
53. **Nielsen, M.K.**, A. Betancourt, **E.T. Lyons**, **D.W. Horohov**, and S. Jacobsen. 2013. Characterization of the inflammatory response to anthelmintic treatment of ponies with cyathostomiasis. *The Veterinary Journal* 198(2):457-462.
54. **Nielsen, M.K.**, A.N. Vidyashankar, B.M. Hanlon, G. Diao, S.L. Petersen, and R.M. Kaplan. 2013. Hierarchical model for evaluating pyrantel efficacy against strongyle parasites in horses. *Veterinary Parasitology* 197(3-4):614-622.
55. Pereira, G.R., P.L. Lorenzo, G.F. Carneiro, **B.A. Ball**, L.M.C. Pegoraro, C.A. Pimentel, and I.K.M. Liu. 2013. Influence of equine growth hormone, insulin-like growth factor-i and its interaction with gonadotropins on in vitro maturation and cytoskeleton morphology in equine oocytes. *Animal* 7(9):1493-1499.
56. Pereira, G.R., P.L. Lorenzo, G.F. Carneiro, **B.A. Ball**, S. Bilodeau-Goeseels, J. Kastelic, L.M.C. Pegoraro, C.A. Pimentel, **A. Esteller-Vico**, J.C. Illera, G.S. Granada, P. Casey, and I.K.M. Liu. 2013. The involvement of growth hormone in equine oocyte maturation, receptor localization and steroid production by cumulus-oocyte complexes in vitro. *Research in Veterinary Science* 95(2):667-674.

57. Petersen, J.L., J.R. Mickelson, A.K. Rendahl, S.J. Valberg, L.S. Andersson, J. Axelsson, **E. Bailey**, D. Bannasch, M.M. Binns, A.S. Borges, P. Brama, A.D. Machado, S. Capomaccio, K. Cappelli, E.G. Cothran, O. Distl, L. Fox-Clipsham, **K.T. Graves**, G. Guerin, B. Haase, T. Hasegawa, K. Hemmann, E.W. Hill, T. Leeb, G. Lindgren, H. Lohi, M.S. Lopes, B.A. McGivney, S. Mikko, N. Orr, M.C.T. Penedo, R.J. Piercy, M. Raekallio, S. Rieder, K.H. Roed, J. Swinburne, T. Tozaki, M. Vaudin, C.M. Wade, and M.E. Mccue. 2013. Genome-wide analysis reveals selection for important traits in domestic horse breeds. *Public Library of Science Genetics* 9(1):e1003211. DOI 10.1371/journal.pgen.1003211.
58. Petersen, J.L., J.R. Mickelson, E.G. Cothran, L.S. Andersson, J. Axelsson, **E. Bailey**, D. Bannasch, M.M. Binns, A.S. Borges, P. Brama, A.D. Machado, O. Distl, M. Felicetti, L. Fox-Clipsham, **K.T. Graves**, G. Guerin, B. Haase, T. Hasegawa, K. Hemmann, E.W. Hill, T. Leeb, G. Lindgren, H. Lohi, M.S. Lopes, B.A. McGivney, S. Mikko, N. Orr, M.C.T. Penedo, R.J. Piercy, M. Raekallio, S. Rieder, K.H. Roed, M. Silvestrelli, J. Swinburne, T. Tozaki, M. Vaudin, C.M. Wade, and M.E. Mccue. 2013. Genetic diversity in the modern horse illustrated from genome-wide SNP data. *Public Library of Science One* 8(1):e54997. DOI 10.1371/journal.pone.0054997.
59. Pozor, M.A., M.L. Macpherson, S. McDonnell, M. Nollin, J.F. Roser, C. Love, S. Runyon, B.F. Thomas, and **M.H.T. Troedsson**. 2013. Indenopyridine derivative RTI-4587-073(I): A candidate for male contraception in stallions. *Theriogenology* 80(9):1006-1016.
60. Quinlivan, M., **F. Cook**, R. Kenna, J.J. Callinan, and A. Cullinane. 2013. Genetic characterization by composite sequence analysis of a new pathogenic field strain of equine infectious anemia virus from the 2006 outbreak in Ireland. *Journal of General Virology* 94:612-622.
61. Reed, S.M., **D.K. Howe**, J.K. Morrow, A. Graves, M.R. Yeargan, A.L. Johnson, R.J. MacKay, M. Furr, W.J.A. Saville, and **N.M. Williams**. 2013. Accurate antemortem diagnosis of equine protozoal myeloencephalitis (epm) based on detecting intrathecal antibodies against *sarcocystis neurona* using the snsag2 and snsag4/3 ELISAs. *Journal of Veterinary Internal Medicine* 27(5):1193-1200.
62. **Sanz, M., A. Loynachan, L. Sun**, A. Oliveira, P. Breheny, and **D.W. Horohov**. 2013. The effect of bacterial dose and foal age at challenge on *Rhodococcus equi* infection. *Veterinary Microbiology* 167(3-4):623-631.
63. Sinatra, S.T., R.K. Chopra, S. Jankowitz, **D.W. Horohov**, and H.N. Bhagavan. 2013. Coenzyme q10 in equine serum: Response to supplementation. *Journal of Equine Veterinary Science* 33(2):71-73.
64. Stoll, A., C.C. Love, and **B.A. Ball**. 2013. Use of a single-layer density centrifugation method enhances sperm quality in cryopreserved-thawed equine spermatozoa. *Journal of Equine Veterinary Science* 33(7):547-551.

65. **Sun, L.S.**, Z.B. Gong, E.J. Oberst, A. Betancourt, **A.A. Adams**, and **D.W. Horohov**. 2013. The promoter region of interferon-gamma is hypermethylated in neonatal foals and its demethylation is associated with increased gene expression. *Developmental and Comparative Immunology* 39(3):273-278.
66. **Swerczek, T.W.** 2013. Tyzzer's disease in foals: Retrospective studies from 1969 to 2010. *Canadian Veterinary Journal* 54(9):876-880.
67. Tadros, E.M., N. Frank, and **D.W. Horohov**. 2013. Inflammatory cytokine gene expression in blood during the development of oligofructose-induced laminitis in horses. *Journal of Equine Veterinary Science* 33(10):802-808.
68. Tyden, E., D.A. Morrison, A. Engstrom, **M.K. Nielsen**, M. Eydal, and J. Hoglund. 2013. Population genetics of *parascaris equorum* based on DNA fingerprinting. *Infection Genetics and Evolution* 13:236-241.
69. Vander Veen, R.L., M.A. Mogler, B.J. Russell, **A.T. Loynachan**, D.L.H. Harris, and K.I. Kamrud. 2013. Haemagglutinin and nucleoprotein replicon particle vaccination of swine protects against the pandemic H1N1 2009 virus. *Veterinary Record* 173(14):344.
70. Vedhagiri, K., **S. Velineni**, **J.F. Timoney**, S. Shanmughapriya, P. Vijayachari, R. Narayanan, and K. Natarajaseenivasan. 2013. Detection of LipL32-specific IgM by ELISA in sera of patients with a clinical diagnosis of leptospirosis. *Pathogens and Global Health* 107:130-135.
71. **Velineni, S.**, and **J. Timoney**. 2013. Characterization and protective immunogenicity of the SzM protein of *Streptococcus zooepidemicus* NC78 from a clonal outbreak of equine respiratory disease. *Clinical and Vaccine Immunology* 20(8):1181-1188.
72. **Velineni, S.** and **J.F. Timoney**. 2013. Evidence for lateral gene transfer among strains of *Streptococcus zooepidemicus* in weanling horse with respiratory disease. *Infection, Genetics and Evolution* 21:157-160.
73. **Velineni, S.**, and **J.F. Timoney**. 2013. Identification of novel immunoreactive proteins of *streptococcus zooepidemicus* with potential as vaccine components. *Vaccine* 31(38):4129-4135.
74. Wagner, A.L., K.L. Urschel, A. Betancourt, **A.A. Adams**, and **D.W. Horohov**. 2013. Effects of advanced age on whole-body protein synthesis and skeletal muscle mechanistic target of rapamycin signaling in horses. *American Journal of Veterinary Research* 74(11):1433-1442.
75. **Woodward, E.M.**, and **M.H.T. Troedsson, M.H.T.** 2013. Equine breeding induced endometritis: A review. *Journal of Equine Veterinary Science* 33(9):673-682.

76. **Woodward, E.M.**, M. Christoffersen, **J. Campos**, A. Betancourt, **D. Horohov**, K.E. Scoggin, **E.L. Squires**, and **M.H.T. Troedsson**. 2013. Endometrial inflammatory markers of the early immune response in mares susceptible or resistant to persistent breeding-induced endometritis. *Reproduction* 145(3):289-296.
77. Yeargan, M.R., C. Alvarado-Esquivel, J.P. Dubey, and **D.K. Howe**. 2013. Prevalence of antibodies to *Sarcocystis neurona* and *Neospora hughesi* in horses from Mexico. *Parasite* 20:29 doi:10.1051/parasite/2013029.

### **NON-REFEREED PUBLICATIONS**

1. **Adams, A.** 2013. The importance of nutrition in enhancing immunity in the aging horse. *Equine Disease Quarterly* 22(4):4
2. **Adams, A.A.** 2013. Understanding the differences between EMS and PPID. *Bluegrass Equine Digest*. <http://www2.ca.uky.edu/gluck/images/BED/BED-Jun13.pdf>.
3. **Arnold, L.M.** 2013. Acute or Atypical Interstitial Pneumonia (AIP). *KY Veterinary News* (Fall).
4. **Arnold, L.M.** 2013. Brassicas: Be aware of animal health risks. *Grazing News* (Winter 2013).
5. **Arnold, L.M.** 2013. Colostrum management for dairy calves. *Kentucky Dairy Notes* (June).
6. **Arnold, L.M.** 2013. Decisions in the face of growing dewormer resistance. *Goat Producer's Newsletter* (Winter).
7. **Arnold, L.M.** 2013. Did anaplasmosis kill my cow? *Kentucky Dairy Notes* (October).
8. **Arnold, L.M.** 2013. Test your knowledge of parasite management that affect dewormer resistance. *Goat Producer's Newsletter*. (Fall).
9. **Arnold, L.M.** 2013. USDA's animal disease traceability begins March 11, 2013. *Kentucky Dairy Notes* (March).
10. **Arnold, L.M.** 2013. What are you doing to protect refugia? *Goat Producer's Newsletter* (Summer).
11. **Arnold, L.M.** 2013. What to look for in an oral electrolyte product. *Kentucky Dairy Notes* (February).
12. **Arnold, L.M.** 2013. Acute or atypical interstitial pneumonia in grazing cattle. *Cow Country News* (Sept).
13. **Arnold, L.M.** 2013. Brassicas: Be aware of the animal health risks. *Cow Country News* (Nov).

14. **Arnold, L.M.** 2013. Does your pour-on dewormer still work? Cow Country News (June).
15. **Arnold, L.M.** 2013. Judicious use of antibiotics-what does this mean for a beef producer? Cow Country News (July).
16. **Arnold, L.M.** 2013. New research in the diagnosis and treatment of neonatal calf diarrhea. Cow Country News (January).
17. **Arnold, L.M.** 2013. Slaframine toxicosis or “Slobbers” in cattle. Cow Country News (Aug).
18. **Arnold, L.M.** 2013. UK fundamentals of herd health: Vaccinations for the cow-calf operation. Cow Country News (April).
19. **Arnold, L.M.** 2013. USDA Issues final rule for animal disease traceability. Cow Country News (February).
20. **Arnold, L.M.** 2013. What to look for in an oral electrolyte product. Cow Country News (March).
21. **Arnold, L.M.** 2013. When does it pay to deworm in Kentucky? Cow Country News (May).
22. **Arnold, L.M.** 2013. Fescue toxicosis. Cow Country News (Oct).
23. **Arnold, L.M.** 2013: Acute or atypical interstitial pneumonia (AIP). KY Veterinary News (Fall).
24. **Arnold, L.M.** 2013. Judicious use of antibiotics-what does this mean for a dairy producer? Kentucky Dairy Notes (July).
25. **Arnold, L.M.** 2013. What is the best antibiotic against *Staphylococcus aureus* mastitis in lactating cows? Kentucky Dairy Notes (August).
26. **Arnold, L.M.** and **C. Gaskill.** 2013. Mycotoxins and their effects on cattle. KY Veterinary News (Winter).
27. **Balasuriya, U.B.R.,** B.M. Crossley, and **P.J. Timoney.** 2013. Laboratory diagnosis of equine herpesvirus-1 infection in horses: Advances and challenges. Proceedings of the 116<sup>th</sup> Annual Meeting of the United States Animal Health Association, October 18-24, 2012, Greensboro, NC, p. 325-337.
28. **Ball, B.A.** 2013. Abnormalities of the equine estrous cycle. Proceedings, Zoetis Symposium, June 26-29, Guadalajara, Mexico.
29. **Ball, B.A.** 2013. Endocrinological evaluation of the prospective and breeding stallion. Proceedings, Zoetis Symposium, June 26-29, Guadalajara, Mexico.

30. **Ball, B.A.** 2013. New diagnostic methods in endocrinology. Proceedings, Zoetis Symposium, June 26-29, Guadalajara, Mexico.
31. **Ball, B.A.** 2013. Testicular and epididymal injuries and abnormalities. Proceedings, Zoetis Symposium, June 26-29, Guadalajara, Mexico.
32. **Ball, B.A.** 2013. Ultrasonographic and endoscopic examination of the stallion. Proceedings, Zoetis Symposium, June 26-29, Guadalajara, Mexico.
33. **Carter, C.N.** 2013. Editor, Diagnostic Laboratory Rounds. Kentucky Veterinary News, Spring, Summer, Fall, Winter editions.
34. **Carter, C.N.** 2013. From the Diagnostic Laboratory. Cattle Country News (September).
35. **Carter, C.N.**, J. Smith, and **E. Erol.** 2013. Equine monocytic ehrlichiosis: Kentucky case series 2008-2013. Equine Disease Quarterly 22(4):3-4.
36. **Dwyer, R.M.** 2013. Commentary. Lloyd's Equine Disease Quarterly 22(1):1.
37. **Dwyer, R.M.** 2013. Commentary. Lloyd's Equine Disease Quarterly 22(3):1.
38. **Dwyer, R.M.** 2013. Commentary. Lloyd's Equine Disease Quarterly 22(2):1.
39. **Dwyer, R.M.** 2013. Rabies cases during 2011. Lloyd's Equine Disease Quarterly 22(2):4.
40. **Dwyer, R.M.** 2013. West Nile Virus and EEE cases in Kentucky. Bluegrass Equine Digest e-Newsletter, October.
41. **Gaskill, C.L.** 2013. Blue-green algae poisoning. Bluegrass Equine Digest (October).
42. **Gaskill, C.L.** 2013. Snakebite in horses. Equine Disease Quarterly 22(3):4-5.
43. **Gaskill, C.L.** 2013. Snakebite in horses. The Horse (July 15).
44. **Howe, D.K.** and S. Reed. 2013. EPM diagnostics. Equine Disease Quarterly 22(2):3.
45. **Lyons, E.T.** 2013. Delusional parasitosis. American Society of Parasitologists Newsletter 35(1):7-11.
46. **Lyons, E.T.** 2013. Review of life cycles of some parasitic nematodes in mammals in research associated with the University of Kentucky. University of Kentucky College of Agriculture, Food and Environment Agricultural Experiment Station Bulletin SR 106, 7 pp.
47. **Nielsen, M.K.**, L. Mittel, A. Grice, M. Erskine, E. Graves, W. Vaala, R.C. Tully, D.D. French, R. Bowman, and R.M. Kaplan. 2013. AAEP Parasite Control Guidelines. American Association of Equine Practitioners. Online at [www.aaep.org](http://www.aaep.org).

48. **Timoney, J.F.** 2013. Streptococcus zooepidemicus: Only an opportunist? Equine Disease Quarterly, 22(3):3.
49. **Williams, N.M.** 2013. Equine neurologic disease. Equine Disease Quarterly 22(2).

### **EXTENSION PUBLICATIONS**

1. **Arnold, L.M.** 2013. Acute or atypical interstitial pneumonia in grazing cattle. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (August).
2. **Arnold, L.M.** 2013. Deworming-when is it profitable to deworm? University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (April).
3. **Arnold, L.M.** 2013. Did anaplasmosis kill my cow? University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (October).
4. **Arnold, L.M.** 2013. Does your pour-on dewormer work? University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (May).
5. **Arnold, L.M.** 2013. Forage-related disorders in cattle-hypomagnesemic tetany or "Grass Tetany". University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (December).
6. **Arnold, L.M.** 2013. Judicious use of antibiotics-what does this mean for a beef producer? University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (June).
7. **Arnold, L.M.** 2013. Sulfamazine toxicosis or "Slobbers" in cattle. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (July).
8. **Arnold, L.M.** 2013. UK fundamentals of herd health: Vaccinations for the Cow-Calf Operation. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (March).
9. **Arnold, L.M.** 2013. USDA issues final rule for animal disease traceability. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (January).
10. **Arnold, L.M.** 2013. What do you mean my calf has polio? University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (November).
11. **Arnold, L.M.** 2013. What to look for in an oral electrolyte product. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (February).

12. **Arnold, L.M.** 2013. Fescue toxicosis. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (September).

## **2014**

### **BOOKS/CHAPTERS**

1. **Balasuriya, U.B.R.** 2014. RNA extraction from equine samples. *In:* Spackman, E. (ed), *Methods in Molecular Biology*. Humana Press, Springer, New York. pp 379-392.
2. **Balasuriya, U.B.R.** 2014. Type A influenza virus detection by RT-PCR from horses *In:* Spackman, E. (ed), *Animal Influenza Virus. Methods in Molecular Biology*. Humana Press, Springer, New York. pp 393-402.
3. **Ball, B.A.** 2014. Applied andrology in horses. *In:* Chenoweth, P.J. and S.P. Lorton. (eds.), *Animal Andrology: Theories and Applications*. CABI, Wallingford, Oxfordshire, UK, pp 254-296.
4. **Chambers, T.M.** 2014. A brief introduction to equine influenza and equine influenza Viruses. *In:* Spackman, E. (ed), *Animal Influenza Virus. Methods in Molecular Biology*. Springer, New York. Chapter 31, pp 365-370.
5. **Chambers, T.M.** and Reedy, S.E. 2014. Equine influenza culture methods. *In:* Spackman, E. (ed), *Animal Influenza Virus. Methods in Molecular Biology*. Springer, New York. Chapter 35, pp 403-410.
6. **Chambers, T.M.** and Reedy, S.E. 2014. Equine influenza diagnosis: Sample collection and transport *In:* Spackman, E. (ed), *Animal Influenza Virus. Methods in Molecular Biology*. Springer, New York. Chapter 32, pp 371-377
7. **Chambers, T.M.** and Reedy, S.E. 2014. Equine influenza serological methods. *In:* Spackman, E. (ed), *Animal Influenza Virus. Methods in Molecular Biology*. Springer, New York. Chapter 36, pp 411-422.
8. **Dwyer, R.M.** 2014. Equine Zoonoses: Consequences of horse-human interactions. *In:* Sing, A. (ed), *Zoonoses – Infections Affecting Humans and Animals: Focus on Public Health*. Springer Publishing, Germany, pp 643-658.
9. **Lear, T.L.** 2014. Equine cytogenetics. *In:* Dascanio, J.J. and P.M. McCue (eds.), *Equine Reproductive Procedures*. Wiley-Blackwell, Hoboken, NJ. Chapter 22, pp 77-82.
10. **Page, A.E.** 2014. Screening herds for Lawsonia. *In:* Sprayberry, K.A. and N.E. Robinson (eds.), *Robinson's Current Therapy in Equine Medicine, 7th Ed.* Elsevier. Chapter 43, pp 181-183.

11. **Timoney, J.F.** 2014. Strangles. *In: Sprayberry, K.A. and N.E. Robinson* (eds.), *Robinson's Current Therapy in Equine Medicine*, 7<sup>th</sup> Ed. Elsevier. pp 173-177.

### **REFEREED PUBLICATIONS**

1. Andersen, U.V., C.R. Reinemeyer, N. Toft, S.N. Olsen, S. Jacobsen, and **M.K. Nielsen**. 2014. Physiologic and systemic acute phase inflammatory responses in young horses repeatedly infected with cyathostomins and *Strongylus vulgaris*. *Veterinary Parasitology* 201(1-2):67-74.
2. Archambault, D., **U.B.R. Balasuriya**, R.R.R. Rowland, H.C. Yang, and D. Yoo. 2014. Animal arterivirus infections. *Biomed Research International*. Doi 10.1155/2014/303841
3. **Bailey, E.** 2014. Five things equine veterinarians should know about genomics. *Equine Veterinary Journal* 46(4):404-407.
4. **Bailey, E.** 2014. Heritability and the equine clinician. *Equine Veterinary Journal* 46(1):12-14.
5. **Balasuriya, U.B.R.** 2014. Equine viral arteritis (Invited Review). *Veterinary Clinics of North America: Equine Practice* 30(3):543-560.
6. **Balasuriya, U.B.R., J.Q. Zhang, Y.Y. Go**, and N.J. MacLachlan. 2014. Experiences with infectious cDNA clones of equine arteritis virus: Lessons learned and insights gained. *Virology* 462:388-403.
7. **Balasuriya, U.B.R.**, P-Y. Lee, **A. Tiwari**, A. Skillman, **B. Nam, T.M. Chambers**, Y-L. Tsai, L-J. Ma, P-C. Yang, S. Chung, H-F. Chang, and H-T. Wang. 2014. Rapid detection of equine influenza virus H3N8 subtype by insulated isothermal RT-PCR (iiRT-PCR) assay using the POCKIT<sup>TM</sup> nucleic acid analyzer. *Journal of Virological Methods*, 207:66-72.
8. **Ball, B.A.**, A.J. Conley, J. Almeida, **A. Esteller-Vico**, J. Crabtree, C. Munro, and I.K.M. Liu. 2014. A retrospective analysis of 2,253 cases submitted for endocrine diagnosis of possible granulosa cell tumors in mares. *Journal of Equine Veterinary Science* 34(2):307-313.
9. Bautista, A.C., J. Tahara, A. Mete, **C.L. Gaskill, U.K. Bryant**, and B. Puschner. 2014. Diagnostic value of tissue monensin concentrations in horses following toxicosis. *Journal of Veterinary Diagnostic Investigation* 26(3):423-427.
10. Brewer, K., L. Dirikolu, C.G. Hughes, and **T. Tobin**. 2014. Scopolamine in racing horses: Trace identifications associated with dietary or environmental exposure. *Veterinary Journal* 199(3):324-331.

11. Burk, S., **S. Dangoudoubiyam**, T. Brewster-Barnes, **U.K. Bryant**, **D.K. Howe**, **C.N. Carter**, E. Vanzant, R. Harmon, K.R. Kazacos, and M.G. Rossano. 2014. In vitro culture of *Parascaris equorum* larvae and initial investigation of parasite excretory-secretory products. *Parasitology Research* 113(11):4217-4224.
12. Burk, S.V., **S. Dangoudoubiyam**, T. Brewster-Barnes, **U.K. Bryant**, **D.K. Howe**, **C.N. Carter**, E.S. Vanzant, R.J. Harmon, K.R. Kazacos, and M.G. Rossano. 2014. In vitro culture of *Parascaris equorum* larvae and initial investigation of parasite excretory-secretory products. *Parasitology Research*. 113(11):4217-4224. doi: 10.1007/s00436-014-4097-0.
13. **Campos, J.R.**, P. Brehenyb, R.R. Araujoc, **M.H.T. Troedsson**, **E.L. Squires**, **P.J. Timoney**, and **U.B.R. Balasuriya**. 2014. Semen quality of stallions challenged with the Kentucky 84 (KY84) strain of equine arteritis virus. *Theriogenology* 82(8):1068-1079.
14. **Canisso, I.F.**, **B.A. Ball**, C. Cray, **N.M. Williams**, K.E. Scoggin, **G.M. Davolli**, **E.L. Squires** and **M.H. Troedsson**. 2014. Serum amyloid A and haptoglobin concentrations are increased in plasma of mares with ascending placentitis in the absence of changes in peripheral leukocyte counts or fibrinogen concentration. *American Journal of Reproductive Immunology* 72(4):376-385.
15. **Canisso, I.F.**, **M.H.T. Troedsson**, **E.L. Squires**, and **B.A. Ball**. 2014. How to perform transabdominal ultrasound guided fetal fluid sampling in mares. *Journal of Equine Veterinary Science* 34:1143-1147.
16. **Cerny, K.L.**, **T.V. Little**, C.F. Scoggin, R.J. Coleman, **M.H.T. Troedsson**, and **E.L. Squires**. 2014. Presence of bacteria on the external genitalia of healthy stallions and its transmission to the mare at the time of breeding by live cover. *Journal of Equine Veterinary Science* 34(3):369-374.
17. **Claes, A.**, **B.A. Ball**, C.J. Corbin, and A.J. Conley. 2014. Anti-mullerian hormone as a diagnostic marker for equine cryptorchidism in three cases with equivocal testosterone concentrations. *Journal of Equine Veterinary Science* 34(3):442-445.
18. Coutinho da Silva, M., G.E. Seidel, **E.L. Squires**, J.K. Graham, E.M. Carnevale. 2014. Effects of milk proteins on the binding to the zona pellucida and the intracellular Ca<sup>+</sup> concentrations in Stallions. *Animal Reproduction Science* DOI:10.1016/j.anireprosci.
19. Da Silva, E., V. Rossini, L. Rivero, A. Morales, A. Mendez, K. Brewer, and **T. Tobin**. 2014. Furosemide and detection of foreign substances in race horses, *Archivos Venezolanos de Farmacologia y Terapeutica*, 33(4):76-79.
20. **Dangoudoubiyam, S.**, Z.J. Zhang, and **D.K. Howe**. 2014. Purine salvage in the apicomplexan sarcocystis neurona, and generation of hypoxanthine-xanthine-guanine phosphoribosyltransferase-deficient clones for positive-negative selection of transgenic parasites. *Parasitology* 141(11):1399-1405.

21. Dong, J., **R.F. Cook**, and W. Zhu. 2014. Equine infectious anemia virus in Japan: Viral isolates V70 and V26 are of North American not Japanese origin. *Veterinary Microbiology* 174 (1-2):276-278.
22. Dong, J., **R.F. Cook**, T. Haga, Y. Horii, J. Norimine, N. Misawa, Y. Goto, and W. Zhu. 2014. Comparative analysis of LTR and structural genes in an equine infectious anemia virus strain isolated from a feral horse in Japan. *Archives of Virology* 159(2):3413-3420.
23. Dougal, K., G. de la Fuente, P.A. Harris, S.E. Girdwood, E. Pinloche, R.J. Geor, B.D. Nielsen, H.C. Schott, **S. Elzinga**, and C.J. Newbold. 2014. Characterisation of the faecal bacterial community in adult and elderly horses fed a high fibre, high oil or high starch diet using 454 pyrosequencing. *Public Library of Science One* 9(2).
24. Eisenberg, R., S. Kudrimoti, C.G. Hughes, G.A. Maylin, and **T. Tobin**. 2014. Synthesis, purification, and chemical characterization of 20-dihydro-6methylprednisone, an isomeric metabolite of methylprednisolone in the horse, for use as an analytical standard. *Drug Testing and Analysis* 6(3):303-307.
25. Fenger, C., **T. Tobin**, P. Casey, J. Langemeier, and D. Haines. 2014. Bovine colostrum supplementation does not influence serum insulin-like growth factor-1 in horses in race training. *Journal of Equine Veterinary Science* 34(8):1025-1027.
26. Fenger, C.K., **T. Tobin**, P.J. Casey, E. Roualdes, J.L. Langemeier and D.M. Haines. 2014. Bovine Colostrum Supplementation Improves Earnings, Performance and Recovery in Racing Thoroughbreds. *Comparative Exercise Physiology* 10(4):233-238.
27. Ghosh, S., Z.P. Qu, P.J. Das, E. Fang, R. Juras, E.G. Cothran, S. McDonell, D.G. Kenney, **T.L. Lear**, D.L. Adelson, B.P. Chowdhary, and T. Raudsepp. 2014. Copy number variation in the horse genome. *Public Library of Science Genetics* 10(10):e1004712. *Doi:* 10.1371/journal.pgen.1004712.
28. **Go, Y., U.B.R. Balasuriya**, and C. Lee. 2014. Zoonotic encephalitides caused by arboviruses: transmission and epidemiology of alphaviruses and flaviviruses. *Clinical and Experimental Vaccine Research* 3:58-77.
29. **Go, Y.Y.**, Y.H. Li, Z.H. Chen, M.Y. Han, D.W. Yoo, Y. Fang, and **U.B.R. Balasuriya**. 2014. Equine arteritis virus does not induce type I interferon  $\alpha/\beta$  production in equine endothelial cells: Identification of nonstructural protein 1 as a main interferon antagonist. *Biomed Research International*. *Doi* 10.1155/2014/420658
30. Gohari, I.M., L. Arroyo, J.I. MacInnes, **J.F. Timoney**, V.R. Parreira, and J.F. Prescott. 2014. Characterization of clostridium perfringens in the feces of adult horses and foals with acute enterocolitis. *Canadian Journal of Veterinary Research-Revue Canadienne De Recherche Veterinaire* 78(1):1-7.

31. Gutierrez, J., R. Eisenberg, E.M. Ferguson, C. Hughes, and **T. Tobin**. 2014. Synthesis of myo-inositol trispyrophosphate (ITPP) for use as an analytical standard. 19th International Conference of Racing Analysts and Veterinarians, Philadelphia, Pennsylvania, September 15-22, 2012. [UK 398 Ag. Experiment Station Number, 12-14-100, published Dec 2014]
32. Hansen, S., K.E. Baptiste, J. Fjeldborg, A. Betancourt, and **D.W. Horohov**. 2014. A comparison of pro-inflammatory cytokine mRNA expression in equine bronchoalveolar lavage (BAL) and peripheral blood. *Veterinary Immunology and Immunopathology* 158(3-4):238-243.
33. Henneke, C., A. Jespersen, S. Jacobsen, **M.K. Nielsen**, and H.E. Jensen. 2014. The distribution pattern of *Halicephalobus gingivalis* in a horse is suggestive of a haematogenous spread of the nematode. *Acta Veterinaria Scandinavica* 56:56.
34. **Holyoak, G.R.**, C.C. Lyman, and **U.B.R. Balasuriya**. 2014. Equine viral arteritis – an update. *Clinical Theriogenology* 6(3):321-327.
35. **Howe, D.K.**, R.J. MacKay, S.M. Reed. 2014. Equine Protozoal Myeloencephalitis. *Veterinary Clinics of North America: Equine Practice. New Perspectives in Infectious Diseases*. 30:659-675. doi:10.1016/j.cveq.2014.08.012.
36. **Hughes, S.**, C.J. Stowe, **M.H.T. Troedsson**, **B.A. Ball**, and **E.L. Squires**. 2014. The athletic performance of thoroughbred racehorses out of mares with suspected placentitis during gestation. *Journal of Equine Veterinary Science* 34(4):514-519.
37. **Hughes, S.**, **K. Cerny**, **J. Campos**, **M. Troedsson**, **B. Ball**, and **E. Squires**. 2014. The use of equine follicle stimulating hormone to increase equine chorionic gonadotropin in the pregnant mare. *Journal of Equine Veterinary Science* 34(8):1021-1024.
38. **Issel, C.J.**, **R.F. Cook**, R.H. Mealey and **D.W. Horohov**. 2014. Equine infectious anemia (EIA) in 2014: live with it or eradicate it? *Veterinary Clinics of North America: Equine Practice* 30(3):561-567.
39. **Janes, J.G.**, K.S. Garrett, K.J. McQuerry, A.P. Pease, **N.M. Williams**, S.M. Reed, and **J.N. MacLeod**. 2014. Comparison of magnetic resonance imaging with standing cervical radiographs for evaluation of vertebral canal stenosis in equine cervical stenotic myelopathy. *Equine Veterinary Journal* 46(6):681-686.
40. Jonsson, H., M. Schubert, A. Sequiini-Orlando, A. Ginolhac, L. Petersen, M. Fumagalli, A. Albrechtsen, B. Petersen, T.S. Korneliussen, J.T. Vilstrup, **T.L. Lear**, J. Myka, J. Lundquist, D.C. Miller, A.H. Alfarhan, S.A. Alquraishi, K.A.S. AlRasheid, J. Stagegaard, G. Strauss, M.F. Berelsen, D.F. Antczak, T. Sicheritz-Ponten, **E. Bailey**, R. Nielsen, E. Willerslev, and L. Orlando. 2014. Speciation with gene flow in equids despite extensive chromosomal plasticity. *Proceedings of the National Academy of Sciences* 111(52):18655-18660.

41. Kilcoyne I, S.J. Spier, **C.N. Carter**, J.L. Smith, A. A. Swinford, and N.D. Cohen. 2014. Increased incidence of *Corynebacterium Psuedotuberculosis* infection in equids across the United States from 2003-2012. Journal of the American Veterinary Medical Association 245:309-314.
42. Kind, A.J., K. Soring, K. Brewer, R. Eisenberg, C.G. Hughes, P. Hartmann-Fishbach, and **T. Tobin**. 2014. Cathinone and related “bath salt” substances – detection in equine urine and potential sources. 19th International Conference of Racing Analysts and Veterinarians, University of Pennsylvania, Philadelphia, Pennsylvania, September 2012. [UK401, Ag. Experiment Station Number, 12-14-099, published, Dec 2014]
43. Knych, K.H., R.M. Arthur, M.M. Mitchell, I. Holser, R. Poppenga, L.L. Smith, M.N. Helm, R.A. Sams, and **C.L. Gaskill**. 2014. Pharmacokinetics and selected pharmacodynamics of cobalt following a single intravenous administration to horses. Drug Testing and Analysis. doi: 10. 1002/dta. 1737.
44. Kuzmina, T.A., **E.T. Lyons**, and T.R. Spraker. 2014. Anisakids (nematoda: Anisakidae) from stomachs of northern fur seals (*callorhinus ursinus*) on St. Paul island, alaska: Parasitological and pathological analysis. Parasitology Research 113(12):4463-4470.
45. Lea, K., L. Smith, **C. Gaskill**, R. Coleman, and S.R. Smith. 2014. Ergovaline stability in tall fescue based on sample handling and storage methods. Frontiers in Chemistry 2:76.
46. **Lear, T.L.**, T. Raudsepp, J.M. Lundquist, and S.E. Brown. 2014. Repeated early embryonic loss in a thoroughbred mare with a chromosomal translocation [64,xx,t(2;13)]. Journal of Equine Veterinary Science 34(6):805-809.
47. **Liu, C.**, S.J. Cook, J.K. Craig, **R.F. Cook**, **C.J. Issel**, R.C. Montelaro, and **D.W. Horohov**. 2014. Epitope shifting of gp90-specific cellular immune responses 1 in EIAV-infected ponies. Veterinary Immunology 161:161-169.
48. **Loynachan, A.T.** 2014. Esophageal cyst in the duodenum of a foal. Journal of Veterinary Diagnostic Investigation 26(2):308-311.
49. **Lyons, E.T.**, and S.C. Tolliver. 2014. Prevalence of patent *strongyloides westeri* infections in Thoroughbred foals in 2014. Parasitology Research 113(11):4163-4164.
50. **Lyons, E.T.**, and S.C. Tolliver. 2014. *Strongyloides westeri* and *parascaris equorum*: Observations in field studies in Thoroughbred foals on some farms in central Kentucky, USA. Helminthologia 51(1):7-12.
51. **Lyons, E.T.**, S.C. Tolliver, T.A. Kuzmina, I.I. Dzeverin, **M.K. Nielsen**, and **K.J. McDowell**. 2014. Profiles of strongyle epg values for Thoroughbred mares on 14 farms in Kentucky (2012-2013). Veterinary Parasitology 205(3-4):646-652.
52. **Lyons, E.T.**, T.A. Kuzmina, J.L. Carie, S.C. Tolliver, T.R. Spraker. 2014. Prevalence of hookworms (*Uncinaria lucasi*) in northern fur seals (*Callorhinus ursinus*) on St. Paul Island, Alaska. Vestnik Zoologii. 48(3):221-230.

53. Marenzoni, M.L., M. Sforza, V. Stefanetti, P.C. Proietti, L. Brignone, A. Del Sero, F. Falcioni, S. Orvieto, C. Tamantini, A. Tiburzi, S. Valentini, M. Coletti, **P.J. Timoney**, and F. Passamonti. 2014. Detection of equid herpesvirus type 2 and 5 DNA in uterine flushings of mares with reproductive disorders. *Veterinary Microbiology* 174(3-4):570-576.
54. Mastro, L.M., **A.A. Adams**, and K.L. Urschel. 2014. Whole-body phenylalanine kinetics and skeletal muscle protein signaling in horses with pituitary pars intermedia dysfunction. *American Journal of Veterinary Research* 75(7):658-667.
55. McNaughten, J., M. Pozor, M. Macpherson, A. Kelleman, **E. Woodward**, and **M. Troedsson**. 2014. Effects of topical application of misoprostol on cervical relaxation in mares. *Reproduction in Domestic Animals* 49(6):1057-1062.
56. Miszczak, F., V. Tesson, N. Kin, J. Dina, **U.B.R. Balasuriya**, S. Pronost, and A. Vabret. 2014. First detection of equine coronavirus (ecov) in Europe. *Veterinary Microbiology* 171(1-2):206-209.
57. Morales Briceno, A., A. Mendez Sanchez, K. Brewer, and **T. Tobin**. 2014. Therapeutic medication in Thoroughbred racing in Venezuela. *Revista Contacto Veterinario* 14(27):34.
58. More, G., A. Vassani, L. Paradini, M. Monina, M. Muriel, **D. Howe**, M. Barrandeguy, and M. Venturini. 2014. Seroprevalence of *Sarcocystis neurona* and its association with neurologic disorders in Argentinean horses. *Journal of Equine Science* 34(9):1051-1054.
59. Morrell, J.M., **C. Klein**, N. Lundeheim, **E. Erol**, and **M.H.T. Troedsson**. 2014. Removal of bacteria from stallion semen by colloid centrifugation. *Animal Reproduction Science* 145:47-53.
60. **Nielsen, M.K.**, A.N. Vidyashankar, H.S. Gravatte, **J. Bellaw**, **E.T. Lyons**, and U.V. Andersen. 2014. Development of strongylus vulgaris-specific serum antibodies in naturally infected foals. *Veterinary Parasitology* 200(3-4):265-270.
61. **Nielsen, M.K.**, C.R. Reinemeyer, J.M. Donecker, D.M. Leathwick, A.A. Marchiondo, and R.M. Kaplan. 2014. Anthelmintic resistance in equine parasites-current evidence and knowledge gaps. *Veterinary Parasitology* 204(1-2):55-63.
62. **Nielsen, M.K.**, J.B. Wang, R. Davis, **J.L. Bellaw**, **E.T. Lyons**, **T.L. Lear**, and C. Goday. 2014. *Parascaris univalens*-a victim of large-scale misidentification? *Parasitology Research* 113(12):4485-4490.
63. **Nielsen, M.K.**, K. Pfister, and G. von Samson-Himmelstjerna. 2014. Selective therapy in equine parasite control-application and limitations. *Veterinary Parasitology* 202(3-4):95-103.

64. **Nielsen, M.K.**, M. Reist, R.M. Kaplan, K. Pfister, D.C.K. van Doorn, and A. Becher. 2014. Equine parasite control under prescription-only conditions in denmark - awareness, knowledge, perception, and strategies applied. *Veterinary Parasitology* 204(1-2):64-72.
65. Oz, H. and **T. Tobin**. 2014. Diclazuril protects against maternal gastrointestinal syndrome and congenital toxoplasmosis. *International Journal of Clinical Medicine* 5(3):93-101.
66. **Page, A.E.**, H.F. Stills, and **D.W. Horohov**. 2014. Sub-isotypic differences in the immunoglobulin g response to lawsonia intracellularis in vaccinated, seropositive, and equine proliferative enteropathy-affected horses. *Veterinary Immunology and Immunopathology* 162(3-4):162-167.
67. **Page, A.E.**, N.M. Slovis, and **D.W. Horohov**. 2014. *Lawsonia intracellularis* and equine proliferative enteropathy. *Veterinary Clinics of North America: Equine Practice* 30(3):641-658.
68. Peregrine, A.S., M.B. Molento, R.M. Kaplan, and **M.K. Nielsen**. 2014. Anthelmintic resistance in important parasites of horses: Does it really matter? *Veterinary Parasitology* 201(1-2):1-8.
69. Pozor, M.A., G. Zambrano, J. Roser, R. Hess, S. Runyon, E. Runcan, B.F. Thomas, D. Dymock, M.L. Macpherson, and **M.H.T. Troedsson**. 2014. Acute and chronic effects of a contraceptive compound RTI-4587-073(1) on testicular and endocrine function in Miniature Horse stallions. *Reproduction in Domestic Animals* 49(3):392-402.
70. Reinemeyer, C.R., J.C. Prado, U.V. Andersen, **M.K. Nielsen**, B. Schrickler, and T. Kennedy. 2014. Effects of daily pyrantel tartrate on strongylid population dynamics and performance parameters of young horses repeatedly infected with cyathostomins and *strongylus vulgaris*. *Veterinary Parasitology* 204(3-4):229-237.
71. Reinemeyer, C.R., and M.K. Nielsen. 2014. Review of the biology and control of *Oxyuris equi*. *Equine Veterinary Education* 26:584-591.
72. Riesenber, A., A.T. Feßler, **E. Erol**, E. Prenger-Berninghoff, Y. Stamm, U. Menke, A. Heusinger, D. Klarmann, S. Schwarz, and C. Werckenthin. 2014. Antimicrobial susceptibility of *Rhodococcus equi* of animal origin. *Journal of Antimicrobial Chemotherapy* 69(4):1045-1049.
73. **Sanz, M.G.**, A.F. Oliveira, **A. Page**, and **D.W. Horohov**. 2014. Administration of commercial *Rhodococcus equi* specific hyperimmune plasma results in variable amounts of IgG against pathogenic bacteria in foals. *Veterinary Record* 175(19):485. doi:10.1136/vr.102594.

74. Scholtz, E.L., S. Krishnan, **B.A. Ball**, C.J. Corbin, B.C. Moeller, S.D. Stanley, **K.J. McDowell**, A.L. Hughes, D.P. McDonnell, and A.J. Conley. 2014. Pregnancy without progesterone in horses defines a second endogenous biopotent progesterone receptor agonist, 5 alpha-dihydroprogesterone. *Proceedings of the National Academy of Sciences of the United States of America* 111(9):3365-3370.
75. Schubert, M., H. Jonsson, D. Chang, C.D. Sarkissian, L. Ermini, A. Ginolhac, A. Albrechtsen, I. Dupanloup, A. Foucal, B. Petersen, M. Fumagalli, M. Raghavan, A. Seguin-Orlando, T.S. Korneliussen, A.M.V. Velazquez, J. Stenderup, C.A. Hoover, C.J. Rubin, A.H. Alfarhan, S.A. Alquraishi, K.A.S. Al-Rasheid, D.E. MacHugh, T. Kalbfleisch, **J.N. MacLeod**, E.M. Rubin, T. Sicheritz-Ponten, L. Andersson, M. Hofreiter, T. Marques-Bonet, M.T.P. Gilbert, R. Nielsen, L. Excoffier, E. Willerslev, B. Shapiro, and L. Orlando. 2014. Prehistoric genomes reveal the genetic foundation and cost of horse domestication. *Proceedings of the National Academy of Sciences of the United States of America* 111(52):E5661-E5669.
76. Silva, E.S.M., K.E. Scoggin, **I.F. Canisso**, **M.H.T. Troedsson**, **E.L. Squires**, and **B.A. Ball**. 2014. Expression of receptors for ovarian steroids and prostaglandin E2 in the endometrium and myometrium of mares during estrus, diestrus and early pregnancy. *Animal Reproduction Science* 151(3-4):169-181.
77. Soring, K.H., K. Brewer, A.J. Kind and **T. Tobin**. 2014. Foreign substances reported in Iowa racing, 2001 – 2011: A review and analysis. 19th International Conference of Racing Analysts and Veterinarians, Philadelphia Pennsylvania, September 15-22, 2012. [UK #400, Ag. Experiment Station Number, 12-14-098, published, Dec 2014]
78. Spraker, T.R., **E.T. Lyons**, T.A. Kuzmina, M.S. Tift, S. Raverty, N. Jaggi, and D.E. Crocker. 2014. Causes of death in preweaned northern elephant seal pups (*mirounga angustirostris*, gill, 1866), ano nuevo state reserve, California, 2012. *Journal of Veterinary Diagnostic Investigation* 26(2):320-326.
79. Steinman, A., K. Aharonson-Raz, S.E. Blum, A. Shnaiderman, E. Klement, I.M. Lensky, **D.W. Horohov**, and **A.E. Page**. 2014. Demographic and environmental risk factors for exposure to *Lawsonia intracellularis* in horses in Israel. *Journal of Equine Veterinary Science* 34(5):641-646.
80. **Swerczek, T.W.** 2014. Tyzzer's disease in foals: Retrospective studies (1969-2010). *Pferdeheilkunde* 30(6):718.
81. **Timoney, J.F.**, P. Suther, **S. Velineni**, and **S.C. Artiushin**. 2014. The anti-phagocytic activity of SeM of *Streptococcus equi* requires capsule. *Journal of Equine Science* 25(2):53-56.
82. **Timoney, P.J.** 2014. How significant a threat is surra as a disease in horses?, *Proceedings of the 118<sup>th</sup> Annual Meeting of the United States Animal Health Association, Kansas City, MO, October 16-22<sup>nd</sup>*, pp . 266-269.

83. **Velineni, S.**, and **J.F. Timoney**. 2014. Capsular hyaluronic acid of equine isolates of *Streptococcus zooepidemicus* is up-regulated at temperatures below 35<sup>0</sup>C. *Equine Veterinary Journal* 47(3):333-338.
84. **Velineni, S.**, D. Desoutter, A.M. Perchec, and **J.F. Timoney**. 2014. Characterization of a mucoid clone of streptococcus zooepidemicus from an epizootic of equine respiratory disease in new caledonia. *Veterinary Journal* 200(1):82-87.
85. **Velineni, S.**, **J.F. Timoney**, K. Russell, H.J. Hamlen, P. Pesavento, W.D. Fortney, and C. Crawford. 2014. Clones of *Streptococcus zooepidemicus* from outbreaks of hemorrhagic canine pneumonia and associated immune responses. *Clinical and Vaccine Immunology* 21(9):1246-1252.
86. Weyenberg, G., P.M. Huggins, C.L. Schardl, **D.K. Howe**, and R. Yoshida. 2014. Kdetrees: nonparametric estimation of phylogenetic tree distributions. *Bioinformatics* 30(16):2280-2287. doi: 10.1093/bioinformatics/btu258.
87. Woodward, A.L., A.S. Rash, D. Blinman, S. Bowman, **T.M. Chambers**, J.M. Daly, A. Damiani, S. Joseph, N. Lewis, J.W. McCauley, L. Medcalf, J. Mumford, J.R. Newton, **A. Tiwari**, N.A. Bryant, and D.M. Elton. 2014. Development of a surveillance scheme for equine influenza in the uk and characterisation of viruses isolated in Europe, Dubai and the USA from 2010-2012. *Veterinary Microbiology* 169(3-4):113-127.
88. **Woodward, E.M.**, and **M.H.T. Troedsson**. 2014. Endometritis in old mares. *Pferdeheilkunde* 30(1):53-56.
89. Xu, J, A. Vidyashankar, and **M.K. Nielsen**. 2014. Drug resistance or re-emergence? Simulating equine parasites. *Transactions on Modeling and Computer Simulation* 24(4). doi 10.1145/2627736.
90. Zasada, I.A., A. Peetz, **D.K. Howe**, L.J. Wilhelm, D. Cheam, D.R. Denver, and A.B. Smythe. 2014. Using mitogenomic and nuclear ribosomal sequence data to investigate the phylogeny of the xiphinema americanum species complex. *Plos One* 9(2).

### **NON-REFEREED PUBLICATIONS**

1. **Adams, A.A.** 2014. Tips for preparing your older horse for winter. *Bluegrass Equine Digest*, October ([http://www.thehorse.com/enews/bluegrass-equine-digest/PDF/BED-Oct2014.pdf?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=10-26-2014](http://www.thehorse.com/enews/bluegrass-equine-digest/PDF/BED-Oct2014.pdf?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=10-26-2014)).
2. **Arnold, L.M.** 2014. Cold stress and newborn calves. *Kentucky Dairy Notes* (February).
3. **Arnold, L.M.** 2014. Harmful algal blooms-are my cattle in danger? *Kentucky Dairy Notes* (August).

4. **Arnold, L.M.** 2014. The esophageal feeder-a life-saving tool for calves. Kentucky Dairy Notes (December).
5. **Arnold, L.M.** 2014. Bovine viral diarrhea virus. Kentucky Cattlemen's Association Cow Country News. (March).
6. **Arnold, L.M.** 2014. Bovine viral diarrhea virus: Regulations concerning a "PI" calf. Kentucky Cattlemen's Association Cow Country News. (June).
7. **Arnold, L.M.** 2014. Brazilian beef in the US? What about foot and mouth disease? The Progressive Cattleman, North Central Edition (April)
8. **Arnold, L.M.** 2014. Brazilian beef in the US? What about foot and mouth disease?. Kentucky Cattlemen's Association Cow Country News. (February).
9. **Arnold, L.M.** 2014. Calf diarrhea-new research into oral electrolyte therapy. The Progressive Dairyman, Issue 14 (August)
10. **Arnold, L.M.** 2014. Chronic pneumonia in Stocker calves due to mycoplasma bovis. Kentucky Cattlemen's Association Cow Country News. (November).
11. **Arnold, L.M.** 2014. Harmful algal blooms-are my cattle in danger? Kentucky Cattlemen's Association Cow Country News. (August).
12. **Arnold, L.M.** 2014. Managing the dry cow to prevent mastitis. The Progressive Dairyman, Issue 9 (September).
13. **Arnold, L.M.** 2014. The esophageal feeder-a life-saving tool for calves. Kentucky Cattlemen's Association Cow Country News. (December).
14. **Arnold, L.M.** 2014. What do you do with your dead animals? Kentucky Cattlemen's Association Cow Country News. (July).
15. **Arnold, L.M.** 2014. What to look for in an oral electrolyte product. The Progressive Dairyman, Issue 5 (March)
16. **Arnold, L.M.** and J. Lehmkuhler. 2014. What's in your Balage? Inadequate fermentation may lead to health risks. Kentucky Cattlemen's Association Cow Country News. (May).
17. **Arnold, L.M.** and L. Townsend. 2014. The VetCap®Treatment method for horn fly control. Kentucky Cattlemen's Association Cow Country News. (September).
18. **Ball, B.A.** 2014. Diagnosis of placentitis in the mare. The Equine Veterinary Practitioner 38:32-32.

19. **Ball, B.A., I.F. Canisso,** and **M.H.T. Troedsson.** 2014. Progress towards new biomarkers for the diagnosis of bacterial placentitis in mares. *Equine Disease Quarterly* 23(1):4-5.
20. **Carter, C.N.** 2014. Editor, Diagnostic Laboratory Rounds. *Kentucky Veterinary News*, Spring, Summer, Fall, Winter editions.
21. **Cassone, L.** 2014. The equine necropsy: A sensitive but important topic. *The Horse* Nov 26, 2014.
22. **Chambers, T.,** et al: 2014. OIE Expert Surveillance Panel on equine influenza vaccine composition: Conclusions and Recommendations. *OIE Bulletin* 2014-2, pp.77-79.  
<http://www.oie.int/en/our-scientific-expertise/specific-information-and-recommendations/equine-influenza/>
23. **Dwyer, R.M.** 2014. Commentary. *Lloyd's Equine Disease Quarterly* 23(4):1.
24. **Gaskill, C.L.** 2014. Unapproved compounded drug alert. *Bluegrass Equine Digest*, May, p 4.
25. **Graves, K.T.** 2014. DNA testing in horses. *Gypsy Horse World* 12(1):18-19.
26. Higgins, S.; K. Schmidt, and **L.M. Arnold.** 2014. How to prevent harmful algal blooms (HABs). *Kentucky Cattlemen's Association Cow Country News.* (October).
27. Lea, K., **C.L. Gaskill,** and R. Smith. 2014. Tall fescue testing: Understanding the numbers. *Bluegrass Equine Digest*, April, pp 7-9.
28. **Nielsen, M.K.** 2014. A new breed of funding. *The Horse*, 31(7):50.
29. **Nielsen, M.K.** 2014. Diatomaceous earth as a dewormer? *Equus*, 439:79-80.
30. Pimenta do Reis, J.K. and **R.F. Cook.** 2014. Anemia Infecciosa Equina: Um Problema ainda a Ser Resolvido (Equine Infectious Anemia: a problem still to be solved). *V&Z EM Minas (Brazil)* 123 (Oct/Nov/Dec 2014): 9-19, 2014.
31. Slater, J., K. Bouchers, **T. Chambers,** A. Cullinane, V. Duggan, D. Elton, L. Legrand, R. Paillot, D. Lussot, and G. Fortier. 2014. Report of the International Equine Influenza Roundtable Expert Meeting at Le Touquet, Normandy, February 2013. *Equine Veterinary Journal* DOI: 10.1111/evj.12302
32. **Woodward, E.M.,** and **M.H.T. Troedsson.** 2014. Endometritis in old mares. *Proceedings, 8th International Conference on Equine Reproductive Medicine.* p 241.

### **EXTENSION PUBLICATIONS**

1. **Arnold, L.M.** 2014. Bovine viral diarrhea virus: What is "PI"? University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (May).

2. **Arnold, L.M.** 2014. Brazilian beef in the US. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (February).
3. **Arnold, L.M.** 2014. Chronic pneumonia in Stocker calves due to *Mycoplasma bovis*. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (November).
4. **Arnold, L.M.** 2014. Cold stress and newborn calves. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (January).
5. **Arnold, L.M.** 2014. Ergotism. University of Kentucky Cooperative Extension Service - Forage-Related Cattle Disorders. VET-34.
6. **Arnold, L.M.** 2014. Harmful algal blooms-are my cattle in danger? University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (July).
7. **Arnold, L.M.** 2014. The esophageal feeder-a life-saving tool for calves. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (December).
8. **Arnold, L.M.** 2014. The VetCap treatment method for horn fly control. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (September).
9. **Arnold, L.M.** 2014. What do you do with your dead animals? University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (June).
10. **Arnold, L.M.** and J. Lehmkuhler, 2014. What's in your Balage?-Inadequate fermentation may lead to botulism. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (April).
11. **Arnold, L.M.** and L. Pittman, 2014. Recent winter weather conditions impact KY cow/calf herds and producers. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (March).
12. **Arnold, L.M.** and J. Lehmkuhler. 2014. Brassicas: Be aware of the animal health risks. University of Kentucky Cooperative Extension Service - Forage-Related Cattle Disorders. ID-223.
13. **Arnold, L.M.** and J. Lehmkuhler. 2014. Hypomagnesemic tetany or "Grass Tetany". University of Kentucky Cooperative Extension Service - Forage-Related Cattle Disorders. ID-226.
14. **Arnold, L.M., C. Gaskill,** and R. Smith. 2014. Fescue toxicosis. University of Kentucky Cooperative Extension Service - Forage-Related Cattle Disorders. ID-221.

15. **Arnold, L.M., C. Gaskill**, J. Lehmkuhler, and R. Smith. 2014. Nitrate poisoning. University of Kentucky Cooperative Extension Service - Forage-Related Cattle Disorders. ID-217.
16. **Arnold, L.M., C. Gaskill**, R. Smith and G. Lacefield. 2014. Cyanide poisoning in ruminants. University of Kentucky Cooperative Extension Service - Forage-Related Cattle Disorders. ID-220.
17. Sterrett, A., D. Amaral-Phillips, J. Bewley and **M. Arnold**. 2014. A fresh cow health monitoring system. University of Kentucky Cooperative Extension Service Factsheet. ID-218.

## **2015**

### **BOOKS/CHAPTERS**

1. **Carter, C.N.** 2015. Animal health, human health, one health: The Life and Legacy of Dr. James H. Steele. Create Space Press.
2. Christensen, B.C., B.R. McNabb, **M.H.T. Troedsson**, and **E.M. Woodward**. 2015. Female reproductive disorders. *In: Large Animal Internal Medicine (5th edition)*. Edited by B.F. Smith. Mosby Co, St Louis, MO, pp 1309-1354.
3. **Cook, R.F.** and **C.J. Issel**. 2015. Equine infectious anemia. *In: Sprayberry, K.A. and N.E. Robinson (eds), Robinson's Current Therapy in Equine Medicine, 7<sup>th</sup> Ed.* Elsevier. Chapter 113, pp 476-479.
4. Furr, M., and **D.K. Howe**. 2015. Equine protozoal myeloencephalitis. *In: Furr, M. and S. Reed (eds.), Equine Neurology, 2<sup>nd</sup> Ed.* Wiley-Blackwell Publishing, Hoboken, NJ, pp 285-305.
5. Higdon, A., M. Newman, and **R. Dwyer**. 2015. Strengthening Community Agrosecurity Preparedness Instructor Guide (360 pages) and Participant Guide (310 pages). US Department of Homeland Security.
6. **Issel, C.J.** and L.D. Foil. 2015. Equine infectious anemia and mechanical transmission: Man and the wee beasties. *In: Zientara, S., D. Verwoerd and P-P Pastoret (eds), New Developments in Major Vector-Borne Diseases. OIE Scientific Technical Review. Vol 34(2), pp 513-523*
7. **Nielsen, M.K.** 2015. Internal parasite screening and control. *In: Sprayberry, K.A. and N.E. Robinson (eds.), Robinson's Current Therapy in Equine Medicine, 7<sup>th</sup> Ed.* Elsevier, pp 336-340.
8. **Nielsen, M.K.** 2015. Equine parasitic disease. *In: Smith, B. (ed.), Large Animal Internal Medicine.* Elsevier, USA, pp 1496-1503.

9. **Nielsen, M.K.** 2015. Parasite infections. *In: McAuliffe, S.B. and D.C. Knottenbelt* (eds.), *Knottenbelt and Pascoe's Color Atlas of Diseases and Disorders of the Horse*, 2<sup>nd</sup> Ed. Saunders Elsevier, pp 72-79.
10. **Troedsson, M.H.T.** 2015. Dystocia. *In: Smith, B.F. (ed.)*, *Large Animal Internal Medicine*, 5<sup>th</sup> Ed. Mosby Co, St Louis, MO, pp 190-192.
11. **Troedsson, M.H.T.** 2015. Pregnancy loss. *In: Smith, B.F. (ed.)*, *Large Animal Internal Medicine*, 5<sup>th</sup> Ed. Mosby Co, St Louis, MO, pp 184-187.
12. **Troedsson, M.H.T.** 2015. Retained fetal membranes. *In: Smith, B.F. (ed.)*, *Large Animal Internal Medicine*, 5<sup>th</sup> Ed. Mosby Co, St Louis, MO, pp 192-194.

### **REFEREED PUBLICATIONS**

1. **Adams, A.A.**, A. Betancourt, V.D. Barker, **M.H. Siard**, **S. Elzinga**, **J.L. Bellaw**, D.M. Amodie, and **M.K. Nielsen**. 2015. Comparison of the immunologic response to anthelmintic treatment in old versus middle-aged horses. *Journal of Equine Veterinary Science* 35(11-12):873-881.
2. Alghamdi, A.S., S. Madill, D.N. Foster, and **M.H.T. Troedsson**. 2015. Equine sperm-neutrophil binding. *Biology of Reproduction* 92(4):94.
3. **Bailey, E.** 2015. Genetics after twilight. *Journal of Equine Veterinary Science* 35(5):361-366.
4. **Balasureiya, U.B.**, B.M. Crossley, and **P.J. Timoney**. 2015. A review of traditional and contemporary assays for direct and indirect detection of Equid herpesvirus 1 in clinical samples. *Journal of Veterinary Diagnostic Investigation* 27(6):673-687.
5. **Bellaw, J.L.**, and **M.K. Nielsen**. 2015. Evaluation of baermann apparatus sedimentation time on recovery of strongylus vulgaris and s-edentatus third stage larvae from equine coprocultures. *Veterinary Parasitology* 211(1-2):99-101.
6. Betancourt, A., **E.T. Lyons**, and **D.W. Horohov**. 2015. Characterisation of the inflammatory cytokine response to anthelmintic treatment in ponies. *Equine Veterinary Journal* 47(2):240-244.
7. Blazejewski, T., N. Nursimulu, V. Pszenny, **S. Dangoudoubiyam**, S. Namasivayam, M.A. Chiasson, K. Chessman, M. Tonkin, L.S. Swapna, S.S. Hung, J. Bridgers, S.M. Ricklefs, M.J. Boulanger, J.P. Dubey, S.F. Porcella, J.C. Kissinger, **D.K. Howe**, M.E. Grigg, and J. Parkinson. 2015. Systems-based analysis of the sarcocystis neurona genome identifies pathways that contribute to a heteroxenous life cycle. *mBio* 6(1):e02445-14. doi:10.1128/mBio.02445-14.
8. **Canisso, I.F.**, **B.A. Ball**, C. Cray, **E.L. Squires**, and **M.H. Troedsson**. 2015. Use of a qualitative horse-side test to measure serum amyloid a in mares with experimentally induced ascending placentitis. *Journal of Equine Veterinary Science* 35(1):54-59.

9. **Canisso, I.F., B.A. Ball, E. Erol, A. Claes,** K.E. Scoggin, **K.J. McDowell, N.M. Williams,** A.R. Dorton, K.E. Wolfsdorf, **E.L. Squires,** and **M.H.T. Troedsson.** 2015. Attempts to induce nocardioform placentitis (crossiela equi) experimentally in mares. *Equine Veterinary Journal* 47(1):91-95.
10. **Canisso, I.F., B.A. Ball,** K.E. Scoggin, **E.L. Squires, N.M. Williams,** and **M.H. Troedsson.** 2015. Alpha-fetoprotein is present in the fetal fluids and is increased in plasma of mares with experimentally induced ascending placentitis. *Animal Reproduction Science* 154:48-55.
11. Carleton, C.L., J.M. Donahue, J.V. Marteniuk, S.F. Sells, and **P.J. Timoney.** 2015. Bacterial and fungal microflora on the external genitalia of male donkeys (equus asinus). *Animal Reproduction Science* 153:62-68.
12. **Cerny, K.L., T.V. Little,** R.J. Coleman, **B.A. Ball, M.H.T. Troedsson,** and **E.L. Squires.** 2015. Variations of potentially pathogenic bacteria found on the external genitalia of stallions during the breeding season. *Journal of Equine Veterinary Science* 35(2):170-173.
13. Christoffersen, M., L. Brandis, J. Samuelsson, A.M. Bojesen, **M.H.T. Troedsson,** and M.R. Petersen. 2015. Diagnostic double-guarded low-volume uterine lavage in mares. *Theriogenology* 83(2):222-227.
14. Chung, C.J., A.L. Grimm, C.L. Wilson, **U.B. Balasuriya,** G. Chung, **P.J. Timoney,** C.B. Bandaranayaka-Mudiyanselage, S.S. Lee, T.C. McGuire. 2015. Enhanced sensitivity of an antibody competitive blocking enzyme-linked immunosorbent assay using equine arteritis virus purified by anion-exchange membrane chromatography. *Journal of Veterinary Diagnostic Investigation* 27(6):728-738.
15. **Claes, A., B.A. Ball,** I.K.M. Liu, B. Vaughan, M.A. Highland, and J.A. Brown. 2015. Uterine B cell lymphoma in a mare. *Equine Veterinary Education* 27(7):e5-e8.
16. **Claes, A., B.A. Ball,** K.E. Scoggin, **A. Esteller-Vico, J.J. Kalmar,** A.J. Conley, **E.L. Squires,** and **M.H.T. Troedsson.** 2015. The interrelationship between anti-mullerian hormone, ovarian follicular populations and age in mares. *Equine Veterinary Journal* 47(5):537-541.
17. **Claes, A., B.A. Ball, M.H. Troedsson,** T.E. Curry, Jr., **E.L. Squires,** and K.E. Scoggin. 2015. Molecular changes in the equine follicle in relation to variations in antral follicle count and anti-Mullerian hormone concentrations. *Equine Veterinary Journal* doi: 10.1111/evj.12514.
18. Craig, J.K., C. Ezzelarab, S.J. Cook, **C. Liu, D. Horohov, C.J. Issel,** and R.C. Montelaro. 2015. Protective efficacy of centralized and polyvalent envelope immunogens in an attenuated equine lentivirus vaccine. *Public Library of Science Pathogens* 11(1) [DOI: 10.1371/journal.ppat.1004610](https://doi.org/10.1371/journal.ppat.1004610).

19. Dominguez, M., S. Munstermann, and **P. Timoney**. 2015. High health, high performance (HHP) horses: risk mitigation strategies and establishment of specific health requirements, World Organization for Animal Health (OIE), <http://www.oie.int>, pp. 1-18.
20. Donoghue, E.M., **E.T. Lyons**, **J.L. Bellaw**, and **M.K. Nielsen**. 2015. Biphasic appearance of corticated and decorticated ascarid egg shedding in untreated horse foals. *Veterinary Parasitology* 214:114-117.
21. Dryburgh, E.L., A.E. Marsh, J.P. Dubey, **D.K. Howe**, S.M. Reed, K.E. Bolten, W. Pei, and W.J.A. Saville. 2015. Sarcocyst development in raccoons (*Procyon lotor*) inoculated with different strains of *Sarcocystis neurona* culture-derived merozoites. *Journal of Parasitology* 101(4):462-467.
22. Dubey, J.P., **D.K. Howe**, M. Furr, W.J. Saville, A.E. Marsh, S.M. Reed, and M.E. Grigg. 2015. An update on *Sarcocystis neurona* infections in animals and equine protozoal myeloencephalitis (EPM). *Veterinary Parasitology* 209(1-2):1-42.
23. **Erol, E.**, **C.B. Jackson**, M. Steinman, K. Meares, J. Donahoe, N. Kelly, S. Locke, J.L. Smith, and **C.N. Carter**. 2015. A diagnostic evaluation of real-time PCR, fluorescent antibody, and microscopic agglutination tests in cases of equine leptospiral abortion. *Equine Veterinary Journal* 47(2):171-174.
24. Gyimesi, Z.S., R.B. Burns, **E. Erol**, and S.R. Bolin. 2015. Acute clinical leptospirosis (*Grippityphosa* serovar) in an adult camel dromedary camel (*Camelus dromedaries*). *Journal of Zoo and Wildlife Medicine* 46(3):605-608.
25. Hackett, E.S., D.P. Lunn, R.A. Ferris, **D.W. Horohov**, M.R. Lappin, and P.M. McCue. 2015. Detection of bacteraemia and host response in healthy neonatal foals. *Equine Veterinary Journal* 47(4):405-409.
26. Hansen, S., K.E. Baptiste, J. Fjeldborg, and **D.W. Horohov**. 2015. A review of the equine age-related changes in the immune system: Comparisons between human and equine aging, with focus on lung-specific immune-aging. *Ageing Research Reviews* 20:11-23.
27. **Hestand, M.S.**, T.S. Kalbfleisch, **S.J. Coleman**, Z. Zeng, J.Z. Liu, L. Orlando, and **J.N. MacLeod**. 2015. Annotation of the protein coding regions of the equine genome. *Public Library of Science One* 10(6): e0124375. doi: 10.1371/journal.pone.0124375, 2015.
28. **Horohov, D.W.** 2015. The equine immune responses to infectious and allergic disease: A model for humans? *Molecular Immunology* 66(1):89-96.
29. **Horohov, D.W.**, J. Dunham, **C. Liu**, A. Betancourt, J.C. Stewart, **A.E. Page**, and **T.M. Chambers**. 2015. Characterization of the in situ immunological responses to vaccine adjuvants. *Veterinary Immunology and Immunopathology* 164(1-2):24-29.

30. **Janes, J.G.**, K.S. Garrett, K.J. McQuerry, S. Waddell, M.J. Voor, S.M. Reed, **N.M. Williams** and **J.N. MacLeod**. 2015. Cervical vertebral lesions in equine stenotic myelopathy. *Veterinary Pathology* 52(5):919-927.240426
31. **Janes, J.G.**, K.S. Garrett, K.J. McQuerry, S. Waddell, M.J. Voor, S.M. Reed, **N.M. Williams**, and **J.N. MacLeod**. 2015. Cervical vertebral lesions in equine stenotic myelopathy. *Veterinary Pathology* 52(5):919-927.
32. Klohonatz, K. M., A.M. Hess, T.R. Hansen, **E.L. Squires**, G.J. Bouma and J.E. Bruemmer. 2015. Equine endometrial gene expression changes during and after maternal recognition of pregnancy. *Journal of Animal Science* 93(7): 3364-3376.
33. Kuzmina, T.A., J.S. Hernandez-Orts, **E.T. Lyons**, T.R. Spraker, V.V. Korniyushyn, and R. Kuchta. 2015. The cestode community in northern fur seals (*Callorhinus ursinus*) on St. Paul Island, Alaska. *International Journal for Parasitology: Parasites and Wildlife* 4:256–263.
34. Larson, K.R.L., G.L. Heil, **T.M. Chambers**, A. Capuano, S.K. White, and G.C. Gray. 2015. Serological evidence of equine influenza infections among persons with horse exposure, Iowa. *Journal of Clinical Virology* 67:78-83.
35. Leathwick, D.M., J.M. Donecker, and **M.K. Nielsen**. 2015. A model for the dynamics of the free-living stages of equine cyathostomins. *Veterinary Parasitology* 209(3-4):210-220.
36. **Lyons, E.T.**, and S.C. Tolliver. 2015. Review of some features of the biology of *Strongyloides westeri* with emphasis on the life cycle. *Helminthologia* 52(1):3–5.
37. Marenzoni, M.L., Stefanetti, V., Danzetta, M.L., and **Timoney, P.J.** 2015. Gammaherpesvirus infections in equids: a review, *Veterinary Medical Research and Reports* 6:91-101.
38. Mastro, L.M., **A.A. Adams**, and K.L. Urschel. 2015. Pituitary pars intermedia dysfunction does not necessarily impair insulin sensitivity in old horses. *Domestic Animal Endocrinology* 50:14-25.
39. **Miller, L.M.J.**, **E.M. Woodward**, **J.R. Campos**, **E.L. Squires**, and **M.H.T. Troedsson**. 2015. Distribution pattern(s) of sperm protein at 22 kda (sp22) on fresh, cooled and frozen/thawed equine spermatozoa and expression of sp22 in tissues from the testes and epididymides of normal stallions. *Reproduction in Domestic Animals* 50(2):275-282.
40. **M.K. Nielsen**, S. Jacobsen, S.N. Olsen, E. Bousquet, and T. Pihl. 2015. Nonstrangulating intestinal infarction associated with *Strongylus vulgaris* in referred Danish equine cases. *Equine Veterinary Journal* DOI: 10.1111/evj.12422.
41. Morales, A., A. Mendez, K. Brewer, and **T. Tobin**. 2015. Sudden death in highly competitive horses. Pathological aspects and clinical case series review. *Revista Equinus*, 41:48-62.

42. Morales, A., A. Mendez, K. Brewer, and **T. Tobin**. 2015. Sudden death in Thoroughbred horses. *Gaceta Hipico* 149(3):23.
43. Murase, H., S. Saito, T. Amaya, F. Sato, **B.A. Ball**, and Y. Nambo. 2015. Anti-Müllerian hormone as an indicator of hemi-castrated unilateral cryptorchid horses. *J Equine Science* 26:15-20.
44. **Nielsen, M.K.** 2015. Universal challenges for parasite control: A perspective from equine parasitology. *Trends in Parasitology* 31(7):282-284.
45. **Nielsen, M.K., A.T. Loynachan**, S. Jacobsen, J.C. Stewart, C.R. Reinemeyer, and **D.W. Horohov**. 2015. Local and systemic inflammatory and immunologic reactions to cyathostomin larvicidal therapy in horses. *Veterinary Immunology and Immunopathology* 168:203-210.
46. **Nielsen, M.K.**, A.N. Vidyashankar, **J. Bellaw**, H.S. Gravatte, X. Cao, E.F. Rubinson, and C.R. Reinemeyer. 2015. Serum *strongylus vulgaris*-specific antibody responses to anthelmintic treatment in naturally infected horses. *Parasitology Research* 114(2):445-451.
47. **Nielsen, M.K.**, E.F. Rubinson, **T.M. Chambers**, **D.W. Horohov**, B. Wagner, A. Betancourt, S.E. Reedy, and S. Jacobsen. 2015. Interaction between anthelmintic treatment and vaccine responses in ponies naturally infected with cyathostomins. *Veterinary Immunology and Immunopathology* 164(3-4):110-117.
48. **Nielsen, M.K., J. Scare**, H.S. Gravatte, **J.L. Bellaw**, J.C. Prado, and C.R. Reinemeyer. 2015. Changes in serum *strongylus vulgaris*-specific antibody concentrations in response to anthelmintic treatment of experimentally-infected foals. *Frontiers in Veterinary Science* 2. DOI 10.3389/fvets.2015.00017.
49. **Page, A.E.**, H.F. Stills, and **D.W. Horohov**. 2015. The effect of passively acquired antibodies on lawsonia intracellularis infection and immunity in the horse. *Equine Veterinary Journal* 47(6):655-661.
50. **Page, A.E.**, L. Henderson, H.F. Stills, and **D.W. Horohov**. 2015. The possible role mares play in the epidemiology of equine proliferative enteropathy. *Journal of Equine Veterinary Science* 35(2):116-123.
51. Pena, F.J., M.P. Davila, **B.A. Ball**, **E.L. Squires**, P.M. Munoz, C.O. Ferrusola, and C.B. da Silva. 2015. The impact of reproductive technologies on stallion mitochondrial function. *Reproduction in Domestic Animals* 50(4):529-537.
52. Petersen, M.R., B. Skive, M. Christoffersen, K. Lu, J.M. Nielsen, **M.H.T. Troedsson**, and A.M. Bojesen. 2015. Activation of persistent streptococcus equi subspecies zooepidemicus in mares with subclinical endometritis. *Veterinary Microbiology* 179(1-2):119-125.

53. Pozor, M., D. Freeman, **M. Troedsson**, M. Brown, A. Morton, A. Smith, and J. McNaughten. 2015. Anatomical variations in epididymal-testicular fusion in stallions and their possible clinical significance. *Equine Veterinary Journal* DOI: 10.1111/evj.12464
54. **Preston, S.A.**, C.M. Riggs, M.D. Singleton, and **M.H.T. Troedsson**. 2015. Descriptive analysis of longitudinal endoscopy for exercise-induced pulmonary haemorrhage in Thoroughbred racehorses training and racing at the Hong Kong Jockey Club. *Equine Veterinary Journal* 47(3):366-371.
55. Raja, V., S. Shanmughapriya, M. Kanagavel, **S.C. Artiushin**, **S. Velineni**, **J.F. Timoney** and K. Natarajaseenivasan. 2015. In vivo expressed proteins of virulent *Leptospira interrogans* serovar Autumnalis N2 elicit strong IgM responses of value in conclusive diagnosis. *Clinical and Vaccine Immunology* 23(1):65-72.
56. Rebolledo-Mendez, J., **M.S. Hestand**, **S.J. Coleman**, Z. Zeng, L. Orlando, **J.N. MacLeod**, and T. Kalbfleisch. 2015. Comparison of the equine reference sequence with its sanger source data and new illumina reads. *Public Library of Science One* 10(6): e0126852. doi: 10.1371/journal.pone.0126852, 2015.
57. Reinemeyer, C.R., J.C. Prado, and **M.K. Nielsen**. 2015. Comparison of the larvicidal efficacies of moxidectin or a five-day regimen of fenbendazole in horses harbouring cyathostomin populations resistant to the adulticidal dosage of fenbendazole. *Veterinary Parasitology* 214:100-107.
58. Robert, M., W. Hu, **M.K. Nielsen**, and C.J. Stowe. 2015. Attitudes towards implementation of surveillance-based parasite control on Kentucky Thoroughbred farms – current strategies, awareness, and willingness-to-pay. *Equine Veterinary Journal* 47(6):694-700.
59. **Sanz, M.**, A. Oliveira, **A. Loynachan**, **A. Page**, V. Svansson, S. Giguere, and **D.W. Horohov**. 2015. Validation and evaluation of VapA-specific IgG and IgG subclasses ELISAs to identify foals with *Rhodococcus equi* pneumonia: VapA-specific IgG(T) ELISA outperforms other VapA-specific IgG subclasses when used to identify foals with *Rhodococcus equi* pneumonia. *Equine Veterinary Journal* DOI: 10.1111/evj.12363.
60. **Sanz, M.G.**, N. Villarino, A. Ferreira-Oliveira, and **D.W. Horohov**. 2015. VapA-specific IgG and IgG subclasses responses after natural infection and experimental challenge of foals with *Rhodococcus equi*. *Veterinary Immunology and Immunopathology* 164(1-2):10-15.
61. **Sarkar, S.**, **U.B.R. Balasuriya**, **D.W. Horohov**, and **T.M. Chambers**. 2015. Equine herpesvirus-1 suppresses type-i interferon induction in equine endothelial cells. *Veterinary Immunology and Immunopathology* 167(3-4):122-129.

62. Stout, T.A.E., and **M.H.T. Troedsson**. 2015. Report of the havemeyer foundation workshop on equine implantation: Is early pregnancy loss the only important potential consequence of disturbed preimplantation development? *Equine Veterinary Journal* 47(4):381-383.
63. Morales, A. A. Mendez-Sanchez, M. Armas, C. Guarino, M. Moya, E. Suniaga, K. Brewer, and **T. Tobin**. 2015. Comparative study of the effect of levothyroxine - clenbuterol combination in BALB/c Sprague Dawley rats. *Patologia* 53:141-150.
64. Tolliver, S.C., **E.T. Lyons**, **M.K. Nielsen**, **J.L. Bellaw**. 2015. Transmission of some species of internal parasites in horse foals born in 2013 in the same pasture on a farm in Central Kentucky. *Helminthologia* 52(3)211–218.
65. **Troedsson, M.H.T.** 2015. Breeding induced endometritis: Physiology or pathology? *Reproduction in Domestic Animals* 50(Supplement):7.
66. van Kasteren, P.B., R.C.M. Knaap, P. van den Elzen, E.J. Snijder, **U.B.R. Balasuriya**, E. van den Born, and M. Kikkert. 2015. In vivo assessment of equine arteritis virus vaccine improvement by disabling the deubiquitinase activity of papain-like protease 2. *Veterinary Microbiology* 178(1-2):132-137.
67. **Velineni, S.**, **R. DeNegri**, **S.C. Artiushin**, and **J.F. Timoney**. 2015. Comparison of specificities of serum antibody responses of horses to clinical infections caused by streptococcus equi or zooepidemicus. *Veterinary Microbiology* 180(3-4):253-259.
68. **Velineni, S.**, **J.F. Timoney**, **S.C. Artiushin**, J.M. Donahue and M. Steinman. 2015. infected with *Leptospira interrogans* indicate a competent immune response. *Equine Vet. J.*, doi: 10.1111/evj.12527.
69. Watson, J.R., A. Leber, **S. Velineni**, **J.F. Timoney**, and M.I. Ardura. 2015. Recurrent *Streptococcus equi* subsp. *zooepidemicus* bacteremia in an infant. *Journal of Clinical Microbiology* 53(9) 3096-3099.
70. **Woodward, E.M.**, and **M.H.T. Troedsson**. 2015. Inflammatory mechanisms of endometritis. *Equine Veterinary Journal* 47(4):384-389.
71. **Woodward, E.M.**, M. Christoffersen, **D. Horohov**, **E.L. Squires**, and **M.H.T. Troedsson**. 2015. The effect of treatment with immune modulators on endometrial cytokine expression in mares susceptible to persistent breeding-induced endometritis. *Equine Veterinary Journal* 47(2):235-239.
72. Yeargan, M., I.D. Rocha, J. Morrow, A. Graves, S.M. Reed, and **D.K. Howe**. 2015. A new trivalent nsag surface antigen chimera for efficient detection of antibodies against sarcocystis neurona and diagnosis of equine protozoal myeloencephalitis. *Journal of Veterinary Diagnostic Investigation* 27(3):377-381.

## **NON-REFEREED PUBLICATIONS**

1. **Arnold, L.M.** 2015. Extended therapy for mastitis: When should you? The Progressive Dairyman, Issue 7 (April).
2. **Arnold, L.M.** 2015. Beware of “Dr. Google”-Grass tetany myths debunked. Kentucky Cattlemen’s Association Cow Country News. (March).
3. **Arnold, L.M.** 2015. Emergency calf management considerations after dystocia (difficult birth). Kentucky Cattlemen’s Association Cow Country News. (January).
4. **Arnold, L.M.** 2015. The veterinary feed directive-Part II: Clarifications in the final rule. Cow Country News. (August).
5. **Arnold, L.M.** 2015. When to Intervene in delivery of a calf. Kentucky Cattlemen’s Association Cow Country News. (February).
6. **Arnold, L.M.** 2015. Can You guess the effect of PI cattle on health and performance outcomes? Kentucky Cattlemen’s Association Cow Country News. (September).
7. **Arnold, L.M.** 2015. Dealing with anaplasmosis in your herd. Kentucky Cattlemen’s Association Cow Country News. (November).
8. **Arnold, L.M.** 2015. Developing quality replacement heifers-vaccine requirements weaning to breeding. Kentucky Cattlemen’s Association Cow Country News. (October).
9. **Arnold, L.M.** 2015. Vaccinations for the Fall Calving Herd-Do Them Now! Cow Country News. (December).
10. **Arnold, L.M.** and D. Johnson. 2015. The veterinary feed directive-changing the way producers obtain medicated feeds. Kentucky Cattlemen’s Association Cow Country News. (June).
11. **Arnold, L.M.** and J.D. Green. 2015. Be aware of poison hemlock. Kentucky Cattlemen’s Association Cow Country News (July).
12. **Arnold, L.M.** and R. Smith. 2015. Wrapping your hay this spring? Poor fermentation may lead to big health risks. Kentucky Cattlemen’s Association Cow Country News. (May).
13. **Arnold, L.M.** 2015: The VFD-what resources are available to understand the new regulations? KY Veterinary News. (Fall).
14. **Arnold, L.M.** 2015: Can you guess the effect of PI cattle on health and performance outcomes? KY Veterinary News. (Spring).
15. **Arnold, L.M.** 2015: Chronic pneumonia in stocker calves due to *Mycoplasma bovis*. KY Veterinary News. (Winter).

16. **Bailey, E.** 2015. Horse Genomics. *Equine Disease Quarterly* 24(1):1.
17. **Carter, C.N.** 2015. Editor, Diagnostic Laboratory Rounds. *Kentucky Veterinary News*, Spring, Summer, Fall, Winter editions.
18. **Chambers, T.M.** 2015. Anonymous: OIE Expert Surveillance Panel on equine influenza vaccine composition: Conclusions and Recommendations. *OIE Bulletin* 2015-2, pp.53-55.
19. Dixon, M. and **R. Dwyer.** 2015. Commentary. *Lloyds Equine Disease Quarterly* 24(3):1.
20. Fenger, C., S. Barker, K. Soring, L. Shalgos, and **T. Tobin.** 2015. Trace environmental substances showing up as post-race positives. *Horsemen's Journal* 62(4):34-38.
21. **Janes, J.G.** 2015. Where are we going with Wobbler Syndrome? *Equine Disease Quarterly* 2015. January 24(1): 3.
22. **Loynachan, A.T.** 2015. Responsible Interpretation of Polymerase Chain Reaction Assays. *Equine Disease Quarterly* 24(1):3.
23. **Lyons, E.T.** and S.C. Tolliver. 2015. Strongyles in Horses-Update 2015. University of Kentucky College of Agriculture, Food and Environment Agricultural Experiment Station Bulletin SR 109.
24. Maples, Deborah and **Arnold, L.M.** 2015. Submitting a sample to the Veterinary Diagnostic Laboratory? Here is what you need to know. *Kentucky Cattlemen's Association Cow Country News.* (April).
25. **Nielsen, M.K.** 2015. Dewormer's effect on scratches. *The Horse* 32(5):48.
26. **Nielsen, M.K.** and C. Barakat. 2015. The future of parasite control. *Equus* 456:44-53.
27. **Timoney, P.J.** 2015. Re-emergent diseases, *Equine Disease Quarterly* 24(2):3-4.

### **EXTENSION PUBLICATIONS**

1. **Arnold, L.M.** 2015. Developing quality replacement heifers-vaccine requirements weaning to breeding. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (November).
2. **Arnold, L.M.** 2015. Emergency calf management after dystocia. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (January).
3. **Arnold, L.M.** 2015. Preventing neonatal calf diarrhea or "Calf Scours". University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (December).

4. **Arnold, L.M.** 2015. Staggers (Tremorgenic Syndrome). University of Kentucky Cooperative Extension Service - Forage-Related Cattle Disorders. VET-35.
5. **Arnold, L.M.** 2015. When to intervene in delivery of the calf. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (February).
6. **Arnold, L.M.** 2015. Can you guess the effect of PI cattle on health and performance outcomes? University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (September).
7. **Arnold, L.M.** 2015. Dealing with anaplasmosis in your herd. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (October).
8. **Arnold, L.M.** 2015. The veterinary feed directive-part II-clarifications to the final rule. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (August).
9. **Arnold, L.M.** and D. Johnson. 2015. The veterinary feed directive-changing the way producers obtain medicated feeds. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (May).
10. **Arnold, L.M.** and J. Lehmkuhler. 2015. Acute or atypical interstitial pneumonia (AIP). University of Kentucky Cooperative Extension Service - Forage-Related Cattle Disorders. ID-231.
11. **Arnold, L.M.** and J.D. Green. 2015. Be aware of poison hemlock. University of Kentucky Cooperative Extension Service - Off the Hoof Kentucky Beef Newsletter (July).
12. **Arnold, L.M.** and R. Smith. 2015. Slaframine toxicosis or "Slobbers" in cattle and horses. University of Kentucky Cooperative Extension Service - Forage-Related Cattle Disorders. ID-230.

## Appendix J

### University of Kentucky Department of Veterinary Science Master's Program Assessment:

#### Mission Statement:

The primary goal of the Department of Veterinary Science research program has been to improve our understanding of the biology of Equidae. Emphasis is placed on investigation of the causes and mechanisms which affect the production and performance of horses, regardless of breed. The mission of the Veterinary Science graduate program is to train students to become capable scientists who are creative and critical thinkers with the contemporary skills and knowledge to perform independent research and to effectively communicate the results of their research.

#### Learning Outcomes:

Learning Outcome #1: Students will be able to describe the major principles of their discipline.

Learning Outcome #2: Students will be able to demonstrate and utilize technical expertise to address a research question central to the activities in the laboratory.

Learning Outcome #3: Students will be able to assemble and evaluate data using appropriate technologies to answer research questions.

Learning Outcome #4: Students will be able to effectively communicate the results of their studies.

#### Learning Outcomes

	1. Describe Major Principles	2. Demonstrate and Use Laboratory Skills	3. Assemble and Evaluate Data	4. Communication
Meeting(s) with Major Advisor*	I, R, E	I, R, E	I, R, E	I, R, E
Year 1 and 2 Courses	I, R	R, E	I, R, E	I, R
VS 770 seminar presentation*	A		R, E, A	I, R, E, A
Laboratory Work	I, R, E, A	R, E	I, R, E	
Thesis Defense and Final Exam*	A	A	A	A

### Program Assessment Procedures:

Master's student learning and progress will be evaluated during three major activities: a) meetings with the Major Advisor; b) VS 770 student seminar presentations; c) the thesis defense and final examination. Students will be assessed by their major advisor (all activities), the full graduate faculty of Veterinary Science (VS 770 presentations), and the student's thesis examination committee (thesis defense and final exam). Evaluation forms with rubrics (see attached forms) will provide the mechanisms for assessment.

Baseline assessments will be obtained by the Major Advisor during the initial meetings of the student and advisor. Students pursuing the Master's in Veterinary Science are required to register once for VS 770 (Seminar) and give a research presentation while enrolled. All members of the Veterinary Science graduate faculty in attendance will be asked to provide an assessment of Learning Outcomes #1, #3 and #4. Finally, the Master's thesis defense and final examination completes the MS graduate program, and students will be assessed by the examination committee for all four learning outcomes during this major activity. Publications with graduate student authors are reported annually to the DGS by the major professor. Assessment data will be compiled at the completion of the Spring semester by the DGS and administrative assistant for the graduate program. The DGS and the Veterinary Science Graduate Program Committee will use the compiled data to make recommendations for program modification. These recommendations will be taken to the full graduate faculty in Veterinary Science for discussion.

### Assessment Cycles:

Learning Outcomes will be evaluated on a 3-year cycle. Since there are numerous opportunities to assess student communication, Learning Outcome #4 will be assessed in the initial year and every fourth year thereafter. Learning Outcomes #1 will be assessed in the second year of the cycle. There are fewest opportunities to assess Learning Outcomes #2, and #3, so these outcomes will be assessed in the third year of the cycle to ensure that sufficient data have been collected. All Master's students in the program will be evaluated during each of the specified activities.

## University of Kentucky Department of Veterinary Science PhD Program Assessment:

### Mission Statement:

The primary goal of the Department of Veterinary Science research program has been to improve our understanding of the biology of Equidae. Emphasis is placed on investigation of the causes and mechanisms which affect the production and performance of horses, regardless of breed. The mission of the Veterinary Science graduate program is to train students to become capable scientists who are creative and critical thinkers with the contemporary skills and knowledge to perform independent research and to effectively communicate the results of their research.

### Learning Outcomes:

Learning Outcome #1: Students will be able to effectively describe the major principles of their discipline.

Learning Outcome #2: Students will be able to identify research questions and formulate testable hypotheses.

Learning Outcome #3: Students will demonstrate technical expertise in the laboratory.

Learning Outcome #4: Students will be able to assemble and evaluate data using appropriate technologies to answer research questions.

Learning Outcome #5: Students will effectively communicate scientific information and the results of their studies.

### Learning Outcomes

	1. Describe Major	2. Develop Research	3. Demonstrate Technical Expertise	4. Assemble and Evaluate	5. Communication
Year 1, Meeting(s) with Major Advisor	I	I			I
Year 1 and 2, Courses	I, R	R, E		I, R, E	I, R
Advisory Committee Meetings*	R, E, A	R, E, A	R, E	R, E	R, E, A
Qualifying Examination*	A	A		A	A
VS 770 seminar presentations*	A	A		R, E, A	I, R, E, A
Laboratory Work		E	I, R, E	I, R, E	
Dissertation Defense and Final Exam*	A	A	A	A	A

I=Introduction; R= Reinforced;

E=Emphasized; A=Applied

\*Indicates assessed activities

### Program Assessment Procedures:

Student learning and progress will be evaluated during four major activities: a) advisory committee meetings; b) the qualifying examination; c) VS 770 student seminar presentations; d) the dissertation defense and final examination. Students will be assessed by their major advisor (all activities), the student's advisory committee (committee meetings, qualifying exam, and final exam), and the full graduate faculty of Veterinary Science (VS 770 presentations). Evaluation forms with rubrics (see attached forms) will provide the mechanisms for assessment.

Baseline assessments will be obtained by the student advisory committee during the student's initial committee meeting (typically at the end of year 1). As applicable, learning outcomes will be assessed by the committee during the initial committee meeting and at all subsequent annual meetings. Students pursuing the PhD in Veterinary Science are required to register twice for VS

770 (Seminar) and give a research presentation while enrolled. All attending members of the Veterinary Science graduate faculty will be asked to provide an assessment of Learning Outcomes 1, 2, 4, and 5. The qualifying examination is held approximately mid-way through the student's program. The advisory committee will use the qualifying exam to assess learning outcomes 1, 2, 4, and 5. Finally, the doctoral dissertation defense and final examination completes the PhD graduate program, and students will be assessed by the advisory committee

for all five learning outcomes during this major activity. An annual report of student progress is provided to the Director of Graduate Studies by the student's major professor. Publications with graduate student authors are reported annually to the DGS by the major professor. Assessment data will be compiled at the completion of the Spring semester by the DGS and administrative assistant for the graduate program. The DGS and the Veterinary Science Graduate Program Committee will use the compiled data to make recommendations for program modification. These recommendations will be taken to the full graduate faculty in Veterinary Science for discussion.

### Assessment Cycles:

Learning Outcomes will be evaluated on a 3-year cycle. Since there are numerous opportunities to assess student communication, Learning Outcome #5 will be assessed in the initial year and every fourth year thereafter. Learning Outcomes #1 and #2 will be assessed in the second year of the cycle. There are fewest opportunities to assess Learning Outcomes #3 and #4, so these outcomes will be assessed in the third year of the cycle to ensure that sufficient data have been collected. All students in the program will be evaluated during each of the specified activities.

## Appendix K

### University of Kentucky Department of Veterinary Science PhD Program Assessment:

#### Mission Statement:

The primary goal of the Department of Veterinary Science research program has been to improve our understanding of the biology of Equidae. Emphasis is placed on investigation of the causes and mechanisms which affect the production and performance of horses, regardless of breed. The mission of the Veterinary Science graduate program is to train students to become capable scientists who are creative and critical thinkers with the contemporary skills and knowledge to perform independent research and to effectively communicate the results of their research.

#### Learning Outcomes:

Learning Outcome #1: Students will be able to effectively describe the major principles of their discipline.

Learning Outcome #2: Students will be able to identify research questions and formulate testable hypotheses.

Learning Outcome #3: Students will demonstrate technical expertise in the laboratory.

Learning Outcome #4: Students will be able to assemble and evaluate data using appropriate technologies to answer research questions.

Learning Outcome #5: Students will effectively communicate scientific information and the results of their studies.

### Learning Outcomes

	1. Describe Major	2. Develop Research	3. Demonstrate Technical Expertise	4. Assemble and Evaluate	5. Communication
Year 1, Meeting(s) with Major Advisor	I	I			I
Year 1 and 2, Courses	I, R	R, E		I, R, E	I, R
Advisory Committee Meetings*	R, E, A	R, E, A	R, E	R, E	R, E, A
Qualifying Examination*	A	A		A	A
VS 770 seminar presentations*	A	A		R, E, A	I, R, E, A
Laboratory Work		E	I, R, E	I, R, E	
Dissertation Defense and Final Exam*	A	A	A	A	A

I=Introduction; R= Reinforced;

E=Emphasized; A=Applied

\*Indicates assessed activities

### Program Assessment Procedures:

Student learning and progress will be evaluated during four major activities: a) advisory committee meetings; b) the qualifying examination; c) VS 770 student seminar presentations; d) the dissertation defense and final examination. Students will be assessed by their major advisor (all activities), the student's advisory committee (committee meetings, qualifying exam, and final exam), and the full graduate faculty of Veterinary Science (VS 770 presentations). Evaluation forms with rubrics (see attached forms) will provide the mechanisms for assessment.

Baseline assessments will be obtained by the student advisory committee during the student's initial committee meeting (typically at the end of year 1). As applicable, learning outcomes will be assessed by the committee during the initial committee meeting and at all subsequent annual meetings. Students pursuing the PhD in Veterinary Science are required to register twice for VS

770 (Seminar) and give a research presentation while enrolled. All attending members of the Veterinary Science graduate faculty will be asked to provide an assessment of Learning Outcomes 1, 2, 4, and 5. The qualifying examination is held approximately mid-way through the student's program. The advisory committee will use the qualifying exam to assess learning outcomes 1, 2, 4, and 5. Finally, the doctoral dissertation defense and final examination completes the PhD graduate program, and students will be assessed by the advisory committee

for all five learning outcomes during this major activity. An annual report of student progress is provided to the Director of Graduate Studies by the student's major professor. Publications with graduate student authors are reported annually to the DGS by the major professor. Assessment data will be compiled at the completion of the Spring semester by the DGS and administrative assistant for the graduate program. The DGS and the Veterinary Science Graduate Program Committee will use the compiled data to make recommendations for program modification. These recommendations will be taken to the full graduate faculty in Veterinary Science for discussion.

### Assessment Cycles:

Learning Outcomes will be evaluated on a 3-year cycle. Since there are numerous opportunities to assess student communication, Learning Outcome #5 will be assessed in the initial year and every fourth year thereafter. Learning Outcomes #1 and #2 will be assessed in the second year of the cycle. There are fewest opportunities to assess Learning Outcomes #3 and #4, so these outcomes will be assessed in the third year of the cycle to ensure that sufficient data have been collected. All students in the program will be evaluated during each of the specified activities.

**PRESENTATIONS**

**2011**

**Faculty**

1. Adams, A.A. 2011. Getting the right start - The overlooked art of nutritional influences on weaning stress “The importance of the immune system”. 27th Alltech International Animal Health & Nutrition Symposium, May 22nd-25th, Nicholasville, KY.
2. Adams, A.A. 2011. The effect of age on telomerase activity and reactive oxygen species (ROS) production in plasma and peripheral blood mononuclear cells of horses. Conference of Research Workers in Animal Disease, December 3<sup>rd</sup>, Chicago, IL.
3. Arnold, L.M. 2011. Master cattlemen hands-on field day. September 15th, Versailles, KY.
4. Arnold, L.M. 2011. Master cattlemen herd health. March-December (6 sessions statewide), KY.
5. Arnold, L.M. 2011. A five point evaluation system for deworming decision making. 2011 Small Ruminant Grazing Conference, January 15th, Elizabethtown, KY.
6. Arnold, L.M. 2011. Animal disease traceability and an introduction to the UKVDL. Montgomery County Cattlemen’s Association Meeting, January 10th, Mt. Sterling, KY.
7. Arnold, L.M. 2011. Animal disease traceability and UKVDL update. Lyon County Extension Meeting, February 1st, Delivered by Skype.
8. Arnold, L.M. 2011. Animal disease traceability and UKVDL Update. McLean County Extension Meeting, January 31st, Delivered by Skype.
9. Arnold, L.M. 2011. Appropriate milking practices for small dairy operations. Third Thursday Kentucky State University Goat Meeting, March 17th, Frankfort, KY.
10. Arnold, L.M. 2011. Appropriate milking practices for small dairy operations. Kentucky Cheesemaking School Seminar Session, March 14th, Lexington, KY.
11. Arnold, L.M. 2011. Cattle demonstration: BVD testing and tail bleeding. Adair County Beef Field Day, October 24th, Columbia, KY.
12. Arnold, L.M. 2011. Collecting and interpreting cow and bulk tank cultures. Somatic Cell Count Reduction Workshops, January and February (6 locations).
13. Arnold, L.M. 2011. CPH Vaccinations and modified live/killed vaccines. Harrison County Extension Meeting, October 17th, Cynthiana, KY.

14. Arnold, L.M. 2011. Health considerations for purchased replacements. Washington County Extension Meeting, February 8th, Springfield, KY.
15. Arnold, L.M. 2011. Health considerations for the cow/calf herd. Franklin County Cattlemen's Association Meeting, April 27th, Frankfort, KY.
16. Arnold, L.M. 2011. How extension can help the practitioner. Kentucky Veterinary Medical Association Mid-America Veterinary Conference, October 9th, Louisville, KY.
17. Arnold, L.M. 2011. Interpreting milk culture results. Kentucky Dairy Agent In-Service Training, March 16th, Marion County, KY.
18. Arnold, L.M. 2011. Mastitis treatment options and strategies. Somatic Cell Count Reduction Workshops, January and February (6 locations).
19. Arnold, L.M. 2011. Mastitis vaccines. Somatic Cell Count Reduction Workshops, January and February (6 locations).
20. Arnold, L.M. 2011. New animal disease traceability regulations. 2011 Winter Food Animal Veterinary Conference, March 9th, Lexington, KY.
21. Arnold, L.M. 2011. Organisms that cause mastitis. Kentucky Dairy Agent In-Service Training, March 16th, Marion County, KY.
22. Arnold, L.M. 2011. Parasite control and rotational grazing. Kentucky Grazing School, April 14th, Microsoft Lync to Princeton, KY.
23. Arnold, L.M. 2011. Produce a quality product through appropriate quality assurance practices. The Kentucky Goat College. April 5th, Georgetown, KY (and Adobe Connect to KY and IN Extension Offices).
24. Arnold, L.M. 2011. Targeted selective treatment of internal parasites in small ruminants. Whitley County Sheep and Goat Producer's Meeting, November 8th, Williamsburg, KY.
25. Arnold, L.M. 2011. The need for a good history - Why the local veterinarian is essential. Beef Cattle Production Certification: Herd Health Section. February 14th-15th, Lexington, KY.
26. Arnold, L.M. 2011. Vaccinating the cow herd to prevent abortion. Beef Cattle Production Certification: Herd Health Section. February 14th, Lexington, KY.
27. Arnold, L.M. 2011. Basic herd health management practices, July 22<sup>nd</sup>, Microsoft Lync Session.
28. Arnold, L.M. 2011. Vaccination programs for CPH calves. 2011 Harrison County Field Day, August 8th, Cynthiana, KY.

29. Arnold, L.M. 2011. Vaccination protocols and CPH health requirements. Whitley County Extension Meeting, October 28th, Microsoft Lync Session.
30. Arnold, L.M. 2011-2012 Master Stocker Herd Health. October -January (7 locations statewide), KY.
31. Artiushin, S. 2011. Prepartum immunization of mares with binding domains of toxin A and B of *Clostridium difficile* elicit antibodies that block toxin binding. 51st Interscience Conference on Antimicrobial Agents and Chemotherapy, September 17th-20th, Chicago, IL.
32. Bailey, E. 2011. Association of ECA11 haplotype with susceptibility for in vitro infection with equine arteritis virus. Ninth Dorothy Russell Havemeyer Foundation International Equine Genome Mapping Workshop, July 27-29, 2011, St. Paul, MN.
33. Bailey, E. 2011. Book review of Maryjean Wall's "How Kentucky Became Southern." University of Kentucky Endowed Chairs and Professor's First Friday Lecture, November 4<sup>th</sup>, Lexington, KY.
34. Bailey, E. 2011. Genetics and genomics before and after the Havemeyer Workshops: Global impact. Havemeyer Foundation, 30<sup>th</sup> Anniversary Workshop, August 16<sup>th</sup>-18<sup>th</sup>, Skidmore College, Saratoga Springs, New York.
35. Bailey, E. 2011. Genome wide association studies (GWAS) for horse diseases: Opportunities and early lessons. Larsen Distinguished Speaker Series. Washington State University, May 17<sup>th</sup>, Pullman, WA.
36. Bailey, E. 2011. Genome wide association study for susceptibility of in vitro infection of cells with equine arteritis virus. Equine Science Society, May 30<sup>th</sup>-June 3<sup>rd</sup>, Murfreesboro, TN.
37. Bailey, E. 2011. Horse whole-genome sequence: Messages written in DNA. Washington State University, May 16<sup>th</sup>-17<sup>th</sup>, Pullman, WA.
38. Bailey, E. 2011. Nature and extent of genetic variation among Thoroughbred horses. Thoroughbred Pedigree, Genetics, and Performance Conference, September 7<sup>th</sup>-8<sup>th</sup>, Lexington, KY.
39. Balasuriya U.B.R. 2011. Discovery of a novel small arterivirus gene that overlaps the GP5 coding sequence and is important for virus production. American Society for Virology, July 16<sup>th</sup>-20<sup>th</sup>, Minneapolis, MN.
40. Balasuriya, U. B. R. 2011. Molecular characterization of field strains of EHV-1. The Third Havemeyer Equine Herpesvirus-1 Workshop, September 18<sup>th</sup>-23<sup>rd</sup>, Steamboat, CO.
41. Balasuriya, U.B.R. 2011. Identification of virulence determinants of T953 (Findlay) strain of EHV-1: experimental inoculation of mice and horses with the cell culture

adapted strains. The Third Havemeyer Equine Herpesvirus-1 Workshop, September 18<sup>th</sup>-23<sup>rd</sup>, Steamboat, CO.

42. Balasuriya, U.B.R. 2011. Herpesviruses and equids: Ramification of a complex yet intriguing relationship. Advances in Equine Neurological Diseases Symposium, December 6<sup>th</sup>, Lexington, KY.
43. Ball, B.A. 2011. Diseases of the scrotum and testis. 2<sup>nd</sup> Annual Breeders' Short Course, January 21<sup>st</sup>, Lexington, KY.
44. Ball, B.A. 2011. The broodmare. TOBA Breeders' Clinic, June 3<sup>rd</sup>-5<sup>th</sup>, Lexington, KY.
45. Ball, B.A. 2011. Anti-Müllerian hormone in the mare: Potential endocrine marker for ovarian function. Second International Gametes Workshop – Equine In Vitro Fertilization, November 10<sup>th</sup>-12<sup>th</sup>, Hilton Head Island, SC.
46. Ball, B.A. 2011. Determination of serum anti-Mullerian hormone concentrations for the diagnosis of granulosa-cell tumors in mares. Fifty-Seventh Annual Convention of the American Association of Equine Practitioners, November 18<sup>th</sup>-22<sup>nd</sup>, San Antonio, TX, 57: 55.
47. Bryant, U.K. 2011. Malignant multilobular tumor of bone. 30th Annual Meeting of the Midwest Association of Veterinary Pathologists. August, Zion, Illinois.
48. Dwyer, R. 2011. Challenges of equine biosecurity. Invited presentation to faculty, staff and students at Louisiana State University College of Veterinary Medicine, July, Baton Rouge, LA.
49. Dwyer, R. 2011. The importance of planning for disasters involving horses. American Society of Animal Science and American Dairy Science Association Joint Annual Meeting, July 11<sup>th</sup>-14<sup>th</sup>, New Orleans, LA.
50. Erol E. 2011. Antimicrobial susceptibility patterns of nocardioform bacteria causing placentitis in horses. 54<sup>th</sup> AAVLD Meeting, Buffalo, NY.
51. Erol, E. 2011. Current microbiological methods for equine abortion diagnoses and beyond. Equine Diagnostic and Research Seminar, University of Kentucky, Department of Veterinary Science, June 30<sup>th</sup>, Lexington, KY.
52. Erol, E. 2011. Broth microdilution antimicrobial susceptibility method. Central Kentucky Veterinary Medical Association and Pfizer Animal Health, Lexington, KY.
53. Gaskill, C.L. 2011. Common intoxications in beef cattle. Agriculture and Natural Resources (ANR) Cooperative Extension Update. October, Winchester, KY.

54. Gaskill, C.L. 2011. Current guidelines for treatment of poisoned horses. Kentucky Breeders Short Course, sponsored by the University of Kentucky, College of Agriculture, and the University of Minnesota. January, Lexington, KY.
55. Gaskill, C.L. 2011. Weed dilemmas after dry summers. Co-presenter with William Witt. Pastures Please program sponsored by the University of Kentucky Cooperative Extension and University of Kentucky Equine Initiative. February, Georgetown, KY.
56. Gaskill, C.L. 2011. Ocular fluid nitrate and nitrite concentrations in aborted, stillborn, and newborn equines. 54th Annual Conference of the American Association of Veterinary Laboratory Diagnosticians. September 28<sup>th</sup>-October 5<sup>th</sup>, Buffalo, NY.
57. Gaskill, C.L. 2011. Forensic toxicology: It's not just for humans anymore! Eastern Kentucky University Forensic Sciences/Chemistry Seminar Series, Richmond, KY (co-presenter).
58. Gaskill, C.L. 2011. Common intoxication in beef cattle. Beef Cattle Production Certification Program, herd health section. University of Kentucky Extension, February, Lexington, KY.
59. Horohov, D.W. 2011. Immunoregulation: Models of cytokine-mediated equine immune responses. Havemeyer Foundation, 30<sup>th</sup> Anniversary Workshop, August 16<sup>th</sup>-18<sup>th</sup>, Skidmore College, Saratoga Springs, New York.
60. Horohov, D.W. 2011. The effect of age on immune function in horses: impact on vaccination and antimicrobial therapy. 2011 ELITE Meeting, August 16<sup>th</sup>, Chicago, IL.
61. Horohov, D.W. 2011. Alternative measures of cell-mediated immunity in the horse. The Third Havemeyer Equine Herpesvirus-1 Workshop, September 18<sup>th</sup>-23<sup>rd</sup>, Steamboat, CO.
62. Howe, D.K. 2011. A genome sequence for the apicomplexan *Sarcocystis neurona*. Microbial Genome Sequencing and Microbial Observatories Programs Workshop, Plant and Animal Genomes Conference, January 15<sup>th</sup>-19<sup>th</sup>, San Diego, CA, 2011.
63. Howe, D.K. 2011. A genome project for *S. neurona*, the cause of equine protozoal myeloencephalitis. 23<sup>rd</sup> International Conference of the World Association for the Advancement of Veterinary Parasitology, August 21<sup>st</sup>-25<sup>th</sup>, Buenos Aires, Argentina.
64. Howe, D.K. 2011. *Sarcocystis neurona*, the primary cause of EPM. Advances in Equine Neurological Diseases Symposium, December 6<sup>th</sup>, Lexington, KY.
65. Jackson, C. 2011. Rabies. Beef Cattle Production Certification: Herd Health Section Meeting, February 15<sup>th</sup>.
66. Jackson, C. 2011. Cytology of lumps and bumps. Summer Food Animal Conference, University of Kentucky, Veterinary Diagnostic Laboratory, August 25<sup>th</sup>, Lexington, KY.

67. Kennedy, L. 2011. Nocardioform placentitis in Central Kentucky. 54<sup>th</sup> Annual Conference of the American Association of Veterinary Laboratory Diagnosticians. September 28<sup>th</sup>-October 5<sup>th</sup>, Buffalo, NY.
68. Kennedy, L. 2011. Nocardioform placentitis in horses. 54<sup>th</sup> Annual Conference of the American Association of Veterinary Laboratory Diagnosticians. September 28<sup>th</sup>-October 5<sup>th</sup>, Buffalo, NY.
69. Lear, T.L. 2011. Cytogenetic abnormalities in horses. KEMI, January 18<sup>th</sup>, Lexington, KY.
70. MacLeod, J.N. 2011. Efforts to analyze the mRNA transcriptome. Ninth Dorothy Russell Havemeyer Foundation International Equine Genome Mapping Workshop, July 27-29, 2011, St. Paul, MN.
71. MacLeod, J.N. 2011. Profiling gene expression across the genome: The opportunity to find the unexpected. Havemeyer Foundation, 30<sup>th</sup> Anniversary Workshop, August 16<sup>th</sup>-18<sup>th</sup>, Skidmore College, Saratoga Springs, New York.
72. MacLeod, J.N. 2011. Genetics 101: Basic terminology and concepts of gene structure and expression. Thoroughbred Pedigree, Genetics, and Performance Conference, September 7<sup>th</sup>-8<sup>th</sup>, Lexington, KY.
73. MacLeod, J.N. 2011. Complexity of the equine mRNA transcriptome. 4<sup>th</sup> International Symposium on Animal Functional Genomics, October 10<sup>th</sup>-12<sup>th</sup>, 2011, Dublin, Ireland.
74. Nielsen, M.K. 2011. Equine parasites – an update. Hagyard Equine Medical Institute, October 12<sup>th</sup>, Lexington, KY.
75. Nielsen, M.K. 2011. Worms and horses – learning to live with worms. Webinar on [www.thehorse.com](http://www.thehorse.com), October 25<sup>th</sup>.
76. Squires, E.L. 2011. Mare and stallion management. Southern States Equine Feed Master Conference, February 1<sup>st</sup> - 3<sup>rd</sup>, Raleigh, NC.
77. Squires, E.L. 2011. Embryo transfer. Equine Breeding, Management and Artificial Insemination Conference, Ohio State University, February 5<sup>th</sup>-6<sup>th</sup>, Columbus, OH.
78. Squires, E.L. 2011. Estrous cycle control. Equine Breeding, Management and Artificial Insemination Conference, February 5<sup>th</sup>-6<sup>th</sup>, Ohio State University, Columbus, OH.
79. Squires, E.L. 2011. Cooled semen. Equine Breeding, Management and Artificial Insemination Conference, Ohio State University, February 5<sup>th</sup>-6<sup>th</sup>, Columbus, OH.
80. Squires, E.L. 2011. Assisted reproduction. American Saddlebred Horse Association's Annual Convention, February 17<sup>th</sup>-19<sup>th</sup>, Lexington, KY.

81. Squires, E.L. 2011. Freezing semen. II Argentina Congress on Equine Reproduction, May 4<sup>th</sup>-6<sup>th</sup>, Mendoza, Argentina.
82. Squires, E.L. 2011. Hormonal control in mares. II Argentina Congress on Equine Reproduction, May 4<sup>th</sup>-6<sup>th</sup>, Mendoza, Argentina.
83. Squires, E.L. 2011. Embryo transfer. II Argentina Congress on Equine Reproduction, May 4<sup>th</sup>-6<sup>th</sup>, Mendoza, Argentina.
84. Squires, E.L. 2011. Centrifugation of stallion semen. Equine Science Society Meeting, May 31<sup>st</sup> – June 4<sup>th</sup>, Murfreesboro, TN.
85. Squires, E.L. 2011. Induction of ovulation in mares. Bioniche Annual Business Meeting, August 1<sup>st</sup>-4<sup>th</sup>, Fort Collins, CO.
86. Squires, E.L. 2011. Safety of sucromate in mares. Society for Theriogenology Annual Meeting, August 9<sup>th</sup> – 11<sup>th</sup>, Milwaukee, WI.
87. Squires, E.L. 2011. Advances in equine reproduction. Havemeyer Foundation, 30th Anniversary Workshop, August 16<sup>th</sup>-18<sup>th</sup>, Skidmore College, Saratoga Springs, New York.
88. Squires, E.L. 2011. In vitro fertilization. Havemeyer Symposium on In Vitro Fertilization. November 10<sup>th</sup>-12<sup>th</sup>, Hilton Head, SC.
89. Squires, E.L. 2011. Evaluation of a new sustained-release deslorelin acetate for induction of ovulation in mares. Fifty-Seventh Annual Convention of the American Association of Equine Practitioners, November 18<sup>th</sup>-22<sup>nd</sup>, San Antonio, TX, 57:53.
90. Squires, E.L. 2011. Trends in the horse industry. Select Breeder Service Annual Meeting, December 7<sup>th</sup>-9<sup>th</sup>, Chesapeake, MD.
91. Timoney, P.J. 2011. Emergent and re-emergent diseases: An ever-present threat to equine industries worldwide. Second Annual Kentucky Breeders' Short Course, January 21<sup>st</sup>, Lexington, KY.
92. Timoney, P.J. 2011. NIAA Annual Conference, Equine Committee, April 11<sup>th</sup>-14<sup>th</sup>, San Antonio, TX.
93. Timoney, P.J. 2011. Contagious equine metritis: a disease of re-emergent significance. USDA and University of Tennessee College of Veterinary Medicine, Foreign Animal and Emerging Diseases Course, August 8<sup>th</sup>-12<sup>th</sup>, Knoxville, TN.
94. Timoney, P.J. 2011. Equine piroplasmiasis: selected features of the disease and etiologic agents. USDA and University of Tennessee College of Veterinary Medicine, Foreign Animal and Emerging Diseases Course, August 8<sup>th</sup>-12<sup>th</sup>, Knoxville, TN.

95. Timoney, P.J. 2011. Equine viral arteritis: Advances in controlling an enigmatic disease. Havemeyer Foundation, 30<sup>th</sup> Anniversary Workshop, August 16<sup>th</sup>-18<sup>th</sup>, Skidmore College, Saratoga Springs, New York.
96. Timoney, P.J. 2011. CEM revisited: defining factors responsible for the 2008/10 occurrence in the USA. Animal Health and Veterinary Laboratories Agency International Conference on Animal Diseases, September 13<sup>th</sup>-15<sup>th</sup>, Royal Holloway, University of London, Surrey, United Kingdom, p. 21.
97. Timoney, P.J. 2011. Resurgence of glanders: A cause for increasing international concern. 115<sup>th</sup> Annual Meeting of the United States Health Association, September 29<sup>th</sup>-October 5<sup>th</sup>, Buffalo, NY.
98. Timoney, P.J. 2011. High-value performance/breeding horses – Reduced risk of disease transfer. Joint FEI-OIE Meeting on International Movement of Horses, October 24<sup>th</sup>, Guadalajara, Mexico.
99. Timoney, P.J. 2011. High value performance/breeding horses. Refresher course for Fédération Equestre Internationale Veterinarians. Fifty-Seventh Annual Convention of the American Association of Equine Practitioners, November 18<sup>th</sup>-22<sup>nd</sup>, San Antonio, TX.

#### **Graduate Students & Post-Doctoral Scholars**

1. Claes, A. 2011. Detection of serum Anti-Müllerian hormone concentrations as a method for diagnosis of cryptorchidism in the horse. Fifty-Seventh Annual Convention of the American Association of Equine Practitioners, November 18<sup>th</sup>-22<sup>nd</sup>, San Antonio, TX.
2. Coleman, S.J. 2011. Analysis of unannotated equine transcripts identified by RNA-sequencing. 9<sup>th</sup> Dorothy Russell Havemeyer Foundation International Equine Genome Mapping Workshop, July 27<sup>th</sup>-29<sup>th</sup>, St. Paul, MN.
3. Dangoudoubiyam, S. 2011. A genome sequencing project for the apicomplexan parasite *Sarcocystis neurona*. 63<sup>rd</sup> Annual Midwestern Conference of Parasitologists, June 8<sup>th</sup>, Saint Mary's College, Notre Dame, Indiana.
4. Dangoudoubiyam, S. 2011. A genome sequencing project for the apicomplexan parasite *Sarcocystis neurona*. 56<sup>th</sup> Annual Meeting of the American Association of Veterinary Parasitologists, July 16<sup>th</sup>-19<sup>th</sup>, St. Louis, MO.
5. Even, D.L. 2011. Deacylated polyethyleneimine and IL-15 expression constructs enhance humoral and cellular immune responses to DNA vaccination in horses. Conference of Research Workers in Animal Disease (CRWAD) Meeting, December 4<sup>th</sup>-6<sup>th</sup>, Chicago, IL.
6. Gautam, A. 2011. Examination of the surface antigen (SnSAG) gene family in *Sarcocystis neurona*. 63<sup>rd</sup> Annual Midwestern Conference of Parasitologists, June 8<sup>th</sup>, Saint Mary's College, Notre Dame, Indiana.

7. Gautam, A. 2011. Examination of the surface antigen (SnSAG) gene family in *Sarcocystis neurona*. 56<sup>th</sup> Annual Meeting of the American Association of Veterinary Parasitologists, July 16<sup>th</sup>-19<sup>th</sup>, St. Louis, MO.
8. Go Y.Y. 2011. Equine arteritis virus does not induce type I interferon  $\alpha/\beta$  production in equine endothelial cells. American Society for Virology, July 16<sup>th</sup>-20<sup>th</sup>, Minneapolis, MN.
9. Janes, J.G. 2011. Comparison of cervical radiographs and MRI to assess vertebral canal stenosis in Wobbler Syndrome. Fifty-Seventh Annual Convention of the American Association of Equine Practitioners, November 18<sup>th</sup>-22<sup>nd</sup>, San Antonio, TX.
10. Janes, J. 2011. Wobbler syndrome. Advances in Equine Neurologic Disease Symposium. December 6<sup>th</sup>, Lexington, KY.
11. Janes, J.G. 2011. Clinical and pathological assessment of cervical stenotic myelopathy. Advances in Equine Neurological Diseases Symposium, December 6<sup>th</sup>, Lexington, KY.
12. Liu, C. 2011. The maturation of equine infectious anemia virus (EIAV) envelope-specific immune responses in vivo after exposure to a live-attenuated vaccine. Conference of Research Workers in Animal Diseases, December 3<sup>rd</sup>, Chicago, IL.
13. Sun, L. 2011. The DNA promoter of the interferon gamma gene (Ifng) is hypermethylated in neonatal foals. Conference of Research Workers in Animal Diseases, December 3<sup>rd</sup>, Chicago, IL.

#### **Undergraduate Students & Visiting Scholars**

1. Andersen, U.V.\*, S.N. Olsen, and M.K. Nielsen. 2011. *Strongylus vulgaris* – can it be diagnosed earlier? Abildgaard Symposium, December 9<sup>th</sup>, University of Copenhagen, Denmark.
2. Dunham, J.\*, C. Liu, and D.W. Horohov. 2011. Comparison of the ability of two different adjuvants to stimulate antigen presenting cells function in vivo. Conference of Research Workers in Animal Diseases, December 3<sup>rd</sup>, Chicago, IL.
3. Gong, Z.\*, L. Sun, and D. Horohov. 2011. A specific CpG site demethylation in the IFN-gamma gene promoter region of different aged equine. Conference of Research Workers in Animal Diseases, December 3<sup>rd</sup>, Chicago, IL.
4. Zoll, M.M. 2011. The effect of flunixin meglumine on the equine immune response to vaccination. Conference of Research Workers in Animal Diseases, December 3<sup>rd</sup>, Chicago, IL.

## 2012

### Faculty

1. Adams, A. 2012. Vaccination strategies and immunity in young horses. 3<sup>rd</sup> Annual Kentucky Breeders' Short Course, January 21<sup>st</sup>, Lexington, KY.
2. Adams, A. 2012. Equine research – The Gluck Center. Asbury University, March 20<sup>th</sup>, Wilmore, KY.
3. Adams, A. 2012. Equine metabolic syndrome – challenges and advances. 18<sup>th</sup> Kentucky Equine Research Conference, May 18<sup>th</sup>, Lexington, KY, pp 118-126.
4. Adams, A. 2012. The stress of weaning. University of Kentucky Veterinary Diagnostic Laboratory Seminar, July 26<sup>th</sup>, Lexington, KY.
5. Adams, A.A. 2012. A novel diagnostic tool for horses with pituitary pars intermedia dysfunction (PPID). 93<sup>rd</sup> Annual Conference of Research Workers in Animal Disease, December 2<sup>nd</sup>-4<sup>th</sup>, Chicago, IL.
6. Adams, A.A. 2012. Comparison of nutritional compounds (pterostilbene, resveratrol, curcuminoids, quercetin, and hydroxypterostilbene) to NSAIDs on equine cytokine production in vitro. 93<sup>rd</sup> Annual Conference of Research Workers in Animal Disease, December 2<sup>nd</sup>-4<sup>th</sup>, Chicago, IL.
7. Arnold, L.M. 2012. Why minerals are important to overall health and FAMACHA training. Small Ruminant Grazing Conference, January 14<sup>th</sup>, Bowling Green, KY.
8. Arnold, L.M. 2012. Update on Pinkeye. Madison County Extension Meeting, January 24<sup>th</sup>, Richmond, KY.
9. Arnold, L.M. 2012. Forage disorders. Scott County Extension Meeting, January 26<sup>th</sup>, Georgetown, KY.
10. Arnold, L.M. 2012. Master cattlemen herd health. February-October (4 locations statewide), KY.
11. Arnold, L.M. 2012. Health considerations for the stocker/backgrounder. Woodford County Extension Meeting, February 7<sup>th</sup>, Versailles, KY.
12. Arnold, L.M. 2012. Trichomoniasis testing, antibiotic residue issues, official animal identification. 2012 Winter Food Animal Veterinary Conference, February 15<sup>th</sup>, Lexington, KY.
13. Arnold, L.M. 2012. Beef herd health overview. Rockcastle County Extension Meeting, February 16<sup>th</sup>, Mt. Vernon, KY.

14. Arnold, L.M. 2012. Vaccination programs for beef cow/calf operations and stockers. Garrard County Extension Meeting, March 8<sup>th</sup>, Lancaster, KY.
15. Arnold, L.M. 2012. Forage disorders. Master Grazer Herd Health, April 11<sup>th</sup>, Princeton, KY.
16. Arnold, L.M. 2012. Vaccinations for beef cow/calf operations. Nelson County Cattlemen's Association, April 12<sup>th</sup>, Bardstown, KY.
17. Arnold, L.M. 2012. Vaccinations for beef cattle. Northern Kentucky Cattle Association Field Demonstration, April 25<sup>th</sup>, Burlington, KY.
18. Arnold, L.M. 2012. Vaccination programs for beef cow/calf operations and stockers. Bullitt County Cattlemen's Association Meeting, May 8<sup>th</sup>, Shepherdsville, KY.
19. Arnold, L.M. 2012. Deworming, vaccination, and fly control. RCARS Mountain Monday Series, May 14<sup>th</sup>, Wolverine, KY.
20. Arnold, L.M. 2012. Nitrate toxicity for agents. July 11<sup>th</sup>, Microsoft Lync Session.
21. Arnold, L.M. 2012. Trichomoniasis testing and official animal identification. Western Kentucky Food Animal Veterinary Conference, June 27<sup>th</sup>, Hopkinsville, KY.
22. Arnold, L.M. 2012. Health considerations for grazing ruminants. Advanced Kentucky Grazing School, July 10<sup>th</sup>, Versailles, KY.
23. Arnold, L.M. 2012. Converting from dairy to beef. Metcalfe County Extension Meeting, July 24<sup>th</sup>, Edmonton, KY.
24. Arnold, L.M. 2012. Master stocker herd health program. August-December (5 locations statewide), KY.
25. Arnold, L.M. 2012. Vaccination protocols, Pinkeye considerations, and animal disease traceability. Advanced Master Cattlemen Cow College, August 9<sup>th</sup>, Lexington, KY.
26. Arnold, L.M. 2012. Tuberculosis Testing Refresher. 2012 Summer Food Animal Veterinary Conference, August 16<sup>th</sup>, Lexington, KY.
27. Arnold, L.M. 2012. Recent changes in antibiotic regulations. Kentucky Milk Quality Conference, August 29<sup>th</sup>, Lake Barkley, KY.
28. Arnold, L.M. 2012. Mastitis treatment options. Neogen Technical Training. September 5<sup>th</sup>, Lexington, KY.
29. Arnold, L.M. 2012. Forage disorders. Kentucky Grazing School. September 12<sup>th</sup>, Versailles, KY.
30. Arnold, L.M. 2012. Herd health considerations. Clay County Field Day, September 20<sup>th</sup>, Manchester, KY.

31. Arnold, L.M. 2012. Age determination using dentition. Beef Bash, September 27<sup>th</sup>, Princeton, KY.
32. Arnold, L.M. 2012. Forage disorders. Pasture Walk on Big Spring Farm. September 28<sup>th</sup>, Adolphus, KY.
33. Arnold, L.M. 2012. Master cattlemen hands-on field day. October 4<sup>th</sup>, Versailles, KY.
34. Arnold, L.M. 2012. UKVDL procedures for submission and dairy heifer cow herd health. Territory Managers Training Meeting-Burkman Feeds Consultant Training, November 8<sup>th</sup>, Pumpkin Creek Lodge, KY.
35. Arnold, L.M. 2012. Disease detection. Precision Dairy Showcase, December 3<sup>rd</sup>, Lexington, KY.
36. Arnold, L.M. 2012. Beef reproductive efficiency-health considerations. Northern Kentucky Beef Reproductive Efficiency Program, December 13<sup>th</sup>, Burlington, KY; and December 20<sup>th</sup>, Campbell County, KY.
37. Artiushin, S. 2012. Antigens for improved specificity of ELISA for detection of serum antibody to *Streptococcus equi*. A Dorothy Russell Havemeyer Foundation workshop on "Getting Grips with Strangles and other streptococcal diseases, October 20<sup>th</sup> – 21<sup>st</sup>, Lexington, KY.
38. Bailey, E. 2012. Genetics of carrier status for equine arteritis virus: Association with *in vitro* virus infectivity assay and a haplotype on ECA11. 33<sup>rd</sup> International Society for Animal Genetics Conference, July 15<sup>th</sup>–20<sup>th</sup>, Cairns, Australia.
39. Balasuriya U.B.R. 2012. Acquisition of a FluorChem E digital imaging system for arterivirus (PRRSV and EAV) vaccine research. AFRI/NRI Animal Health and Welfare Annual Project Director Meeting, December 1<sup>st</sup>, Chicago, IL.
40. Balasuriya, U.B.R. 2012. Development of molecular diagnostic assays for equine pathogens. Center of Excellence for Emerging Zoonotic Animal Diseases (CEEZAD) Annual Meeting, Lied Lodge and Conference Center, May 2<sup>nd</sup>, Nebraska City, NE.
41. Balasuriya, U.B.R. 2012. Molecular and genomic approaches to understanding virus-host interactions in shaping the outcome of equine arteritis virus (EAV). Infection International Symposium on Equine Infectious, Genetic and Metabolic Diseases, August 24<sup>th</sup>-25<sup>th</sup>, Belo Horizonte, Brazil.
42. Balasuriya, U.B.R. 2012. Herpesviruses and equids: Relationship between equine herpesvirus-1 myeloencephalopathy and viral genotypes. Departamento de Medicina Veterinária Preventiva, Escola de Veterinária da Universidade Federal de Minas Gerais (UFMG), August 27<sup>th</sup>, Belo Horizonte, Brazil.
43. Ball, B.A. 2012. Causes of fertilization failure. 3<sup>rd</sup> Annual Kentucky Breeders' Short Course, January 21<sup>st</sup>, Lexington, KY.

44. Ball, B.A. 2012. Pregnancy loss during early gestation. 3<sup>rd</sup> Annual Kentucky Breeders' Short Course, January 21<sup>st</sup>, Lexington, KY.
45. Ball, B.A. 2012. Pregnancy losses during late pregnancy and diagnosis of placentitis. 3<sup>rd</sup> Annual Kentucky Breeders' Short Course, January 21<sup>st</sup>, Lexington, KY.
46. Ball, B.A. 2012. An overview of programs at the Gluck Equine Research Center. Japan Racing Association, February 8<sup>th</sup> – 16<sup>th</sup>, Utsonomiya, Japan.
47. Ball, B.A. 2012. Placentitis in mares. Japan Racing Association, February 8<sup>th</sup> – 16<sup>th</sup>, Hokkaido, Japan.
48. Ball, B.A. 2012. Reproductive endocrinology of the mare. 48<sup>th</sup> Annual Conference for Veterinarians, March 21<sup>st</sup>-24<sup>th</sup>, Athens, GA.
49. Ball, B.A. 2012. Embryonic and early pregnancy loss in mares. 48<sup>th</sup> Annual Conference for Veterinarians, March 21<sup>st</sup>-24<sup>th</sup>, Athens, GA.
50. Ball, B.A. 2012. Abnormalities of the reproductive system of the mare. University of Georgia, School of Veterinary Medicine, March 22<sup>nd</sup>, Athens, GA.
51. Ball, B.A. 2012. Determination of serum anti-Mullerian hormone concentrations for the diagnosis of granulosa-cell tumors in mares. University of Georgia, School of Veterinary Medicine, March 22<sup>nd</sup>, Athens, GA.
52. Ball, B.A. 2012. Characterization of prostaglandin e2 receptors in the equine oviduct. 8<sup>th</sup> International Symposium on Equine Embryo Transfer, July 26<sup>th</sup> – July 29<sup>th</sup>, Vancouver, British Columbia.
53. Ball, B.A. 2012. Expression of anti-Müllerian hormone, cyclin kinase inhibitor, connexin 43, androgen receptor and steroidogenic enzymes in the normal and cryptorchid equine testis. 17<sup>th</sup> International Congress on Animal Reproduction, July 29<sup>th</sup> - Aug 2<sup>nd</sup>, Vancouver, British Columbia.
54. Bolin, D., 2012. Anaplasmosis, Winter Food Animal Conference, University of Kentucky, Veterinary Diagnostic Laboratory, February 15, Lexington KY, 40511.
55. Bryant, U.K. 2012. Congenital disseminated hemangiosarcoma in an equine fetus. 31st Annual Meeting of the Midwest Association of Veterinary Pathologists, July, New Harmony, IN.
56. Carter, C.N. 2012. Preliminary results of a nocardiform placentitis farm-based risk factor study, The Kentucky Association of Equine Practitioners and Kentucky Thoroughbred Farm Managers Club, January 30<sup>th</sup>, Lexington, KY.
57. Carter, C.N. 2012. Equine nocardiform placentitis and abortion outbreak and farm-based risk factor study, 2010-2011. 2nd Congress of the European Association of Veterinary Laboratory Diagnosticians, July 1<sup>st</sup>-4<sup>th</sup>, Kazimierz-Dolny, Poland.

58. Carter, C.N. 2012. Equine Nocardioform Placentitis and Abortion Outbreak and Farm-Based Risk Factor Study, 2010-2011. 2nd Congress of the European Association of Veterinary Laboratory Diagnosticians, July 1<sup>st</sup>-4<sup>th</sup>, Kazimierz-Dolny, Poland.
59. Carter, C.N. 2012. Seroepidemiology of equine leptospirosis utilizing diagnostic laboratory specimens from 29 states (US) and one Canadian province: Is it time to develop a vaccine? The Equine Diagnostic and Research Seminar Series (filmed for a webinar sponsored by The Horse). August 30<sup>th</sup>, University of Kentucky, Lexington, KY.
60. Carter, C.N. 2012. Seroepidemiology of equine leptospirosis utilizing diagnostic laboratory specimens from 29 states (US) and one Canadian province, 55th Annual Conference of American Association of Veterinary Laboratory Diagnosticians, October 18<sup>th</sup>-24<sup>th</sup>, Greensborough, NC.
61. Carter, C.N. 2012. The future of public health and one health. School of Public Health and Medicine, Robert C. Byrd Medical Center, West Virginia University, December 3<sup>rd</sup>, Morgantown, WV.
62. Cook, R.F. 2012. The molecular diagnosis of EIA, a permanent challenge or an attainable goal? Symposium - Current Situation and Proposals of Equine Infectious Anemia Control Following a Six Year Period of Surveillance, October 1<sup>st</sup>, Rome, Italy.
63. Cook, R.F. 2012. EIAV as a research model for other lentiviruses: lessons learned and to be learned. Symposium - Current Situation and Proposals of Equine Infectious Anemia Control Following a Six Year Period of Surveillance, October 1<sup>st</sup>, Rome, Italy.
64. Cook, R.F. 2012. Equine infectious anemia: Lessons learned from the six-year application of the national Italian surveillance programme. Symposium - Current Situation and Proposals of Equine Infectious Anemia Control Following a Six Year Period of Surveillance, October 1<sup>st</sup>, Rome, Italy.
65. Cook, R.F. 2012. An outbreak of equine infectious anemia at a horse riding center in Argentina underscores the limitations of serological testing. 9<sup>th</sup> International Conference on Equine Infectious Diseases, October 21<sup>st</sup>-26<sup>th</sup>, Lexington, Kentucky.
66. Cook, R.F. 2012. Challenges and proposed solutions for more accurate serological diagnosis of equine infectious anemia. 9<sup>th</sup> International Conference on Equine Infectious Diseases, October 21<sup>st</sup>-26<sup>th</sup>, Lexington, Kentucky.
67. Cook, R.F. 2012. Deacylated polyethyleneimine (PEI) and a modified equine IL-15 expression construct enhance adaptive immune responses to DNA vaccination in horses. 9<sup>th</sup> International Conference on Equine Infectious Disease, October 21<sup>st</sup>-26<sup>th</sup>, Lexington, Kentucky.
68. Cook, R.F. 2012. Dynamics of equine infectious anemia virus (EIAV) infection in naturally infected mules. 9<sup>th</sup> International Conference on Equine Infectious Diseases, October 21<sup>st</sup>-26<sup>th</sup>, Lexington, Kentucky.

69. Cook, R.F. 2012. Equine infectious anemia virus (EIAV) gag gene evolution in vivo. 9<sup>th</sup> International Conference on Equine Infectious Diseases, October 21<sup>st</sup>-26<sup>th</sup>, Lexington, Kentucky.
70. Cook, R.F. 2012. Stability differences of envelope-specific T cells responses between newly EIAV infected and inapparent carrier horses. 9<sup>th</sup> International Conference on Equine Infectious Diseases, October 21<sup>st</sup>-26<sup>th</sup>, Lexington, Kentucky.
71. Dwyer, R.M. 2012. EHV-1 and risk reduction: The importance of biosecurity. Kentucky Horse Council Annual Conference, January 13<sup>th</sup>, Lexington, KY.
72. Dwyer, R.M. 2012. Practical biosecurity for horse farms. 3<sup>rd</sup> Annual Kentucky Breeders' Short Course, January 21<sup>st</sup>, Lexington, KY.
73. Dwyer, R.M. 2012. Diseases that can affect your health and unit operations. North American Mounted Unit Commanders Association, March 3<sup>rd</sup>-5<sup>th</sup>, Wilmore, KY.
74. Erol, E. 2012. Diagnostic investigation of real-time PCR, fluorescent antibody, and microscopic agglutination tests in cases of equine leptospiral abortion. 55<sup>th</sup> Annual Conference of American Association of Veterinary Laboratory Diagnosticians, October 18<sup>th</sup>-24<sup>th</sup>, Greensborough, NC.
75. Erol, E. 2012. *Bartonella bovis* isolated from a cow with endocarditis. 55<sup>th</sup> Annual Conference of American Association of Veterinary Laboratory Diagnosticians, October 18<sup>th</sup>-24<sup>th</sup>, Greensborough, NC.
76. Erol, E. 2012. Zoonotic diseases: a perspective from University of Kentucky Veterinary Diagnostic Laboratory. South Central Association for Clinical Microbiology. Fall 2012 Meeting, October, Louisville, KY.
77. Gaskill, C.L. 2012. Forensic toxicology: It's not just for humans anymore! Eastern Kentucky University Forensic Sciences/Chemistry Seminar Series, Richmond, KY (co-presenter).
78. Gaskill, C.L. 2012. Common intoxications in beef cattle. 13<sup>th</sup> Annual Eastern Region Cattleman's Short Course. UK Cooperative Extension, Morehead State University, April, Morehead, KY.
79. Gaskill, C.L. 2012. Poisoning in horses. 5<sup>th</sup> Annual North American Mounted Unit Commanders Association, March, Lexington, KY.
80. Gaskill, C.L. 2012. Evidence preservation, laboratory protocols for managing samples, and laboratory networks. FBI Multi-sector Infrastructure Protection and Threat Workshop, June, Frankfort, KY.
81. Gaskill, C.L. 2012. Toxicology in practice – cattle. Summer Food Animal Conference. August, University of Kentucky, Veterinary Diagnostic Laboratory, Lexington, KY.

82. Gaskill, C.L. 2012. Preliminary study of iron concentrations in adult equine liver tissue. American Academy of Veterinary and Comparative Toxicology, September, Buffalo, New York.
83. Gaskill, C.L. 2012. Current topics in equine toxicology. 101<sup>st</sup> Annual Kentucky Veterinary Medical Association and 39<sup>th</sup> Mid-America Veterinary Conference, October 5<sup>th</sup>-7<sup>th</sup>, Louisville, KY.
84. Gaskill, C.L. 2012. Reference intervals for inorganic element concentrations in equine fetal liver tissue. 55<sup>th</sup> Annual Conference of American Association of Veterinary Laboratory Diagnosticians, October 18<sup>th</sup>-24<sup>th</sup>, Greensborough, NC.
85. Gaskill, C.L. 2012. Case studies in equine toxicology. University of Kentucky Department of Veterinary Science seminar series. January, University of Kentucky, Veterinary Diagnostic Laboratory, Lexington, KY. (co-presenter).
86. Graves, K.T. 2012. The genetic toolbox-beyond answering the question: "Who's your horse's daddy? Friesian Horse Association of North America, March 2<sup>nd</sup>, Lexington, KY.
87. Graves, K.T. 2012. Identifying equine MHC haplotypes with microsatellites. 33rd International Society for Animal Genetics Conference, July 15<sup>th</sup>-20<sup>th</sup>, Cairns, Queensland, Australia.
88. Horohov, D.W. 2012. Infectious diseases of foals. UK Ag Equine Showcase, January 21<sup>st</sup>, Lexington, KY.
89. Horohov, D.W. 2012. A novel model for Rhodococcosis in foals. 5<sup>th</sup> Havemeyer Workshop on *Rhodococcus equi*, July 11<sup>th</sup>, Deauville, France.
90. Horohov, D.W. 2012. Reasons for the age-dependent susceptibility of young foals to *Rhodococcus equi*. 9<sup>th</sup> Equine Infectious Disease Conference, October 21<sup>st</sup>-26<sup>th</sup>, Lexington, KY.
91. Horohov, D.W. 2012. The effect of age on equine dendritic cell (DC) interactions with *Rhodococcus equi*. USDA Animal Health and Welfare PD Workshop, December 1<sup>st</sup>, Chicago, IL.
92. Horohov, D.W. 2012. Effect of exercise and nutritional supplementation on pro-inflammatory cytokine expression in young racehorses during training. 58<sup>th</sup> Annual Meeting of the American Association of Equine Practitioners, December 5<sup>th</sup>, Anaheim, CA.
93. Howe, D.K. 2012. Genomic investigation of the apicomplexan *Sarcocystis neurona*, the primary cause of equine protozoal myeloencephalitis. Department of Plant Pathology Seminar Series, University, March 5<sup>th</sup>, Lexington, KY.

94. Howe, D.K. 2012. An update on EPM. International Conference on Equine Infectious Diseases-Practitioner's Day. October 21<sup>st</sup>, Lexington, KY.
95. Issel, C.J. 2012. Inapparent carriers of EIAV: real and perceived risks of transmission. Symposium - Current Situation and Proposals of Equine Infectious Anemia Control Following a Six Year Period of Surveillance, October 1<sup>st</sup>, Rome, Italy.
96. Issel, C.J. 2012. The three tier system as a solution for a more accurate serological diagnosis of equine infectious anaemia. Symposium - Current Situation and Proposals of Equine Infectious Anemia Control Following a Six Year Period of Surveillance, October 1<sup>st</sup>, Rome, Italy.
97. Kennedy, L. 2012. Case studies in equine toxicology. Equine Diagnostic and Research Seminar, January 26<sup>th</sup>, Lexington, KY. (co-presenter).
98. Kennedy, L. 2012. Nocardioform placentitis. Mid-West Veterinary Medical Conference, October 7<sup>th</sup>, Louisville, KY.
99. Kennedy, L. 2012. Equine multinodular pulmonary fibrosis. 9<sup>th</sup> International Conference on Equine Infectious Diseases, October 21<sup>st</sup>-26<sup>th</sup>, Lexington, Kentucky.
100. Lear, T. 2012. Reproduction of the Horse: Genomics and genetic testing in horses. University of Kentucky, December 4<sup>th</sup>, Lexington, KY.
101. Loynachan, A.T. 2012. Pathology, typical necropsy findings, and newly reported necrotizing EPE. *Lawsonia intracellularis* and Equine Proliferative Enteropathy: In-Depth Seminar. Lexington, KY.
102. Loynachan, A.T. 2012. Ligneous conjunctivitis in a Doberman Pinscher. 55<sup>th</sup> Annual AAVID/USAHA Meeting, October 16<sup>th</sup>-22<sup>nd</sup>, Kansas City, KS.
103. Lyons, E.T. 2012. The influence of anthelmintic treatment on strongylid (Nematoda: Strongylidae) community structure in domestic and wild equids. 9<sup>th</sup> Equine Infectious Disease Conference, October 21<sup>st</sup>-26<sup>th</sup>, Lexington, KY.
104. MacLeod, J.N. 2012. Cartilage development and maturation. UK Ag Equine Showcase, January 20<sup>th</sup>, Lexington, KY
105. MacLeod, J.N. 2012. Cartilage development and repair. Winter Equestrian Festival, February 7<sup>th</sup>-9<sup>th</sup>, Wellington, FL.
106. MacLeod, J.N. 2012. Equine genomics. Winter Equestrian Festival, February 7<sup>th</sup>-9<sup>th</sup>, Wellington, FL.
107. MacLeod, J.N. 2012. Wobbler syndrome. Winter Equestrian Festival, February 7<sup>th</sup>-9<sup>th</sup>, Wellington, FL.

108. MacLeod, J.N. 2012. Articular cartilage development, maturation, and repair. 101<sup>st</sup> Annual KVMA Meeting & 39<sup>th</sup> Mid-America Veterinary Conference, October 5<sup>th</sup>-7<sup>th</sup>, Louisville, KY.
109. McDowell, K. 2012. Endophyte-infected fescue seed causes constriction of the palmar and uterine arteries in pregnant mares. American Society of Animal Science Meeting, July 15<sup>th</sup>-19<sup>th</sup>, Phoenix, AZ.
110. Nielsen, M.K. 2012. Deworming strategies for the young horse. UK Ag Equine Showcase, January 20<sup>th</sup>, Lexington, KY.
111. Nielsen, M.K. 2012. Diagnostics and detection of drug resistance in equine parasites. Department of Statistics, George Mason University, March 2<sup>nd</sup>, Fairfax, Virginia.
112. Nielsen, M.K. 2012. Parasite control and anthelmintic resistance in horses – European perspective. Antiparasitic Drug Use and Resistance in Ruminants and Equines Public Meeting. Food and Drug Administration, Center for Veterinary Medicine, March 5<sup>th</sup>, Rockville, Maryland.
113. Nielsen, M.K. 2012. Sustainable equine parasite control. Kentucky Equine Research Conference, May 17<sup>th</sup>-18<sup>th</sup>, Lexington, KY.
114. Nielsen, M.K. 2012. Equine parasite control – Too much or too little. Department of Veterinary Science Equine Diagnostic and Research Seminar, May 31<sup>st</sup>, Lexington, KY.
115. Nielsen, M.K. 2012. *Strongylus vulgaris* associated with selective therapy on Danish horse farms. 57<sup>th</sup> Annual Meeting of the American Association of Veterinary Parasitologists, August 4<sup>th</sup>-7<sup>th</sup>, San Diego, CA.
116. Nielsen, M.K. 2012. Parasite control in the mare. Hagyard Bluegrass Symposium, November 1<sup>st</sup>-4<sup>th</sup>, Lexington, KY.
117. Squires, E.L. 2012. Career Fair. University of Kentucky, February 6<sup>th</sup>, Lexington, KY.
118. Squires, E.L. 2012. Embryo transfer in horses, assisted reproduction and frozen semen. Winter Equestrian Festival, February 10<sup>th</sup>, Wellington, FL.
119. Squires, E.L. 2012. Preparing the mare for breeding. Thoroughbred Owners & Breeders Association, June 1<sup>st</sup>, Lexington, KY.
120. Squires, E.L. 2012. Recent advances in equine health. Egyptian Arabian Event, June 9<sup>th</sup>, Lexington, KY.

122. Timoney, J.F. 2012. Expression and protective immunogenicity of SzM of *Streptococcus zooepidemicus* NC78 from an outbreak of equine respiratory disease. A Dorothy Russell Havemeyer Foundation Workshop on “Getting to Grips with Strangles and Other Streptococcal Diseases, October 20<sup>th</sup> – 21<sup>st</sup>, Shaker Village, Lexington, KY.
123. Timoney, P.J. 2012. CEM: Selected features of a frequently misunderstood disease. Virginia Veterinary Medical Association Conference, February 23<sup>rd</sup>-25<sup>th</sup>, Roanoke, VA.
124. Timoney, P.J. 2012. EP: Characteristics of the disease and how to prevent/control it. Virginia Veterinary Medical Association Conference, February 23<sup>rd</sup>-25<sup>th</sup>, Roanoke, VA.
125. Timoney, P.J. 2012. Equine Herpes Virus Myeloencephalopathy: a source of increased concern for the horse industry. Virginia Veterinary Medical Association Conference, February 23<sup>rd</sup>-25<sup>th</sup>, Roanoke, VA, 2012.
126. Timoney, P.J. 2013. Equine grass sickness – Significant features of an enigmatic disease. Chilean Thoroughbred Breeders and Owners Association, March 14<sup>th</sup>, Santiago, Chile.
127. Timoney, P.J. 2012. Maintaining a balance between facilitation of movement of horses and mitigation of disease risks. 9<sup>th</sup> Equine Infectious Disease Conference, October 21<sup>st</sup>-26<sup>th</sup>, Lexington, KY.
128. Tobin, T. 2012. Furosemide in racing. Summer Convention, National Horsemen’s Benevolent and Protective Association, June 29<sup>th</sup>, Des Moines, IA.
129. Tobin, T. 2012. Animal welfare - Increase of its importance at a World-wide basis and its relationship with Thoroughbreds. Organización Sudamericana de Fomento del Sangre Pura de Carrera [OSAF], July 3<sup>rd</sup>-4<sup>th</sup>, Buenos Aires, Argentina.
130. Tobin, T. 2012. Avoiding unnecessary positive results. Organización Sudamericana de Fomento del Sangre Pura de Carrera [OSAF], July 3<sup>rd</sup>-4<sup>th</sup>, Buenos Aires, Argentina.
131. Tobin, T. 2012. Clarifying definitions, so that veterinarians who work either at private practice or doping control laboratories may share the same meanings when it comes to specific language. Organización Sudamericana de Fomento del Sangre Pura de Carrera [OSAF], July 3<sup>rd</sup>-4<sup>th</sup>, Buenos Aires, Argentina.
132. Tobin, T. 2012. Environmental substances - pollution. Organización Sudamericana de Fomento del Sangre Pura de Carrera [OSAF], July 3<sup>rd</sup>-4<sup>th</sup>, Buenos Aires, Argentina.
133. Tobin, T. 2012. Factors which affect withdrawal times of therapeutic substances used in sport horses. Organización Sudamericana de Fomento del Sangre Pura de Carrera [OSAF], July 3<sup>rd</sup>-4<sup>th</sup>, Buenos Aires, Argentina.
134. Tobin, T. 2012. Screening methods – Elisa tests. Organización Sudamericana de Fomento del Sangre Pura de Carrera [OSAF], July 3<sup>rd</sup>-4<sup>th</sup>, Buenos Aires, Argentina.

135. Tobin, T. 2012. Thresholds for therapeutic medications. Organización Sudamericana de Fomento del Sangre Pura de Carrera [OSAF], July 3<sup>rd</sup>-4<sup>th</sup>, Buenos Aires, Argentina.
136. Tobin, T. 2012. Troublesome drugs, those which most usually give positive results. Which are they, and why do they test positive? . Organización Sudamericana de Fomento del Sangre Pura de Carrera [OSAF], July 3<sup>rd</sup>-4<sup>th</sup>, Buenos Aires, Argentina.
137. Troedsson, M.H.T. 2012. Breeding-induced endometritis: importance of cytokine expression. 7<sup>th</sup> International Conference on Equine Reproductive Medicine, January 19<sup>th</sup>-21<sup>st</sup>, Leipzig, Germany.
138. Troedsson, M.H.T. 2012. Endometrial cytokine expression during induced endometritis in resistant and susceptible mares. 6<sup>th</sup> Leipzig Workshop on Equine Reproduction, January 20<sup>th</sup>, Leipzig, Germany.
139. Troedsson, M.H.T. 2012. Breeding mares with frozen semen. Winter Equestrian Festival, February 7<sup>th</sup>-9<sup>th</sup>, Wellington, FL.
140. Troedsson, M.H.T. 2012. Possibility of using frozen embryos. Winter Equestrian Festival, February 7<sup>th</sup>-9<sup>th</sup>, Wellington, FL.

#### **Graduate Students & Post-Doctoral Scholars**

1. Adam, E. 2012. How to cope with barn fires. 58<sup>th</sup> Annual Meeting of the American Association of Equine Practitioners, December 5<sup>th</sup>, Anaheim, CA.
2. Adam, E. 2012. How to handle adverse drug reactions and accidental administration of the wrong drug. 58<sup>th</sup> Annual Meeting of the American Association of Equine Practitioners, December 5<sup>th</sup>, Anaheim, CA.
3. Adam, E. 2012. How to manage severe dehydration and the exhausted horse. 58<sup>th</sup> Annual Meeting of the American Association of Equine Practitioners, December 5<sup>th</sup>, Anaheim, CA.
4. Canisso, I.F. 2012. Serum amyloid A and haptoglobin concentrations in pregnant mares with experimentally induced ascending placentitis. 31<sup>st</sup> Annual Symposium in Reproductive Science and Women's Health, University of Kentucky, May 17<sup>th</sup>-18<sup>th</sup>, Lexington, KY.
5. Cerny, K.L. 2012. Presence of bacteria in the reproductive tract of healthy stallions and its relation to the fertility of mares. Annual Meeting of the Society for Theriogenology, August 21<sup>st</sup>-25<sup>th</sup>, Baltimore, MD.
6. Claes, A. 2012. Serum anti-Müllerian hormone concentrations in the stallion: Changes at puberty, effect of season and differences between intact and cryptorchid stallions. 31<sup>st</sup> Annual Symposium in Reproductive Science and Women's Health, University of Kentucky, May 17<sup>th</sup>-18<sup>th</sup>, Lexington, KY.

7. Coleman, S.J. 2012. Sequence and domain conservation in unannotated equine transcripts. International Plant and Animal Genome Conference XX, January 14<sup>th</sup>-18<sup>th</sup>, San Diego, CA.
8. DeNegri, R. 2012. Comparison of specificities of serum antibodies elicited following equine infection with *Streptococcus equi* or *zooepidemicus*. Havemeyer Foundation Workshop, "Getting Grips with Strangles and other Streptococcal Diseases," October 20<sup>th</sup> – 21<sup>st</sup>, Harrodsburg - Lexington, KY.
9. Esteller-Vico, A. 2012. Flow cytometric determination of equine sperm concentration. Comparison with spectrophotometric methods. 31<sup>st</sup> Annual Symposium in Reproductive Science and Women's Health, University of Kentucky, May 17<sup>th</sup>-18<sup>th</sup>, Lexington, KY.
10. Gautam, A. 2012. Examination of the surface antigen (SnSAG) gene family in *Sarcocystis neurona*. Annual Meeting of the American Society of Parasitologists, July 13<sup>th</sup> – 16<sup>th</sup>, Richmond, VA.
11. Go, Y.Y. 2012. Genome-wide association study (GWAS) among four horse breeds identifies a common haplotype in equine chromosome 11 (ECA11) associated with the *in vitro* CD3<sup>+</sup> T cell susceptibility/resistance to equine arteritis virus infection: direct evidence for a correlation between variation in host genotype and phenotypic differences in horses. American Society for Virology, July 21<sup>st</sup>-25<sup>th</sup>, Madison, WI.
12. Go, Y.Y. 2012. *In vitro* susceptibility of CD3<sup>+</sup> T lymphocytes to EAV infection reflects genetic predisposition of stallions to become virus carriers. American Society for Virology, July 21<sup>th</sup>-25<sup>th</sup>, Madison, WI.
13. Hestad, D.A. 2012. Consumption of endophyte-infected tall fescue seed causes constriction of the palmar artery and vein but does not alter estradiol, progesterone, or estrous cycle length in nonpregnant mares. American Society of Animal Science Meeting, July 15<sup>th</sup>-19<sup>th</sup>, Phoenix, AZ.
14. Hestand, M.S. 2012. RNA-seq of 43 equine tissues improves transcriptome annotation. International Plant and Animal Genome Conference XX, January 14<sup>th</sup>-18<sup>th</sup>, San Diego, CA.
15. Hughes, S. 2012. The use of equine follicle stimulating hormone to increase equine chorionic gonadotropin in the pregnant mare. 17<sup>th</sup> International Congress on Animal Reproduction, July 29<sup>th</sup> – August 2<sup>nd</sup>, Vancouver, British Columbia.
16. Janes, J.G. 2012. Genetic determinants in equine cervical stenotic myelopathy. International Plant and Animal Genome Conference XX, January 14<sup>th</sup>-18<sup>th</sup>, San Diego, CA.
17. Janes, J. 2012. Diagnostic approach to equine neurologic cases. 9<sup>th</sup> International Conference on Equine Infectious Diseases, October 21<sup>st</sup>-26<sup>th</sup>, Lexington, KY.

18. Janes, J. 2012. Investigating the role of genetic determinants in equine cervical stenotic myelopathy (Wobbler Syndrome). University of Kentucky Departmental Seminar. May, Lexington, KY.
19. Keith, L.A. 2012. Diestrus oxytocin administration prolongs luteal function and decreases endometrial cyclooxygenase-2 expression in mares. 31<sup>st</sup> Annual Symposium in Reproductive Science and Women's Health, University of Kentucky, May 17<sup>th</sup>-18<sup>th</sup>, Lexington, KY.
20. Keith, L. 2012. The effect of exogenous oxytocin administration on luteal maintenance in mares. The 17<sup>th</sup> International Congress on Animal Reproduction, July 29<sup>th</sup>-Aug 2<sup>nd</sup>, Vancouver, British Columbia.
21. Li, Y. 2012. Comparative sequence and phylogenetic analysis of open reading frame 30 (ORF30) of neuropathogenic and non-neuropathogenic EHV-1 strains from the United States and France. American Society for Virology, July 21<sup>th</sup>-25<sup>th</sup>, Madison, WI.
22. Page, A.E. 2012. *Lawsonia intracellularis*-associated necrotizing enteritis in four weanling horses. 9<sup>th</sup> Equine Infectious Disease Conference, October 21<sup>st</sup>-26<sup>th</sup>, Lexington, KY.
23. Page, A.E. 2012. Incidence of yearly *Lawsonia intracellularis* assay variations from horses in Kentucky. 58<sup>th</sup> Annual Meeting of the American Association of Equine Practitioners, December 5<sup>th</sup>, Anaheim, CA.
24. Sarkar, S. 2012. Neuropathogenic equine herpesvirus-1 T953 strain evades type-I IFN mediated innate immune response in equine endothelial cells. American Society for Virology, July 21<sup>st</sup>-25<sup>th</sup>, Madison, WI.
25. Sun, L. 2012. The hypermethylation of IFN $\gamma$  gene promoter is correlated with IFN $\gamma$  deficiency in the neonatal foals and its demethylation with aging is associated with environment. 5<sup>th</sup> Havemeyer Workshop on *Rhodococcus equi*, July 11<sup>th</sup>, Deauville, France.
26. Sun, L. 2012. The methylation level of the IFN $\gamma$  gene promoter is correlated with IFN $\gamma$  expression in foals. 9<sup>th</sup> Equine Infectious Disease Conference, October 21<sup>st</sup>-26<sup>th</sup>, Lexington, KY.
27. Sun, L. 2012. Age-related susceptibility to *R. equi* infection in foals. 93<sup>rd</sup> Conference of Research Workers in Animal Diseases, December 2<sup>nd</sup> - 4<sup>th</sup>, Chicago, IL.
28. Tiwari, A. 2012. Influenza A virus NS1 protein-mediated inhibition of IL-23 expression is associated with inhibition of C/EBP homologous protein (CHOP). 31<sup>st</sup> Annual Meeting of the American Society for Virology, July 21<sup>st</sup>-25<sup>th</sup>, Madison WI.
29. Velineni, S. 2012. Novel immunoreactive proteins of *Streptococcus zooepidemicus* as vaccine candidates. 9<sup>th</sup> International Conference on Equine Infectious Diseases, October 21<sup>st</sup>-26<sup>th</sup>, Lexington, KY.

30. Woodward, E.M. 2012. The effect of immune modulators on endometrial cytokine expression in mares susceptible to persistent breeding induced endometritis. The 17<sup>th</sup> International Congress on Animal Reproduction, July 29<sup>th</sup>-August 2<sup>nd</sup>, Vancouver, Canada.

## **2013**

### **Faculty**

1. Adams, A.A. 2013. Novel therapies for equine metabolic syndrome: Do they work? UK Ag Equine Showcase, January 18<sup>th</sup>, Lexington, KY.
2. Adams, A.A. 2013. Obesity in horses: What's wrong with being fat? Kentucky Equine Networking Association, March 20<sup>th</sup>, Lexington, KY.
3. Adams, A.A. 2013. Overview of the Gluck Equine Research Center, Presented at the Fort Harrod Back Country Horsemen Meeting, April 4<sup>th</sup>, Harrodsburg, Kentucky.
4. Adams, A.A. 2013. The Geriatric Horse: Define and Management. Kentucky Equine Networking Association, May 15<sup>th</sup>, Lexington, Kentucky.
5. Adams, A. A. 2013. Identifying the role of a "caloric restriction mimetic", resveratrol, in Equine Metabolic Syndrome and its implications for targeted therapy. Equine Science Society Symposium, May 28<sup>th</sup>-31<sup>st</sup>, Mescalero, New Mexico.
6. Adams, A.A. 2013. Resveratrol: a Sirtuin-1 Activator that promotes healthy aging in animals and humans. Southeast KY VMA, Corbin, Kentucky.
7. Adams, A.A. 2013. Resveratrol: A Sirtuin-1 Activator that promotes healthy aging in animals and humans. Academy VMA, Nashville, TN.
8. Arnold, L.M. 2013. Master cattlemen herd health. February-July (6 locations statewide), KY.
9. Arnold, L.M. 2013. FAMACHA training and producer panel moderator. 2013 Small Ruminant Grazing Conference, February 2<sup>nd</sup>, Morehead, KY.
10. Arnold, L.M. 2013. Dewormer resistance. Rockcastle County Extension Office. February 7<sup>th</sup>, Mt. Vernon, KY.
11. Arnold, L.M. 2013. Animal disease traceability. Ag Council Meeting. March 5<sup>th</sup>, Microsoft Lync Session to Taylor County Extension Office.
12. Arnold, L.M. 2013. Dewormer resistance. Harrison County Young Farmers Association, March 12<sup>th</sup>, Cynthiana, KY.
13. Arnold, L.M. 2013. Beef cattle health and breeding options. RCARS Mountain Monday Program, April 9<sup>th</sup>, Breathitt County, KY.

14. Arnold, L.M. 2013. UKVDL virtual tour. Eastern Kentucky University Sheep and Goat Class, April 12<sup>th</sup>, Richmond, KY.
15. Arnold, L.M. 2013. Animal disease traceability update for agents, April 16<sup>th</sup>, Microsoft Lync Presentation.
16. Arnold, L.M. 2013. Improving reproductive efficiency in beef cattle. Northern Kentucky Beef Reproductive Efficiency Program, April 22<sup>nd</sup>, Boone County, KY and Microsoft Lync.
17. Arnold, L.M. 2013. Johne's Disease and goat herd health. Morehead Clinic Days- Buffalo Trace Veterinary Meeting, June 1<sup>st</sup>, Morehead, KY.
18. Arnold, L.M. 2013. Vaccination programs for beef cow/calf operations. Edmonson County Cattlemen's Association Meeting, June 13<sup>th</sup>, Brownsville, KY.
19. Arnold, L.M. 2013. Beef herd health basics for agents. June 24<sup>th</sup>, Microsoft Lync Presentation.
20. Arnold, L.M. 2013. Deworming considerations in light of new research and new products. Western Kentucky Food Animal Veterinary Conference, June 27<sup>th</sup>, Hopkinsville, KY.
21. Arnold, L.M. 2013. Forage disorders. Kentucky Grazing School, August 21<sup>st</sup>, Versailles, KY.
22. Arnold, L.M. 2013. Forage disorders. Pasture Walk on Big Spring Farm, October 18<sup>th</sup>, Adolphus, KY.
23. Arnold, L.M. 2013. BVD update. Garrard County Cattlemen's Association Meeting, October 29<sup>th</sup>, Lancaster, KY.
24. Arnold, L.M. 2013. Health disorders in the first 6 months-beef and dairy. Southern States Basic Livestock Feed Master School, December 4<sup>th</sup>, Lexington, KY.
25. Arnold, L.M. 2013. Health implications. Marshall County Livestock Extension Meeting, December 19<sup>th</sup>, Benton, KY.
26. Artiushin, S.C. 2013. Real-time PCR for diagnosis of contagious equine metritis (CEM). International Meeting on Emerging Diseases and Surveillance, February 15<sup>th</sup>-18<sup>th</sup>, Vienna, Austria.
27. Bailey, E. 2013. What genomics can tell us about performance. Equine Affaire 2013, April 12<sup>th</sup>, Columbus, OH.
28. Bailey, E. 2013. What genomics tells us about horse breeds. Equine Affaire 2013, April 12<sup>th</sup>, Columbus, OH.

29. Balasuriya, U.B. 2013. Application of reverse genetics and equine genomics to study virus-host interactions: Equine arteritis virus as a model. Department of Microbiology, Immunology and Molecular Genetics, University of Kentucky Medical Center, April 2<sup>nd</sup>, Lexington, KY.
30. Balasuriya, U.B.R. 2013. Validation of real-time PCR assays for equine viral and bacterial pathogens. Center of Excellence for Emerging Zoonotic Animal Diseases (CEEZAD), Annual Meeting, Lied Lodge and Conference Center, April 23<sup>rd</sup>, Nebraska City, NE.
31. Balasuriya, U.B.R. 2013. Host genetics and immunological factors may determine the establishment of equine arteritis virus persistent infection in the stallion (D7-1132). Positive Stranded RNA Virus Meeting, April 28<sup>th</sup>- May 2<sup>nd</sup>, Boston Park Plaza & Towers, Boston, MA.
32. Balasuriya, U.B.R. 2013. Validation of a field-deployable POKKIT<sup>TM</sup> nucleic acid detection system for specific and sensitive point-of-need detection of equine influenza virus (H3N8). 56<sup>th</sup> Annual AAVLD/USAHA Meeting, October 17<sup>th</sup>-23<sup>rd</sup>, Town & Country Resort and Convention Center, San Diego, CA.
33. Balasuriya, U.B.R. 2013. Equine viral arteritis: Application of reverse genetics, flow cytometry and genomics approaches to study virus-host interactions. Baker Institute, Cornell University, October 22<sup>nd</sup>, Ithaca, NY.
34. Balasuriya, U.B.R. 2013. Understanding the genetic basis of equine arteritis virus carrier state in the stallion. role of genetics in studying equine diseases. USDA-NIFA Symposium, Embassy Suites, December 17<sup>th</sup>, Lexington, KY.
35. Ball, B.A. 2013. Ovarian problems in mares. 4<sup>th</sup> Annual Kentucky Breeders' Short Course, January 19<sup>th</sup>, Lexington, KY.
36. Ball, B.A. 2013. Abnormalities of the equine estrous cycle. Zoetis Symposium, June 26<sup>th</sup>-29<sup>th</sup>, Guadalajara, Mexico.
37. Ball, B.A. 2013. Endocrinological evaluation of the prospective and breeding stallion. Zoetis Symposium, June 26<sup>th</sup>-29<sup>th</sup>, Guadalajara, Mexico.
38. Ball, B.A. 2013. New diagnostic methods in endocrinology. Zoetis Symposium, June 26<sup>th</sup>-29<sup>th</sup>, Guadalajara, Mexico.
39. Ball, B.A. 2013. Testicular and epididymal injuries and abnormalities. Zoetis Symposium, June 26<sup>th</sup>-29<sup>th</sup>, Guadalajara, Mexico.
40. Ball, B.A. 2013. Ultrasonographic and endoscopic examination of the stallion. Zoetis Symposium, June 26<sup>th</sup>-29<sup>th</sup>, Guadalajara, Mexico.

41. Ball, B.A. 2013. Estrogen as potential diagnostic markers in mares with experimentally induced ascending placentitis. 59<sup>th</sup> Annual AAEP Convention, December 7<sup>th</sup>-11<sup>th</sup>, Nashville, TN.
42. Carter, C.N. 2013. Continuous animal health monitoring. Animal Identification & Information Systems Council, National Institute of Animal Agriculture Meeting, April 17<sup>th</sup>, Louisville, KY.
43. Carter, C.N. 2013. Knowledge-based differential diagnostic and accessioning mobile application to improve ruminant laboratory case submissions. 16th WAVLD Symposium, June 5<sup>th</sup>-8<sup>th</sup>, Berlin, Germany.
44. Carter, C.N. 2013. The Life and career of Dr. James Steele: Contributions to veterinary public health and one health. American Veterinary History Society, 40th Mid-America Veterinary Conference. September 28<sup>th</sup>, Louisville, KY.
45. Chambers, T.M. 2013. Role of receptor binding as a limiting factor in susceptibility of swine to equine influenza virus. 2<sup>nd</sup> International Symposium on Neglected Influenza Viruses, March 7<sup>th</sup> – 8<sup>th</sup>, Dublin, Ireland.
46. Dwyer, R.M. 2013. Emergency preparedness: Is your VMA part of the problem or the solution? Heartland Veterinary Conference, August 23<sup>rd</sup>-24<sup>th</sup>, Lexington, KY.
47. Erol, E. 2013. Infectious agents identified from equine neonatal fatalities between 2010 and 2012. 16th WAVLD Symposium, June 5<sup>th</sup>-8<sup>th</sup>, Berlin, Germany.
48. Erol, E. 2013. Diagnostic methods of infectious diseases and on site diagnostic methods in veterinary medicine. 10<sup>th</sup> National Veterinary Internal Diseases Congress. June 27<sup>th</sup>-30<sup>th</sup>, Urgup, Turkey.
49. Erol, E. 2013. Toxin genotypes and antimicrobial susceptibility patterns of *Clostridium perfringens* isolates recovered from horses. 56<sup>th</sup> Annual AAVLD/USAHA Meeting, October 17<sup>th</sup>-23<sup>rd</sup>, San Diego, CA.
50. Gaskill, C.L. 2013. Cases of poisoning in horses. 4<sup>th</sup> Annual Kentucky Breeder's Short Course, January 19<sup>th</sup>, University of Kentucky, Lexington, KY.
51. Gaskill, C.L. 2013. Plants poisonous to horses and how to control them. Bourbon County Extension Service, June, Paris, KY.
52. Gaskill, C.L. 2013. Toxicology and residue problems as reportable diseases: State regulations. American Academy of Veterinary and Comparative Toxicology, October 17<sup>th</sup>-23<sup>rd</sup>, San Diego, CA.
53. Gaskill, C.L. 2013. Toxicology case interpretations: The weak link in quality control? American Academy of Veterinary and Comparative Toxicology Retreat, October 17<sup>th</sup>-23<sup>rd</sup>, Davis, CA.

54. Gaskill, C.L. 2013. The case of the toxic tennis ball. American Academy of Veterinary and Comparative Toxicology, October 17<sup>th</sup>-23<sup>rd</sup>, San Diego, CA.
55. Graves, K.T. 2013. Why is my horse that color? Understanding coat color genetics. UK Ag Equine Showcase, January 18<sup>th</sup>, Lexington, KY.
56. Horohov, D.W. 2013. Can inflammatory markers predict fitness and impending injury? UK Ag Equine Showcase, January 18<sup>th</sup>, Lexington, Ky.
57. Horohov, D.W. 2013. The effect of training and nutritional supplementation on exercise-induced pro-inflammatory cytokine gene expression in two-year-old Thoroughbreds. Darley Flying Start, January 21<sup>st</sup>, Lexington, KY.
58. Horohov, D.W. 2013. Inflammatory responses and nutritional supplementation in horses during training. Mid Atlantic Nutrition Conference, March 28<sup>th</sup>, Baltimore, MD.
59. Horohov, D.W. 2013. The effect of training and exercise on pro-inflammatory cytokine gene expression in two-year-old Thoroughbreds. Kentucky Horse Racing Commission Veterinarians, April 25<sup>th</sup>, Keeneland Racetrack, Lexington, KY.
60. Horohov, D.W. 2013. A novel model for Equine Rhodococcosis. Zoetis, October 2<sup>nd</sup>, Kalamazoo, MI.
61. Horohov, D.W. 2013. Healthy horses: Medicine, science and research careers. Future Farmers of America National Meeting, October 30<sup>th</sup>, Louisville, KY.
62. Horohov, D.W. 2013. Inflammatory cytokines and musculoskeletal health in Thoroughbred racehorses. Racing Regulatory Veterinarians' Meeting, December 6<sup>th</sup>, Nashville, TN.
63. Howe, D.K. 2013. Moving *Sarcocystis neurona* into the "omics" era. Finally. Opening session Keynote presentation. 2<sup>nd</sup> International Meeting on Apicomplexan Parasites in Farm Animals, October 31<sup>st</sup>-November 2<sup>nd</sup>, Kusadasi, Turkey.
64. Lear, T.L. 2013. Recognizing genetic diseases in clinical practice. Equine Genetics and Endocrinology Symposium, November 21<sup>st</sup>, UKVDL, Lexington, KY.
65. MacLeod, J.N. 2013. Tissue-Restricted Patterns of Alternative mRNA Splicing. International Plant & Animal Genome XXI Conference, January 11<sup>th</sup> – 16<sup>th</sup>, San Diego, CA.
66. MacLeod J. 2013. Annotated protein-coding genes that are missing from EquCab2. 10<sup>th</sup> International Equine Genome Workshop, July 10<sup>th</sup>-13<sup>th</sup>, Furnas, S. Miguel, Portugal.
67. Nielsen, M.K. 2013. Parasite resistance update: What am I supposed to do different? Zoetis: Healthy Horse, Healthy Practice, February 18<sup>th</sup>, Lexington, KY.

68. Nielsen, M.K. 2013. Parasite control in horse establishments. Three seminars for veterinarians, March 18<sup>th</sup>- 20<sup>th</sup>, Copenhagen, Denmark.
69. Nielsen, M.K. 2013. Parasites and pathogenicity. Discussion Seminar hosted by Virbac Animal health, March 20<sup>th</sup>, Copenhagen, Denmark.
70. Nielsen, M.K. 2013. AAEP parasite control guidelines: Putting new strategies to work in your practice. Webinar, American Association of Equine Practitioners, May 15<sup>th</sup>.
71. Nielsen, M.K. 2013. Equine parasite control - trends, traditions, and evidence. New Zealand Society for Parasitology Conference, October 20<sup>th</sup>-22<sup>nd</sup>, Palmerston North, New Zealand.
72. Nielsen, M.K. 2013. *Strongylus vulgaris*-specific antibodies: Monitoring naturally infected horses. New Zealand Society for Parasitology Conference, October 20<sup>th</sup>-22<sup>nd</sup>, Palmerston North, New Zealand.
73. Squires, E.L. 2013. Control of sexual behavior in stallions. 4<sup>th</sup> Annual Kentucky Breeders' Short Course, January 19<sup>th</sup>, Lexington, KY.
74. Squires, E.L. 2013. Hormonal use in mares. 4<sup>th</sup> Annual Kentucky Breeders' Short Course, January 19<sup>th</sup>, Lexington, KY.
75. Squires, E.L. 2013. Effect of season and reproductive status on the incidence of equine dystocia. Equine Science Society Symposium, May 28<sup>th</sup>-31<sup>st</sup>, Mescalero, New Mexico.
76. Timoney, P.J. 2013. Equine rhinopneumonitis: Selected features of a multisyndromic disease. Turkish Jockey Club of Breeders, Trainers and Owners, January 9<sup>th</sup>, Istanbul, Turkey.
77. Timoney, P.J. 2013. Equine viral arteritis: Predictable and unpredictable behavior of an intriguing pathogen. Ghent University School of Veterinary Medicine, March 5<sup>th</sup>, Brussels, Belgium.
78. Timoney, P.J. 2013. Prevention and control of equine infectious diseases. Chilean Thoroughbred Breeders and Owners Association, March 14<sup>th</sup>, Santiago, Chile.
79. Timoney, P.J. 2013. Informational sources of foreign animal diseases and international communication systems for reporting equine infectious disease events. American Horse Council Convention, June 16<sup>th</sup>, Washington DC.
80. Timoney, P.J. 2013. Paradigm shift in the frequency and nature of EHV-1 neurologic disease events. 117<sup>th</sup> Annual USAHA Meeting, October 19<sup>th</sup>, San Diego, CA.
81. Timoney, P.J. 2013. Role of institutions in disease control: research institutions. First International Havemeyer Foundation Workshop: Infectious Diseases of Working Horses and Donkeys, November 18<sup>th</sup>-22<sup>nd</sup>, Addis Ababa, Ethiopia.

82. Troedsson, M.H.T. 2013. How do you treat uterine infection in mares? 4<sup>th</sup> Annual Kentucky Breeders' Short Course, January 19<sup>th</sup>, Lexington, KY.
83. Troedsson, M.H.T. 2013. What happens when sperm meets egg? 4<sup>th</sup> Annual Kentucky Breeders' Short Course, January 19<sup>th</sup>, Lexington, KY.
84. Troedsson, M.H.T. 2013. Cooled, shipped and frozen semen. Eickemeyer/Ansager Dyrehospital Short Course, March 17<sup>th</sup>-23<sup>rd</sup>, Jylland, Denmark.
85. Troedsson, M.H.T. 2013. Endometritis. Eickemeyer/Ansager Dyrehospital Short Course, March 17<sup>th</sup>-23<sup>rd</sup>, Jylland, Denmark.
86. Troedsson, M.H.T. 2013. High risk pregnancies. Eickemeyer/Ansager Dyrehospital Short Course, March 17<sup>th</sup>-23<sup>rd</sup>, Jylland, Denmark.
87. Troedsson, M.H.T. 2013. Ovarian abnormalities. Eickemeyer/Ansager Dyrehospital Short Course, March 17<sup>th</sup>-23<sup>rd</sup>, Jylland, Denmark.
88. Troedsson, M.H.T. 2013. Reproductive endocrinology and physiology of the mare, hormone therapy. Eickemeyer/Ansager Dyrehospital Short Course, March 17<sup>th</sup>-23<sup>rd</sup>, Jylland, Denmark.
89. Troedsson, M.H.T. 2013. Sperm transport, normal pregnancy development, and management of twins. Eickemeyer/Ansager Dyrehospital Short Course, March 17<sup>th</sup>-23<sup>rd</sup>, Jylland, Denmark.
90. Troedsson, M.H.T. 2013. Ultrasound examination of the non pregnant mare including the use of Doppler ultrasonography. Eickemeyer/Ansager Dyrehospital Short Course, March 17<sup>th</sup>-23<sup>rd</sup>, Jylland, Denmark.
91. Troedsson, M.H.T. 2013. Ultrasound examination of the pregnant mare. Eickemeyer/Ansager Dyrehospital Short Course, March 17<sup>th</sup>-23<sup>rd</sup>, Jylland, Denmark.
92. Troedsson, M.H.T. 2013. Equine endometritis. Brazilian Association for Equine Practitioners, ABRAVEQ Annual Meeting, June 21<sup>st</sup>-23<sup>rd</sup>, Campinas, Brazil.
93. Troedsson, M.H.T. 2013. Placentitis. Brazilian Association for Equine Practitioners, ABRAVEQ Annual Meeting, June 21<sup>st</sup>-23<sup>rd</sup>, Campinas, Brazil.

#### **Graduate Students & Post-Doctoral Scholars**

1. Canisso, I.F. 2013. Diagnosis of equine placentitis: Potential role of acute phase proteins, microRNA, steroids and fetal fluid composition. 32<sup>nd</sup> Annual Symposium in Reproductive Science and Women's Health, University of Kentucky, May 16<sup>th</sup> & 17<sup>th</sup>, Lexington, KY.
2. Canisso, I.F. 2013. Experimental induction of nocardioform placentitis in mares. SFT/ACT Annual Symposium, August 7<sup>th</sup>-10<sup>th</sup>, Louisville, KY.

3. Claes A. 2013. The interrelationship between antral follicle count, anti-Müllerian hormone concentration, and age in mares. 32<sup>nd</sup> Annual Symposium in Reproductive Science and Women's Health, University of Kentucky, May 16<sup>th</sup> & 17<sup>th</sup>, Lexington, KY.
4. Dangoudoubiyam, S. 2013. Development of molecular tools for genetic manipulation of the apicomplexan parasite *Sarcocystis neurona*. American Midwestern Conference of Parasitologists, June 6<sup>th</sup>-8<sup>th</sup>, West Lafayette, IN.
5. Dangoudoubiyam, S. 2013. Transcriptome analyses during asexual development of the apicomplexan parasite *Sarcocystis neurona*. Molecular Parasitology Meeting XXIV, September 23<sup>rd</sup>-27<sup>th</sup>, Woods Hole, MA.
6. Esteller-Vico, A. 2013. Equine lactoferrin increases *in vitro* binding of polymorphonuclear neutrophils to spermatozoa. 32<sup>nd</sup> Annual Symposium in Reproductive Science and Women's Health, University of Kentucky, May 16<sup>th</sup> & 17<sup>th</sup>, Lexington, KY.
7. Esteller-Vico A. 2013. Equine lactoferrin increases *in vitro* binding of polymorphonuclear neutrophils to spermatozoa. SFT/ACT Annual Symposium, August 7<sup>th</sup>-10<sup>th</sup>, Louisville, KY.
8. Esteller-Vico, A. 2013. Effects of low progesterone concentrations on endometrial transcription at days 8 and 12 of the estrous cycle in mares. Havemeyer Foundation Workshop on Equine Implantation, October 28<sup>th</sup>-29<sup>th</sup>, Savannah, GA.
9. Esteller-Vico, A. 2013. Determination of testosterone and estrone sulfate half-lives and best sampling times post-hCG challenge in stallions. 59<sup>th</sup> Annual AAEP Convention, December 7<sup>th</sup>-11<sup>th</sup>, Nashville, TN.
10. Gaubatz, B. 2013. Assessment of an artificial infection method to induce equine protozoal myeloencephalitis in horses. American Midwestern Conference of Parasitologists, June 6<sup>th</sup>-8<sup>th</sup>, West Lafayette, IN.
11. Gautam, A. 2013. Functional characterization of the surface antigens (SnSAGs) in *Sarcocystis neurona*. 65<sup>th</sup> Annual Midwestern Conference of Parasitologists, June 6<sup>th</sup>-8<sup>th</sup>, West Lafayette, IN
12. Gautam, A. 2013. Functional characterization of the surface antigens (SnSAGs) in *Sarcocystis neurona*. 58th Annual Meeting of American Association of Veterinary Parasitologists, July 20-23, Chicago, IL.
13. Janes, J. 2013. Wobbler Syndrome: What we know and remaining questions. UK Ag Equine Showcase, January 18<sup>th</sup>, Lexington, KY.
14. Kalmar, J.J. 2013. Factors affecting freezability of stallion semen. 32<sup>nd</sup> Annual Symposium in Reproductive Science and Women's Health, University of Kentucky, May 16<sup>th</sup> & 17<sup>th</sup>, Lexington, KY.

15. Li, Y. 2013. Comparison of *in vitro* antiviral activity of human herpesvirus DNA polymerase inhibitors against equine herpesvirus-1 and characterization of drug resistant mutant viruses. 32<sup>nd</sup> Annual Meeting of the American Society for Virology, Penn State University Park, July 20<sup>th</sup>-24<sup>th</sup>, State College, PA
16. Sanz, M. 2013. *Rhodococcus equi* – a new model for a better understanding of an old disease. ACVIM Forum, June 14<sup>th</sup>, Seattle WA.
17. Sanz, M. 2013. Evaluation of *VapA* specific immunoglobulin G in mares and foals from farms in KY. 59<sup>th</sup> Annual AAEP Convention, December 11<sup>th</sup>, Nashville, TN.
18. Siard, M.H. 2013. Effects of polyphenolic bioactive compounds (pterostilbene, resveratrol, curcuminoids, quercetin, and hydroxypterostilbene) on pro-inflammatory cytokine production *in vitro*. Equine Science Society Symposium, May 28<sup>th</sup>-31<sup>st</sup>, Mescalero, New Mexico.
19. Sparling, A.E. 2013. Genes “unique” to equids. XXI International Plant & Animal Genome Conference, January 12<sup>th</sup>-16<sup>th</sup>, San Diego, CA.
20. Woodward, E. 2013. The modulators on endometrial cytokine expression in mares susceptible to persistent breeding induced endometritis (PBIE). 32<sup>nd</sup> Annual Symposium in Reproductive Science and Women’s Health, University of Kentucky, May 16<sup>th</sup> & 17<sup>th</sup>, Lexington, KY.
21. Woodward, E.M. 2013. The effect of immune modulators on endometrial cytokine expression in mares susceptible to persistent breeding induced endometritis. SFT/ACT Annual Symposium, August 7<sup>th</sup>-10<sup>th</sup>, Louisville, KY.

### **Undergraduate Students & Visiting Scholars**

1. Walter, J.C. 2013. Development and validation of enzyme immunoassay for the measurement of circulating testosterone in the horse. 32<sup>nd</sup> Annual Symposium in Reproductive Science and Women’s Health, May 16<sup>th</sup> & 17<sup>th</sup>, University of Kentucky, Lexington, KY.
2. Zoll, W. 2013. Effect of a non-steroidal anti-inflammatory treatment at the time of vaccination. 59<sup>th</sup> Annual AAEP Convention, December 8<sup>th</sup>, Nashville, TN.

## **2014**

### **Faculty**

1. Adams, A.A. 2014. Overview of the Gluck Equine Research Center. Asbury University, March 3<sup>rd</sup>, Wilmore, KY.
2. Adams, AA. 2014. Managing for gut health and efficiency: Focus on the immune system. Mid-Atlantic Nutrition Conference (MANC), March 24<sup>th</sup>, Baltimore, Maryland.

3. Adams, A.A. 2014. Equine metabolic syndrome vs. equine cushing's disease. Asbury University, April 23<sup>rd</sup>, Wilmore, KY.
4. Adams, A.A. 2014. Managing for animal health: focus on the immune system. Purina Mills, June 6<sup>th</sup>, St. Louis, MO.
5. Adams, A.A. 2014. Physiology of aging-focus on the horse. Purina Equine Veterinary Conference, October 17<sup>th</sup>-19<sup>th</sup>, St. Louis, MO.
6. Adams, A.A. 2014. Does equine pituitary pars intermedia dysfunction (PPID) affect immune responses to vaccination? 2nd Dorothy Havemeyer Equine Geriatric Workshop, November 17<sup>th</sup>-20<sup>th</sup>, Middlesburg, VA.
7. Adams, A.A. 2014. Interleukin-6: A predictor of metabolic health status in the geriatric horses? 2nd Dorothy Havemeyer Equine Geriatric Workshop, November 17<sup>th</sup>-20<sup>th</sup>, Middlesburg, VA.
8. Adams, A.A. 2014. Does equine pituitary pars intermedia dysfunction (PPID) affect immune responses to vaccination? Annual Convention of the American Association of Equine Practitioners, December 6<sup>th</sup>-10<sup>th</sup>, Salt Lake City, UT.
9. Adams, A.A. 2014. Managing for gut health & efficiency in horses with the use of yeast. Lesaffre Conference, Lesaffre's Animal Health and Productivity Forum, Monterey, CA.
10. Arnold, L.M. 2014. Dystocia. Kenton County Reproductive Efficiency Meeting, January 8<sup>th</sup>, Covington, KY.
11. Arnold, L.M. 2014. Parasite resistance and long range. Bourbon County Winter Beef Meeting, January 22<sup>nd</sup>, Paris, KY.
12. Arnold, L.M. 2014. FAMACHA Training. Small Ruminant Grazing Conference, February 1<sup>st</sup>, Lexington, KY.
13. Arnold, L.M. 2014 Long range, antibiotic strategies, judicious use of antibiotics, and calf scours. Rockcastle County Winter Beef Series, February 6<sup>th</sup>, Mt. Vernon, KY.
14. Arnold, L.M. 2014. BVD refresher. Winter Food Animal Conference, February 26<sup>th</sup>, University of Kentucky Veterinary Diagnostic Laboratory, Lexington, KY.
15. Arnold, L.M. 2014. Antibiotic residues. Farm Start Short Course, March 12<sup>th</sup>, University of Kentucky Dairy, Lexington, KY.
16. Arnold, L.M. 2014. Vaccine protocols. Grayson County Beef Producers, March 13<sup>th</sup>, via Lync from Lexington, KY.
17. Arnold, L.M. 2014. Stocker/backgrounder considerations. Lincoln County Backgrounders Meeting, March 24<sup>th</sup>, Stanford, KY.

18. Arnold, L.M. 2014. Abortions and birth defects. Carter County Reproduction Meeting, March 27<sup>th</sup>, Grayson, KY.
19. Arnold, L.M. 2014. Grass tetany. Harrison County Cattlemen Meeting, April 7<sup>th</sup>, Cynthiana, KY.
20. Arnold, L.M. 2014. Vaccine protocols for spring. Taylor County Beef Meeting, April 10<sup>th</sup>, Campbellsville, KY.
21. Arnold, L.M. 2014. Vaccine protocols for cow-calf producers. Clay County Cattlemen's Meeting, April 24<sup>th</sup>, via Lync from Lexington, KY.
22. Arnold, L.M. 2014. Vaccination of the market calf (preweaning). Northern KY Beef Reproductive Efficiency Program, April 30<sup>th</sup>, Kenton County, KY.
23. Arnold, L.M. 2014. Blue green algae and botulism. Spencer County Beef Association, May 5<sup>th</sup>, Taylorsville, KY.
24. Arnold, L.M. 2014. BVD informational webinar with Dr. Bob Stout (KY State Veterinarian), May 8<sup>th</sup>, via Lync from Lexington, KY.
25. Arnold, L.M. 2014. Forage disorders. Master Grazer, May 21<sup>st</sup>, Versailles, KY.
26. Arnold, L.M. 2014. Anaplasmosis. Estill County Beef Association, June 12<sup>th</sup>, Irvine, KY.
27. Arnold, L.M. 2014. Deworming decisions. Madison County Beef Association, July 17<sup>th</sup>, Richmond, KY.
28. Arnold, L.M. 2014. Functions of the KVDL, anaplasmosis, and pinkeye. Cow College, August 8<sup>th</sup>, Lexington, KY.
29. Arnold, L.M. 2014. Intravenous fluid therapy in neonatal calves. 2014 Summer Food Animal Conference, August 14<sup>th</sup>, Lexington, KY.
30. Arnold, L.M. 2014. Vaccination protocols at weaning. Grant County Fall Feeder Calf Management Class, September 15<sup>th</sup>, Williamstown, KY.
31. Arnold, L.M. 2014. Mastitis treatment protocols. Southeast Quality Milk Initiative Annual Meeting, September 21<sup>st</sup>, Blacksburg, VA.
32. Arnold, L.M. 2014. Anaplasmosis. Beef Bash, September 25<sup>th</sup>, Princeton, KY.
33. Arnold, L.M. 2014. Pinkeye prevention. Henry County Regional Cattlemen's Field Day, October 1<sup>st</sup>, Henry County, KY.
34. Arnold, L.M. 2014. Careers in veterinary medicine. Careers Class, October 6<sup>th</sup>, University of Kentucky, Lexington, KY.

35. Arnold, L.M. 2014. Ketosis in sheep; cyanide potential following frost. Multi-Species Grazing Demonstration, October 17<sup>th</sup>, Adolphus, KY.
36. Arnold, L.M. 2014. BVD-PI and value of a necropsy. Hardin County Cattlemen's Meeting, October 23<sup>rd</sup>, Elizabethtown, KY.
37. Arnold, L.M. 2014. FAMACHA Training. Sheep and Goat Development Annual Meeting, October 25<sup>th</sup>, Cave City, KY.
38. Arnold, L.M. 2014. Value of a dead animal. Southern States Basic Livestock Feedmaster Program, October 29<sup>th</sup>, Lexington, KY.
39. Arnold, L.M. 2014. Receiving and testing of beef replacements in the cow herd. Kentucky Beef Conference, October 30<sup>th</sup>, Lexington, KY.
40. Arnold, L.M., 2014. BVD-PI review and value of a necropsy. Southern States Advanced Livestock Feedmaster Program, November 19<sup>th</sup>, Richmond, VA.
41. Arnold, L.M. 2014. Scours and fluid therapy in calves. Rowan County Cattlemen's Association, December 2<sup>nd</sup>, Morehead, KY.
42. Arnold, L.M. 2014. Cow signals. Casey County Dairy Meeting, December 22<sup>nd</sup>, Liberty, KY.
43. Bailey, E.B. 2014. Messages written in DNA: A story of people and horses. National Conference on Undergraduate Research, April 3<sup>rd</sup>-5<sup>th</sup>, Lexington, KY.
44. Bailey, E. 2014. Review of horse genome and horse genome project. First International and 13<sup>th</sup> National Iranian Congress, May 24<sup>th</sup>-26<sup>th</sup>, Tehran, Iran.
45. Bailey, E. 2014. Horse breeding and the impact of genomics. National Animal Breeding Center and Animal Production Promotion, May 25<sup>th</sup>, Tehran, Iran.
46. Bailey, E. 2014. Association of *CXCL16* with establishment of carrier state in the equine arteritis virus infected stallion. 13<sup>th</sup> Annual Nidovirus Conference, June 1<sup>st</sup>-6<sup>th</sup>, Salamanca, Spain.
47. Bailey, E. 2014. Host responses to equine arteritis virus are associated with alleles of *CXCL16*. Conference of the International Society of Animal Genetics, July 26<sup>th</sup>-August 1<sup>st</sup>, Xian, China.
48. Bailey, E. 2014. Primer on genomics and heritability. British Equine Veterinary Association, September 10<sup>th</sup>-13<sup>th</sup>, Birmingham, UK.
49. Bailey, E. 2014. Novel contributions of genomics to studies of equine viral arteritis. Mary Passenger Lecture, University of Kentucky, October 10<sup>th</sup>, Lexington, KY.

50. Bailey, E. 2014. Screening for genetic markers of disease: what do we tell our clients? British Equine Veterinary Association, September 10<sup>th</sup>-13<sup>th</sup>, Birmingham, UK.
51. Bailey, E. 2014. The genomic age: Disease-free and excelling. British Equine Veterinary Association, September 10<sup>th</sup>-13<sup>th</sup>, Birmingham, UK.
52. Bailey, E. 2014. 32 and your Horse. Equine Forum, University of Kentucky, December 5<sup>th</sup>, Lexington, KY.
53. Balasuriya, U.B.R. 2014. Equine infectious diseases in the genomic era: Equine viral arteritis as a model. Department of Pathology, Microbiology and Immunology, School of Veterinary Medicine, University of California, May 8<sup>th</sup>, Davis, CA.
54. Balasuriya, U.B.R. 2014. Experiences with infectious cDNA clones of equine arteritis virus: lessons learned and insights gained. XIII<sup>th</sup> International Nidovirus Symposium, June 1<sup>st</sup>-6<sup>th</sup>, Salamanca, Spain.
55. Balasuriya, U.B.R. 2014. Laboratory diagnosis of EHV-1 infection: interpretation of results and the challenges presented. UK Department of Veterinary Science Equine Diagnostic and Research Seminar Series. University of Kentucky, September 25<sup>th</sup>, Lexington, KY.
56. Balasuriya, U.B.R. 2014. Application of reverse genetics, flow cytometry and genomics approaches to study virus-host interactions: Equine viral arteritis as a model. Department of Veterinary Pathobiology, Center for Veterinary Health Sciences, Oklahoma State University, September 29<sup>th</sup>, Stillwater, OK.
57. Balasuriya, U.B.R. 2014. Development of a rapid and improved purification method for equine arteritis virus using anion exchange membrane chromatography and use of the purified virus to enhance sensitivity of an antibody competitive enzyme-linked immunosorbent assay. 55<sup>th</sup> AAVLD/118<sup>th</sup> USAHA Annual Meeting, October 16<sup>th</sup>-22<sup>nd</sup>, Kansas City, MO.
58. Balasuriya, U.B.R. 2014. Evaluation of newly developed insulated isothermal RT-PCR assay in comparison with real-time RT-PCR assay for the detection of equine arteritis virus nucleic acid in equine semen. 55<sup>th</sup> AAVLD/ 118<sup>th</sup> USAHA annual meeting October 16<sup>th</sup>-22<sup>nd</sup>, Kansas City, MO.
59. Balasuriya, U.B.R. 2014. Equine infectious diseases in the genomic era: Equine CXCL16 associated with EAV carrier state in the stallion. Central European Institute of Technology (CEITEC) Annual Conference: Frontiers in Life and Materials Sciences, October 22<sup>nd</sup>, Brno, Czech Republic
60. Ball, B.A. 2014. Diagnosis of placentitis in the mare. 11th International Symposium on Equine Reproduction, Veterinarian Conference, January 26<sup>th</sup>-31<sup>st</sup>, Hamilton, New Zealand.

61. Ball, B.A. 2014. Evaluation of fresh, cooled and frozen semen wet lab. 5<sup>th</sup> Annual Kentucky Breeder's Short Course, February 8<sup>th</sup>, Lexington, KY.
62. Ball, B.A. 2014. Methods for evaluating stallion sperm. 5<sup>th</sup> Annual Kentucky Breeder's Short Course, February 8<sup>th</sup>, Lexington, KY.
63. Ball, B.A. 2014. Anti-Müllerian hormone in equids: A predictive endocrine marker for ovarian tumors, ovarian reserve and cryptorchidism. Reproductive Biology Seminar, Cornell University, February 19<sup>th</sup>, Ithaca, NY.
64. Ball, B.A. 2014. Review of the 11<sup>th</sup> International Symposium on Equine Reproduction – non pregnant mare. Veterinary Diagnostic Lab seminar series, February 27<sup>th</sup>, Lexington, KY.
65. Ball, B.A. 2014. Role of estrogens during late pregnancy in the mare: Diagnostic applications and the effects of aromatase inhibitors.” School of Veterinary Medicine, University of California, April 28<sup>th</sup>, Davis, CA.
66. Ball, B.A. 2014. The biology of anti-Müllerian hormone in the horse: Ovarian follicular reserve, ovarian neoplasia and cryptorchidism. Storer Lectureship, University of California, April 29<sup>th</sup>, Davis.
67. Ball, B.A. 2014. Potential biomarkers for placental disease in the mare. Havemeyer Workshop – The Robert M. Kenney Equine Reproduction Symposium II. September 26<sup>th</sup>-28<sup>th</sup>, New Bolton, PA.
68. Ball, B.A. 2014. Endocrine diagnostics in subfertile stallions. Annual Conference, British Equine Veterinary Association. October 9<sup>th</sup>-12<sup>th</sup>, Birmingham, UK.
69. Ball, B.A. 2014. Equine placentitis: New diagnostic methods. Annual Conference, British Equine Veterinary Association. October 9<sup>th</sup>-12<sup>th</sup>, Birmingham, UK.
70. Ball, B.A. 2014. The relationship between mare age, antral follicle count and anti-Müllerian hormones: Implications for follicular reserve, follicular function and age-related changes in fertility. Havemeyer Workshop on Comparative Aspects of Reproductive Aging in the Mare and Woman, October 9<sup>th</sup>-12<sup>th</sup>, Estes Park, CO.
71. Ball, B.A. 2014. Use of anti-Müllerian hormone as a diagnostic marker in the mare and stallion. 25<sup>th</sup> Annual Conference, ABRAVEQ, October 24<sup>th</sup>-26<sup>th</sup>, Campos do Jordao, Brazil.
72. Ball, B.A. 2014. Diagnosis of placentitis in mares. 25<sup>th</sup> Annual Conference, ABRAVEQ, October 24<sup>th</sup>-26<sup>th</sup>, Campos do Jordao, Brazil.
73. Ball, B.A. 2014. Equine Placentitis Research.” Kentucky Thoroughbred Farm Manager's Club. November 19<sup>th</sup>, Lexington, KY.

74. Ball, B.A. 2014. Anti-Müllerian hormone predicts follicular reserve in aged mares. Annual Convention of the American Association of Equine Practitioners. December 6<sup>th</sup>-10<sup>th</sup>, Salt Lake City, UT.
75. Ball, B.A. 2014. Suppression of estrogen biosynthesis during late pregnancy in mares. Annual Convention of the American Association of Equine Practitioners. December 6<sup>th</sup>-10<sup>th</sup>, Salt Lake City, UT.
76. Cook, R.F. 2014. EIA -110 years of virus discovery. Escola de Veterinária da Universidade Federal de Minas Gerais, February 14<sup>th</sup>, Belo Horizonte, Brazil.
77. Cook, R.F. 2014. Equine infectious anemia at 110. Departmental Seminar Series, Gluck Equine Research Center, April 24<sup>th</sup>, Lexington, KY.
78. Cook, R.F. 2014. Evolution and molecular epidemiology of equine infectious anemia virus: Simplicity and conservation in the midst of change. 6<sup>th</sup> Workshop of the European Union Reference Laboratory, October 6<sup>th</sup>, Lyon France.
79. Dwyer, R.M. 2014. Biosecurity for Horse Farms. Kentucky Equine Management Internship students and Darley Flying Start students, January 31<sup>st</sup>, Lexington, KY.
80. Dwyer, R.M. 2014. Practical Trail Ride Biosecurity. Fort Harrod Back Country Horsemen meeting, February 27<sup>th</sup>, Harrodsburg, Kentucky.
81. Dwyer, R.M. 2014. Horse Farm Disaster Preparedness. UK Equine Programs Forum, November 26<sup>th</sup>, Lexington, KY.
82. Gaskill, C.L. 2014. Clinical Pearls: Toxic tidbits that backyard chickens eat: what you don't know could hurt you (and your chickens!). Zoetis-Kentucky Poultry Federation Backyard Poultry Symposium, March, University of Kentucky Veterinary Diagnostic Laboratory, Lexington, KY.
83. Gaskill, C.L. 2014. Large animal toxicology case studies. 36th Annual Morehead Clinic Days Veterinary Conference, June, Morehead, KY.
84. Gaskill, C.L. 2014. Moxidectin intoxication in foals and brain moxidectin concentrations. American Academy of Veterinary and Comparative Toxicology, October, Kansas City, MO.
85. Gaskill, C.L. 2014. Update on serum cobalt testing in racehorses. American Academy of Veterinary and Comparative Toxicology, October, Kansas City, MO.
86. Horohov, D.W. 2014. The effect of exercise on inflammation in Thoroughbreds in training. Darley Flying Start, January 31<sup>st</sup>, Lexington, KY.
87. Horohov, D.W. 2014. Nutritional supplementation and the inflammatory response to exercise in performance horses. Southern States Advanced Equine Feed Master Program, February 12<sup>th</sup>, Richmond, VA.

88. Horohov, D.W. 2014. Pro-inflammatory gene expression in Thoroughbred racehorses as a marker for exercise conditioning. Purdue University School of Veterinary Medicine, May 1<sup>st</sup>, West Lafayette, IN.
89. Horohov, D.W. 2014. Pro-inflammatory gene expression during training: portents of adaptation or injury? Hambletonian CE Seminar, August 1<sup>st</sup>, E. Rutherford, NJ.
90. Horohov, D.W. Vaccines and adjuvants. Hambletonian CE Seminar, August 1<sup>st</sup>, E. Rutherford, NJ.
91. Horohov, D.W. 2014. Inflammatory gene expression in racehorses in training: Adaptation or portent of injury? Racetrack Breakdown Symposium, October 20<sup>th</sup>, Lexington, KY.
92. Horohov, D.W. 2014. Alterations in Cytokine Expression are associated with race fitness. Can we use this novel diagnostic to maximize performance? Hagyard Bluegrass Symposium, October 24<sup>th</sup>, Lexington, KY.
93. Horohov, D.W. The inflammatory response to exercise. Rutgers University, November 10<sup>th</sup>, E. Rutherford, NJ.
94. Horohov, D.W. 2014. Regulation of interferon-gamma gene expression in foals and its relationship to susceptibility to *Rhodococcus equi*. Conference of Research Workers in Animal Diseases, December 7<sup>th</sup>-8<sup>th</sup>, Chicago, IL.
95. Issel, C.J. 2014. Equine infectious anemia: the only cure is dying. Veterinary Science Department Seminar, September 25<sup>th</sup>, Lexington, KY.
96. Issel, C.J. 2014. Equine infectious anemia 2014: challenges and opportunities. Institute for Animal Health Institute, Pirbright Laboratories, October 3<sup>rd</sup>, Surrey, England.
97. Issel, C.J. 2014. Equine infectious anemia: the only cure is dying. Faculty of Veterinary Medicine, October 10<sup>th</sup>, Timisoara, Romania.
98. Issel, C.J. 2014. Equine infectious anemia: the only cure is dying. Faculty of Veterinary Medicine, Iasi, October 13<sup>th</sup>, Romania.
99. MacLeod, J.N. 2014. Annotation of the equine mRNA transcriptome. Plant and Animal Genome XXII, January 11<sup>th</sup>-15<sup>th</sup>, San Diego, CA.
100. MacLeod JN. 2014. Developmental progenitor cells of articular chondrocytes. American Society of Animal Science - Joint Annual Meeting, July 20<sup>th</sup>-24<sup>th</sup>, Kansas City, MO.
101. Nielsen, M.K. 2014. Pieces of a puzzle – parasite control in foals and young horses. Bayer Animal Health, April 7<sup>th</sup>-9<sup>th</sup>, Sweden.
102. Nielsen, M.K. 2014. What's the evidence? A basis for parasite control in adult horses. Bayer Animal Health, April 7<sup>th</sup>-9<sup>th</sup>, Sweden.

103. Nielsen, M.K. 2014. Anthelmintic resistance – Survival of the fittest? The 66th Annual Midwestern Conference of Parasitologists, June 5<sup>th</sup>-7<sup>th</sup>, Lexington, KY.
104. Nielsen, M.K. 2014. Evaluation of the systemic inflammatory response to anthelmintic treatment in ponies. The 66th Annual Midwestern Conference of Parasitologists, June 5<sup>th</sup>-7<sup>th</sup>, Lexington, KY.
105. Nielsen, M.K. 2014. *Parascaris equorum* is dead. Long live *Parascaris univalens*! Proceedings, American Association for Veterinary Parasitologists, July 26<sup>th</sup>-29<sup>th</sup>, Denver, Colorado
106. Nielsen, M.K. 2014. Serum *Strongylus vulgaris*-specific antibody responses to anthelmintic treatment in naturally infected horses. Proceedings, American Association for Veterinary Parasitologists, July 26<sup>th</sup>-29<sup>th</sup>, Denver, Colorado.
107. Nielsen, M.K. 2014. *Strongylus vulgaris* and colic – a retrospective case-control study. Proceedings, American Association for Veterinary Parasitologists, July 26<sup>th</sup>-29<sup>th</sup>, Denver, Colorado.
108. Nielsen, M.K. 2014. Equine parasite control – implications of shifting paradigms. Ohio State University, Equine Research Group, Meeting & Seminar Series, September 4<sup>th</sup>, Columbus, OH.
109. Swerczek, T. 2014. The cause and prevention of fetal loss in dairy cattle. Canadian Dairyman Meeting, December 2<sup>nd</sup>, Ontario, Canada.
110. Timoney, P.J. 2014. Equine viral arteritis: Predictable and unpredictable behavior of the causal agent. International Thoroughbred Breeders Federation Meeting, March March 2<sup>nd</sup>-6<sup>th</sup>, Santiago, Chile.
111. Timoney, P.J. 2014. Re-emergent threat of equine herpesvirus-1 neurologic disease. Annual Meeting of the National Institute for Animal Agriculture, March 31<sup>st</sup>-April 2<sup>nd</sup>, Omaha, NE.
112. Timoney, P.J. 2014. Current vaccination recommendations against EVA: Considerations of safety and efficacy/national and international control disease certification programs for EVA, Symposium on Controlling EAV and other Infectious Agents in Stallions, Semen and Embryos, November 22<sup>nd</sup>, Lexington, KY.
113. Tobin, T. 2014. Scientifically validated regulatory thresholds for use in racing regulation. National Horsemen's Benevolent and Protective Association Winter Meeting, January 25<sup>th</sup>, Pasadena, CA.
114. Tobin, T. 2014. Scientifically defined thresholds/withdrawal time guidelines for racing regulation. Kentucky Association of Equine Practitioners, January 28<sup>th</sup>, Lexington, KY.

115. Tobin, T. 2014. Furosemide and EIPH: Efficacy and controversy: The American horsemen's story. Darley Flying Start, January 31<sup>st</sup>, Lexington, KY.
116. Tobin, T. 2014. Where did that positive come from? Let me count the ways. Third Annual University of Kentucky Equine Showcase, February 7<sup>th</sup>, Lexington, KY.
117. Tobin, T., K. Brewer, and C. Hughes. 2014. Cobalt, Lasix, thresholds and withdrawal times: An overview. National Horsemen's Benevolent and Protective Association, Summer Meeting, August 16<sup>th</sup>, Oklahoma City, OK.
118. Tobin, T. 2014. "Shipping-in," a risk factor associated with fatal musculoskeletal racing injuries. 20th International Conference of Racing Analysts and Veterinarians, Sugar Beach, September 20<sup>th</sup>-27<sup>th</sup>, Mauritius.
119. Tobin, T. 2014. Bovine colostrum supplementation improves earnings, performance and recovery in racing thoroughbreds. 20th International Conference of Racing Analysts and Veterinarians, September 20<sup>th</sup>-27<sup>th</sup>, Sugar Beach, Mauritius.
120. Tobin, T. 2014. Dihydemethylprednisone, an isomeric metabolite of methylprednisolone: Synthesis of an analytical standard. 20th International Conference of Racing Analysts and Veterinarians, September 20<sup>th</sup>-27<sup>th</sup>, Sugar Beach, Mauritius.
121. Tobin, T. 2014. Dihydemethylprednisone, an isomeric metabolite of methylprednisolone: synthesis of an analytical standard. 20th International Conference of Racing Analysts and Veterinarians, September 20<sup>th</sup>-27<sup>th</sup>, Sugar Beach, Mauritius.
122. Tobin, T. 2014. Increased incidence of sudden death associated with exercise induced pulmonary hemorrhage (EIPH) in horses racing at higher altitude in Venezuela. 20th International Conference of Racing Analysts and Veterinarians, September 20<sup>th</sup>-27<sup>th</sup>, Sugar Beach, Mauritius.
123. Tobin, T. 2014. Synthesis and characterization of 4-hydroxyxylazine and 4-hydroxyxylazine-d6 standards for use in xylazine regulation in competition horses. 20th International Conference of Racing Analysts and Veterinarians, September 20<sup>th</sup>-27<sup>th</sup>, Sugar Beach, Mauritius.
124. Tobin, T. 2014. RMTC Board of Directors Meeting, Canterbury Downs, Oct. 13<sup>th</sup>, Minneapolis, MN.
125. Tobin, T. 2014. Presentation to Mr. Azam Syed, Pharmacy in Charge, Zabeel Palace, Dubai and visits to and presentations to the Marmoom Equine Research Center, December 3<sup>rd</sup>-14<sup>th</sup>, Dubai UAE
126. Troedsson, M.H.T. 2014. Endometritis in old mares. 8<sup>th</sup> International Conference on Equine Reproductive Medicine, January 16<sup>th</sup>-18<sup>th</sup>, Leipzig, Germany.

127. Troedsson, M.H.T. 2014. Equine seminal plasma derived lactoferrin regulates binding of Polymorphonuclear neutrophils (PMNs) to spermatozoa. 11th International Symposium on Equine Reproduction, Veterinarian Conference, January 26<sup>th</sup>-31<sup>st</sup>, Hamilton, New Zealand.
128. Troedsson, M.H.T. 2014. Update on endometritis therapy. 11th International Symposium on Equine Reproduction, Veterinarian Conference, January 26<sup>th</sup>-31<sup>st</sup>, Hamilton, New Zealand.

### **Graduate Students & Post-Doctoral Scholars**

1. Bellaw, J.L. 2014. Evaluation of growth rate responses to anthelmintic regimens in young Thoroughbreds. The 66<sup>th</sup> Annual Midwestern Conference of Parasitologists, June 5<sup>th</sup>-7<sup>th</sup>, Lexington, KY.
2. Bellaw, J.L. 2014. Objective evaluation of two deworming regimens in young Thoroughbreds: parasitological parameters and growth rates. Proceedings, American Association for Veterinary Parasitologists, July 26<sup>th</sup>-29<sup>th</sup>, Denver, Colorado.
3. Canisso, I.F. 2014. Acute phase proteins and blood leukocyte counts in mares with experimentally induced ascending placentitis. 11th International Symposium on Equine Reproduction, Veterinarian Conference, January 26<sup>th</sup>-31<sup>st</sup>, Hamilton, New Zealand.
4. Canisso, I.F. 2014. Dehydroepiandrosterone sulphate (DHEA-S) concentrations in mares with experimentally induced ascending placentitis. 33<sup>rd</sup> Annual Symposium in Reproductive Science and Women's Health, University of Kentucky, March 26<sup>th</sup>, Lexington, KY.
5. Canisso, I.F. 2014. Dehydroepiandrosterone sulfate and testosterone concentrations in mares carrying normal pregnancies. Society for Theriogenology Annual Meeting, August 6<sup>th</sup>-9<sup>th</sup>, Portland, OR.
6. Claes, A. 2014. The interrelationship between antral follicle count, anti-Müllerian hormone concentration, and age in mares. 11th International Symposium on Equine Reproduction, Veterinarian Conference, January 26<sup>th</sup>-31<sup>st</sup>, Hamilton, New Zealand.
7. Claes, A. 2014. Endocrine and molecular changes in the equine follicle associated with ageing in mares. 33<sup>rd</sup> Annual Symposium in Reproductive Science and Women's Health, University of Kentucky, March 26<sup>th</sup>, Lexington, KY.
8. Claes, A. 2014. Endocrine and molecular changes in the equine follicle associated with ageing in mares. Society for Theriogenology Annual Meeting, August 6<sup>th</sup>-9<sup>th</sup>, Portland, OR.
9. Davolli, G.M. 2014. Effects of a third-generation GnRH antagonist on reproductive parameters in the stallion. 33<sup>rd</sup> Annual Symposium in Reproductive Science and Women's Health, University of Kentucky, March 26<sup>th</sup>, Lexington, KY.

10. Davolli, G.M. 2014. Effects of a third-generation GnRH antagonist on equine reproductive parameters in the stallion. Society for Theriogenology Annual Meeting, August 6<sup>th</sup>-9<sup>th</sup>, Portland, OR.
11. Elzinga, S. 2014. Equine metabolic syndrome. Buffalo Trace Veterinary Medical Association, May 31<sup>st</sup>, Morehead, KY.
12. Esteller-Vico, A. 2014. Inhibition of estrogen synthesis during the last trimester of gestation: changes in endocrine patterns, fetal growth and uterine artery hemodynamics in mares. 11th International Symposium on Equine Reproduction, Veterinarian Conference, January 26<sup>th</sup>-31<sup>st</sup>, Hamilton, New Zealand.
13. Esteller-Vico, A. 2014. Effects of low progesterone concentrations on endometrial transcription at Days 8 and 12 of the estrous cycle in mares. 33<sup>rd</sup> Annual Symposium in Reproductive Science and Women's Health, University of Kentucky, March 26<sup>th</sup>, Lexington, KY.
14. Esteller-Vico, A. 2014. Effects of low serum progesterone concentrations on endometrial transcription at days 8 and 12 of the estrous cycle in mares. Society for Theriogenology Annual Meeting, August 6<sup>th</sup>-9<sup>th</sup>, Portland, OR.
15. Fedorka, C.E. 2014. Immune response of the equine uterus after insemination with live versus dead spermatozoa. 11th International Symposium on Equine Reproduction, Veterinarian Conference, January 26<sup>th</sup>-31<sup>st</sup>, Hamilton, New Zealand.
16. Fedorka, C.E. 2014. Effects of seminal plasma proteins CRISP-3 and lactoferrin on the immune response of the equine uterus. 33<sup>rd</sup> Annual Symposium in Reproductive Science and Women's Health, University of Kentucky, March 26<sup>th</sup>, Lexington, KY.
17. Fedorka, C.E. 2014. Sperm motility and fertility of cooled preserved stallion semen extended in either INRA96 or EquiPro CoolGuard. Society for Theriogenology Annual Meeting, August 6<sup>th</sup>-9<sup>th</sup>, Portland, OR.
18. Janes, J.G. 2014. Genomic analysis of equine cervical stenotic myelopathy. Plant and Animal Genome XXII, January 11<sup>th</sup>-15<sup>th</sup>, San Diego, CA. W277, P572.
19. Kalmar, J.J. 2014. Effect of number of mounts and pre-freeze concentration on stallion seminal parameters. 11th International Symposium on Equine Reproduction, Veterinarian Conference, January 26<sup>th</sup>-31<sup>st</sup>, Hamilton, New Zealand.
20. Mondal, S.P. 2014. An infectious synthetic cDNA clone of the virulent Bucyrus strain of equine arteritis virus expressing red fluorescent protein (mCherry). XIII<sup>th</sup> Internationals Nidovirus Symposium, June 1<sup>st</sup>-6<sup>th</sup>, Salamanca, Spain.
21. Mondal, S.P. 2014. Development and characterization of a synthetic infectious cDNA clone of the virulent Bucyrus strain of equine arteritis virus expressing red fluorescent protein (mCherry). American Society for Virology, 33<sup>rd</sup> Annual Meeting, Colorado State University, June 21<sup>st</sup>-25<sup>th</sup>, Boulder, CO.

22. Nam, B. 2014. Complete genome sequence analysis of the KY-84 strain of equine arteritis virus. National Conference on Undergraduate Research, University of Kentucky, April 3<sup>rd</sup>-5<sup>th</sup>, Lexington, KY.
23. Nam, B. 2014. Comparison of complete genome sequence of KY84 strain with other virulent and avirulent strains of equine arteritis virus. XIII<sup>th</sup> International Nidovirus Symposium, June 1<sup>st</sup>-6<sup>th</sup>, Salamanca, Spain.
24. Page, A.E. 2014. The effect of passively-acquired antibodies on Lawsonia intracellularis infection and immunity in the horse. Conference of Research Workers in Animal Diseases, December 7<sup>th</sup>-8<sup>th</sup>, Chicago, IL.
25. Pfahl, K. 2014. Evaluation of a commercially available competitive ELISA (cELISA) for the detection of antibodies to equine arteritis virus (EAV). 55<sup>th</sup> AAVLD/ 118<sup>th</sup> USAHA Annual Meeting, October 16<sup>th</sup>-22<sup>nd</sup>, Kansas City, MO.
26. Sanz, M.G. 2014. Evaluation of changes in VapA-specific IgG and IgG subclasses over time to identify foals with Rhodococcus equi pneumonia. Conference of Research Workers in Animal Diseases, December 7<sup>th</sup>-8<sup>th</sup>, Chicago, IL.
27. Sarkar, S. 2014. Equine herpes virus-1 suppresses type-I IFN production by disrupting IRF-3 signaling pathway in equine endothelial cells. American Society for Virology, 33rd Annual Meeting, Colorado State University, June 21<sup>st</sup>-25<sup>th</sup>, Boulder, CO.
28. Siard, M.H. 2014. Comparison of inflammatory and endocrine measures in geriatric horses. American College of Veterinary Internal Medicine, June 4<sup>th</sup>-7<sup>th</sup>, Nashville, TN.
29. Siard, M.H. 2014. Comparison of inflammation, nutritional status, muscle mass, pituitary function and age in geriatric horses. 2nd Dorothy Havemeyer Equine Geriatric Workshop, November 17<sup>th</sup>-20<sup>th</sup>, Middlesburg, VA.
30. Tiwari, A. 2014. Interleukin-23 partially protects mice from lethal influenza virus and bacterial co-infection. 32<sup>nd</sup> annual meeting of American Society for Virology, Colorado State University, June 21<sup>st</sup>-25<sup>th</sup>, Fort Collins, CO.
31. Woodward, E.M. 2014. A transcriptomic investigation of the equine endometrial response to breeding. 11th International Symposium on Equine Reproduction, Veterinarian Conference, January 26th-31st, Hamilton, New Zealand.
32. Woodward, E.M. 2014. Breeding-induced endometritis: a transcriptomic approach. 33<sup>rd</sup> Annual Symposium in Reproductive Science and Women's Health, University of Kentucky, March 26<sup>th</sup>, Lexington, KY.

### **Undergraduate Students & Visiting Scholars**

1. Rubinson, E. 2014. Vaccine-induced responses in ponies – are they modulated by anthelmintic treatment? The 66th Annual Midwestern Conference of Parasitologists, June 5<sup>th</sup>-7<sup>th</sup>, Lexington, KY.

2. Schlich, M. 2014. Characterization and localization of *Sarcocystis neurona* rhoptry protein SnROP9. The 66th Annual Midwestern Conference of Parasitologists, June 5<sup>th</sup>-7<sup>th</sup>, Lexington, KY.
3. Stephens, M. 2014. Transabdominal ultrasonography for diagnosing and monitoring *Parascaris* spp. in foals. The 66th Annual Midwestern Conference of Parasitologists, June 5<sup>th</sup>-7<sup>th</sup>, Lexington, KY.
4. Young, A. 2014. Identification of surface antigens in the llama and alpaca parasite *Sarcocystis aucheniae*. The 66th Annual Midwestern Conference of Parasitologists, June 5<sup>th</sup>-7<sup>th</sup>, Lexington, KY.
5. Rubinson, E. 2014. Modulation of vaccine-induced responses by anthelmintic treatment in ponies. Proceedings, American Association for Veterinary Parasitologists, July 26<sup>th</sup>-29<sup>th</sup>, Denver, Colorado.
6. Stephens, M. 2014. Transabdominal ultrasonography as a tool for monitoring *Parascaris* spp. in foals. Proceedings, American Association for Veterinary Parasitologists, July 26<sup>th</sup>-29<sup>th</sup>, Denver, Colorado.

## 2015

### Faculty

1. Adams, A.A., 2015. Overview of the immune system and collaborative studies. BIVI National Sales Meeting, February 26<sup>th</sup>-27<sup>th</sup>, Atlanta, GA.
2. Adams, A.A. 2015. The effect of n-3 polyunsaturated fatty acids (DHA) and prebiotic supplementation on inflammatory cytokine production and immune responses to vaccination in old horses. Equine Science Society Symposium, May 26<sup>th</sup>, St Petersburg, FL.
3. Adams, A.A. 2015. Equine Track: Overview of the immune system. 100<sup>th</sup> Wisconsin Veterinary Medical Association (WVMA) Annual Meeting, October 8<sup>th</sup>-10<sup>th</sup>, Madison, WI.
4. Adams, A.A. 2015. Equine Track: Overview of equine vaccines. 100<sup>th</sup> Wisconsin Veterinary Medical Association (WVMA) Annual Meeting, October 8<sup>th</sup>-10<sup>th</sup>, Madison, WI.
5. Adams, A.A. 2015. Equine Track: Young horse immunology. 100<sup>th</sup> Wisconsin Veterinary Medical Association (WVMA) Annual Meeting, October 8<sup>th</sup>-10<sup>th</sup>, Madison, WI.
6. Adams, A.A. 2015. Equine Track: Effect of weaning stress on immune function. 100<sup>th</sup> Wisconsin Veterinary Medical Association (WVMA) Annual Meeting, October 8<sup>th</sup>-10<sup>th</sup>, Madison, WI.

7. Adams, A.A. 2015. Equine Track: Geriatric horse immunology. 100<sup>th</sup> Wisconsin Veterinary Medical Association (WVMA) Annual Meeting, October 8<sup>th</sup>-10<sup>th</sup>, Madison, WI.
8. Adams, A.A. 2015. Equine Track: Understanding the differences between EMS and PPID. 100<sup>th</sup> Wisconsin Veterinary Medical Association (WVMA) Annual Meeting, October 8<sup>th</sup>-10<sup>th</sup>, Madison, WI.
9. Adams, A.A. 2015. An overview of the immune system. Role of Immunology in Equine Health Symposium, November 21<sup>st</sup>, Lexington, Kentucky.
10. Arnold, L.M. 2015. Cow Signals. Dairy Meeting, January 6<sup>th</sup>, Barren County.
11. Arnold, L.M. 2015. Cow Signals. Dairy meeting, January 29<sup>th</sup>, Adair County.
12. Arnold, L.M. 2015. Reproductive Emergencies. Kenton County Reproductive Meeting, February 2<sup>nd</sup>, Covington, KY.
13. Arnold, L.M. 2015. Vaccinations for the Cow-Calf Herd. Garrard County Cattlemen's Meeting, February 2<sup>nd</sup>, Lancaster, KY.
14. Arnold, L.M. 2015. Mastitis treatment options. Young Dairy Producer Conference, February 24<sup>th</sup>, Bowling Green, KY.
15. Arnold, L.M. 2015. Dystocia management. Garrard County Reproductive Meeting, March 3<sup>rd</sup>, Lancaster, KY.
16. Arnold, L.M. 2015. Master Cattlemen Herd Health. March 12<sup>th</sup>, Princeton, KY.
17. Arnold, L.M. 2015. Master Cattlemen Herd Health. March 17<sup>th</sup>, Owingsville, KY.
18. Arnold, L.M. 2015. Master Cattlemen Herd Health. March 24<sup>th</sup>, Vanceburg, KY.
19. Arnold, L.M. 2015. Master Cattlemen Herd Health. April 9<sup>th</sup>, Winchester, KY.
20. Arnold, L.M. 2015. Physical examination of dairy cattle. Dairy Agent Training at Coldstream, April 14<sup>th</sup>, Lexington, KY.
21. Arnold, L.M. 2015. Master Cattlemen Herd Health. April 21<sup>st</sup>, Carrolton, KY.
22. Arnold, L.M. 2015. beef reproduction efficiency for Eastern KY. Kickoff Herd Health, April 23<sup>rd</sup>, via Lync.
23. Arnold, L.M. 2015. Veterinary feed directive. Anderson County Cattlemen's Association, April 27<sup>th</sup>, Lawrenceburg, KY.
24. Arnold, L.M. 2015. Master grazer-forage disorders. May 20<sup>th</sup>, Woodford County Extension Office, Versailles, KY.

25. Arnold, L.M. 2015. Pasture to plate health considerations. May 26<sup>th</sup>, Princeton, KY.
26. Arnold, L.M. 2015. Pasture to plate health considerations. May 27<sup>th</sup>, Eden Shale, Owenton, KY.
27. Arnold, L.M. 2015. Prevention of pinkeye. McLean County Field Day, August 14<sup>th</sup>, Calhoun, KY.
28. Arnold, L.M. 2015. Master Cattlemen Herd Health. September 14<sup>th</sup>, Monticello, KY.
29. Arnold, L.M. 2015. Veterinary feed directive. Harrison County Cattlemen's Meeting, September 28<sup>th</sup>, Cynthiana, KY.
30. Arnold, L.M. 2015. Pasture to plate health considerations. September 29<sup>th</sup>, Princeton, KY.
31. Arnold, L.M. 2015. Pasture to plate health considerations. September 30<sup>th</sup>, Eden Shale, Owenton, KY.
32. Arnold, L.M. 2015. Pasture to plate health considerations. October 1<sup>st</sup>, Morgan County, KY.
33. Arnold, L.M. 2015. Discussion of the VFD. Dr. Ryan Wonderlich's Field Day, October 3<sup>rd</sup>, Bardstown, KY.
34. Arnold, L.M. 2015. Master Grazer-Forage Disorders. October 6<sup>th</sup>, Woodford County Extension Office, Versailles, KY.
35. Arnold, L.M. 2015. Master Cattlemen Herd Health. MC Field Day, October 13<sup>th</sup>, Versailles, KY.
36. Arnold, L.M. 2015. Perilla mint and other toxicities in the field. Pasture Walk at Brann's farm, October 16<sup>th</sup>, Adolphus, KY.
37. Arnold, L.M. 2015. Small ruminant wasting diseases. Barren County Sheep and Goat Producers, October 20<sup>th</sup>, via Lync.
38. Arnold, L.M. 2015. Master Cattlemen Herd Health. October 22<sup>nd</sup>, Brandenburg, KY.
39. Arnold, L.M. 2015. Veterinary feed directive update and cold weather calving. Kentucky Beef Conference, October 29<sup>th</sup>, Fayette County Extension, Lexington, KY.
40. Arnold, L.M. 2015. Mastitis treatment and dry cow management. Southeast Quality Milk Initiative Annual Meeting, November 3<sup>rd</sup>, Russellville, KY.
41. Arnold, L.M. 2015. Preparing for the veterinary feed directive. Appalachian Cow-Calf Conference, November 7<sup>th</sup>, Morehead, KY.

42. Arnold, L.M. 2015. Master Cattlemen Herd Health. November 10<sup>th</sup>, West Liberty, KY.
43. Arnold, L.M. 2015. Master Cattlemen Herd Health. November 16<sup>th</sup>, Fayette County, KY.
44. Arnold, L.M. 2015. Preparing livestock for winter. Farm School for Women, December 1<sup>st</sup>, Fleming County Extension.
45. Arnold, L.M. 2015. Preparing for the veterinary feed directive. Morehead Cattle Producers Meeting, December 17<sup>th</sup>, Dickerson Agricultural Complex, Morehead State University.
46. Bailey, E. 2015. Immune response phenotypes for equine viral arteritis (EVA) associated with alleles of CXCL16. Plant and Animal Genome Conference XXIII, January 10<sup>th</sup>-14<sup>th</sup>, San Diego, CA.
47. Bailey, E. 2015. Genetics after twilight. Equine Science Society Meeting, May 27<sup>th</sup>-28<sup>th</sup>, St Petersburg, FL.
48. Bailey, E. 2015. Future contributions of molecular genetics to horse breeding. Premier Internacional Congreso Equino, July 14<sup>th</sup>-15<sup>th</sup>, Bogota, Columbia.
49. Bailey, E. 2015. Genetic tools for horse breeding. Premier Internacional Congreso Equino, July 14<sup>th</sup>-15<sup>th</sup>, Bogota, Columbia.
50. Balasuriya, U.B.R. 2015. Identification of genetic factors responsible for the establishment of EAV carrier state in the stallion. USDA-NIFA Animal genome project director meeting at PAG, January 9<sup>th</sup>, San Diego, CA.
51. Balasuriya, U.B.R. 2015. Variants in CXCL16 gene are associated with the equine arteritis virus (EAV) persistent infection in the stallion. Immunity to veterinary pathogens: Informing Vaccine Development (A3), January 20<sup>th</sup>-25<sup>th</sup>, Keystone, Colorado, USA.
52. Balasuriya, U.B.R. 2015. Rapid and sensitive insulated isothermal polymerase chain reaction on field-deployable POKKIT<sup>TM</sup> system enables on-site detection of equid herpesvirus-1. XVII International Symposium of the World Association of Veterinary Laboratory Diagnosticians, June 15<sup>th</sup>-18<sup>th</sup>, Saskatoon, Canada.
53. Balasuriya, U.B.R. 2015. Application of contemporary molecular, cellular and genomic techniques to advance understanding of virus-host interactions. Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, September 10<sup>th</sup>, Sri Lanka.
54. Balasuriya, U.B.R. 2015. Persistent infection of arteriviruses: Association of equine CXCL16 gene variants with establishment of equine arteritis virus carrier state in stallions. XXVI Brazilian Congress of Virology / South American Meeting of Virology, October 11<sup>th</sup>-14<sup>th</sup>, Florianopolis, Brazil.

55. Balasuriya, U.B.R. 2015. Traditional and contemporary assays for direct and indirect detection of equid herpesvirus-1 in clinical samples. Universidade Federal De Minas Gerais, Escola De Veterinária Da UFMG, October 16<sup>th</sup>, Belo Horizonte/MG, Brazil.
56. Balasuriya, U.B.R. 2015. Development of insulated isothermal PCR-based point-of-need assays for detection of veterinary and human viral agents. Korean Research Institute of Chemical Technology, November 3<sup>rd</sup>, Dejeon, South Korea.
57. Balasuriya, U.B.R. 2015. Immune response to equine arteritis virus infection and immunopathology of the stallion reproductive tract during persistent infection. Role of Immunology in Equine Health Symposium, November 21<sup>st</sup>, Lexington, KY.
58. Balasuriya, U.B.R. 2015. Identification of genetic factors responsible for the establishment of EAV carrier state in the stallion. USDA-NIFA AFRI Animal Health, Animal Well-Being and Food Security Awardee Workshop, December 4<sup>th</sup>, Chicago, IL.
59. Balasuriya, U.B.R. 2015. Laboratory diagnosis of Dengue virus infection: Interpretation of results and the challenges presented. International Conference in Tropical Medicine, December 10<sup>th</sup>-11<sup>th</sup>, Kandy, Sri Lanka
60. Ball, B.A. 2015. What goes wrong with the geriatric mare?" 6<sup>th</sup> Annual Kentucky Breeders Short Course, January 24<sup>th</sup>, Lexington, Kentucky.
61. Ball, B.A. 2015. Anti-Müllerian hormone: Implications for the follicle reserve, follicle function and age related changes in fertility in the mare. International Conference on Biotechnology and Welfare in Animal Husbandry, June 14<sup>th</sup>-16<sup>th</sup>, Krakow, Poland.
62. Cook, R.F. 2015. Trends in vaccine development. USDA-NIFA-AFRI Symposium "Role of Immunology in Equine Health," November 21<sup>st</sup>, Lexington, KY.
63. Gaskill, C.L. 2015. Update on the illicit use of cobalt in racehorses. 4th Annual UK Equine Showcase, January, Lexington, KY.
64. Gaskill, C.L. 2015. Update on moxidectin poisoning in horses. 4th Annual UK Equine Showcase, January, Lexington, KY.
65. Gaskill, C.L. 2015. Poisonous pasture plants and horses. Pastures Please program sponsored by the University of Kentucky Cooperative Extension and University of Kentucky Equine Initiative, February, Lexington, KY.
66. Gaskill, C.L. 2015. Careers in veterinary diagnostics. Franklin County High School 4-H Livestock Club and Future Farmers of America students, March, University of Kentucky Veterinary Diagnostic Laboratory, Lexington, KY.
67. Gaskill, C.L. 2015. Tall fescue ergovaline concentrations based on sample handling and storage method. AOAC International Midwest Meeting, June, Bozeman, MT.

68. Gaskill, C.L. 2015. Veterinary diagnostic toxicology: CSI in the Veterinary Realm. Department of Veterinary Science seminar series, December, Gluck Equine Research Center, University of Kentucky, Lexington, KY.
69. Howe, D.K. 2015. The molecular composition of *Sarcocystis neurona* and its application for controlling equine protozoal myeloencephalitis. 4th Annual UK Equine Showcase, January 23rd-24th, Lexington, KY.
70. Howe, D.K. 2015. Omics investigation of *Sarcocystis neurona*. President's Symposium "What genomics is teaching us about Apicomplexan development." 90th Annual Meeting of the American Society of Parasitologists, June 25th-28th, Omaha, NE.
71. Issel, C.J. 2015. Justification for a progressive three tiered approach for the diagnosis of equine infectious anemia in the laboratory: 2015. Diagnosis of Equine Infectious Anemia and Bovine Leucosis, Istituto Zooprofilattico Sperimentale (IZS) sponsored by the National Reference Centre for Equine Infectious Anemia (IZS-Lazio e Toscana), April 14th, Rome, Italy.
72. Janes, J. 2015. A review of equine cervical stenotic myelopathy orthopaedic pathology. 34th Annual Midwest Association of Veterinary Pathologists Meeting, August 6th, Lexington, KY.
73. MacLeod, J.N. 2015. E-FAANG: A community effort to functionally annotate the equine genome and facilitate genome to phenome analyses. 11th International Equine Genome Workshop, July 22nd-23rd, Hannover, Germany.
74. Nielsen, M.K. 2015. Controlling equine parasites in the face of drug resistance. Penn State University, January 17th, Pittsburgh, University Park, PA.
75. Nielsen, M.K. 2015. Parasites and growth rates in foals. UK Ag Equine 4th Annual Showcase, January 23rd, Lexington, KY.
76. Nielsen, M.K. 2015. Parasite control in young horses – maneuvering through that tricky first year. 6th Annual Kentucky Breeders' Short Course, January 24th, Lexington, KY.
77. Nielsen, MK. 2015. Parasite control in young horses - how to implement proper surveillance. Nordic Equine Veterinary Conference, January 30th-February 1st, Stockholm, Sweden.
78. Nielsen, M.K. 2015. Parasitology research progress - a summary of recent work. Nordic Equine Veterinary Conference, January 30th-February 1st, Stockholm, Sweden.
79. Nielsen, MK. 2015. Integrated parasite control in mature horses – a review of the evidence. Nordic Equine Veterinary Conference, January 30th – February 1st, Stockholm, Sweden.

80. Nielsen, M.K. 2015. An update on equine intestinal parasites and deworming recommendations. Webinar hosted by Ontario Association of Equine Veterinary Practitioners, June 3<sup>rd</sup>.
81. Nielsen, M.K. 2015. Local and systemic inflammatory reactions to cyathostomin larvicidal therapy in horses. American Veterinary Medical Association Annual Convention, July 10<sup>th</sup>-14<sup>th</sup>, Boston, MA.
82. Nielsen, M.K. 2015. Evaluation of the larvicidal efficacy of a five-day regimen of fenbendazole in horses harboring cyathostomin populations resistant to the adulticidal dosage of fenbendazole. American Association for Veterinary Parasitologists Meeting, July 10<sup>th</sup>-14<sup>th</sup>, Boston, MA.
83. Nielsen, M.K. 2015. Patterns of *Strongylus vulgaris*-specific antibody development following stage-targeting larvicidal therapy with ivermectin. American Veterinary Medical Association Annual Convention, July 10<sup>th</sup>-14<sup>th</sup>, Boston, MA.
84. Nielsen, M.K. 2015. Transabdominal ultrasonography: A monitoring tool for *Parascaris* spp. burdens in foals. American Association for Veterinary Parasitologists Meeting, July 10<sup>th</sup>-14<sup>th</sup>, Boston, MA.
85. Nielsen, M.K. 2015. Anthelmintic resistance in horses and livestock. American Veterinary Medical Association Annual Convention, July 10<sup>th</sup>-14<sup>th</sup>, Boston, MA.
86. Nielsen, M.K. 2015. Screening of anthelmintic resistance on farms. American Veterinary Medical Association Annual Convention, July 10<sup>th</sup>-14<sup>th</sup>, Boston, MA.
87. Nielsen, M.K. 2015. The foal in focus – parasite control. Online webinar hosted by Merck Animal Health.
88. Timoney, P.J. 2015. Emerging equine diseases. 4th Annual UK Equine Showcase, January 23<sup>rd</sup>, Lexington, KY.
89. Timoney, P.J. 2015. Vaccination strategies for EVA and managing the EVA carrier stallion. 6th Annual Kentucky Breeders Short Course, January 24<sup>th</sup>, Lexington, KY.
90. Tobin, T. 2015. Where did that positive come from? Highly sensitive testing: Let me count the ways. Royal Western India Turf Club, February 27<sup>th</sup>, Mumbai, India.
91. Tobin, T. 2015. Presentation to Mr. Azam Syed, Pharmacy in Charge, Zabeel Palace, Dubai and visits and presentations to the Marmoom Equine Research Center, March 26<sup>th</sup>, Dubai UAE.
92. Tobin, T. 2015. Regulatory thresholds for Cobalt and Gamma Amino Butyric Acid [GABA]. Association of Racing Commissioners International Scientific Advisory Committee Meeting, April 21<sup>st</sup>, Tampa, FL

93. Tobin, T. 2015. The role of chaperone proteins in ageing and onset of disease in modern medicine. NorthWest Naturopathic Physicians Convention, May 2<sup>nd</sup>-3<sup>rd</sup>, Seattle Washington.
94. Tobin, T. 2015. Where did that positive come from: Highly sensitive testing; Let me count the ways. Union Nacional de Asociaciones Ganaderas Colombianas- UNAGA, July 14<sup>th</sup>-15<sup>th</sup>, Bogota, Colombia.
95. Tobin, T. 2015. Revisiting the Racing Medication and Testing Consortium [RMTC] Xylazine Guidelines, with Australian assistance. National HBPA Summer Meeting, August 6<sup>th</sup>-9<sup>th</sup>, Denver, CO.
96. Tobin, T. 2015. Canadian environmental methamphetamines identifications linked to a horse trailer: Summer 2015 Medication Forum of the National Horsemen's Benevolent and Protective Association Meeting, August 6<sup>th</sup>-9<sup>th</sup>, Denver, Colorado.
97. Tobin, T. 2015. Managing a rash of 'positives' that result from a known source(s) of contamination through no fault of the trainer/owner? Is there a way to pragmatically manage positives that result from inadvertent contamination that could reasonably be expected not to have an influence on a horses' performance? Open Meeting of the International Group of Specialist Racing Veterinarians [IGSRV], December 14<sup>th</sup>, Sha Tin, Hong Kong.

#### **Graduate Students & Post-Doctoral Scholars**

1. Adam, E.N. 2015. Unique Patterns of Gene Expression in Articular Chondrocytes. Plant and Animal Genome XXIII, January 10<sup>th</sup>-14<sup>th</sup>, San Diego, CA.
2. Adam, E.N. 2015. Unique Patterns of Gene Expression in Articular Chondrocytes. International Cartilage Repair Society, May 8<sup>th</sup>-11<sup>th</sup>, Chicago, IL.
3. Bellaw, J.L. 2015. Objective evaluation of two deworming regimens in young Thoroughbreds using parasitological and performance parameters. American Association for Veterinary Parasitologists, July 11<sup>th</sup>-14<sup>th</sup>, Boston, MA.
4. Carossino, M. 2015. Characterization of the local inflammatory response in the reproductive tract of the equine arteritis virus carrier stallion. 58th AAVLD/ 119th USAHA and Annual Meeting, October 22<sup>nd</sup>-28<sup>th</sup>, Providence, RI.
5. Carossino, M. 2015. Sites of equine arteritis virus localization in the reproductive tract during long-term persistence in the stallion. 58th AAVLD/ 119th USAHA and Annual Meeting, October 22<sup>nd</sup>-28<sup>th</sup>, Providence, RI.
6. Dangoudoubiyam, S. 2015. CRISPR/CAS9-mediated gene editing in *Sarcocystis neurona*. 60<sup>th</sup> Annual Meeting of the American Association of Veterinary Parasitologists, July 11<sup>th</sup>-14<sup>th</sup>, Boston, MA.

7. Elzinga, S.E. 2015. Characterization of lipid and inflammatory profiles in horses with equine metabolic syndrome. Equine Science Society, May 26<sup>th</sup>-29<sup>th</sup>, 2015, St Petersburg, FL.
8. Go, Y.Y. 2015. Complete genome sequencing and phylogenetic analysis of three clinical isolates (serotype 1) and three laboratory strains (serotypes 2, 3, and 4) of dengue virus available in South Korea. 34<sup>th</sup> Annual Meeting, American Society of Virology, July 11<sup>th</sup>-15<sup>th</sup>, Ontario, Canada.
9. Scare, J. 2015. Fecal egg counting by smartphone image analysis. American Association for Veterinary Parasitologists Meeting, July 11<sup>th</sup>-14<sup>th</sup>, Boston, MA.
10. Scare, J. 2015. Diagnosing parasites – with a computer? A smart-phone? UK Infectious Disease Research Day, October 22<sup>nd</sup>, Lexington, KY.
11. Siard, M.H. 2015. Comparison of inflammation, nutritional status, muscle mass, pituitary function, and age in geriatric horses. Equine Science Society, May 26<sup>th</sup>, St Petersburg, FL.
12. Siard, M.H. 2015. Effects of the novel feed additive Phytozen on immune and endocrine function in senior horses. Equine Science Society, May 26<sup>th</sup>, St Petersburg, FL.
13. Thampi, P. 2015. Determining cDNA sequences for targeted axolotl salamander genes using assembled RNA-seq reads. Plant and Animal Genome XXIII, January 10<sup>th</sup>-14<sup>th</sup>, San Diego, CA.

## Welcome to the Maxwell H. Gluck Equine Research Center!!!

<http://www2.ca.uky.edu/gluck/>

### Parking

A parking pass for your first day will be available in the front office. You may pull into the circle at the front of Gluck to come into the front office and pick one up. Visit the UK Parking & Transportation Services Office if you wish to purchase a permit for the year. There are several permit options available.

You may visit their website for more information and hours: <http://www.uky.edu/pts>.

Most students purchase the E permit, which allows you to park in the lot next to Gluck. However, these spots fill up quickly- usually by 9am during the fall and spring semesters!

### Housing

The University of Kentucky offers limited graduate student housing. If you are interested, fill out an application as early as possible to have the best chance at securing on-campus housing. Many off-campus housing options are available as well.

More information can be found on their website: <http://www.uky.edu/housing/graduate/about>

### First Day/Week Requirements

There are several forms that need to be completed on your first day. See Gail Watkins ([bwatkins@uky.edu](mailto:bwatkins@uky.edu)) in the front office for information on completing your I-9 form at Scovell Hall and being added to the payroll.

Prior to beginning any lab activities, complete the required online lab safety training. See the UK EHS website <http://ehs.uky.edu/classes>. Discuss which courses you need to take with your advisor/PI. There is also lab-specific training that is required in-person on the first day that you work in the lab.

## Appendix M

### Lab Keys, Mailboxes, & Student IDs

To obtain a key for your lab, please email or talk to Deb Mollett ([dmoll01@uky.edu](mailto:dmoll01@uky.edu)) in the front office. She will also assign you a copy number to allow you to use the copy machine, located in the front office.

You will have a mailbox assigned to you in the front office.

Deb can also program your Student ID to open the building doors after hours. Student ID's can be purchased in the Wildcard ID office. The current fee is \$15. <http://www.uky.edu/Police/UKID>

### Computers/Desks

Deb can let you know which desks in the graduate student office are available. Select one and let her know. If there is not a computer at the desk or if you have any IT-related questions, you may contact Colin Tudor, the Gluck IT contact, at [catu225@g.uky.edu](mailto:catu225@g.uky.edu).

### Course Enrollment and a few FAQs answered by Dr. Howe

Discuss course enrollment with your advisor/PI or with Dr. Howe, the Director of Graduate Studies. There are specific deadlines that must be met regarding course enrollment and adding/dropping of courses. Please see the UK Registrar website for details: <http://www.uky.edu/registrar/>

#### *1.) How long is the departmental stipend guaranteed?*

For a PhD, the stipend is guaranteed for 4 years (assuming adequate progress to the degree), with the opportunity to extend to 5 years if there's reasonable justification (never been declined). For a Master's, the stipend is for 2 years, but can be extended another 0.5 years.

#### *2.) Can you take classes after your qualifying exam?*

Yes, but this should be kept to a minimum and needs to be approved since there is an associated tuition cost. In general, all coursework should be completed before the qualifying exam. However, there is the occasional useful course that is offered infrequently and not available during the pre-qualifying period for a student.

#### *3.) Can you do the required seminars (VS 770) after your qualifying exam?*

While possible, this is not ideal. One of the two VS 770 seminars should be completed prior to the qualifying exam.

## Appendix M

### Gluck Social Activities

There is generally a Gluck-wide social activity once per quarter. In August, there is an Ice-Cream Social to introduce new graduate students.

The graduate students hold meetings once per month (usually the first week of the month). They also occasionally have graduate student social outings.

On the first Tuesday of each month, there is a coffee break from 8-9am before the faculty meeting. This generally includes coffee/tea and donuts/bagels. Deb Mollett usually sends out a reminder the day before.

### Conferences/Symposiums

There are several symposiums and conferences that are hosted by Gluck. Registration for these is generally free for students. For registration information, contact Jenny Evans at [jenny.evans@uky.edu](mailto:jenny.evans@uky.edu).

### Weekly Seminars

All graduate students are expected to attend the weekly seminars, held Thursdays at 4pm. To be added to the seminar reminder email list, contact Diane Furry at [dfurry1@uky.edu](mailto:dfurry1@uky.edu).

From Dr. Howe:

“All graduate students are expected to attend our departmental seminars on Thursday afternoon at the Gluck Center, regardless of whether you are enrolled in VS 770. Attendance at seminars is part of your training as it makes you aware of the activities ongoing within Gluck and the VDL, and it gives you an opportunity to hear from a variety of excellent investigators from outside our department and university.

Certainly, you are excused if you have a class that conflicts with the seminar time; please inform me or your major advisor of the conflict. Infrequent absence due to lab work is permissible, but this is not a valid excuse for routine absence.”

## Appendix M

### Website

During the first several weeks, Diane Furry will usually place a form in your mailbox regarding adding your information to the Gluck website.

### Bluegrass Equine Digest

Written by Jenny Evans

The Bluegrass Equine Digest is a monthly electronic newsletter dedicated to providing up-to-date information on equine research from the University of Kentucky's College of Agriculture, Food and Environment. The Bluegrass Equine Digest brings together several entities and content is provided by the UK Ag Equine Programs and the Gluck Equine Research Center and published by TheHorse.com. It includes short news items that bring the reader up-to-date on happenings in the research labs and from the field, plus in-depth articles from world-renowned experts to help the reader understand current "hot" topics. The newsletter also includes tips on horse care and property care, and business advice from a team of experts. Managing editors are Jenny Evans and Holly Wiemers. Sign up to receive the free newsletter at [www.thehorse.com](http://www.thehorse.com). Under newsletters → from our partners → click Bluegrass Equine Digest.

### UK Ag Equine Programs' Equine Forum

Written by Jenny Evans

These meetings occur the last Friday of every month at 8 a.m. in the E.S. Good Barn. The meetings are attended by equine faculty, staff and students and feature news, updates and a monthly speaker from an equine-related entity. Sign up to receive announcements regarding the forum by emailing [equine@uky.edu](mailto:equine@uky.edu) and identifying yourself as a graduate/visiting student.

## 2016 Gluck Graduate Student Course Comments

### IBS 601

No comments received

### IBS 602

- *Quality course with good instructors*
- *I'd like to take IBS 602 again! I think it's one of those courses you'd get something new out of each time you took it...*
- *I do not come from a strong science background, and had to work incredible hard at IBS 602 to do well. I pretty much lived and breathed it and probably studied around 20 hours a week for it. Not for the faint of heart but totally worth it!*
- *Was a good course (at least when I took it, though I know they've changed it some/combined it with 604 since when I took it), but it was pretty challenging...very helpful for understanding genetics/PCR work.*
- *IBS 602 is probably the hardest class I have ever taken in my life, but the learning pay offs were great. I found myself learning things I didn't even know were out there to learn! It was sometimes a little challenging having different instructors rotate, but the course co-ordinator (Dr. Mellon) was fantastic. Extra review sessions were offered weekly, and instructors were always available for email correspondence. I loved this class, and don't think I've ever got more out of a class than I did this one.*

### IBS 603

No comments received

**IBS 606**

- *Quite interesting, again with good instructors*
- *Was really good/interesting and not incredibly hard (though still rigorous)*

**General Comments- All IBS courses**

- *Both IBS 602 and 603 had just been integrated two classes down to one they had some issues with that hopefully they have fixed combining classes.*
- *The IBS courses would be important for anyone doing any kind of molecular work or immunology.*
- *Essential concepts given in IBS 602 and 603- I think they are a must for all students.*
- *Recommendations on the IBS courses would be based on individual students science background-some would get more out of the courses than others. I personally enjoyed IBS 606 the most as it covered more of a range of topics and had a decent research focus.*
- *These are the courses I would recommend for anyone who needs a good background of cell biology and genetics. They were up to date with current literature and were relevant to my research area.*

## Appendix #

### STA 570

- *There was some time spent in lab on using statistical software, but mostly everything was done by hand, which was a repeat of other stats courses I have taken.*
- *I learned less than in my high school AP stats class -- nobody does stuff by hand anymore. It was an easy A though, which is what I assumed going in based on what I'd heard.*
- *Stats in particular was redundant and very unhelpful-high school level and no practical applications for researchers.*
- *STA 570 instructor was horrible but is no longer teaching the class*
- *While the material was more of a review from other stats courses I had taken, the homework assignments usually took about 3 hours per week.*
- *Is good for an easy A*
- *Everyone in grad school should be required to take stats and I think biostats if taught correctly helps relate stats to animal/human research*
- *I didn't dislike the STA 570 course, but I did not find it very useful. I don't think I really learnt much that I hadn't learnt in my undergraduate classes (although admittedly these were stats heavy). I still do not feel comfortable analysing data, and will take another stats course in the fall to (hopefully!) remedy this.*

### STA 580

- *Awful*
- *Haven't heard great things about STA 580 plus it's harder, so I'd go with 570 over that*
- *STA580 did not provide labs with statistical software and students that had biostatistics before will find that the syllabus is repetitive.*

**General Comments- All Statistics Courses**

- *I have heard of a really good stats course over in plant & soil sciences though -- wish they'd had it/I'd known about it back when I was taking classes.*
- *Did not learn anything in stats*
- *It sounds like the plant & soil sciences stats class would be a great option though (not sure what the course # on that is)*

## **Other courses that were recommended:**

### **VS 600 – Ethics in Scientific Research**

Number of recommendations: 6

- *VS 600 (Ethics in Research) was a decent course and made you think about things especially that could come up later in your career.*
- *Requires class participation and on the reading of a thought provoking book - not much to ask for an interesting class! The course co-ordinator (Dr. Mellon) is wonderful, and I would take any class taught by her in a heartbeat.*
- *This was a really nice discussion course.*
- *Gives a good background in research ethics*

### **BIO 494G/MI 494G - Immunobiology**

Number of recommendations for: 4

- *BIO 494G was good but pretty hard. I had never taken Immunology before, so this was a good intro. They do not curve, however, and I actually did better in the grad level one (MI 685) because MI 685 did curve quite a bit, and BIO 494G did not. MI 685 was good but quite hard. I had already taken immunology, which was good, as this was a challenging course. It was a lot of good material; however, the work load was heavy, and the organization was pretty terrible. The information presented kinda trailed all over the place with the powerpoints lacking good organization.*
- *BIO 494G- recommended for students coming into the infectious disease program*
- *BIO 494G- Both Biochemistry and Immunobiology are challenging and I spend approximately 15 hours a week studying for each one, but they are incredibly useful. I have learnt so much from both classes that pertains to my field of study in infectious disease. They are set up in a way that students succeed, and where hard work is rewarded. They are tough but enjoyable.*
- *BIO 494G- Gives a very good introduction to immunology*

### **VS 597 - Emerging Diseases in the Equine Genomic Era.**

Number of recommendations for: 4

- *Really enjoyed this course. Drs. Bailey, Timoney, and Balasuriya do a great job with it. It is discussion based, so you also get a chance to get to know other Gluck students.*
- *This is a great all around course for anyone involved in the equine industry. It is mainly a discussion based course and requires little out of class work, but is still extremely informative. We cover everything from the viruses that infect our horses to the horses immune response.*
- *Very interactive. Excellent invited speakers.*
- *Not particularly challenging, but is very interesting nonetheless. It broadens your horizons into the field of infectious disease, and adds some really great perspective. I particularly like that it draws from examples that are not horse related, while still keeping an equine central theme.*

### **MI 685 – Immunobiology, Infection, and Inflammation**

Number of recommendations for: 3

- *BIO 494G was good but pretty hard. I had never taken Immunology before, so this was a good intro. They do not curve, however, and I actually did better in the grad level one (MI 685) because MI 685 did curve quite a bit, and BIO 494G did not. MI 685 was good but quite hard. I had already taken immunology, which was good, as this was a challenging course. It was a lot of good material; however, the work load was heavy, and the organization was pretty terrible. The information presented kinda trailed all over the place with the powerpoints lacking good organization.*
- *Advanced immunology is a great course, I think it is a must but may demand more time, plenty of assignments and tons of reading. Very useful. However, it is advanced and you need to have solid concepts of basic immunology and lab techniques.*
- *Extremely informative great class-learned a lot of very valuable information. However, it is an extremely difficult class.*
- *Great course, I think it is a must but may demand more time, plenty of assignments and tons of reading. Very useful. However, it is advanced and you need to have solid concepts of basic immunology and lab techniques.*

### **TOX 780 - Special Problems in Toxicology (Grant writing and reviewing)**

Number of recommendations for: 3

- *I highly recommend this class especially as you are approaching to sit for your Ph.D. qualifying exam*
- *Very good course to help you prepare your research grant proposal and also gives you a background in reviewing grant proposals*

### **ASC 782 - Special Problems in Animal Nutrition**

Number of recommendations for: 2

- *Provides a broad background on equine sciences*

### **BIO 582 - Virology**

Number of recommendations for: 2

- *Recommended to student coming to virology program*
- *Very good introductory Virology course*

### **BIO 529 - Developmental Biology**

Number of recommendations for: 2

Number of recommendations against: 1

- *Very detailed. I had never learned about Developmental Biology before but learned so much in this course.*
- *Broad application, thought provoking*
- *The instructor for BIO 529 followed the text book verbatim and it would be just as helpful to read the text on your own. There were only a couple of paper discussions which were quite old.*

**STA 671– Regression and Correlation**

**&**

**STA 672 Design and Analysis of Experiments**

Number of recommendations for: 1

- *STA 671/672 was pretty good. It gave a good intro to SAS, which I had been wanting, and it wasn't very hard -- just took time in lab class to do the assignments, and the lab TA was really nice & helpful.*

**ASC 601- Mammalian Endocrinology**

Number of recommendations for: 1

Number of recommendations against: 1

- *This course was very poorly structured and extremely hard to follow. Half of the time, the professors didn't even know what was going on in the class. I was extremely disappointed as this should have been a very useful course for me. I would only recommend this course if it were completely restructured with different professors.*

**ASC 688 - Equine Nutrition**

Number of recommendations for: 1

- *ASC 688 (Equine Nutrition) was a good, quality course. It was a difficult one to take first semester of grad school, especially since I had never taken a nutrition course before. Dr. Lawrence is an excellent lecturer, but you need to know all the information backwards & forward for the exams. The written project is also quite intense and comprehensive (definitely pulled my first all-nighter trying to get the paper and the presentation up to snuff); I had at least 50 sources cited, I believe.*

### **BIO 510 - Recombinant DNA Laboratory Techniques**

Number of recommendations for: 1

- *This course was 100% hands on lab work. It covers everything from running a gel to isolating and inserting genes into vectors. It provides very detailed information that is useful to anyone interested in molecular biology and/or genetics. It is a challenging course and very time consuming, but well worth it.*

### **CPH 605, CPH 612, & CPH 712**

#### **(Epidemiology, Infectious/Emerging Diseases Epi., and Advanced Epi.)**

Number of recommendations for: 1

- *I took a lot of courses in Public Health so anyone interested in epidemiology, infectious disease or advanced biostats I would recommend CPH 605-intro to epi; CPH 712-Advanced epi; CPH 630/STA 681-advanced biostats; CPH 612-Infectious disease epi*

### **GS 640 - Grant Writing**

Number of recommendations for: 1

- *This course was especially helpful. I had never written grants before and would not have known how to write one before this course.*

### **IBS 611 - Practical Statistics**

Number of recommendations for: 1

### **Journal Club (Dr. Ball)**

Number of recommendations for: 1

- *A space to read current and interesting articles about reproduction and related subjects.*

**PLS--Stats class**

Number of recommendations for: 1

**PLS 510 – Forage Managements & Utilization**

Number of recommendations for: 1

**VS 500- Advanced Equine Reproduction**

Number of recommendations for: 1

- *Equine Repro taught me about the many different aspects there are to the reproduction world. Between Mare management, stallion management, embryo and sperm management, to processing and handling, to prepping for foals, handling foals, preventing disease in utero or the spread of reproductive diseases, it was so interesting and I learned there was so much more to it than I thought originally.*

**Any grant writing course:**

- *Very useful. This course needs to be done before the qualifying exam. the courses are very useful when writing the proposal for qualifying exam and when writing papers for publication. i think most students would benefit a lot from them*

**BIO 607 - Advanced Evolution**

Number of recommendations for: 1

- *This course is really difficult but teaches you a lot more than Evolution. I learned a lot of Bioinformatics and computer technology during this course.*

### **BCH 401G – Biochemistry**

Number of recommendations for: 1

- *Both Biochemistry and Immunobiology are challenging and I spend approximately 15 hours a week studying for each one, but they are incredibly useful. I have learnt so much from both classes that pertains to my field of study in infectious disease. They are set up in a way that students succeed, and where hard work is rewarded. They are tough but enjoyable.*

### **CPH 630/STA 681- Biostatistics II**

Number of recommendations for: 1

Number of recommendations against: 1

- *STA 681 was not taught well. The instructor did not like being asked questions and didn't help understanding statistics any easier.*
- *Biostats taught in college of Public Health was more practical than Stats 571 and the epidemiology classes gave me a better understanding for setting up research in broader sense and a different approach*

## **Courses that were NOT recommended:**

### **410G - Equine Science**

Number of recommendations against: 1

- *Pretty clearly an undergrad level class, so I withdrew from it, although perhaps it would be good if you had no equine science background.*

### **GS 610 - College Teaching**

Number of recommendations against: 1

- *Was OK but not super high on list of classes I'd recommend.*

**CPH 783- Intro to Bioinformatics**

Number of recommendations against: 1

- *Not as expected. Hard if you do not have basic knowledge on computer language*

**Computer Applications of Scientists (An Sci course Dr Vanzant)**

Number of recommendations against: 1

- *It catered to students with a much higher ability unbeknownst to us. It said computer applications but actually meant write code in VBA*

**MI 707 - Contemporary Topics in Immunology**

Number of recommendations against: 2

- *I did not enjoy MI 707. This does not mean it will not be useful or enjoyable to another student. Did not touch my aspect of my training program: virology so I felt it was not really beneficial to me but you never know*
- *It mainly dealt with Bacteriology and my research work was on Virology. Furthermore, It wasn't a lecture based course and was focused on discussing scientific papers related to the human microbiome.*

**Others:**

- *VS 770 (seminar) is OK, but I wish more of them were related to what we do/horses. The VDL ones are usually pretty good though.*

## Equipment List

Item # (Prioritized)	Desired Equipment	Description	Price	Justification	Potential Users
1*	Luminex 200 System (EMD Millipore). Price includes LX200 3.1 xPONETENT System, Milliplex Analyst 5.1 software, BioTek Magnetic plate washer, starter kit of 25 plex premix	A magnetic bead-based flow cytometry instrument used for quantitation and detection of single or multiplexing of a large number of analytes (protein and/or nucleic acids) in a single sample. MILLIPLEX@ MAP assays are analytically validated for sensitivity, specificity, reproducibility and wide dynamic rangeApplications for both in research and diagnostics.	\$70,505.00	MILLIPLEX@ MAP multiplex assays consist of analyte-specific capture antibodies conjugated to xMAP@ beads, enabling multivariate analysis of complex biological states, including metabolic disease, immunology, neurodegenerative disease, toxicity, cancer and more, using minimal sample volumes. Essential instrument to perform cutting edge multiplexing assays for the detection of proteins such as cytokines, intracellular signaling proteins, antibodies to infectious agents, and hormones from plasma, serum or cell culture samples. Several Faculty and graduate student projects require this instrument desperately.	Udeni Balasuriya, Thomas Chambers, Chuck Issel, Frank Cook, Amanda Adams, Martin Nielsen, Peter Timoney, David Horohov and Dan Howe
2*	4D-Nucleofector™ Y Unit (with 96-well Shuttle™ device) delivers flexible throughput combined with economical processing, speed, and pre-optimized protocols for a range of both primary cells and cell lines.(Lonza's electroporator; Bio.Lonza.Com)	Electroporation-based methods have so far required cells to be in suspension for transfection. The Nucleofector™ technology entered a new era and allows direct Nucleofection™ of cells in adherence. Cells which typically grow in adherence in cell culture, can be kept and transfected by Nucleofection™ in their physiological state. This instrument give very high efficiency (70-80% of the cells get transfected).	\$60,000.00	Essential instrument to achieve high efficiency electroporation of nucleic acid into mammalian cells. Used for transfection of <i>in vitro</i> transcribed RNA to generate progeny virus. In addition, we transfect plasmid DNA into <i>E.coli</i> and mammalian cells for protein expression. These techniques are required for EAV, EHV-1, EIA, EIV and EPM research. Bio-Rad electroporator in Dr. Balasuriya's lab is broken. Only one BTX electroporator (>10 years old) available in Dr. Howe's lab. The efficiency of this instrument is low. Reverse genetics work requires a high efficiency electroporator.	Udeni Balasuriya, Thomas Chambers, Chuck Issel, Frank Cook, John Timoney, Amanda Adams, Martin Nielsen, Peter Timoney, David Horohov and Dan Howe
3	AID EliSpot Reader Classic (AID GmbH)	The AID Classic interprets any type of 96 and 384-well plates, including all brands of membrane type plates, ELISA-style plates and low volume plates. It simultaneously takes high resolution images, auto-centers the well, counts/analyzes plates and exports data in various formats.	\$50,000.00	Essential instrument to study cell mediated immune response to infectious agents. This instrument will allow us to get away from using radioactivity (chromium release) assay.	Udeni Balasuriya, Thomas Chambers, Chuck Issel, Frank Cook, Amanda Adams, Martin Nielsen, Peter Timoney, David Horohov and Dan Howe
4	MACSQuant VYB Flow cytometer (Miltenybiotec)	Flow cytometric analysis of PBMCs and other cells. This flow cytometer also has the 561 nm laser for viral research application.	\$160,000.00	Currently we use the UK Medical School Flow Cytometer facility which cost ~\$150 per hour. This is a very important piece of equipment that need to be in the Gluck building.	Udeni Balasuriya, Thomas Chambers, Chuck Issel, Frank Cook, John Timoney, Amanda Adams, Martin Nielsen, Peter Timoney, David Horohov and Dan Howe
4	Applied Biosystems® ViiA™ 7 Real-Time PCR System with TaqMan® Array Block or QuantStudio™ 6 Flex	Real-time PCR equipment - TaqMan®Full compatibility with any standard or fast-cycling 384- or 96-well plates and Array Micro Fluidic Cards and Reagents makes high-productivity real-time PCR accessible to any size lab.	\$60,000.00	Like to trade-in the Applied Biosystems 7500 Fast Real-Time PCR System (room #416) to purchase this new instrument. The instrument that we have is 10 years old and that need to be upgraded to a newer system. This instrument is required for testing research and diagnostic samples received at the OIE reference laboratories (EAV, EIA and EHV), as well as quantification of cytokine sRNAs	Udeni Balasuriya, Thomas Chambers, Chuck Issel, Frank Cook, John Timoney, Amanda Adams, Martin Nielsen, Peter Timoney, David Horohov and Dan Howe
4	Back-up -80C freezer for the Department	Upright or chest	\$10,000.00	Currently, there is no back-up freezer for emergency use in case of freezer failure	All faculty
5	MagMax Express 96 Deep Well Magnetic Particle Processor	Rapid, reliable, and cost efficient magnetic bead-based extraction of nucleic acids from clinical specimens using magnetic beads (Quote S149064 with \$16,891 trade-in credit for the Corbett CAS1820 ).	\$40,000.00	This instrument is required for processing large number of research and diagnostic samples received at the OIE reference laboratories (EAV, EIA and EHV). Currently, we use the machine at the UKVDL	Udeni Balasuriya, Thomas Chambers, Chuck Issel, Frank Cook, Peter Timoney, David Horohov, Martin Nielsen and Dan Howe
6	BioTek ELISA Reader or iMark™ Microplate Absorbance Reader		\$30,000.00	ELISA reader is required for testing of serum antibodies. Needed for both basic and applied research.	Udeni Balasuriya, Thomas Chambers, Chuck Issel, Frank Cook, Peter Timoney, David Horohov, Martin Nielsen and Dan Howe
7	ProteinSimple (Western Immuno Blotting system)	Automated Western Blotting System	\$60,000.00	High throughput capillary based Western blotting system. Results available in a couple of hours (efficient way to perform Western immunoblotting)	Udeni Balasuriya, Thomas Chambers, Chuck Issel, Frank Cook, John Timoney, Amanda Adams, Martin Nielsen, Peter Timoney, David Horohov and Dan Howe
8	ProFlex™ 96-well PCR System (Lifetechnologies)	PCR/RT-PCR machine	\$8,000.00	Infectious disease graduate students/postdocs (3rd and 4th floor) use the two PCR machine in Dr. Balasuriya's lab. Both machines are over 9 years and need to be replaced soon	Udeni Balasuriya, Thomas Chambers, Chuck Issel, Frank Cook, John Timoney, Amanda Adams, Martin Nielsen, Peter Timoney, David Horohov and Dan Howe
9	Coulter AcT Diff (Beckman Coulter)	Hematology analyzer	\$50,000.00	Critical piece of equipment in particularly to infectious disease and immunology research or any research involving the horse to allow for complete blood cell counts, differentials, and blood chemistry to be done on site instead of sending samples to outside laboratories for analysis	Gluck faculty
			\$598,505.00		

Item # (Prioritized)	Desired Equipment (Vendor)	Description	Price	Justification	Potential Users
1	Life Technologies	Kingfisher DNA extraction unit	\$50,000.00	Preparedness for higher throughput of PCR testing in the face of an outbreak such as Avian Influenza and FMD as part of the National Animal Health Laboratory Network (NAHLN)	Erdal Erol; Li Zeng; Jocelynn Morgan, Erica Phillips in the Molecular Biology and Bacteriology Sections
	Life Technologies	ABI 7500	\$35,000.00	Preparedness for higher throughput of PCR testing in the face of an outbreak such as Avian Influenza and FMD as part of the National Animal Health Laboratory Network (NAHLN)	Erdal Erol; Li Zeng; Jocelynn Morgan, Erica Phillips in the Molecular Biology and Bacteriology Sections
2	Biotek	Plate washers - 405	\$11,400.00	Increased efficiency and accuracy on serological testing for the animal agricultural industries, pet diagnostics and research projects	Meg Steinman, Angela Runyon, Donna Cook, Diane Higgins, Lauren O'Mara
3	DAKO	DAKO Artisan Link Pro	\$41,000.00	Maintain and improve turn around on the production and staining of histology slides in support of general animal health pathology diagnostics and research projects	Alan Loynachan, Jamie Howard, Sandra Thacker, Diane Murphy, Randy Watercutter
4	Leica	Embedding Station H- Paraffin/Cold Plate	\$14,600.00	Maintain and improve turn around on the production and staining of histology slides in support of general animal health pathology diagnostics and research projects	Alan Loynachan, Jamie Howard, Sandra Thacker, Diane Murphy, Randy Watercutter
5	Sakura	Tissue Tek Film System Link	\$55,000.00	Maintain and improve turn around on the production and staining of histology slides in support of general animal health pathology diagnostics and research projects	Alan Loynachan, Jamie Howard, Sandra Thacker, Diane Murphy, Randy Watercutter
6	ALFA Wassermann	Axcel Veterinary Chemistry Analyzer	\$30,000.00	To provide continuity of serum chemistry testing for animal agriculture, pet medicine, and research projects	Bonnie Decker, Judy Tucker
7			\$237,000.00		

### **Veterinary Science Teaching Task Force Report**

April 17, 2015

Submitted by: Daniel K. Howe (Chair), Roberta Dwyer, Fernanda Camargo, Roger Brown, Martin Nielsen

Summary: The Teaching Task Force was formed by College of Agriculture, Food and Environment (CAFE) Dean Nancy Cox to evaluate current and prospective teaching opportunities for faculty in the Department of Veterinary Science (VS). Specifically, the Task Force was charged with: 1) reviewing existing VS course offerings; 2) evaluating the potential for additional offerings; 3) assessing the capacity and willingness of faculty to teach more; 4) providing a cost/benefit assessment in the University's new budget model; 5) recommending a path forward. Although there have been few VS undergraduate lecture courses offered historically (2 courses since the 1960s), three new courses have been developed over the past three years. Discussions with VS faculty and faculty from other departments associated with current CAFE undergraduate degree programs, as well as a survey circulated to undergraduate students in the college, identified at least three prospective courses that could be useful contributions to curricula. The discussions with VS faculty revealed that most were willing to participate in undergraduate teaching, but few were interested in developing and/or serving as the primary instructor for an undergraduate course. The financial benefits that might come from increased teaching activities remain uncertain due to lack of clarity with the University's proposed new budget model. However, it seems unlikely that the new budget model will have a major impact given the overall funding sources available to the department and the projected level of future VS undergraduate teaching. Despite the nominal financial gains that are likely to be realized, other benefits will come from increased undergraduate teaching. Therefore, VS faculty members are encouraged to take advantage of additional opportunities to mentor students in the laboratory and develop and teach courses that contribute to the curricula of undergraduate programs in CAFE.

## Appendix P

### 1. Existing undergraduate course offerings from Veterinary Science

Consistent with the Department's emphasis on graduate student training, a majority of courses with a VS prefix are 600-700 level (14 courses listed in the University Bulletin). The Department of Veterinary Science (VS) does not have an undergraduate major, so undergraduate course offerings have been minimal historically. However, three new courses appropriate for undergraduate students have been developed over the past three years by faculty in the department.

“Introduction to Animal Anatomy and Physiology” (VS 350) and “Animal Hygiene and Disease Control” (VS 351) have been offered since the 1960s. Special Problems in Veterinary Science (VS 395), an independent study course for undergraduates, has been offered since the 1980s. These courses continue to be taught by Dr. Roberta Dwyer. The courses attract undergraduate students interested in animal production and health, and can help to satisfy specialty support and elective credits for students in a variety of majors, including Animal Sciences (ASC), Equine Science and Management (EQM), and Agricultural Biotechnology (ABT). Spring 2014 enrollment for VS 350 was 28 undergraduate students. Spring 2013 enrollment for VS 351 was 42 undergraduate students.

“Advanced Equine Reproduction” coordinated by Dr. Barry Ball was offered initially in Fall, 2012 as GEN 300. The course was officially approved as VS 500 and again offered in Fall, 2014. As a 500-level course, VS 500 is intended for graduate students and advanced undergraduate students who have prior coursework in physiology (prerequisite is ASC 364). The course can be used to satisfy specialty support and elective credits for students in majors such as ASC and ABT, and it is listed as an acceptable course for the Equine Science emphasis area of the EQM degree program. Fall 2014 enrollment in the course was 14 undergraduate students.

“Genetics of Horses” taught by Dr. Ernie Bailey was first offered as GEN 300 in Fall, 2013. The course was again offered in Fall, 2014 under the approved designation of VS 307. The course is appropriate for undergraduate students majoring in the natural sciences (Prerequisites listed are BIO 148, 152, CHE 107, 113) who have an interest in basic genetic principles related to equids, including evolution, coat color, heritable diseases, and population genetics. The course can be used to satisfy specialty support and elective credits for students in majors such as ASC and ABT, and it is listed as an acceptable course for the Equine Science emphasis area of the EQM degree program. Fall 2014 enrollment in the course was 32 undergraduate students.

“Equine Infectious Diseases in the Genomic Era” was developed in 2014 and offered in Spring 2014 and Spring 2015 as GEN 300 for undergraduate credit and ASC 782 for graduate credit. Pending final approval of a new special topics course, VS 597, the course will be offered in the future as a section under this designation. The instructors for this

## Appendix P

course are Drs. Ernie Bailey, Udeni Balasuriya, and Peter Timoney. The course addresses concepts related to genomic analyses, evolutionary biology, and the nature of infectious diseases, and it is intended for graduate students and advanced undergraduate students who have prior coursework in the sciences (BIO 148/152 and CHE 105/107 or 104/108 are listed as prerequisites). The course will satisfy specialty support and elective credits for students in a variety of majors, including ASC, EQM, and ABT. Spring 2015 (current) enrollment in the course is 22 undergraduate students.

Two VS faculty members serve as instructors for non-VS courses; R. Dwyer co-teaches a GEN 109 course (final designation will be ASC 209), “Veterinary Medical Terminology”, and D. Howe teaches ABT 301, “Writing and Presentation in the Sciences”. Multiple VS faculty members provide guest lectures for a variety of courses offered at UK and elsewhere.

Multiple VS faculty members provide opportunities in their labs for undergraduate students to conduct research projects for credit in ABT 395 or VS 395 (Independent Study/Special Problems).

### **2. Potential new course offerings from Veterinary Science**

The prospects for new VS course offerings were developed through discussions within the Teaching Task Force, interviews with VS faculty members, consultations with key faculty in relevant undergraduate programs in CAFE (e.g., Dr. Bob Coleman, EQM; Dr. Bill Silvia, ASC), and a survey circulated to undergraduate students in CAFE (**Appendix B, Appendix C**). During task force discussions of potential VS courses, primary considerations were: 1) what course topics could be effectively taught by VS faculty and is there interest in developing and teaching the course; 2) would the course represent a useful addition to the curriculum of an existing degree program; 3) what is the likely demand for the course?

Initial Task Force discussions focused on the types of courses that would attract students and would fit into degree curricula.

New undergraduate VS courses that contribute to the curricula of existing CAFE degree programs were considered most viable. Currently, CAFE undergraduate programs must include 18 credit hours of “Specialty Support” courses. Specialty support courses are intended to strengthen the coursework in an area of interest to the student and must be 200 level or above. As well, the EQM program requires 21 credits of coursework in “Emphasis Areas”; two VS course (VS 301 and VS 500) are currently options in the Equine Science Emphasis Area.

Courses that satisfy a UKCore (general education) requirement could draw appreciable numbers of students, including those in degree programs outside of CAFE. VS faculty have expertise to teach courses that would satisfy the “Inquiry in the Natural/Physical/Mathematical Sciences” area of UKCore. Additionally, topics related to

## Appendix P

public health (e.g., local-global disease transfer) fit into the “Global Dynamics” course requirement in UKCore. Faculty members considering development of a UKCore course need to be mindful that these are intended for a broad student audience, often in the first two years of their coursework. Consequently, UKCore courses need to be taught at an introductory level.

Distance learning is becoming more common at many institutions of higher education. Distance learning courses allow greater access to education for more students, including students from outside the home university. While there remain some challenges to distance learning, it can be an effective and efficient mechanism for delivery of instruction.

Two new courses were proposed by VS faculty members. These potential courses were viewed positively by the task force, and preliminary inquiries suggested that there would be student interest in the courses.

“Veterinary Immunology” (D. Horohov; see **Appendix A** for course description) would be developed as an alternative to BIO 494G, Immunobiology. There would be some overlap between the two course, but Veterinary Immunology would focus more on immunity in domestic animals (agricultural and companion) rather than humans. Veterinary Immunology would likely be a 3 credit course offered at the 500 level so that it would be available to both undergraduate and graduate students.

“Introduction to the One Health Initiative” (L. Cassone; see **Appendix A**) would be developed as a 1 credit, seminar-based course offered at the 100-200 level. A course covering the topic of One Health is not currently offered at the University of Kentucky.

Input from non-VS faculty members involved in CAFE undergraduate degree programs led to suggestions for new courses and/or increased teaching opportunities in existing courses.

Develop a lab course on techniques in equine reproduction. However, a VS faculty member with expertise in reproduction indicated that they did not believe it was appropriate to teach this topic to undergraduate students.

If there is sufficient demand, offer VS 500 (Advanced Equine Reproduction) every year.

Teach a section of ASC 325, Animal Physiology. There is heavy student demand for this course, and it is currently taught solely by Dr. Kristine Urschel (Department of Animal and Food Sciences).

Develop and teach a biosecurity course as part of the UKCore curriculum. As mentioned previously, a course on this topic could be developed to fit into the Global Dynamics area of UKCore.

## Appendix P

Develop and teach a course in the area of molecular genetics. It should be noted that ABT 460, Molecular Genetics, is taught every spring, and there does not seem to be much demand for the course beyond students majoring in Agricultural Biotechnology.

Develop and teach a course that covers the basic principles of scientific research (see **Appendix A** for course description; “Principles of Research in the Natural Sciences”). The course is envisioned as a 300-level course that would satisfy Specialty Support credit hours. Although it may be introduced as part of the material covered by some courses (e.g., ABT 301, “Writing and Presentation in the Sciences”), the general topic of scientific investigation is not taught as a formal course at the undergraduate level in CAFE.

To gauge student interest in the prospective “Principles of Research” course, an online survey was developed and circulated to all undergraduate students in CAFE (**Appendix B**). Students were asked about their major, class standing (i.e., Freshman, Sophomore, etc.), and a previous course they liked that was taken for Specialty Support or elective credit. The students were then provided the course description for “Principles in Research” and asked to rate the course positively or negatively compared to the previous course they liked OR to all other courses taken at UK. A total of 406 responses to the survey were received (of 2498 undergraduate students in CAFE), with 311 students assigning a rating to the proposed course (**Appendix C**). Of these, 126 students (31%) rated the course favorably compared to a specific Specialty Support course they liked or to all courses they had taken. Based on these findings, it seems apparent that there is more than sufficient interest to warrant development of the course by VS faculty. Depending on how it is taught and the number of students enrolled in the initial offering, it is conceivable that multiple sections might be appropriate for future offerings of the course.

### **3. Capacity and willingness of Veterinary Science Faculty to teach more undergraduate courses**

To determine faculty interest in teaching, task force members (R. Dwyer, M. Nielsen, D. Howe) had one-on-one discussions with a majority of VS faculty members who hold a regular title series appointment. While their appointments likely preclude them from extensive involvement in undergraduate instruction, most of the faculty members with research title, clinical title, and special title series appointments were consulted for input either face-to-face or by email.

Of the faculty members consulted, four currently have formal teaching responsibility (i.e., part of their Distribution of Effort; DOE). Two faculty members help coordinate a course that is taught to both undergraduate and graduate students (“Equine Infectious Diseases in the Genomic Era”).

All regular title series faculty members consulted who do not have a current teaching DOE expressed willingness to participate in teaching an undergraduate course by providing lectures. Two faculty members (one with a clinical title appointment) expressed interest in

## Appendix P

developing a new course (**Appendix A**). In general, however, faculty members were reluctant to commit to developing a new course and/or serving as the primary instructor for a course. Two faculty members who had teaching responsibilities at former institutions expressed frustration with their prior experience and said that a 100% research DOE was a major draw when recruited to UK.

Several faculty members stated that they were open to increased teaching by the faculty, but that research should remain the primary emphasis of the department.

### **4. Impact of the University's proposed new budget model**

Ostensibly, the new value-based financial model proposed for the University of Kentucky will place an emphasis on undergraduate instruction. This expectation was part of the impetus for the formation of the Veterinary Science Teaching Task force since the department does not have an undergraduate degree program and faculty participation in undergraduate teaching is modest relative to many other departments in CAFE and across campus.

Specific details remain unclear for how funds will be allocated in the new financial model. Consequently, it is not possible at present to accurately evaluate the impact that the new budget model will have on the Department of Veterinary Science with regards to teaching activities. It should be noted that the department benefits tremendously from numerous endowment accounts that provide significant support for research activities. These endowment funds represent a significant portion of the overall operating budget of Veterinary Science. Moreover, these funds are not subject to change with implementation of the new financial model. Unless the department faculty chooses to develop a new undergraduate degree program that attracts large numbers of students, the allocation of funds to Veterinary Science based on teaching activities will likely have only a modest impact on the department's budget.

### **5. Conclusions and recommendations**

The teaching contributions of the Department have grown over the past three years (three new courses). Although the University's new financial model remains uncertain, it is unlikely that the Department will realize appreciable financial gains by further increasing its teaching activities. However, there are other tangible benefits that will come from increased instruction of undergraduate students. Undergraduate teaching is a very effective avenue for recruitment of excellent students into the VS graduate program. At least two examples exist of students matriculating into the VS graduate degree program from a CAFE undergraduate degree program; these two students have subsequently assumed faculty positions at major universities. Additionally, promotion of Veterinary Science as a leading Department in CAFE and the University of Kentucky is best validated if the faculty excels in all areas of the University's tripartite mission (Teaching, Research, and Service). Thus, the Department and its faculty will gain goodwill and stature within the University by helping fulfill the educational responsibility of the institution.

## Appendix P

Based on the information collected and discussed, the VS Teaching Task Force provides the following specific recommendations:

- **The two prospective courses in Veterinary Immunology and The One Health Initiative were viewed by the Task Force members as useful additions to curricula of undergraduate degree programs. The faculty proposers are encouraged to develop and teach these courses.**
- **Based on the results of a survey of CAFE undergraduate students, the VS faculty should consider developing a 300-level course “Principles of Research”. Faculty volunteers will be needed to develop and pilot the first offering of the course.**
- **VS faculty members are encouraged to continue offering opportunities for undergraduate students to conduct research in their labs (i.e., VS 395, ABT 395, etc.). These research projects are a valuable contribution since they provide the “academic enrichment experience” that is mandated for all undergraduate students in CAFE.**
- **Research and service should continue as the mainstays of the Department.**

### Appendix A: Course descriptions for prospective VS courses

#### **Veterinary Immunology**

An overview of the immunology of domesticated species. While this course will provide a general overview of basic immunological concepts, the emphasis will be on applied immunology as it relates to vaccination, allergic reactions, immunomodulation, and protective and pathologic immune responses of domesticated species. Prereq: BCH 401G and BIO 208 or BIO 308 or consent of instructor.

*Prospective VS course from David Horohov (Professor, Regular Title series appointment)*

#### **Introduction to the One Health Initiative**

This course is intended to be an overview of the One Health Initiative, a worldwide strategy for advancing human health and welfare by monitoring, studying, and integrating human and veterinary medicine, and the agricultural and environmental sciences. The course format will include weekly discussions and seminars with representatives of these fields characterizing their role in One Health. Students will be evaluated based upon participation, and a single paper describing the potential contributions of their field of choice to this initiative.

*Prospective VS course from Lynne Cassone (Asst. Professor, Clinical Title series appointment)*

#### **Principles of Research in the Natural Sciences**

The course will introduce basic concepts of conducting scientific research. It will focus on developing a hypothesis, constructing an appropriate study design, and how to adequately interpret and report results. Students will be presented with examples of scientific studies reported by media and tasked with identifying limitations and finding potential flaws in the study design. The course will also touch upon ethics in animal research and go over criteria for ethical approval of research studies.

**Appendix P****Appendix B: Student Survey for Prospective VS Course**

---

**Default Question Block**

This survey will take about 3 minutes! Your responses will help the College of Agriculture, Food, and Environment (CAFE) identify what courses students like the best and want to take.

You are receiving this survey as an undergraduate student in CAFE. Your responses will be confidential.

You may stop this survey at any time. If you have questions about this survey, contact Dr. Daniel Howe at [daniel.howe@uky.edu](mailto:daniel.howe@uky.edu).

What is your major?

- ABT Agricultural Biotechnology
- AEC Agricultural Economics
- ASC Animal Science
- CTE Career and Technical Education
- CLD Community and Leadership Development
- EQM Equine Science and Management
- FS Food Science
- FOR Forestry
- PLS Horticulture, Plant, and Soil Sciences
- LA Landscape Architecture
- BAE Biosystems and Agricultural Engineering
- DHN Dietetics and Human Nutrition
- FAM Family Science
- HMT Hospitality Management and Tourism
- MAT Merchandising, Apparel, and Textiles
- NRES Natural Resources and Environmental Science
-

### Appendix P

IPA Entomology (Individualized)

IPA Sustainable Agriculture (Individualized)

Other

What is your class standing?

- Senior
- Junior
- Sophomore
- Freshman

All students have to take "Specialty Support" courses. These are 200+ level courses that are related to your major but are taught by other departments. Have you taken a specialty support course or other upper-division elective that was taught by a department outside of your major? (NOTE: These aren't usually UK Core courses).

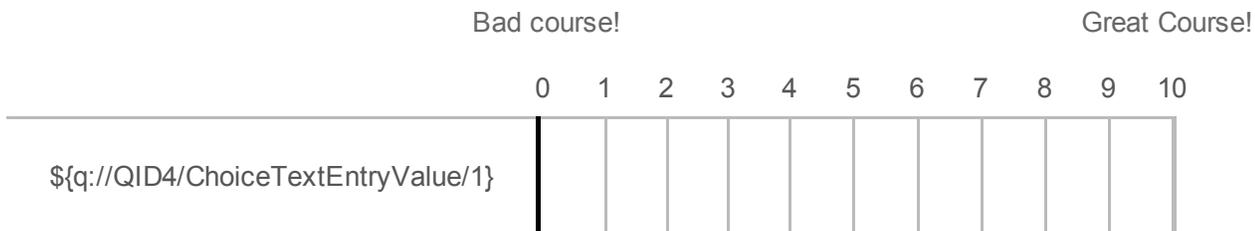
- Yes
- No

What was the prefix and number (e.g., ABC 234) or the title of one specialty support or elective course you took? If you took more than one, just pick one that you liked. Name the course as best as you can.

The course I took was:

I don't know.

How well did you like  $\{q://QID4/ChoiceTextEntryValue/1\}$ ? (Click and slide the bar to answer the question.)







### Appendix C: Analysis of student survey responses

**Two questions asked students to compare the proposed VS 300 course to other courses they had taken, and below is a summary and analysis of the responses to these questions.**

#### **Question 6:**

The students were asked to compare the proposed VS course to a specialty support or elective course that they recently took and liked.

161 respondents compared the proposed VS course to another course. Of these, 105 (64%) scored 4 or below, whereas 45 (28%) scored 6 or higher. A detailed breakdown of responses to this question is presented in figure 1.

#### **Characteristics of the top 1/3 with a favorable evaluation of the proposed course:**

28% of respondents scored 6 or above. Top-five majors represented were agricultural biotechnology (12), animal science (7), agricultural economics (5), natural resources and environment (6), and dietetics and human nutrition (5).

#### **Characteristics of the bottom 1/3 with an unfavorable evaluation of the proposed course:**

32% of respondents scored 2 or below. Top-five majors represented were equine science and management (11), agricultural economics (10), agricultural biotechnology (8), career and technical education (5), animal science (4), and community and leadership development (4).

#### **Question 9:**

Students were asked to compare the proposed VS course to all courses they had taken.

149 respondents compared the proposed VS course to all courses they had taken. Of these, 44 (30%) scored 4 or below, whereas 81 (54%) scored 6 and above. A detailed breakdown of responses to this question is presented in figure 1.

#### **Characteristics of the top 1/3 with a favorable evaluation of the proposed course:**

33.5% of the respondents scored 7 or above. Top-five majors represented were animal science (8), agricultural economics (6), agricultural biotechnology (5), career and technical education (5), and dietetics and human nutrition (5).

#### **Characteristics of the bottom 1/3 with an unfavorable evaluation of the proposed course:**

30% of the respondents scored 4 or below. Top-five majors represented here were equine science and management (10), agricultural economics (8), dietetics and human nutrition (6), animal science (5), and hospitality management and tourism (3).

## Appendix P

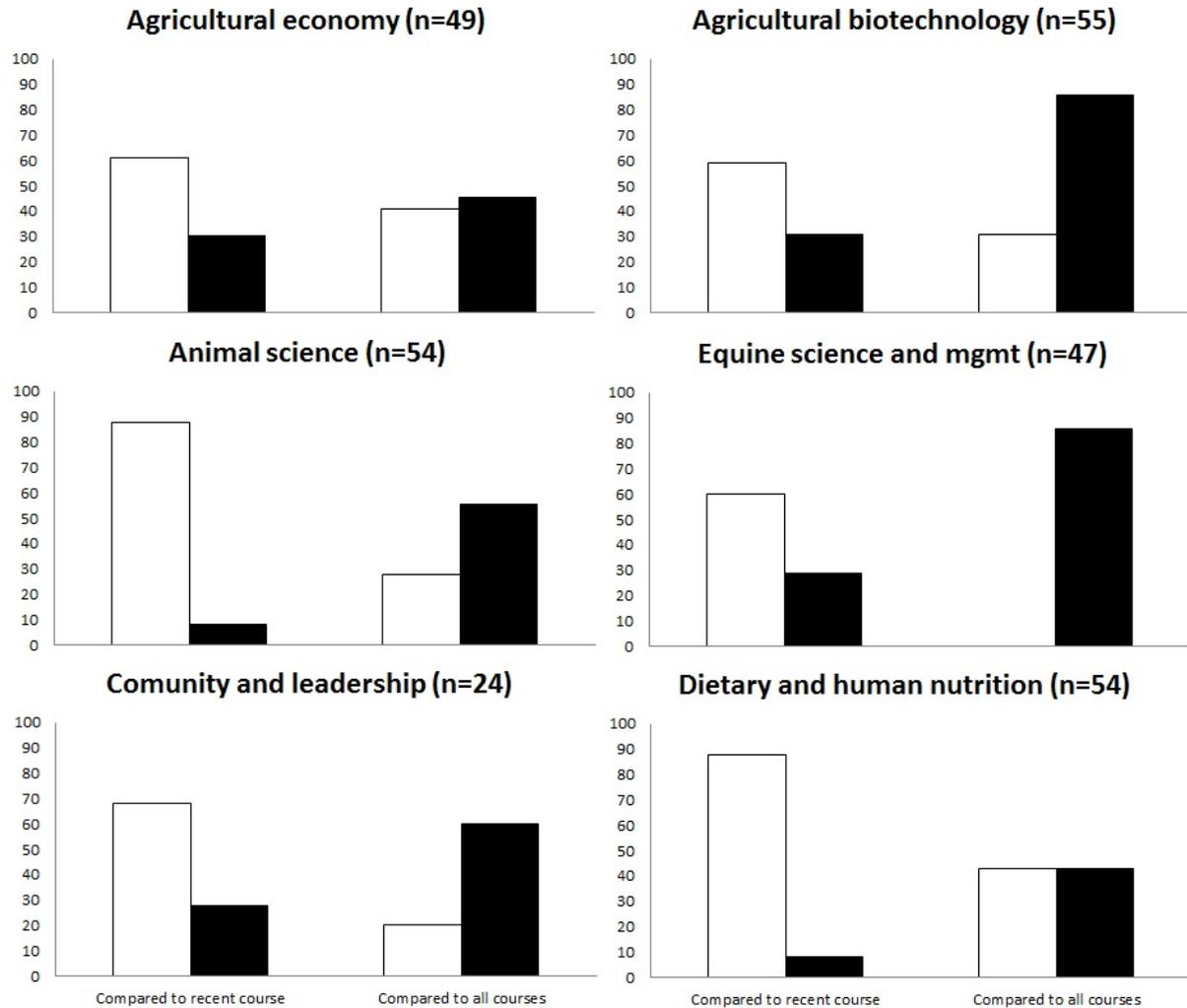


Figure 1. Results broken down by majors represented by at least 20 respondents in the survey. White columns represent the percent of respondents assigning an unfavorable rating (<5), whereas black columns represent the percent of respondents assigning a favorable rating (>5) of the proposed VS 300 course. The students were asked to either compare the proposed course to a specialty support or elective course that they recently took (left set of columns in each graph) and liked or compare the proposed course to all courses they had taken at UK (right set of columns in each graph).

## Appendix P

### Favorable ratings broken down by majors:

This data is summarized in table 1 below.

Table 1. A summary of respondents assigning a favorable rating (>5) in the comparisons made to either a course recently taken or all courses taken at UK.

Major	n	Rating >5 (%)
Agricultural biotechnology	55	18 (33%)
Agricultural economy	49	17 (35%)
Animal science	54	12 (22%)
Career and tech education	19	7 (37%)
Community and leadership	24	13 (54%)
Dietary and human nutrition	54	8 (15%)
Equine science and mngmt	47	16 (34%)

### Summary:

Altogether, 311 (162+149) out of 406 respondents (77%) assigned a rating of the proposed VS 300 course. Of these, 126 (45+81) gave a favorable rating to the proposed course in comparison to either a recently taken specialty support course or all courses they had taken. Thus, 31% of the respondents viewed the proposed course as better than the courses they were comparing to. It is worth noting that although a proportion of students majoring in equine science and management were not in favor of this course, the rating was similar to students representing other majors in the survey (figure 1 and table 1).



## **University of Kentucky Veterinary Diagnostic Laboratory Annual KAES Report, Calendar Year 2015**

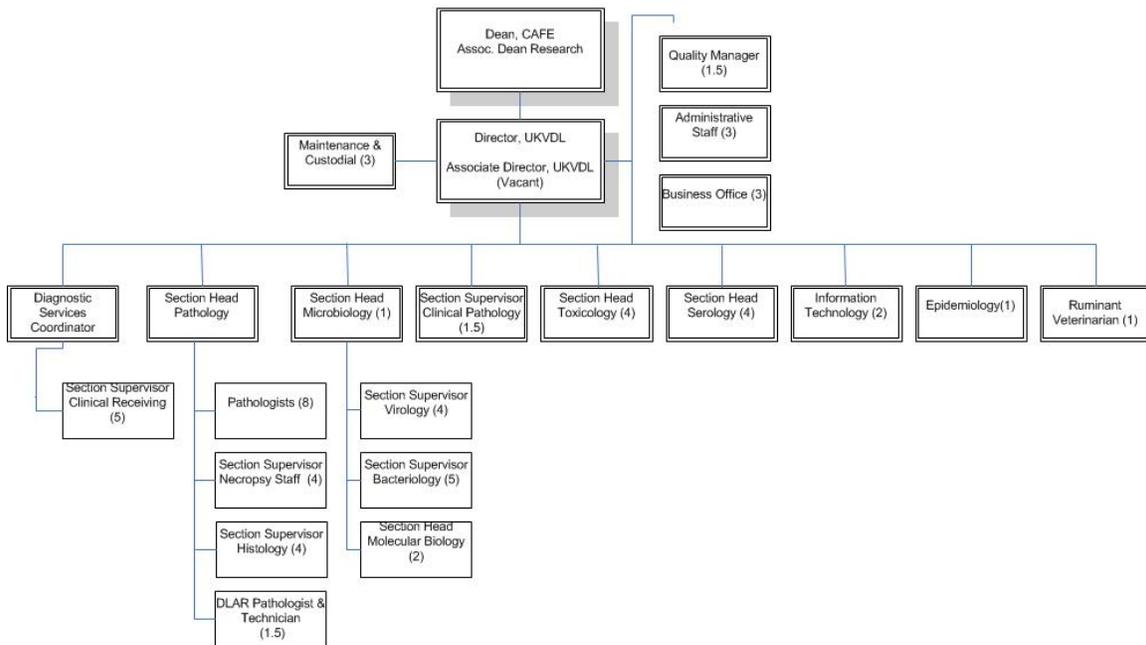
***Craig N. Carter, Director & Professor, Epidemiology***

### **Overview--**

The University of Kentucky Veterinary Diagnostic Laboratory (UKVDL) strives to be one of the premier veterinary diagnostic laboratories in the United States, providing timely and accurate services in support of the practicing veterinary profession, Kentucky animal agriculture, the signature equine industries, companion animals, and public health. As the state's flagship veterinary diagnostic laboratory, the University of Kentucky Veterinary Diagnostic Laboratory's primary goal is to develop, apply, and utilize state-of-the-art veterinary diagnostic testing methods and scientific knowledge to improve animal health and marketability, preserve the human-animal bond, and help protect and improve public health through the early and accurate identification of zoonotic diseases. The UKVDL laboratory is fully accredited by the American Association of Veterinary Laboratory Diagnosticians (AAVLD), and is a member of the USDA National Animal Health Laboratory Network (NAHLN) and the FDA Veterinary Laboratory Investigation Response Network (Vet-LIRN).

In addition to its clinical diagnostic role, the UKVDL provides surveillance and regulatory testing for emerging and endemic diseases such as equine infectious anemia (EIA), equine viral arteritis, equine piroplasmiasis, West Nile virus, chronic wasting disease of deer, contagious equine metritis, bovine spongiform encephalitis (Mad Cow Disease), Johne's disease, bovine leukosis, avian influenza, rabies and many other diseases of agricultural, public health and companion animal importance. Furthermore, the laboratory continually monitors for the emergence of foreign animal diseases (FADs) such as foot and mouth disease, and classical swine fever. As part of the NAHLN, the UKVDL conducts ongoing Proficiency Testing (PT) to be prepared for any outbreak of a FAD in Kentucky and to assist other states as needed. Finally, UKVDL hosts a rich continuing education and outreach program for our clients and the public every year. The laboratory is composed of fifteen distinct sections as depicted in this organizational chart:

UK Veterinary Diagnostic Laboratory  
Organizational Structure (December 2015)



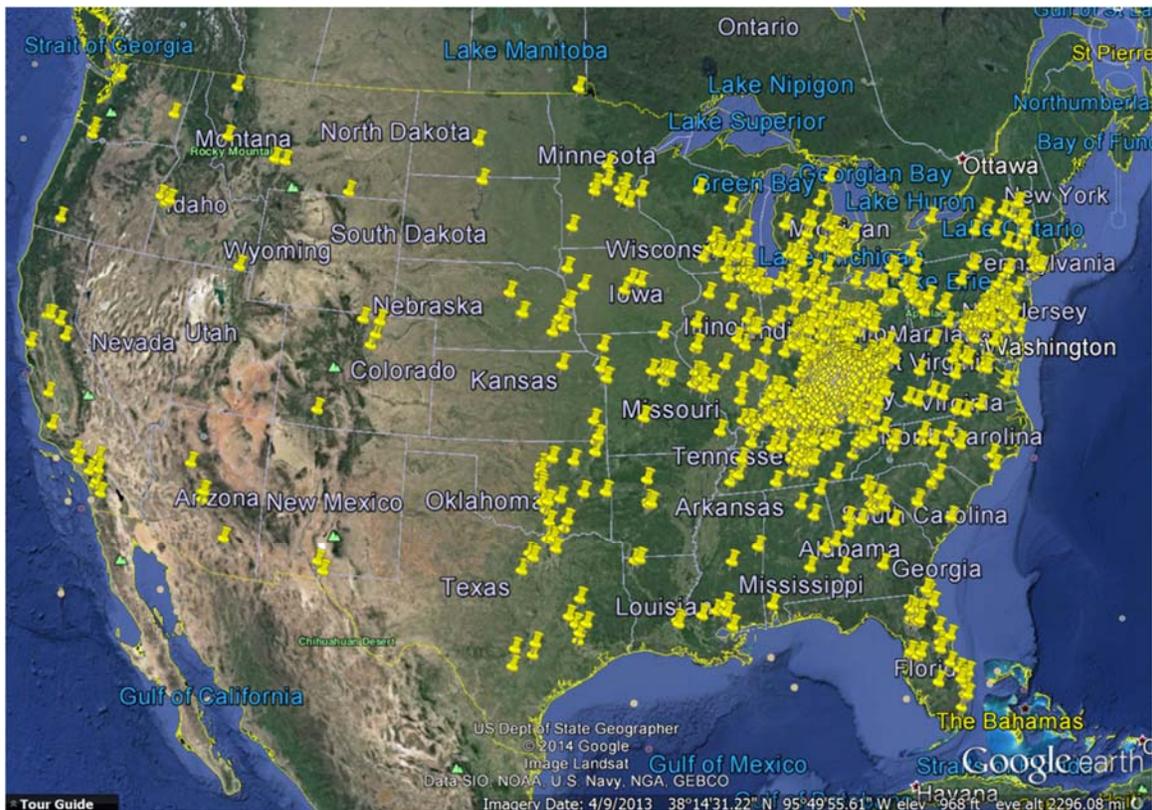
Farmers and animal owners use the UKVDL's services primarily through their practicing veterinarians. These professionals have expertise in selecting, preparing, shipping, and submitting the proper specimens for testing when needed to assist in making a clinical diagnosis. Laboratory findings are reported back to the submitting veterinarian who then consults with his or her clients to implement a treatment protocol or a prevention/management solution to disease problems on the farm. A state-of-the-art Laboratory Information Management System (LIMS) is utilized at the UKVDL which enables UKVDL to provide the most professional, accurate and timely accessioning, order entry, results capture and clinical case reporting for our clients.

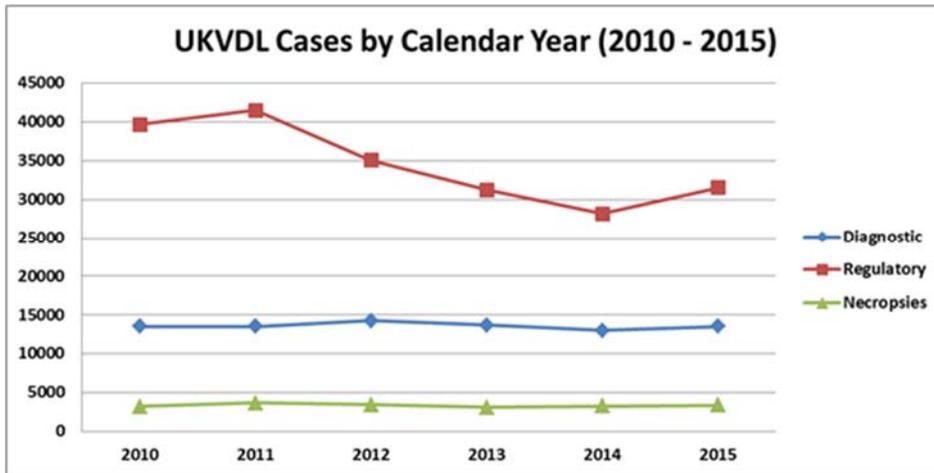
UKVDL faculty, scientists, and technical staff are specialists in several diagnostic medical disciplines directly related to animal health to include bacteriology, clinical pathology, epidemiology, extension, molecular biology, pathology, serology, toxicology, virology and informatics. Funding to add metagenomics testing is being pursued to improve diagnostics in the future. The laboratory is also exploring the potential of supporting the Kentucky aquaculture industries, food safety, stem cell therapy and other emerging animal health technologies. As part of the cooperative agreement with the Lincoln Memorial University College of Veterinary Medicine, the Center for Animal Health in Appalachia (CAHA) was launched in 2015. Director, Dr. Craig Carter, is serving on the advisory board.

Disease diagnostic efforts are coordinated and handled by specialists in the appropriate disciplines. Complex clinical cases involving multiple sections are monitored by trained case coordinators. During surge testing periods and disease outbreaks, cross-trained technicians are redistributed across sections to assure that the surge in workload can be managed in a timely and accurate fashion.

***The UKVDL received 13,493 clinical diagnostic cases (+4%) and 31,534 regulatory cases (+12%) in calendar year 2015. Regulatory cases are down about 10% from 2013. The increasing trend in regulatory cases is due primarily to gaining three large poultry clients. The clinical diagnostic and necropsy caseloads have increased by ~4% each in cy2015. The diagnostic and necropsy accession loads fluctuate based on seasonal and natural epidemiologic conditions and events. Total tests run in each laboratory section are listed in the individual section reports.***

### **Locations of clients submitting accessions to UKVDL, 2010-2015**





	Diagnostic	%Change	Regulatory	%Change	Necropsies	%Change
2010	13487		39705		3172	
2011	13491	0.03%	41538	4.62%	3645	14.91%
2012	14227	5.46%	35093	-15.52%	3398	-6.78%
2013	13655	-4.02%	31251	-10.95%	3100	-8.77%
2014	12976	-4.97%	28142	-9.95%	3227	4.10%
2015	13493	3.98%	31534	12.05%	3343	3.59%

## Vision--

The Veterinary Diagnostic Laboratory strives to be one of the premier veterinary diagnostic laboratories in the United States, providing the very best and timely services in support of the practicing veterinary profession, Kentucky animal agriculture, the signature equine industries, companion animals and public health.

The Veterinary Diagnostic Laboratory (UKVDL) is a full-service laboratory and an administrative unit in the College of Agriculture, Food and the Environment (CAFE) at the University of Kentucky. The UKVDL was established in 1970 by the State Legislature of Kentucky and charged with the responsibility of provision of diagnostic assistance to veterinary practitioners, owners of animals in Kentucky, wildlife conservationists, scientists utilizing animals in their research throughout the university, and state-federal regulatory officials. The laboratory assists with safeguarding the health of animal agriculture in Kentucky via diagnostic testing and disease identification.

The UKVDL confirms infectious and parasitic diseases, chemical and other toxic contaminants that may harm animals or humans, nutritional diseases, regulatory diseases, provides the means to meet export sales and movement requirements, and provides an early warning system for impending epidemics. Emphasis is placed on quality assurance and control for all diagnostic and regulatory testing including new testing methods. Each employee of the UKVDL

focuses on performance of all tasks according to protocol with total commitment to quality.

### **Mission—**

The UK Veterinary Diagnostic Laboratory's primary goal is to develop, apply and utilize state-of-the-art technology and scientific knowledge to improve animal health and marketability, preserve the human-animal bond, and to help protect the public health.

### **Quality Philosophy and Objectives--**

Every employee of the UKVDL is committed to quality, integrity and excellence in all work completed. In order to meet our mission and achieve our vision, we must:

- Ensure client satisfaction by consistently meeting or exceeding customer requirements.
- Demonstrate competence in accordance with AAVLD Essential Requirements through the performance of high quality diagnostic testing in accordance with ISO 17025 standards and guidelines.
- Continuously improve diagnostic information and dissemination processes.
- Integrate contemporary laboratory practices throughout the laboratories.
- Ensure employee health and safety.
- Provide employees with training and tools to facilitate our quality effort.

The Laboratory's success is measured by customer satisfaction, meeting professional standards, meeting the essential American Association of Veterinary Laboratory Diagnosticians (AAVLD) Accreditation requirements and our response to service demands. These quality objectives are reviewed for continuing compliance on a recurring basis.

### **Outreach--**

The UKVDL continues to build and enhance outreach programs around Kentucky. The Kentucky VetLabNet listserv continues to distribute animal health bulletins and has grown to a list of over 2000 UKVDL clients, scientists, farmers and stakeholders. The UKVDL Director and other faculty continue to contribute articles quarterly to the KVMA journal and the Kentucky Cattleman Association *Cow Country News*. The UKVDL Director, faculty and staff continue to deliver lectures at scientific and lay meetings and participate in the monthly Equine Diagnostic-Research Seminar Series at the UKVDL since 2006. These seminars are filmed by *The Horse magazine*, edited and made available as Webinars. These seminars have been viewed in over sixty countries:

## University of Kentucky Diagnostic Research Lecture Series

The University of Kentucky Lecture Series offers up-to-date horse health research and information from leading academic experts. Most presentations are 45 minutes to an hour long.



Seminars

Sport Horse  
Reproduction:  
Challenges and  
Solutions



Seminars

Emergent and Re-  
Emergent Equine  
Disease



Seminars

Equine Enteric  
Coronavirus



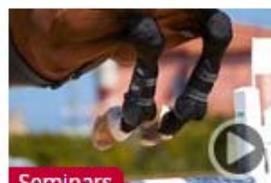
Seminars

Equine Gastric Ulcers



Seminars

Objective  
Determination of  
Lameness in the Horse



Seminars

Advances in Joint  
Disease Treatment



Seminars

Pain Management in  
Horses



Seminars

Performance Horse  
Nutrition: What Role  
Do Supplements Play?



Seminars

The Ergot Alkaloid  
Enigma



Seminars

Developing Practical  
Pasture and Forage  
Diagnostic Tools



Seminars

Parasite and Growth  
Rates in Foals, and  
More



Seminars

Surgical Intervention  
to Improve Mare  
Fertility

### **Other outreach events (select)--**

- Food Animal Practitioner Conference, February 26, 2015, ~50 veterinarians and other guests in attendance.
- Food Animal Practitioner Conference, August 13, 2015, ~50 veterinarians and other guests in attendance.
- The Director and six UKVDL employees attended the AAVLD meeting in Providence, RI, for continuing education and delivering scientific presentations.
- Dr. Craig Carter, Executive Director of the World Association of Veterinary Laboratory Diagnosticians, oversaw planning for the biennial meeting in Saskatoon, Saskatchewan, Canada,
- Public Health Contributions of Veterinary Diagnostic Laboratories, 1<sup>st</sup> annual meeting of the Center for Animal Health in Appalachia, Lincoln Memorial University College of Veterinary Medicine, Ewing, VA, Oct 2015.
- Continuous Animal Activity Monitoring System for Early Detection of Health Problems in Cattle, 32<sup>nd</sup> World Veterinary Congress, Istanbul, Turkey, Sep 2015.
- High Path Avian Influenza Diagnostic Laboratory Response, presented to the HPAI Kentucky Poultry Federation Planning Forum, Elizabethtown Tourism and Convention Bureau, Elizabethtown, KY, Sep 9, 2015.
- Overview of the DVM Training Programs by the University of Kentucky in support of the Lincoln Memorial University (LMU) College of Veterinary Medicine. Presented to the LMU Dean, faculty and staff, Jul 28, 2015
- See the Ruminant Extension Veterinarian and Epidemiologist's reports below for additional outreach activities.

### **Disease Diagnoses & Outbreak Responses (select few cases to highlight the UKVDL clinical diagnostic mission)--**

- UKVDL placed on standby by the National Animal Health Laboratory Network to assist in control of the 2015 High Path Avian Influenza outbreak, H5N2.
- Severe necrotizing bronchopneumonia and pleuritis, *M. haemolytica*, *Mycoplasma* sp., and *P. multocida*, BRSV
- EHV-1, leptospiral, and other etiologies in equine abortion cases.
- Confirmation of selenium/copper deficiencies in cattle.
- Confirmed diagnoses of botulism in cattle.
- Centrilobular hepatocyte necrosis in a bovine.
- Bovine Viral Diarrhea and deaths in multiple outbreaks.
- Confirmed diagnosis of blackleg (*Clostridium chauvoei*) in cattle.
- Confirmed canine herpesvirus infection in a litter of Labrador puppies.
- Vegetative endocarditis in cattle.
- Diffuse interstitial pneumonia in cattle.
- Coccidiosis and epicarditis in chickens.
- Mild segmental enterocolitis in cattle.

- Multifocal nonsuppurative interstitial nephritis in cattle.
- Myocardial degeneration and necrosis in cattle.
- Anaplasmosis in cattle.
- Histomoniasis, mycotic myocarditis, pneumonia and sacculitis in chickens.
- Ulcerative stomatitis in Alpacas.
- Necrotizing enteritis, coronavirus and rotavirus infection in cattle.
- Intestinal cryptosporidiosis in cattle.
- Abomasal obstruction in cattle.
- *Mycoplasma bovis* pneumonia and pulmonary abscesses in cattle.
- Parasitic meningoencephalomyelitis, verminous pneumonia in goats.
- Leptospiral infection in cattle.
- Lymphoproliferative disease in chickens.
- Necrotizing enterocolitis in sheep.
- Chronic fibrosing and eosinophilic portal hepatitis in pigs.
- Capillariasis (severe ingluvititis and mucosal nematodes) in quail.
- Aspiration pneumonia in an alpaca.
- Poison hemlock toxicosis in cattle.
- Botulism in horses.
- Carbofuran poisoning in a dog.
- Lead poisoning in calves.
- Taxus poisoning in cattle.
- Anticoagulant rodenticide poisoning in a dog.
- Sodium intoxication & water deprivation in cattle.
- Ivermectin toxicosis in dogs.
- Nitrate poisoning in cattle.
- Ethylene glycol toxicosis in a dog.

#### **Notable achievements or advancements—**

- Maintained American Association of Veterinary Laboratory Diagnosticians (AAVLD) national accreditation, accredited by the USDA National Animal Health Laboratory Network (NAHLN), FDA Veterinary Laboratory Investigation & Response Network (VetLIRN) certified member, National Poultry Improvement Program (NPIP) laboratory certification through the oversight of proficiency testing and quality control programs, faculty & staff continuing medical education initiatives, and participation in outbreak response and emergency exercises.
- Provided leadership and guidance for faculty and staff to enhance the UKVDL outreach programs through one day symposia and seminars such as food animal (Dr. Michelle Arnold), equine (all faculty), poultry (Meg Steinman & Dr. Lynne Cassone), toxicology (Dr. Cindy Gaskill). The Equine Diagnostic Research Seminars reach a global audience through our partnership with *The Horse* magazine.
- Supported and guided Mr. Ryan Redimarker and helped to provide a clear vision and oversight for a UKVDL strategic and marketing plan to improve

- client services, enhance testing and collection of fees and to purchase high value instrumentation to modernize our laboratory sections.
- Served as key liaison with Lincoln Memorial University leaders to enter a cooperative agreement to provide training for veterinary medical students in exchange for significant funds that can be used to improve UKVDL services and research capability in support of Kentucky animal agriculture.
  - Continue to oversee the operation of a real-time animal disease cluster detection system for Kentucky.
  - Continue to provide support for faculty and staff to host professional exhibits for display at local, state and national meetings
  - Supported and guided Dr. Jackie Smith in fostering the growth of KY-VetLabNet listserv from 600 to 1949 subscribed clients to maintain a high level of situational awareness for veterinarians and farmers through alerts and bulletins.
  - Continue to oversee epidemiological field investigations/research studies for clients as requested/needed.
  - Regular articles in the Kentucky Veterinary Medical Association (since 2005) and the Kentucky Cattleman Association (since 2009) magazines.
  - Implemented a visiting foreign scientist program at the UKVDL— One scientist from Turkey recruited in 2015 to arrive in 2016.
  - Supported and guided Dr. Laura Kennedy as PI in the furtherance of the Kentucky Horse Racing Necropsy Program funded by the Kentucky Horse Racing Commission and the Equine Drug Research Council.
  - Supported and guided Dr. Erdal Erol in the development of several problem-based diagnostic testing panels that assist veterinarians in obtaining the earliest definitive diagnosis on clinical cases.
  - Supported and guided Dr. Erdal Erol in the implementation of Matrix Assisted Laser Desorption-Ionization Time Of Flight (MALDI-TOF) mass spectrometric identification of pathogenic bacteria and fungi. This new technology has accelerated the time from receipt of samples to pathogen identification by up to 24 hours.
  - Supported and guided Dr. Erdal Erol in his role as a member of the Joint National VS-AAVLD Antimicrobial Resistance Working Group.
  - Supported and guided Dr. Michelle Arnold in her role as a Co-PI on the Southeast Quality Milk Initiative to improve milk quality in the southeast.
  - Supported and guided Dr. Jennifer Janes in her role as PI on an internally funded project to identify genetic determinants in Wobbler Syndrome in horses.
  - Supported and guided Drs. Cindy Gaskill and Lori Smith in the modernization of instrumentation and staffing in the toxicology laboratory to include the purchase of new ICP-MS and HPLC instrumentation to improve the development of toxicological methods and enhance throughput of cobalt, mycotoxin and ergovaline testing.
  - Supported and guided Dr. Alan Loynachan as a Co-PI on the development of a genetically defined live attenuated equine herpesvirus-1 vaccine for the horse.

- Supported and guided Dr. Jackie Smith in the production and dissemination of the weekly Reportable Disease alerts distributed to the Office of the KY State Veterinarian's office.
- Supported and guided James Mason and Derrick Miles in the total overhaul and upgrade of the UKVDL file servers and networking software to greatly improve the performance and efficiency of our centralized Laboratory Information System internally and for UKVDL clients.

### **Initiatives and programs—**

- Equine leptospirosis awareness and vaccine initiative: Served on the Zoetis Equine Leptospirosis Advisory Committee. PI on the national sero-epidemiological survey that helped convince Zoetis to pursue a research and development project to create a vaccine for the horse. In October, 2015, the LeptoEQ Innovator equine leptospirosis vaccine was announced by Zoetis as the first ever licensed vaccine for the horse to protect against abortion and recurrent uveitis.
- Metagenomics diagnostic laboratory section for UKVDL— Met with the University of Tennessee, University of Illinois, Columbia University, Texas A&M University and Neogen Corporation to discuss the formation of a consortium of university and industry partners to explore metagenomics as an initiative for furthering veterinary diagnostic medicine. Helped convince the Gluck Equine Research Center to hire a bioinformatics faculty member to assist in the formation of a metagenomics research effort within the Department of Veterinary Science.
- Pursuit of laboratory testing data integration with veterinary practice management software— Hosted several meetings and demonstrations with AAVLD laboratory directors and representatives of VetData corporation toward LIMS data integration with practice management software at clients hospitals/clinics.
- Established an agreement with VetAura, a commercial veterinary laboratory in Lexington, to refer selected case material to UKVDL for testing.

## Section Reports--

### Bacteriology/Mycology

*Dr. Erdal Erol, Section Head; Mr. Steve Locke, Section Supervisor*

The Bacteriology/Mycology Section of the UKVDL receives specimens to culture for the isolation and identification of potentially pathogenic bacteria and fungi from livestock, companion and other animals. The section performs susceptibility testing on isolates for the treatment of specific pathogens to safeguard the health of animals in Kentucky and beyond. This section performs cultures for *Taylorella equigenitalis* and *T. asinigenitalis* for the federal/state CEM regulatory program in equines. Other specialized cultures and testing techniques include: anaerobic culture, mycoplasma culture, mastitis culture and fluorescent antibody testing for leptospire and clostridia (blackleg). This section also performs cultures for the National Poultry Improvement Plan (NPIP) In addition, Bacteriology/Mycology section participates in annual proficiency testing for AAVLD, NPIP salmonella, FDA Vet-LIRN salmonella and Listeria. In April 2015, the bacteriology section put a MALDI-TOF biotyper into service a cutting edge instrument used for the quick identification of microorganisms. This equipment has already significantly decreased our turn-around time on the identification of many bacteria. We are confident that this new technology will increase client satisfaction with our microbiology service offerings

#### Highlights 2015:

- 8862 Aerobic Cultures were performed on samples submitted to the UKVDL; significant bacterial pathogens were found in these samples, such as: Nocardioform bacteria, coliforms, Beta-hemolytic streptococci, *Salmonella*, *Pasteurella*, *Mannheimia*, *Arcanobacterium*, *Mycoplasma* and *Staphylococci*.
- 6869 CEM cultures were performed for the CEM regulatory screening program.
- 3022 antimicrobial susceptibilities were performed to determine the antimicrobials that could be used for their treatment in exposed animals (MIC broth microdilution method).
- 1385 specimens were tested for leptospire by fluorescent antibody testing.
- 687 specimens were cultured for NPIP Salmonella testing. Our participation in NPIP helps poultry industry improve infectious disease control and eradication programs.
- 373 anaerobic cultures were performed. *Clostridium perfringens* & *C. difficile* screening was the predominant focus.
- 204 ruminant mastitis cultures were performed. Often collaborate with extension veterinarian, Dr. M. Arnold for communication of treatment options to client.

- 155 specimens were tested for fungal pathogens.
- 132 *Clostridium chauvoei* (blackleg) and *Clostridium septicum* fluorescent antibody tests were performed.

## **Virology**

*Dr. Erdal Erol, Section Head; Ms. Sharon K. Ray, Section Supervisor*

The Virology section aids veterinarians and animal owners to diagnose viral infections, treat and protect their animals. Our section also works closely with UKVDL Pathology section to test for evidence of viral infections in necropsy specimens. In addition, Virology performs a high volume of regulatory tests for national sales, and for both the national and international movement of animals. The Virology section provides information to the field veterinarians and animal owners regarding sample selection, preservation, shipping procedures and interpretation of results.

### **Highlights:**

During 2015, Virology conducted numerous virus neutralizations, virus isolations, ELISAs and fluorescent antibody tests (FA) in support of animal agriculture not only in Kentucky but across the country. The table below provides an overview of the variety and number of tests done this year.

Bovine Corona Virus	FA	47
Bovine Respiratory Syncytial Virus	FA	97
Bovine Respiratory Syncytial Virus	VN	31
Bovine Rotavirus	FA	32
Bovine Viral Diarrhea	ELISA	5712
Bovine Viral Diarrhea	FA	750
Bovine Viral Diarrhea 1	VN	60
Bovine Viral Diarrhea 2	VN	60
Canine Adenovirus	FA	21
Canine Corona Virus	FA	20
Canine Distemper Virus	FA	75
Canine Herpesvirus	FA	43
Canine Parainfluenza 2	FA	27
Canine Parvovirus	FA	93
Equine Herpesvirus 1	FA	779
Equine Herpesvirus 1	VN	235
Equine Influenza A1	HI	142
Equine Influenza A2	HI	142
Equine Viral Arteritis	VN	12999

Feline Herpesvirus	FA	31
Feline Infectious Peritonitis	FA	49
Feline Panleukopenia	FA	49
Infectious Bovine Rhinotracheitis	FA	266
Infectious Bovine Rhinotracheitis	VN	82
Parainfluenza-3 Virus	FA	71
Potomac Horse Fever	IFA	392
Vesicular Stomatitis IN	VN	1722
Vesicular Stomatitis NJ	VN	1722
Virus Isolation	VI	544
West Nile IgM Capture	ELISA	113

## **Molecular Diagnostics**

*Dr. Erdal Erol, Section Head*

The primary mission of the Molecular Diagnostic Section at the UKVDL is to provide molecular testing on the clinical specimens submitted by animal owners, veterinarians and pathologists. A number of molecular assays, in the formats of gel-based PCR, real-time PCR, multiplex gel-based PCR or multiplex real-time PCR, are being utilized because of their speed, specificity and sensitivity. This section also analyzes specimens received from the Virology and Bacteriology sections to obtain a confirmatory diagnosis. In addition, Dr. Erol provides consultations to Kentucky veterinarians and animal owners on the areas of appropriate sample collection and submission, therapeutic advice, interpretation of test results, determination of appropriate tests and differential diagnosis. The molecular biology section personnel consist of Dr. Erdal Erol, two full-time technicians and one half-time technician.

### **Highlights:**

- The molecular diagnostics section successfully demonstrated its ability to provide accurate, rapid, high-volume testing. This section also became an accredited member of the USDA's National Animal Laboratory Health Network and passed several federal proficiency tests such as Foot and Mouth disease, Classical Swine Fever, Avian influenza and Exotic New Castle Disease. The membership enables this unit to participate in national veterinary disease surveillance and provide rapid coordinated diagnostic response in the event of future outbreaks within the veterinary industry.
- Dr. Erol performed independent and collaborative research with other scientists. The results were presented at World Veterinary Medical Association Congress.
- The number of major molecular tests performed by Molecular section in 2015 is provided in the below table.

Avian Influenza	250
Calf Diarrhea Panel (corona virus, rotavirus, E. coli, Salmonella and Cryptosporidium)	212
Bovine Respiratory disease-Viral panel (viral diarrhea virus, corona virus, Respiratory syncytial virus and herpes virus)	143
Bovine Respiratory disease-Bacterial panel (Mannheimia haemolytica, Pasteurella multocida, Histophilus somni and Mycoplasma bovis)	70
Clostridium perfringens Toxin Typing	80
Nocardioform actinomycetes (Amycolatopsis spp and Crossiella equi)	62
Equine Arteritis Virus	42
Equine Herpesvirus 1	291
Equine Herpesvirus 2	99
Equine Herpesvirus 3	17
Equine Herpesvirus 4	121
Equine Herpesvirus 5	64
Equine Influenza	221
Equine Protozoal Myeloencephalitis	14
Lawsonia intracellularis	158
Leptospira	62
Mycobacterium paratuberculosis	87
Mycoplasma gallisepticum	99
Potomac Horse Fever	449
Salmonella	872
Streptococcus equi	669
Tritrichomonas foetus	145

## **Pathology**

*Dr. David Bolin, Section Head*

The UKVDL pathology section is composed of seven faculty pathologists, a staff laboratory animal pathologist, one post-doctoral scholar (pathology residents), four histology technicians, four full-time necropsy technicians, and three part-time necropsy student workers. The pathologists perform complete necropsy examinations on animals, histopathology on necropsy cases, surgical biopsies, and cytological examinations, all submitted by veterinarians, producers, and pet owners. The pathologists are fully supported by the other laboratory sections in the necropsy investigations.

As part of the comprehensive necropsy examination, additional laboratory tests are ordered by the pathologist to aid in confirming a diagnosis. The abnormal findings on necropsy are correlated with other laboratory tests, including microscopic examination of the tissues, and a comprehensive report is prepared for every pathology case. Utilizing the abundant cases submitted to the VDL and the faculty expertise, the post-doctoral scholar (DVM) is trained in veterinary anatomic pathology in a three-year program. However, with the upcoming cooperative agreement to train Lincoln Memorial University DVM students, the post-doctoral residency program is being discontinued. Visiting senior veterinary students have extern rotations, and surgical residents visit to fulfill the pathology requirement for the American College of Veterinary Surgeons.

### **Highlights:**

#### **Necropsy Examinations--**

Postmortem examinations (necropsies) are conducted on animals submitted to the VDL to identify any pathologic changes in the tissues that would indicate disease, injury, toxicosis, or any other abnormal process resulting in illness.

<b>Species</b>	<b># Done</b>
Avian	115
Bovine	1,111
Caprine	80
Equine	1,480
Ovine	68
Porcine	30
Small animal	429
Miscellaneous	40
Laboratory animal	60
<b>TOTAL</b>	<b>3,413</b>

## Necropsy Examinations (Cont.)—

Species	Necropsy Type	# of Animals
African Grey Parrot	Gross Necropsy - Small Animal/Exotic Animal	1
Alpaca	Gross Necropsy - Small Animal/Exotic Animal	13
Antilopine Kangaroo	Gross Necropsy - Small Animal/Exotic Animal	2
Bovine	Gross Necropsy - Food Animal Adult	319
Bovine	Gross Necropsy - Food Animal Fetus/Neonate	710
Canine	Gross Necropsy - Small Animal/Exotic Animal	242
Caprine	Gross Necropsy - Food Animal Adult	38
Caprine	Gross Necropsy - Food Animal Fetus/Neonate	45
Chicken	Gross Necropsy - Poultry (up to 3 birds)	128
Chinchilla	Gross Necropsy - Small Animal/Exotic Animal	3
Deer	Gross Necropsy - Small Animal/Exotic Animal	6
Donkey	Gross Necropsy - Equine Adult	4
Donkey	Gross Necropsy - Equine Fetus/Foal	2
Elk	Gross Necropsy - Small Animal/Exotic Animal	3
Emu	Gross Necropsy - Small Animal/Exotic Animal	1
Equine	Gross Necropsy - Equine Adult	538
Equine	Gross Necropsy - Equine Fetus/Foal	750
Equine	Gross Necropsy - Equine Placenta	240
Equine	Gross Necropsy - Food Animal Adult	1
Equine	Gross Necropsy - Food Animal Fetus/Neonate	3
Feline	Gross Necropsy - Small Animal/Exotic Animal	87
Ferret	Gross Necropsy - Small Animal/Exotic Animal	3
Guinea Pig	Gross Necropsy - Small Animal/Exotic Animal	1
Hedgehog	Gross Necropsy - Small Animal/Exotic Animal	1
Lion	Gross Necropsy - Small Animal/Exotic Animal	1
Llama	Gross Necropsy - Small Animal/Exotic Animal	6
Mouse	Gross Necropsy - Small Animal/Exotic Animal	43
Ovine	Gross Necropsy - Food Animal Adult	29
Ovine	Gross Necropsy - Food Animal Fetus/Neonate	37
Pigeon	Gross Necropsy - Small Animal/Exotic Animal	2
Porcine	Gross Necropsy - Food Animal Fetus/Neonate	33
Quail	Gross Necropsy - Poultry (up to 3 birds)	24
Quail	Gross Necropsy - Small Animal/Exotic Animal	2
Rabbit	Gross Necropsy - Food Animal Fetus/Neonate	1
Rabbit	Gross Necropsy - Small Animal/Exotic Animal	4
Raccoon	Gross Necropsy - Small Animal/Exotic Animal	1
Rat	Gross Necropsy - Small Animal/Exotic Animal	18
Ringnecked Parakeet	Gross Necropsy - Small Animal/Exotic Animal	1

## Biopsies--

Tissue lesions are often removed surgically or portions biopsied from live animals and sent to the laboratory for determination of the type of process, recommended treatment, and potential prognosis. These tissue specimens are processed and microscopic slides prepared for the pathologists to examine by microscopy. Tissue specimens representing 3,149 cases were processed and examined. A report with diagnosis was produced for each case. Typical turn-around on these cases is 24 to 48 hours.

## **Cytologies--**

Preparations of cells harvested and/or aspirated from abnormal lesions or abnormal fluids are placed on microscopic slides and stained for examination under the microscope by the pathologists. Cytopathological examinations were performed, diagnoses made, and reports generated for 483 cases.

## **Pathology, research animal (DLAR)--**

*Kathryn (Casey) Coyle*

The research animal pathology service sees mostly small rodents and a variety of other species (see below) non-human primates, and pigs. There were 101 submissions from research animals during 2014 including clinical pathology samples, biopsies and necropsies. In addition to research animal work, Dr. Coyle is handling the diagnostic pathology case load for the agricultural research animals housed at the various UK farms.

<b>DLAR CASES</b>	<b>2015</b>
Cynomolgus monkey	1
Equine	1
Hamster	2
Mouse	46
Pigeon	1
Porcine	1
Quail	7
Rat	24
Salamander	2
Water	16
<b>Grand Total</b>	<b>101</b>

## **Clinical Pathology Section**

*Bonnie L. Decker*

The primary mission of the Clinical Pathology is to provide chemistry, hematology, endocrine, urinalysis, fluid analysis, fecal parasite exams, and other testing to animal owners, veterinarians and the agriculture community. The section also provides support and testing to UKVDL's pathologists and testing related to necropsy as well as University of Kentucky equine and animal science researchers who can submit specimens to Clinical Pathology for monitoring various chemistry, hematology and endocrine levels in their research animals. Clinical Pathology hosts 2-3 Morehead State University veterinary technician students every year to help them complete their practicum.

The Clinical Pathology section completes its testing same day as receipt with a few exceptions to get information to the submitting veterinarian as soon as possible to aid in the treatment of their client's animals. The department personnel consist of 1.50 FTE. A section chief with a BS MT (ASCP) and 40 years' experience in veterinary and human diagnostic laboratory testing works full time. A part time veterinary technician with 21 years' experience occupies the half-time position in the section. Other qualified UKVDL personnel are available for backup and consultation as needed.

Clinical pathology is dedicated to meeting the current and future needs of the agriculture community, companion animal community and veterinarians.

### Testing performed in 2015--

Test	# Run
Bovine Panel	358
Canine Panel	194
Caprine Panel	20
Chemistry Panel	61
Equine Panel	244
Feline Panel	54
Hepatic Panel	0
Porcine Panel	0
Renal Panel	4
Electrolyte Panel	6
Eye Fluid Panel	156
Fluid Exam	88
Urinalysis	88
CBC	496
CBC no diff	4
Differential Only	5
ACTH	18
K-9 TLI	6
T4	286
K-9 TSH	17
Cortisol	150
Cryptosporidia	63
Fecal Exam	918
Fibrinogen	115
Giardia Antigen	16
Parasite ID	0
Phenobarbital	202

Progesterone	352
Reticulocyte Count	1
Stone Analysis	234
T3	70
Total	4226

## **Quality Control/Quality Assurance**

*Mary Harbour*

The goal of the Quality Management System (QMS) is to ensure quality of all test results and continuous improvement of all services to clients. Our design of the QMS and Quality Assurance program is based on American Association of Veterinary Diagnostic Laboratory (AAVLD) requirements, International Standards Organization (ISO) guidelines and Organization of International Epizootics (OIE). In addition to fulfilling meeting these requirements, the UKVDL QMS helps fulfill the university's mission of improving service delivery while achieving excellent human relations (internally and externally), sound leadership, and effective communications.

The Quality Assurance Section now consists of two employees, a Quality Assurance Manager and full time Quality Assistant. The requirements for maintaining the QMS are continuously being updated. The Assistant Position was created to meet the increasing more stringent AAVLD Requirements, OIE, NAHLN and federal mandates.

Since 2010 UKVDL has been a part of the National Animal Health Laboratory Network (NAHLN). QA maintains UKVDL information on the NAHLN Portal. This portal provides information to NAHLN about the capacity of national laboratories in the event of a food animal outbreak. The section continues to prepare Quarterly Reports to the NAHLN and maintains the NAHLN Policies and Procedures.

To maintain conformance to all requirements, the QA Manager attended Quality Assurance Committee Meeting at the annual AAVLD meeting and also attended AAVLD auditor training. The QA Manager and Assistant attended a 4 day seminar at the USDA/NVSL facility about Quality Management System

The Quality Assurance Section has implemented new Quality system software. This software has improved document control, streamlined internal audits, improved equipment inventory, improved Competency and Training Assessments and improved Corrective Action investigations. Quality Assurance will continue to monitor and update policies and procedures to meet the AAVLD Requirements. Two members of the AAVLD Accreditation team are scheduled to revisit UKVDL in 2016 to assure compliance with all non-conformance findings from the 2014 full Accreditation team visit.

## **Ruminant Extension**

*Dr. L. Michelle Arnold*

The Ruminant Extension Veterinarian works closely with the College of Agriculture, Food and Environment (CAFE) faculty, UKVDL faculty and clients, county extension agents, producer organizations, state livestock commodity specialists, and state and federal regulatory agencies regarding all veterinary ruminant health issues. Perhaps most important is outreach to food animal veterinarians through regular continuing education programs, newsletters, and animal health bulletins. In addition, by developing this close working relationship between practicing veterinarians and UKVDL faculty, better diagnostic work-ups on challenging diagnostic cases and complex investigations result in more definitive answers for the producers of Kentucky.

I consider the entire network of industry stakeholders to be partners with me in lowering morbidity and mortality rates, attaining higher rates of production, and adding more pounds sold to return profits throughout the agricultural community. I continue to be involved in collaborative research projects within the University with the dairy, beef and small ruminant industries, especially those involving diagnostic veterinary medicine.

The livestock disease risk and occurrence, its diagnosis, treatment, prevention and control form the core of the information disseminated from this position. New University research, governmental directives, and other stakeholder concerns are also communicated broadly for discussion and action to benefit producers throughout Kentucky.

### **Highlights**

- Updated and presented the herd health portion of Master Cattleman in 11 regions and 2 Master Grazer sessions. These programs directly affected many farming enterprises representing significant numbers of KY cattle.
- Hosted two well-attended food animal veterinary continuing education meetings at the diagnostic laboratory (UKVDL) and one at the Breathitt Veterinary Center (BVC). A total of 24 hours of continuing education was made available to food animal veterinarians at no cost to them. Outside sponsors covered the costs of the events. The Winter CE meeting at the UKVDL was sponsored by Zoetis Animal Health. Fifty-seven food animal veterinarians attended the winter meeting. A summer meeting was held in August at the UKVDL sponsored by Boehringer Ingelheim Animal Health. Seventy-nine were in attendance. The final CE meeting was held at Breathitt Veterinary Center in November. Bayer Animal Health sponsored the event that was attended by 39 food animal veterinarians primarily from the western portion of the state.

- Pasture to Plate is a new demonstration/educational effort to increase the knowledge base of producers on all aspects of cattle production from genetics to consumers. The overall goal of this program is for cattlemen to learn and experience all phases of feeder calf growth from feeder through the eating experience. Topics covered in the program included receiving programs, feeding to finish programs, nutrient management, live animal evaluation, carcass evaluation, taste panel evaluation, consumer preferences and healthfulness of beef. Dr. Arnold developed and presented the health modules for six sessions.
- Continued to work with the Extension Dairy Specialist, Dr. Jeffrey Bewley, teaching the “Cow Signals” training course for dairy producers. This program originated in the Netherlands and teaches how to read the body language of cows to improve management techniques.
- Dr. Arnold continued to teach the health portion of the undergraduate classes in beef and dairy science and a veterinary lecture to the careers class.
- Continued development of the new extension program: Improving Reproductive Efficiency in Beef Cattle in Northern KY with Drs. Les Anderson, Jeff Lehmkuhler, and Darrh Bullock. These meetings are very specific and target one topic with extensive question and answer periods. This year the program expanded into Eastern KY. The herd health portion is an in-depth examination of vaccination protocols, abortion diagnostics, and pre- and post- calving problems. This is a unique program of classroom sessions, field day demonstrations, and on-farm case studies.
- Dr. Arnold published several fact sheets on Forage Related Cattle Disorders. These include: Staggers (Tremorgenic Syndrome) (Vet-35), Acute or Atypical Interstitial Pneumonia (AIP) with Dr. Jeff Lehmkuhler (Animal Science) (ID-231), and Slaframine Toxicosis or “Slobbers” in cattle and horses with Dr. Ray Smith (Animal Science) (ID-230).
- Joined the BVD Task Force at the request of the KY State Veterinarian (Dr. Stout) to discuss BVD PI testing and the new law regarding the movement of positive calves as well as brainstorm long term solutions.
- Participated in numerous field days, producer meetings and farm visits throughout the state to educate producers in best management practices, identify existing problems and promote prevention through realistic on-farm changes.
- Dr. Arnold writes a monthly health article for Cow Country News, the newsletter of the KY Cattlemen’s Association. In addition, Dr. Arnold is a regular contributor to the KVMA newsletter, Off the Hoof (UK Beef

electronic newsletter), and KY Dairy Notes (UK Dairy electronic newsletter).

- Dr. Arnold educated producers, extension personnel and veterinarians about the new Veterinary Feed Directive. This new government strategy, scheduled to begin January 2017, will affect the way antibiotics administered through the feed or water are sold to the public and change the labeled indications for these products.
- Continued to serve as the attending IACUC veterinarian for the UK Swine Unit and attending veterinarian on several research projects. Dr. Arnold also serves on two graduate committees for PhD candidates.
- Continued to expand the database of food animal veterinarians with email addresses and cell phone numbers to enhance the speed of communication and decrease postal expenses. The list currently has approximately 400 veterinarians and 288 veterinary clinics.
- Participated in producer meetings, conference calls, and program development with faculty from 6 southeastern land grant institutions funded by the Southeast Quality Milk Initiative (SQMI) grant. This is a multi-state grant for \$3M over a 5 year funding period that began in February 2013. Dr. Arnold spoke and helped coordinate the two-day SQMI Annual Meeting held in Russellville, KY. The University of Kentucky prints and distributes the SQMI Quarterly Newsletter to veterinarians throughout the Southeast identified as active in dairy practice.
- Managed cases at the UK Veterinary Diagnostic Laboratory including recording in-depth histories, determining necessary tests, participating in complex disease investigations, and interpretation and communication of results to veterinarians and producers.

Kentucky veterinarians, extension agents, producers, government entities and the University benefit from a strong livestock sector and health is a major component. In 2015, this position served to reach each of these stakeholders for the overall improvement of livestock health and sustainability of the food animal veterinary profession.

## **Serology**

*Meg Steinman, Section Head*

The mission of the Serology Section is to provide accurate and timely results for both diagnostic and regulatory testing. The results generated provide veterinarians and regulatory personnel with data upon which to base their decisions. This section offers a wide variety of tests by various types of methodologies; the tests and numbers listed below are just a sampling.

Poultry: This section participates in annual USDA audits to maintain status as an NPIP approved laboratory. Personnel from this section have attended National Poultry Improvement Plan (NPIP) approved training courses. In 2015 the serology laboratory tested 11,482 samples for antibody to Avian Influenza, 21,876 samples for antibody to *Salmonella pullorum*, 30,615 samples for antibody to *Mycoplasma gallisepticum*, and 30,615 samples for *Mycoplasma synoviae*.

Equines: This section successfully passed USDA-APHIS audits and proficiency tests to continue to offer Equine Infectious Anemia (EIA) antibody testing and piroplasmiasis testing. In 2015, we ran 15,327 ELISA and 408 AGID EIA tests. The serology section continues to monitor equines moving through the state stockyards for EIA antibody, testing 3,221 specimens. All employees of this section passed the required NVSL proficiency testing for piroplasmiasis testing *Babesia caballi* (391 samples) and *Theileria equi* (391 samples). We tested 1,145 serum samples for antibody to Contagious Equine Metritis (CEM-CF). Serology performs antibody screening tests for *Leptospira* in equines for diagnostic and regulatory purposes. In 2015, we tested approximately 5,100 serums.

Bovines: The serology section offers a variety of antibody tests performed on serum from bovines and other ruminant species. In 2015 we began to offer a serum test on ruminants to determine pregnancy status and tested 1,397 samples. Other testing done include 524 specimens for antibodies to *Anaplasma marginale*, 99 specimens for antibody to Bluetongue virus, 127 samples for EHD antibody, 377 specimens for antibodies to the Bovine Leukemia Virus, 1,625 serums for Johne's (*Mycobacterium paratuberculosis*) antibodies, approximately 500 samples for *Leptospira* antibodies, and 359 specimens for antibody to *Neospora caninum*. This lab is also active in regulatory screening for antibodies to *Brucella abortus*, testing approximately 1,100 samples.

Small ruminants: The serology section runs testing on small ruminants, including *Brucella melitensis* (50) and small lentivirus virus antibody (279).

Canine and feline: This section offers a variety of tests that can be run on dogs and cats. In 2015 the lab was requested to offer a rapid test to determine pregnancy. We began offering a rapid test to determine pregnancy, and hope to begin getting requests. A few examples of the testing done in 2015 include 123 for antibodies to histoplasmosis and blastomyces. Serology also offers *Brucella canis* testing, an important test for breeding, and tested 99 samples. We also are running tests for Lyme Disease, Canine heartworm, Ehrlichia and Anaplasma, testing 31 samples. Feline testing offered includes FIP testing (35 tests), FeLV (40), FIV (38) and Toxoplasmosis (135 tests). This is just a sampling of the tests we run for these species.

Porcine: This section also offers regulatory testing for swine. In 2015 we tested 125 samples for Pseudorabies and Brucella antibodies.

### **Section Head Additional Activities:**

- Meg Steinman serves on a National Animal Health Laboratory Network Exercises and Drills Working Group. The purpose of this group is to develop exercises to help prepare for a disease outbreak in the food animal. This year the committee developed a training exercise to determine a laboratory's ability to implement a response plan to keep the food supply safe. Findings from the exercises will help determine the strengths and weaknesses of the individual laboratory, and identify what needs to be in place to help respond.
- Meg Steinman is a member of the Poultry Health Advisory Board for KY. Meetings this year centered around the outbreak of AI that occurred and plans for managing should an outbreak hit KY.

### **Toxicology**

*Dr. Cynthia L. Gaskill, Section Head*

The primary mission of the UKVDL Toxicology section is to provide toxicological diagnostic testing capabilities and consultations to Kentucky veterinarians, UKVDL pathologists, county extension agents, livestock producers, pet owners, state officials, and others. A large variety of toxicological tests are available, including analyses for metals and minerals; organic compounds including a multitude of pesticides, drugs and other chemicals; biological toxicants such as plant, insect, bacterial and fungal toxins; and numerous other toxicants. Tests are performed in tissues, gastrointestinal contents, biological fluids, baits, feeds, forages, water, soil, and many other substances.

Consultation services include assistance with therapeutic advice, differential diagnoses, residue considerations, toxicological risk assessments, determination of appropriate tests, appropriate sample collection and submission recommendations, interpretation of analytical results, and other general toxicological information. Alerts, updates and toxicological information regarding cases of poisoning or contaminated animal feeds are also provided to the State Veterinarian's office.

The Toxicology section personnel consist of Cynthia Gaskill, DVM PhD ABVT, clinical veterinary toxicologist and section head; Lori Smith, PhD, senior analytical chemist; Michelle Helm, BSc, technician; Kyle Francis, MSc, research analyst; Joseph Johnson, BSc, research analyst; Boying Liang, PhD, post-doctoral scholar, and student interns.

### **Highlights**

- In 2015, the Toxicology section handled a number of herd food animal poisoning cases involving toxicants such as arsenic, lead and organochlorine pesticides. We worked in cooperation with state and federal agencies for

these cases. We provided analyses of blood, tissues and feeds to evaluate herd animals for evidence of exposure, and source and tissue residue information to assist the state veterinarian with quarantine/withholding time decisions, and provided toxicological information related to toxicokinetics, environmental considerations, treatments, and other considerations. This work helped prevent contamination of the human food supply.

- The most common causes of poisoning diagnosed at the UKVDL in 2015 included:
  - **Cattle, sheep, goats:** Yew (Taxus), nitrate, arsenic, botulism, sodium, lead, organochlorine pesticides, copper, cyanide, poison hemlock, sulfur, ionophores, buckeye
  - **Horses:** Botulism, yew (Taxus)
  - **Dogs and cats:** Anticoagulant rodenticides, bromethalin, ivermectin, carbofuran, ethylene glycol, lead
- We received continued funding from several federal and other grants, totaling over \$150,000 for this calendar year (total funding of \$675,000 over several years). This funding provides support for instrumentation, personnel, and supplies to develop analytical methods and complete inter-laboratory validations studies, to investigate poison cases involving drugs and feeds, and to develop methods to detect fescue-associated toxicants in biological samples. Our FDA grants involves collaboration with several veterinary diagnostic laboratories including the Davis California Animal Health and Food Safety laboratory, Iowa State University Veterinary Diagnostic laboratory, the Washington Animal Disease Diagnostic Laboratory, and others.
- We hired 2 additional full time analysts (Kyle Francis and Joseph Johnson) using grant funding
- We provided serum and plasma cobalt analyses for several horse racing jurisdictions. We performed over 4,500 cobalt analyses in 2015.
- New ICP-MS and UPLC instrumentation was installed which will increase our analytical capabilities, shorten analytical test run times, and free up instrument time for method development.
- Several new methods were developed and validated including an anticoagulant rodenticide screen in liver tissue and fumonisins B1 and B2 in feeds.
- We hosted student interns from the Forensic Science Internship program at Eastern Kentucky University and a post-doctoral scholar.
- Our post-doctoral scholar, Dr. Boying Liang, won an American Association of Veterinary Laboratory Diagnosticians (AAVLD) Trainee Travel Award to present her work at the 2015 AAVLD conference in Rhode Island.

- We continued providing forage ergovaline analyses for the University of Kentucky Pasture Evaluation program and for producers and UK extension agents.
- We participate in numerous proficiency programs to ensure quality results, and revised and reviewed a number of Toxicology Standard Operating Procedures.

The UKVDL Toxicology section participated in several additional research projects directly applicable to improvements in diagnostic offerings. Funding from these projects helped support instrumentation and personnel also used for diagnostic purposes. 2015 projects included:

- Completion of a study investigating moxidectin concentrations in brain tissue and serum in horses post-therapeutic dosing to help with diagnostic interpretation.
- Evaluation of Kentucky barn owls for evidence of chemical contaminations.
- Strontium concentrations in serum samples post-dosing in horses.
- Serum bromide concentrations in Idaho cattle exposed to forages contaminated with methyl bromide.
- Liver metal concentrations in Kentucky racehorse break-down cases

<b>2015 TOXICOLOGY TESTS</b>	<b>Total number of analyses</b>
Anticoagulant rodenticide panel – Liver. Panel includes analyses for 8 ACR compounds. LC-MS/MS method	104
Arsenic - whole blood. ICP-MS method	180
Bromide – serum. IC method	139
Clostridium botulinum – sent to referral lab. PCR method	16
Cobalt – serum, plasma, blood. ICP-MS method	4,547
Ergovaline – UPLC method	291
Ethylene glycol/glycolic acid panel – GC/FID method	8
GC/MS organic compound screen	68
Lead – whole blood. ICP-MS and anodic stripping voltammetry methods	70
Metal panels – liver and kidney tissue, blood, feeds, water, environmental samples. Panel includes analyses for 14 different inorganic elements. ICP-MS method	2,548

Trace mineral panels – liver and serum. Panel includes analyses for 7 trace elements. ICP-MS method	2,758
Moisture contents – forages	48
Mycotoxin panel – feeds. Panel includes analyses for 6 mycotoxins. HPLC and GC methods	24
Nitrate/nitrite panel – ocular fluid, serum, water, forages, other. IC and colorimetric methods	394
pH – forage, rumen contents, other samples. pH meter	29
Plant ID	6
Selenium – serum, blood. ICP-MS method	122
Sodium – brain. ICP-MS method	8
Strontium – serum. ICP-MS method	150
Other tests (misc. tests including those with < 4 requests each). Various methods	87
<b>TOTAL NUMBER OF ANALYSES:</b>	<b>11,597</b>

## **Epidemiology**

*Dr. Jacqueline L. Smith, Section Head*

The UKVDL Epidemiology section plans and conducts veterinary epidemiological research experiments that lead to the earliest detection of animal disease outbreaks, with our primary mission being to provide animal disease surveillance, and assist veterinarians in the investigation of serious and unusual disease problems. Daily monitoring of finalized necropsy and lab testing data streams provide near real-time disease cluster analysis.

The section also conducts data acquisition and statistical analysis in support of the Office of the State Veterinarian, USDA, and to provide animal health situational awareness for industry stakeholders. Many of these studies lead to publication in peer-reviewed journals and lay publications. Disease reporting to the state veterinarian (reportable infectious diseases, disease of interest, emergency disease notification) is performed weekly for the typical endemic diseases, while unusual or emergency disease situations are reported immediately.

In-depth field investigations to better characterize disease outbreaks for identifying causative etiology through the collection of diagnostic specimens and recommending diagnostic testing are provided free of charge to any farm/producer in the state of Kentucky at the request of a local client with the approval of the UKVDL administration.

## **Highlights**

- Conducted 261 telephone consults regarding suggestions, recommendations and information related to animal health issues.
- Statistical requests (from UKVDL faculty, UK faculty, state and federal officials, local veterinarian) - 197 requests (1-10 hrs each)
- Graphics requests: 173 (2-10 hrs each)
- Reportable disease reports sent: 52 weekly reports (approximately 1hr each week)

- **UK Veterinary Diagnostic Laboratory Faculty and Professional Veterinary Scientists  
2015**

*Arnold, Michelle*, DVM, ABVP Ruminant Veterinarian, Associate Professor

*Bryant, U.K.*, DVM, Associate Professor

*Bolin, D.C.*, DVM, PhD, DACVP, Associate Professor

*Carter, C.N.*, DVM, MS, PhD, DACPVM, DSNAP, Professor and Director (R)

*Cassone, L.M.C.*, BS, DVM, DACVP, Assistant Professor

*Coyle, Kathryn*, DVM, DACVP, Laboratory Animal Pathology Service

*Erdal Erol*, DVM MS PhD, Associate Professor & Head, Diagnostic Microbiology

*Gaskill, C.L.*, DVM, PhD, Associate Professor

*Jackson, C.B.*, DVM, DACVP, DACPVM, Professor

*Janes, Jennifer*, DVM PhD, DACVP, Assistant Professor

*Kennedy, L.A.*, DVM, ACVP, Assistant Professor

*Loynachan, A.T.*, BS, DVM, PhD, Associate Professor

*Maples, Deborah*, DVM, Head, Diagnostic Services

*Smith, Jacqueline*, MS PhD, Section Head, Epidemiology

### **Books and Book Chapters:**

Carter CN, *Animal Health, Human Health, One Health: The Life and Legacy of Dr. James H. Steele*, Copyright 2015, CreateSpace Press, ISBN-10 1511558016.

Gaskill CL. *Phenobarbital: Adverse effects/toxicosis*. In: Cote E, ed. *The Veterinary Clinical Advisor: Dogs and Cats*. 3<sup>rd</sup> edition. Saunders, St. Louis MO. 2015. 801.e3 – 801.e4

### **Refereed Journal Publications**

Canisso IF, Ball BA, Erol E, Claes A, Scoggin KE, McDowell KJ, Williams NM, Dorton AR, Wolfsdorf KE, Squires EL, Troedsson MH: Attempts to induce nocardioform placentitis (*Crossiela equi*) experimentally in mares.. *Equine Vet J*. 2015 Jan;47(1):91-5.

Gyimesi ZS, Burns RB, Erol E, Bolin SR: Acute clinical leptospirosis (*Grippotyphosa* serovar) in an adult camel dromedary camel (*Camelus dromedaries*). *J Zoo Wildl Med*. 2015 Sep;46(3):605-8.

Janes JG, Garrett KS, McQuerry KJ, Waddell S, Voor MJ, Reed SM, Williams NM, MacLeod JN: Cervical Vertebral Lesions in Equine Stenotic Myelopathy. *Veterinary Pathology*, 2015 Sept; 52(5):919-927.

Nielsen MK, AT Loynachan, S Jacobsen, JC Stewart, CR Reinemeyer, and DW Horohov. Local and systemic inflammatory and immunological reactions to cyathostomin larvicidal therapy in horses. *Veterinary Immunology and Immunopathology*. 2015. Sep 25. Doi: 10.1016/j.vetimm.2015.09.009.

Smith JL, Vanzant ES, Carter CN, Jackson CB: Discrimination of healthy versus sick steers utilizing continuous remote monitoring of animal activity. *AJVR*, Vol. 76 No. 8 August 2015.

### **Refereed Journal Publications (Under Review/In Press)**

Burk SV, Dangoudoubiyam S, Brewster-Barnes T, Howe DK, Carter CN, Bryant UK, Rossano MG: Equine antibody response to *Parascaris equorum* excretory-secretory products, *Submitted to Veterinary Parasitology, 2015*.

Erol E, Jackson C, Horohov D, Locke S, Smith J, Carter CN: Elevated serum amyloid A levels in cases of aborted equine fetuses due to fetal and placental infections, *Submitted to Theriogenology*.

Moore CE, Juan J, Lin Y, Gaskill CL, Puschner B. Comparison of protein phosphatase inhibition assay with LC-MS/MS for diagnosis of microcystin toxicosis in veterinary cases. *Mar. Drugs* 2016, 14, 54; doi:10.3390/md14030054

Velineni S, Timoney J; Artiushin S; Donahue M; Steinman M: Multiple specificities of IgM in equine fetuses infected with *Leptospira interrogans* indicate a competent immune response, under review.

### **Abstracts/Posters**

Carter CN, Smith JL, Vanzant ES, Odoi A: Continuous Animal Activity Monitoring System for Early Detection of Health Problems in Cattle, Proc. of the 32<sup>nd</sup> World Veterinary Congress, Istanbul, Turkey, Sep 2015, p 46.

Carossino M, AT Loynachan, JR. Campos, B Nam, IF Canisso, YY Go, PJ Timoney, KM Shuck, MH Troedsson, RF Cook, T Swerczek, EL Squires, E Bailey and UBR Balasuriya. Sites of Equine Arteritis Virus Localization in the Reproductive Tract During with Long-term Persistence in the Stallion. 58<sup>th</sup> Annual AAVLD/USAHA Meeting. Providence, RI USA. 2015.

Carossino M, AT Loynachan, JR Campos, B Nam, IF Canisso, YY Go, PJ Timoney, KM Shuck, MH Troedsson, RF Cook, T Swerczek, EL Squires, E Bailey and UBR Balasuriya. Characterization of the local inflammatory response in the reproductive tract of the equine arteritis virus carrier stallion. 58<sup>th</sup> Annual AAVLD/USAHA Meeting. Providence, RI USA. 2015.

Carossino M, AT Loynachan, JR Campos, B Nam, IF Canisso, YY Go, PJ Timoney, KM Shuck, P Henney, MH Troedsson, RF Cook, T Swerczek, EL Squires, E Bailey and UBR Balasuriya. Sites of equine arteritis virus persistence in the stallion's reproductive tract and characterization of the local inflammatory response to the virus. Conference of Research Workers in Animal Disease (CRWAD), Chicago, IL USA. 2015.

Erol E, Cassone L, Jin Yoon K, Kelly N, Warner JK, Phillips E, Runyon A, Carter CN: Application of Multiplex Real-time PCR Panel for Detection of Microbiological Agents Causing Bovine Respiratory Disease Complex in Necropsy Cases, Proc. of the 32<sup>nd</sup> World Veterinary Congress, Istanbul, Turkey, Sep 2015, p 21.

Francis KA, Smith LL, Gaskill CL. *Quantitation of ergovaline in bovine serum*. Poster. Abstract in Proceedings, 58<sup>th</sup> AAVLD Annual conference, Providence Rhode Island, Oct 2015

Francis KA, Smith LL, Gaskill CL. *Applied mass spectrometry in veterinary diagnostic testing*. Presented by KF at the Ohio Mass Spectrometry Symposium, Columbus Ohio, May 2015

Janes JG, Kennedy LA, Garrett KS. Observation of pre-existing lesions of the third metacarpal and metatarsal bone in Thoroughbred catastrophic breakdown

injuries. 2015 ACVP/ASCV/STP Combined Annual Meeting. Minneapolis, MN USA. 2015. (Presentation and abstract).

Janes JG, Garrett KS, McQuerry KJ, Waddell S, Voor MJ, Reed SM, Williams NM, Macleod JN. Pathology of the Articular Processes in Horses with Cervical Stenotic Myelopathy. 61<sup>st</sup> Annual Convention of the American Association of Equine Practitioners. Las Vegas, NV USA. 2015. (Presentation and abstract).

Kennedy L. *The Kentucky Horse Racing Necropsy Program: An Integrative Approach to the Investigation of Catastrophic Injuries in Thoroughbred Racehorses*. American College Of Veterinary Pathologists, annual meeting, Minneapolis MN, October 2015.

Kennedy L. *A Potpourri of Equine Neurology*. Midwest Association of Veterinary Pathologists, Lexington KY, August 2015.

Kennedy L. *Proper Diagnosis: Lessons Learned From Postmortem Programs*. Welfare and Safety of the Racehorse Summit VI, Lexington KY, July 2015.

Liang B, Smith LL, Gaskill CL. *Quantitation of eight anticoagulant rodenticides in animal liver by LC-MS/MS with a d-SPE clean-up method*. Presented by LS; abstract in Proceedings, 58<sup>th</sup> AAVLD Annual conference, Providence Rhode Island, Oct 2015

Nielsen M, D Horohov, A Loynachan, S Jacobsen, C Stewart, and C Reinemeyer. Local and systemic inflammatory reactions to larvicidal therapy in horses. 60<sup>th</sup> Annual American Association of Veterinary Parasitologists Meeting. Boston, MA USA. 2015.

Sanz MG, AT Loynachan, and DW Horohov. Rhodococcus equi-specific hyperimmune plasma decreased rhodococcal pneumonia severity in newborn foals after experimental infection. 61<sup>st</sup> Annual American Association of Equine Practitioners. Las Vegas, NV. 2015.

Smith LL, Gaskill CL. *Quantitation of fumonisin B1 and B2 in feed using FMOC precolumn derivatization and UPLC-fluorescence*. Presented by LS; abstract in Proceedings, 58<sup>th</sup> AAVLD Annual conference, Providence Rhode Island, Oct 2015

### **Presentations**

Arnold LM. *Cow Signals*. Barren County (1/6/15) and Adair County (1/29/15) Dairy Meetings.

Arnold LM. *Reproductive Emergencies*. Kenton County Reproductive Meeting. Feb. 2, 2015. Covington, KY.

Arnold LM. *Vaccinations for the Cow-Calf Herd*. Garrard County Cattlemen's Meeting. Feb. 2, 2015. Lancaster, KY.

Arnold LM. *Mastitis Treatment Options*. 2015 Young Dairy Producer Conference. Feb. 24, 2015. Bowling Green, KY.

Arnold LM. *Dystocia Management*. Garrard County Reproductive Meeting. March 3, 2015. Lancaster, KY.

Arnold LM. *Master Cattlemen Herd Health Sessions* at Princeton (3/12/15), Owingsville (3/17/15), Vanceburg (3/24/15), Winchester (4/9/15), Carrollton (4/21/15), Monticello (9/14/15), Brandenburg (10/22/15), West Liberty (11/10/15), Fayette (11/16/15) and MC Field Day in Versailles (10/13/15).

Arnold LM. *Physical Examination of Dairy Cattle*. Dairy Agent Training at Coldstream. April 14, 2015. Lexington, KY.

Arnold LM. *Beef Reproduction Efficiency for Eastern KY*. Kickoff Herd Health. April 23, 2015 by Lync.

Arnold LM. *Veterinary Feed Directive*. Anderson County Cattlemen's Association. April 27, 2015. Lawrenceburg, KY and Harrison County Cattlemen's Meeting Sept. 28, 2015. Cynthiana, KY.

Arnold LM. *Master Grazer-Forage Disorders*. Woodford County Extension Office. May 20 and Oct. 6, 2015. Versailles, KY.

Arnold LM. *Pasture to Plate Health Considerations* at Princeton (5/26/15 and 9/29/15), Eden Shale (5/27/15 and 9/30/15), and Morgan County (10/1/15).

Arnold LM. *Prevention of Pinkeye*. McLean County Field Day. Aug. 14, 2015. Calhoun, KY.

Arnold LM. *Discussion of the VFD*. Dr. Ryan Wonderlich's Field Day. Oct. 3, 2015. Bardstown, KY.

Arnold LM. *Perilla Mint and Other Toxicities in the Field*. Pasture Walk at Brann's farm. Oct. 16, 2015. Adolphus, KY.

Arnold LM. *Small Ruminant Wasting Diseases*. Barren County Sheep and Goat Producers. Oct. 20, 2015 by Lync.

Arnold LM. *Veterinary Feed Directive Update and Cold Weather Calving*. KY Beef Conference. Fayette County Extension. Oct. 29, 2015.

Arnold LM. *Mastitis Treatment and Dry Cow Management*. Southeast Quality Milk Initiative Annual Meeting. Russellville, KY. Nov. 3, 2015.

Arnold LM. *Preparing for the Veterinary Feed Directive*. Appalachian Cow-Calf Conference. Morehead, KY (11/7/15) and Morehead Cattle Producers Meeting (12/17/15) at Dickerson Agricultural Complex, MSU.

Arnold LM. *Preparing Livestock for Winter*. Farm School for Women. Dec. 1, 2015. Fleming County Extension.

Carter CN, *Equine Leptospirosis: We now have a vaccine!* Presented to the 7<sup>th</sup> Annual Kentucky Breeders Short Course, Fayette County Extension Office, Lexington, KY Saturday January 20, 2016.

Carter CN, *Public Health Contributions of Veterinary Diagnostic Laboratories*, 1<sup>st</sup> annual meeting of the Center for Animal Health in Appalachia, Lincoln Memorial University College of Veterinary Medicine, Ewing, VA, Oct 2015.

Carter CN, *High Path Avian Influenza Diagnostic Laboratory Response*, presented to the HPAI Kentucky Poultry Federation Planning Forum, Elizabethtown Tourism and Convention Bureau, Elizabethtown, KY, Sep 9, 2015.

Carter CN, *Overview of the DVM Training Programs by the University of Kentucky in support of the Lincoln Memorial University (LMU) College of Veterinary Medicine*. Presented to the LMU Dean, faculty and staff, Jul 28, 2015

Gaskill CL. *Introduction to the UKVDL and veterinary toxicology*. Presentation for the Franklin county 4-H Livestock club and FFA, UKVDL, May 2015

Gaskill CL. *Poisonous pasture plants and horses*. Presentation for the UK Cooperative Extension service Pastures Please program, Lexington, KY, Feb. 2015

Gaskill CL. *Veterinary diagnostic toxicology: CSI in the veterinary realm*. Presentation for the Department of Veterinary Science Seminar series, Lexington KY, Dec. 2015

Gaskill CL. *Update on the illicit use of cobalt in racehorses*. Presentation for the 4<sup>th</sup> Annual UK Equine Showcase, Lexington KY, Jan 2015

Gaskill CL, Lea K, Smith L, Coleman R, Smith RS. *Tall fescue ergovaline concentration based on sample handling and storage method*. Presented by CG at the AOAC International Midwest meeting, Bozeman MT, June 2015

Gaskill CL. *Update on moxidectin poisoning in horses*. Presentation for the 4<sup>th</sup> Annual UK Equine Showcase, Lexington KY, Jan 2015

Jackson, C. *Zika Virus Update*, Kentucky One Health Meeting, Kentucky Horse Park, Lexington, KY 20 Aug 15.

Loynachan AT. *Concurrent Equine herpesvirus 1 and Clostridium piliforme hepatitis in a foal*. 58<sup>th</sup> Annual AAVLD/USAHA Meeting. **Providence, RI USA**. 2015.

### **Lay/Extension Publications**

Carter CN: Editor, Diagnostic Laboratory Rounds. Kentucky Veterinary News, Spring, Summer, Fall, Winter, 2015 editions.

Arnold, L.M. 2015. Forage Related Cattle Disorders: Staggers (Tremorgenic Syndrome). University of Kentucky College of Agriculture, Food and Environment Extension Factsheet. VET-35.

Arnold, L.M. and Ray Smith. 2015. Forage Related Cattle Disorders: Slaframine Toxicosis or "Slobbers" in Cattle and Horses. University of Kentucky College of Agriculture, Food and Environment Extension Factsheet. ID-230.

Arnold, L.M. and Jeff Lehmkuhler. 2015. Forage Related Cattle Disorders: Acute or Atypical Interstitial Pneumonia (AIP). University of Kentucky College of Agriculture, Food and Environment Extension Factsheet. ID-231.

Arnold, L.M. 2015. Preventing Neonatal calf Diarrhea or "Calf Scours". Off the Hoof (December).

Arnold, L.M. 2015. Developing Quality Replacement Heifers-Vaccine Requirements Weaning to Breeding. Off the Hoof (November).

Arnold, L.M. 2015. Dealing with Anaplasmosis in Your Herd. Off the Hoof (October).

Arnold, L.M. 2015. Can You Guess the Effect of PI Cattle On Health and Performance Outcomes? Off the Hoof (September).

Arnold, L.M. 2015. The Veterinary Feed Directive-Part II-Clarifications to the Final Rule. Off the Hoof (August).

Arnold, L.M. and J.D. Green. 2015. Be Aware of Poison Hemlock. Off the Hoof (July).

Arnold, L.M. and Darrell Johnson. 2015. The Veterinary Feed Directive- Changing the Way Producers Obtain Medicated Feeds. Off the Hoof (May).

Arnold, L.M. 2015. When to Intervene in Delivery of the Calf. Off the Hoof (February).

Arnold, L.M. 2015. Emergency Calf Management After Dystocia. Off the Hoof (January).

Arnold, L.M. Fall 2015: The VFD-What Resources are Available to Understand the New Regulations? KY Veterinary News.

Arnold, L.M. Spring 2015: Can You Guess the Effect of PI Cattle on Health and Performance Outcomes? KY Veterinary News.

Arnold, L.M. Winter 2015: Chronic Pneumonia in Stocker Calves due to *Mycoplasma bovis*. KY Veterinary News.

Arnold, L.M. 2015. Vaccinations for the Fall Calving Herd-Do Them Now! Cow Country News. (December).

Arnold, L.M. 2015. Dealing with Anaplasmosis in Your Herd. Cow Country News. (November).

Arnold, L.M. 2015. Developing Quality Replacement Heifers-Vaccine Requirements Weaning to Breeding. Cow Country News. (October).

Arnold, L.M. 2015. Can You Guess the Effect of PI Cattle on Health and Performance Outcomes? Cow Country News. (September).

Arnold, L.M. 2015. The Veterinary Feed Directive-Part II: Clarifications in the Final Rule. Cow Country News. (August).

Arnold, L.M. and J.D. Green. 2015. Be Aware of Poison Hemlock. Cow Country News (July).

Arnold, L.M. and Darrell Johnson. 2015. The Veterinary Feed Directive- Changing the Way Producers Obtain Medicated Feeds. Cow Country News. (June).

Arnold, L.M. and Ray Smith. 2015. Wrapping Your Hay this Spring? Poor Fermentation may lead to big health risks. Cow Country News. (May).

Arnold, L. M. 2015. Extended Therapy for Mastitis: When Should You? The Progressive Dairyman, Issue 7 (April).

Maples, Deborah and Arnold, L.M. 2015. Submitting a Sample to the Veterinary Diagnostic Laboratory? Here is what you need to know... Cow Country News. (April).

Arnold, L.M. 2015. Beware of "Dr. Google"-Grass Tetany Myths Debunked. Cow Country News. (March).

Arnold, L.M. 2015. When to Intervene in Delivery of a Calf. Cow Country News. (February).

Arnold, L.M. 2015. Emergency Calf Management Considerations after Dystocia (Difficult birth). Cow Country News. (January).

Janes JG. Where are we going with Wobbler Syndrome? Equine Disease Quarterly 2015. January 24(1): 3.

Manifestations of Equine Herpesvirus-1", Equine Disease Quarterly, October 2015

Loynachan AT. Responsible Interpretation of Polymerase Chain Reaction Assays. *Equine Disease Quarterly*. 2015. 24(1):3.

Smith, JL: Equine Tyzzer's Disease Update: January 1993- April 2015. Equine Disease Quarterly, July 2015: Vol 24 Number 3.

### **Research Projects**

Carter CN, Vanzant E, Smith JS, Agricola Odoi: Animal health sensing and surveillance - RFID for early detection. Department of Homeland Security, Advanced Research Project Agency, Chemical and Biological Defense Research and Development, \$250,000 2014-2016.

Carter CN, Gellin G: Equine Immune Response to Leptospiral Infection. (\$11,967) – National Institute of Occupational Safety and Health, 2015-2016.

Carter CN, Vanzant E, Smith J, Odoi, A: Continuous Animal Health Monitoring, Field Testing. \$175,000 – Department of Homeland Security, National Institute of Homeland Security, 2015-2016.

Davis C, Steinman, M. Chagas Titers in Canines Samples in the state of KY, Western Kentucky University.

Gaskill CL, Smith LL. Validation of LC-MS/MS analyses of animal tissue and feed matrices for toxicants. FDA Vet-LIRN. \$494,980. 2013-2018

Gaskill CL, Smith LL. Fescue associated alkaloids in tissues and forages. USDA ARS SCA. \$69,000. 2013-2015

Gaskill CL, Erol E, Carter CN. FDA Vet-LIRN veterinary diagnostic laboratory cooperative agreement program funding to increase sample analyses in the event of animal food or drug related illness. FDA Vet-LIRN. \$82,500. 2012-2017

Gaskill CL, Erdal E, Carter CN. FDA *Vet-LIRN veterinary diagnostic laboratory cooperative agreement program funding travel supplement*. FDA Vet-LIRN. \$5,000 2015-2016

Janes JG, MacLeod JN, Reed SM. Identifying Genetic Determinants in Wobbler Syndrome. Co-principal investigator. Gluck Equine Research Foundation Fall Cycle. 2015-2016. \$25,000.

Nielsen M, Gaskill CL. Brain moxidectin concentrations in horses post-therapeutic dosing and development of a quantitative HPLC method for macrocyclic lactone anthelmintic analyses in equine brain tissue. Koller Rapid Response Research Endowment. University of Kentucky Gluck Equine Research Center. \$19,285

Oliver, S., R. Almeida, G. Pighetti, P. Krawczel, M. Fly, C. Petersson-Wolfe, J.M. Bewley, L.M. Arnold, D. Amaral-Phillips, L. Garkovich, S. Nickerson, S. Hill Ward, and A. DeVries. 2013-2018. Southeast Quality Milk Initiative: Implementing science-based recommendations in the field to control mastitis & improve milk quality in the Southeast. \$3,000,000 (\$597,645 to UK). United States Department of Agriculture, National Institute of Food and Agriculture, Agriculture and Food Research Initiative. Program: Extension-driven Disease Prevention and Control in Animals. Program Area Code A5113. Award number 2013-68004-20424.

## Genbank Register

None submitted

## Patent's/Copyrights

Utility patent update, Aug 2015: Carter CN; Smith J

January 31, 2014

### VIA EMAIL CORRESPONDENCE

Mr. Donald G. Keach  
Intellectual Property Development Director  
University of Kentucky Intellectual Property Development Office  
A144 ASTeCC  
Lexington, KY 40506-0286

RE: U.S. Utility Patent Application  
Title: Health Monitoring System  
Serial No.: 14/161,277  
Filed: January 22, 2014  
Inventors: CARTER, et al.  
Our Docket No.: 13177N/1821US  
Your Ref No.: UKRF1821

# Appendix R

Equine Infectious Disease Reports sent to International Collating Centre, Animal Health Trust, Newmarket, United Kingdom

From	To	Subject	Sent	Size	Catego...
Timoney, Pet...	'maire.obrien@aht.org...	EHM--Texas	Mon 5/30/2016 ...	7 KB	
Timoney, Pet...	MAIRE O'BRIEN	RE: International Collating Centre - Interim R...	Fri 5/27/2016 7:...	33 KB	
Timoney, Pet...	'MAIRE O'BRIEN'	RE: International Collating Centre - Interim R...	Thu 5/26/2016 2:...	28 KB	
Timoney, Pet...	MAIRE O'BRIEN; RICHA...	Re: International Collating Centre - Interim R...	Wed 5/25/2016 ...	20 KB	
Timoney, Pet...	MAIRE O'BRIEN	Re: International Collating Centre - Interim R...	Tue 5/24/2016 7:...	28 KB	
Timoney, Pet...	MAIRE O'BRIEN; RICHA...	Re: International Collating Centre - Interim R...	Mon 5/23/2016 ...	18 KB	
Timoney, Pet...	RICHARD NEWTON	Re: ICC report today	Fri 5/20/2016 11:...	31 KB	
Timoney, Pet...	'maire.obrien@aht.org...	Strangles	Tue 4/26/2016 3:...	6 KB	
Timoney, Pet...	Maire O'Brien	EIA, EHM update	Fri 4/22/2016 10:...	36 KB	
Timoney, Pet...	Maire O'Brien	First Quarter Report 2016 USA	Wed 4/20/2016 ...	20 KB	
Timoney, Pet...	Maire O'Brien	EHM Update	Wed 4/20/2016 ...	36 KB	
Timoney, Pet...	'maire.obrien@aht.org...	Rabies	Tue 4/19/2016 8:...	6 KB	
Timoney, Pet...	'maire.obrien@aht.org...	EEE	Fri 4/15/2016 8:...	6 KB	
Timoney, Pet...	Maire O'Brien	EHM Update	Tue 4/12/2016 4:...	36 KB	
Timoney, Pet...	'maire.obrien@aht.org...	Interim report	Mon 3/21/2016 ...	6 KB	
Timoney, Pet...	Maire O'Brien	Strangles report	Thu 3/17/2016 2:...	36 KB	
Timoney, Pet...	Maire O'Brien	Getah and VS articles	Fri 3/11/2016 10:...	4 MB	
Timoney, Pet...	Maire O'Brien	EIA and Strangles	Thu 3/10/2016 1:...	36 KB	
Timoney, Pet...	Maire O'Brien	Update on Rabies and Strangles	Tue 3/8/2016 1:...	37 KB	
Timoney, Pet...	Maire O'Brien	Equine herpesvirus 1	Tue 3/1/2016 2:...	36 KB	
Timoney, Pet...	Maire O'Brien	Update on Strangles	Fri 2/26/2016 10:...	36 KB	
Timoney, Pet...	Maire O'Brien	Updates	Tue 2/23/2016 2:...	19 KB	
Timoney, Pet...	maire.obrien@aht.org.uk	Interim Report	Fri 2/19/2016 2:...	5 KB	
Timoney, Pet...	MAIRE O'BRIEN	RE: Un foyer d'anémie infectieuse équine - Fl...	Thu 2/18/2016 1:...	32 KB	
Timoney, Pet...	'MAIRE O'BRIEN'	RE: EHM, Strangles and VS update	Thu 2/11/2016 7:...	17 KB	
Timoney, Pet...	Maire O'Brien	EHM, Strangles and VS update	Wed 2/10/2016 ...	20 KB	
Timoney, Pet...	Maire O'Brien	EHM	Mon 2/8/2016 3:...	36 KB	
Timoney, Pet...	Maire O'Brien	Strangles Update	Thu 2/4/2016 3:...	36 KB	
Timoney, Pet...	Maire O'Brien	EHM Update Feb 4	Thu 2/4/2016 3:...	37 KB	
Timoney, Pet...	Maire O'Brien	Neurologic disease	Thu 2/4/2016 9:...	23 KB	
Timoney, Pet...	Maire O'Brien	EHM Update	Tue 2/2/2016 3:...	36 KB	
Timoney, Pet...	sonia.gonzalez-medina...	Article for the Equine Disease Quarterly	Mon 2/1/2016 4:...	24 KB	
Timoney, Pet...	Maire O'Brien	Fourth Quarter Report	Mon 1/25/2016 ...	38 KB	
Timoney, Pet...	maire.obrien@aht.org.uk	INTERIM REPORTS, EHM, VS, STRANGLES	Sat 1/23/2016 1:...	7 KB	
Timoney, Pet...	MAIRE O'BRIEN	Re: International Collating Centre - Interim R...	Tue 1/19/2016 7:...	6 KB	
Timoney, Pet...	Maire O'Brien	Rabies report	Fri 1/15/2016 3:...	37 KB	
Timoney, Pet...	Maire O'Brien	EHM report	Mon 1/11/2016 ...	38 KB	
Timoney, Pet...	'MAIRE O'BRIEN'	RE: International Collating Centre - Interim R...	Thu 1/7/2016 4:...	13 KB	
Timoney, Pet...	Maire O'Brien	VS Report	Tue 1/5/2016 3:...	54 KB	
Timoney, Pet...	Maire O'Brien	Interim Report	Mon 1/4/2016 4:...	37 KB	
Timoney, Pet...	'MAIRE O'BRIEN'	RE: International Collating Centre - Interim R...	Tue 12/29/2015 ...	13 KB	
Timoney, Pet...	Maire O'Brien	Vesicular Stomatitis report	Mon 12/21/2015 ...	37 KB	
Timoney, Pet...	'maire.obrien@aht.org...	VS update	Thu 12/3/2015 1:...	6 KB	
Timoney, Pet...	'MAIRE O'BRIEN'	RE: Defra/AHT/BEVA Equine Quarterly Diseas...	Tue 12/1/2015 1:...	24 KB	
Timoney, Pet...	'maire.obrien@aht.org...	VS interim report	Mon 11/30/2015 ...	7 KB	
Timoney, Pet...	MAIRE O'BRIEN	RE: Defra/AHT/BEVA Equine Quarterly Diseas...	Sun 11/29/2015 ...	13 KB	
Timoney, Pet...	'maire.obrien@aht.org...	Interim VS report	Thu 11/19/2015 ...	6 KB	
Timoney, Pet...	'maire.obrien@aht.org...	Interim reports	Fri 11/13/2015 5:...	7 KB	
Timoney, Pet...	'maire.obrien@aht.org...	Vesicular Stomatitis update	Thu 11/5/2015 8:...	7 KB	
Timoney, Pet...	'maire.obrien@aht.org...	Vesicular Stomatitis Update	Fri 10/30/2015 1:...	7 KB	

	From	To	Subject	Sent	Size	Catego...
	Timoney, Pet...	Maire O'Brien	Disease Report from USA, Third Quarter 2015	Thu 10/29/2015 ...	38 KB	
	Timoney, Pet...	'MAIRE O'BRIEN'	RE: PRO/AH/EDR> Equine influenza - USA (0...	Thu 10/22/2015 ...	45 KB	
	Timoney, Pet...	'maire.obrien@aht.org....	Interim Reports	Mon 10/19/201...	7 KB	
	Timoney, Pet...	'maire.obrien@aht.org....	Interim Reports	Fri 10/9/2015 5...	8 KB	
	Timoney, Pet...	Maire O'Brien	WNE & EEE 100215	Fri 10/2/2015 4...	23 KB	
	Timoney, Pet...	Maire O'Brien	VS 100115	Thu 10/1/2015 1...	23 KB	
	Timoney, Pet...	Maire O'Brien	EEE 093015	Wed 9/30/2015 ...	22 KB	
	Timoney, Pet...	MAIRE O'BRIEN	RE: PRO/AH/EDR> Blister beetle poisoning, e...	Thu 9/24/2015 4...	89 KB	
	Timoney, Pet...	Maire O'Brien	EEE & VS 092415	Thu 9/24/2015 4...	24 KB	
	Timoney, Pet...	Maire O'Brien	EEE 092215	Tue 9/22/2015 1...	22 KB	
	Timoney, Pet...	Maire O'Brien	WNE 091815	Fri 9/18/2015 2...	22 KB	
	Timoney, Pet...	Maire O'Brien	VS 091715	Thu 9/17/2015 3...	22 KB	
	Timoney, Pet...	Maire O'Brien	EEE 091615	Wed 9/16/2015 ...	22 KB	
	Timoney, Pet...	Maire O'Brien	WNE, EIA & VS 091415	Mon 9/14/2015 ...	23 KB	
	Timoney, Pet...	'MAIRE O'BRIEN'	RE: Defra/AHT/BEVA Equine Surveillance Rep...	Mon 9/7/2015 1...	15 KB	
	Timoney, Pet...	Maire O'Brien	VS 090315	Thu 9/3/2015 1...	22 KB	
	Timoney, Pet...	Maire O'Brien	WNE 090215	Wed 9/2/2015 1...	24 KB	
	Timoney, Pet...	Maire O'Brien	EEE & WNE 090115	Tue 9/1/2015 4...	22 KB	
	Timoney, Pet...	Maire O'Brien	WNE Update 082815	Fri 8/28/2015 3...	22 KB	
	Timoney, Pet...	Maire O'Brien	WNE 082815	Fri 8/28/2015 9...	23 KB	
	Timoney, Pet...	Maire O'Brien	VS 082715	Thu 8/27/2015 1...	23 KB	
	Timoney, Pet...	Maire O'Brien	EEE 082515	Tue 8/25/2015 9...	22 KB	
	Timoney, Pet...	Maire O'Brien	EEE 082415	Mon 8/24/2015 ...	22 KB	
	Timoney, Pet...	Maire O'Brien	EEE & WNE 082115	Fri 8/21/2015 11...	23 KB	
	Timoney, Pet...	Maire O'Brien	VS & Pythiosis 082015	Thu 8/20/2015 1...	23 KB	
	Timoney, Pet...	Maire O'Brien	EEE & WNE 081715	Mon 8/17/2015 ...	23 KB	
	Timoney, Pet...	Maire O'Brien	WNE 081415	Fri 8/14/2015 11...	19 KB	
	Timoney, Pet...	Maire O'Brien	EEE 081415	Fri 8/14/2015 11...	23 KB	
	Timoney, Pet...	Maire O'Brien	VS 081315	Thu 8/13/2015 1...	24 KB	
	Timoney, Pet...	Maire O'Brien	Anthrax 081315	Thu 8/13/2015 8...	24 KB	
	Timoney, Pet...	'maire.obrien@aht.org....	Interim report on VS	Fri 8/7/2015 7:5...	6 KB	
	Timoney, Pet...	'maire.obrien@aht.org....	Interim Reports, USA	Mon 8/3/2015 2...	7 KB	
	Timoney, Pet...	Maire O'Brien	VS 072915	Wed 7/29/2015 ...	21 KB	
	Timoney, Pet...	Maire O'Brien	EEE 072815	Tue 7/28/2015 1...	23 KB	
	Timoney, Pet...	Maire O'Brien	EEE & WNE 072715	Mon 7/27/2015 ...	23 KB	
	Timoney, Pet...	Maire O'Brien	WNE 072215	Wed 7/22/2015 ...	22 KB	
	Timoney, Pet...	Maire O'Brien	2nd Qtr Report	Wed 7/22/2015 ...	36 KB	
	Timoney, Pet...	Maire O'Brien	VS 071715	Fri 7/17/2015 3...	22 KB	
	Timoney, Pet...	Maire O'Brien	EEE 071715	Fri 7/17/2015 1...	23 KB	
	Timoney, Pet...	Maire O'Brien	EEE 071615	Thu 7/16/2015 1...	23 KB	
	Timoney, Pet...	Maire O'Brien	EEE and VS 071515	Wed 7/15/2015 ...	22 KB	
	Timoney, Pet...	Maire O'Brien	EEE 071315	Mon 7/13/2015 ...	22 KB	
	Timoney, Pet...	Maire O'Brien	Disease report 070915	Thu 7/9/2015 12...	26 KB	
	Timoney, Pet...	maire.obrien@aht.org.uk	Interim reports	Tue 6/23/2015 1...	5 KB	
	Timoney, Pet...	Meade, Barry J - APHIS	Re: International Collating Centre - Interim R...	Sat 6/20/2015 8...	13 KB	
	Timoney, Pet...	Maire O'Brien	Disease reports	Mon 6/8/2015 1...	8 KB	
	Timoney, Pet...	Maire O'Brien	EHM 060415	Thu 6/4/2015 11...	23 KB	
	Timoney, Pet...	Maire O'Brien	EHM & VS 052715	Wed 5/27/2015 ...	23 KB	
	Timoney, Pet...	Maire O'Brien	VS 052615	Tue 5/26/2015 1...	22 KB	
	Timoney, Pet...	Maire O'Brien	EHM & VS 052015	Wed 5/20/2015 ...	23 KB	

	From	To	Subject	Sent	Size	Catego...
	Timoney, Pet...	Maire O'Brien	EHM 051915	Tue 5/19/2015 4...	23 KB	
	Timoney, Pet...	Maire O'Brien	EHM Report & ICC Reports Data	Mon 5/18/2015 ...	53 KB	
	Timoney, Pet...	RICHARD NEWTON	RE: International Collating Centre - 1Q 2015 ...	Fri 5/15/2015 10...	27 KB	
	Timoney, Pet...	Maire O'Brien	EHM 051415	Thu 5/14/2015 4...	22 KB	
	Timoney, Pet...	Maire O'Brien	VS 051415	Thu 5/14/2015 1...	22 KB	
	Timoney, Pet...	MAIRE O'BRIEN	RE: International Collating Centre - 1Q 2015 ...	Wed 5/13/2015 ...	14 KB	
	Timoney, Pet...	Maire O'Brien	EEE 051215	Tue 5/12/2015 3...	22 KB	
	Timoney, Pet...	'Maire O'Brien'	VS & EHM 051115	Mon 5/11/2015 ...	25 KB	
	Timoney, Pet...	Maire O'Brien	EHM Update 050715	Thu 5/7/2015 11...	23 KB	
	Timoney, Pet...	Maire O'Brien	VS Update 050515	Tue 5/5/2015 3:...	23 KB	
	Timoney, Pet...	Maire O'Brien	EHM & EIA 050415	Mon 5/4/2015 1:...	23 KB	
	Timoney, Pet...	Maire O'Brien	Glanders 050115	Fri 5/1/2015 4:1...	22 KB	
	Timoney, Pet...	Maire O'Brien	VS 043015	Thu 4/30/2015 3...	23 KB	
	Timoney, Pet...	'maire.obrien@aht.org....	EHM event	Thu 4/16/2015 2...	6 KB	
	Timoney, Pet...	Maire O'Brien	1st Qtr. 2015 Report	Wed 4/8/2015 2:...	35 KB	
	Timoney, Pet...	Maire O'Brien	EHM 040815	Wed 4/8/2015 1...	23 KB	
	Timoney, Pet...	Maire O'Brien	EEE 040215	Thu 4/2/2015 9:...	22 KB	
	Timoney, Pet...	Maire O'Brien	EHM 033015	Mon 3/30/2015 ...	23 KB	
	Timoney, Pet...	Maire O'Brien	EHM 032515	Wed 3/25/2015 ...	22 KB	
	Timoney, Pet...	Maire O'Brien	EHM 031615	Mon 3/16/2015 ...	23 KB	
	Timoney, Pet...	'MAIRE O'BRIEN'	RE: PRO/AH/EDR> Equine herpesvirus, equin...	Sat 2/28/2015 1...	23 KB	
	Timoney, Pet...	Maire O'Brien	EHM 022315	Mon 2/23/2015 ...	22 KB	
	Timoney, Pet...	Maire O'Brien	EHM & VS 021315	Fri 2/13/2015 4:...	23 KB	
	Timoney, Pet...	Maire O'Brien	EHV-1 and EHM 020915	Mon 2/9/2015 2:...	24 KB	
	Timoney, Pet...	Maire O'Brien	4th Qtr Report for 2014	Wed 1/14/2015 ...	36 KB	
	Timoney, Pet...	Maire O'Brien	VS 010815	Thu 1/8/2015 3:...	24 KB	
	Timoney, Pet...	'maire.obrien@aht.org....	Vs update	Thu 12/11/2014 ...	6 KB	
	Timoney, Pet...	'MAIRE O'BRIEN'	RE: International Collating Centre - Interim R...	Mon 12/8/2014 ...	13 KB	
	Timoney, Pet...	'maire.obrien@aht.org....	Interim report on vesicular stomatitis	Tue 11/25/2014 ...	7 KB	
	Timoney, Pet...	'maire.obrien@aht.org....		Fri 9/5/2014 11:...	7 KB	
	Timoney, Pet...	'MAIRE O'BRIEN'	RE: VS, EEE & WNE Update 082114	Thu 8/21/2014 1...	16 KB	
	Timoney, Pet...	MAIRE O'BRIEN	RE: Respe/Promed	Mon 8/18/2014 ...	13 KB	
	Timoney, Pet...	MAIRE O'BRIEN	RE: Six foyers de stomatite vésiculeuse - Texa...	Mon 8/11/2014 ...	50 KB	
	Timoney, Pet...	MAIRE O'BRIEN	RE: International Collating Centre - Interim R...	Fri 7/25/2014 12...	11 KB	
	Timoney, Pet...	MAIRE O'BRIEN	RE: Trois nouveaux cas de stomatite vésicule...	Wed 7/23/2014 ...	52 KB	
	Timoney, Pet...	'MAIRE O'BRIEN'	RE: Defra/AHT/BEVA Equine Surveillance Rep...	Fri 7/11/2014 1:...	14 KB	
	Timoney, Pet...	'MAIRE O'BRIEN'	RE: International Collating Centre - Interim R...	Thu 6/12/2014 1...	12 KB	
	Timoney, Pet...	davidtimoney@gmail.c...	RE: EVA	Wed 6/11/2014 ...	28 KB	
	Timoney, Pet...	'MAIRE O'BRIEN'	RE: International Collating Centre - Interim R...	Wed 6/11/2014 ...	12 KB	
	Timoney, Pet...	Fatima Cruz Lopez	RE: EVA	Sat 6/7/2014 7:3...	24 KB	
	Timoney, Pet...	MAIRE O'BRIEN	RE: PRO/AH/EDR> Equine infectious anemia ...	Mon 5/5/2014 1...	33 KB	
	Timoney, Pet...	RICHARD NEWTON	RE: International Collating Centre - Interim R...	Tue 4/29/2014 1...	22 KB	
	Timoney, Pet...	RICHARD NEWTON	RE: EHV-1 Neurologic Disease	Fri 4/11/2014 4:...	19 KB	
	Timoney, Pet...	RICHARD NEWTON	RE: EHV-1 Neurologic Disease	Fri 4/11/2014 4:...	19 KB	
	Timoney, Pet...	MAIRE O'BRIEN	RE: West Nile Virus	Tue 3/18/2014 1...	43 KB	
	Timoney, Pet...	MAIRE O'BRIEN	RE: West Nile Virus	Fri 3/14/2014 10...	33 KB	
	Timoney, Pet...	MAIRE O'BRIEN	RE: West Nile Virus	Wed 3/12/2014 ...	24 KB	
	Timoney, Pet...	Maire O'Brien	EEE & WNE 121613	Mon 12/16/201...	21 KB	
	Timoney, Pet...	Maire O'Brien	EEE & WNE 112613	Tue 11/26/2013 ...	20 KB	
	Timoney, Pet...	Maire O'Brien	EEE & WNE 111413	Thu 11/14/2013 ...	20 KB	

				From	To	Subject	Sent	Size	Catego...	
				Timoney, Pet...	'MAIRE O'BRIEN'	RE: International Collating Centre 3Q 2013 Re...	Fri 11/8/2013 3:...	10 KB		
				Timoney, Pet...	MAIRE O'BRIEN	RE: 3rd Qtr Report	Thu 11/7/2013 4:...	21 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 110713	Thu 11/7/2013 4:...	21 KB		
				Timoney, Pet...	Maire O'Brien	3rd Qtr Report	Wed 11/6/2013 ...	7 KB		
				Timoney, Pet...	Williams, Neil M	FW: International Collating Centre - Interim R...	Wed 11/6/2013 ...	88 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 110113	Fri 11/1/2013 2:...	20 KB		
				Timoney, Pet...	Maire O'Brien	3rd Qtr Disease Report	Thu 10/17/2013 ...	36 KB		
				Timoney, Pet...	Maire O'Brien	WNE Update 101713	Thu 10/17/2013 ...	20 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE Interim Report 101113	Fri 10/11/2013 4:...	20 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 100413	Fri 10/4/2013 4:...	20 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 092713	Fri 9/27/2013 11:...	20 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 091113	Wed 9/11/2013 ...	20 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 090513	Thu 9/5/2013 2:...	21 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 082913	Thu 8/29/2013 1:...	21 KB		
				Timoney, Pet...	Maire O'Brien	EEE Update	Mon 8/19/2013 ...	19 KB		
				Timoney, Pet...	'MAIRE O'BRIEN'	RE: International Collating Centre - Interim R...	Fri 8/16/2013 8:...	11 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 081513	Thu 8/15/2013 3:...	21 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 080713	Wed 8/7/2013 3:...	20 KB		
				Timoney, Pet...	Maire O'Brien	EEE, WNE & EI 080113	Thu 8/1/2013 11:...	21 KB		
				Timoney, Pet...	Maire O'Brien	EEE Update 072313	Tue 7/23/2013 2:...	20 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE Update 071913	Fri 7/19/2013 3:...	20 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 071813	Thu 7/18/2013 9:...	20 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 070813	Mon 7/8/2013 3:...	19 KB		
				Timoney, Pet...	Maire O'Brien	2nd Qtr Report	Mon 7/8/2013 3:...	38 KB		
				Timoney, Pet...	Maire O'Brien	EEE Update 070113	Mon 7/1/2013 1:...	19 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 062613	Wed 6/26/2013 ...	20 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 062113	Fri 6/21/2013 2:...	21 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 060713	Fri 6/7/2013 4.0:...	20 KB		
				Timoney, Pet...	Fatima Cruz Lopez	RE: EVA	Thu 5/30/2013 3:...	25 KB		
				Timoney, Pet...	Fatima Cruz	EVA	Wed 5/29/2013 ...	9 KB		
				Timoney, Pet...	'MAIRE O'BRIEN'	RE: Interim Report 052213	Thu 5/23/2013 3:...	16 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 052213	Wed 5/22/2013 ...	21 KB		
				Timoney, Pet...	MAIRE O'BRIEN	RE:	Tue 5/21/2013 2:...	19 KB		
				Timoney, Pet...	MAIRE O'BRIEN	RE: International Collating Centre - 1Q 2013 ...	Thu 5/9/2013 1:...	18 KB		
				Timoney, Pet...	MAIRE O'BRIEN	RE: Interim Report 050713	Wed 5/8/2013 1:...	22 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 050713	Tue 5/7/2013 4:...	19 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 050313	Fri 5/3/2013 1:4:...	21 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 040913	Tue 4/9/2013 10:...	36 KB		
				Timoney, Pet...	Maire O'Brien	2013 1st Qtr Report	Tue 4/2/2013 11:...	53 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 032813	Thu 3/28/2013 1:...	36 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 032713	Wed 3/27/2013 ...	36 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 032513	Mon 3/25/2013 ...	36 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 032113	Thu 3/21/2013 1:...	36 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 031213	Tue 3/12/2013 3:...	36 KB		
				Timoney, Pet...	Maire O'Brien	Update	Fri 3/8/2013 4:3:...	36 KB		
				Timoney, Pet...	Maire O'Brien	FW: Interim Report 030713	Thu 3/7/2013 4:...	19 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 030713	Thu 3/7/2013 4:...	23 KB		
				Timoney, Pet...	Maire O'Brien	EHM Update	Mon 3/4/2013 9:...	19 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 030113	Fri 3/1/2013 4:2:...	19 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 022713	Wed 2/27/2013 ...	19 KB		

				From	To	Subject	Sent	Size	Catego...	
				Timoney, Pet...	MAIRE O'BRIEN	RE: International Collating Centre - 4Q 2012 ...	Wed 2/20/2013 ...	12 KB		
				Timoney, Pet...	MAIRE O'BRIEN	RE: ICC 4Q report	Fri 2/15/2013 11...	13 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 021513	Fri 2/15/2013 11...	21 KB		
				Timoney, Pet...	MAIRE O'BRIEN	RE: Interim Report 020813	Mon 2/11/2013 ...	16 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 020813	Fri 2/8/2013 3:1...	20 KB		
				Timoney, Pet...	Maire O'Brien	FW: EHM Interim Report 013013	Wed 1/30/2013 ...	23 KB		
				Timoney, Pet...	Maire O'Brien		Thu 1/17/2013 4...	20 KB		
				Timoney, Pet...	MaireO'Brien	EHM Interim Report 010713	Mon 1/7/2013 1...	36 KB		
				Timoney, Pet...	MaireO'Brien	2012 4th Qtr Report	Mon 1/7/2013 1...	53 KB		
				Timoney, Pet...	MaireO'Brien	EEE & WNE 121812	Tue 12/18/2012 ...	37 KB		
				Timoney, Pet...	MaireO'Brien	EHM Interim Report 121012	Mon 12/10/201...	37 KB		
				Timoney, Pet...	MAIRE O'BRIEN	RE: Dourine	Tue 12/4/2012 9...	34 KB		
				Timoney, Pet...	MaireO'Brien	Dourine	Mon 12/3/2012 ...	25 KB		
				Timoney, Pet...	MaireO'Brien	EEE & WNE (Nov. 27 update)	Thu 11/29/2012 ...	25 KB		
				Timoney, Pet...	MaireO'Brien	EEE & WNE (week of Nov. 20th)	Wed 11/28/201...	38 KB		
				Timoney, Pet...	MAIRE O'BRIEN	RE: International Collating Centre - 3Q report...	Mon 11/26/201...	43 KB		
				Timoney, Pet...	MaireO'Brien	EEE, WNE & VS 111612	Fri 11/16/2012 1...	39 KB		
				Timoney, Pet...	Dwyer, Roberta M	RE: EDQ grass sickness article	Tue 11/13/2012 ...	28 KB		
				Timoney, Pet...	MaireO'Brien	EEE and WNE 110812	Thu 11/8/2012 4...	38 KB		
				Timoney, Pet...	MaireO'Brien	EEE and WNE 110812	Thu 11/8/2012 4...	25 KB		
				Timoney, Pet...	MaireO'Brien	EEE & WNE 110212	Fri 11/2/2012 10...	38 KB		
				Timoney, Pet...	MaireO'Brien	EEE, WNE, VS & EHM 103012	Tue 10/30/2012 ...	40 KB		
				Timoney, Pet...	MaireO'Brien	EEE and WNE 101912	Fri 10/19/2012 1...	38 KB		
				Timoney, Pet...	MaireO'Brien	EEE & WNE 101012	Wed 10/10/201...	38 KB		
				Timoney, Pet...	MaireO'Brien	3rd Qtr Report and EEE & WNE Updates	Thu 10/4/2012 4...	68 KB		
				Timoney, Pet...	MaireO'Brien	EEE, WNE & VS 092812	Fri 9/28/2012 3...	38 KB		
				Timoney, Pet...	MaireO'Brien	EEE & WNE 092012	Thu 9/20/2012 9...	38 KB		
				Timoney, Pet...	MaireO'Brien	EEE, WNE & VS 091412	Fri 9/14/2012 11...	39 KB		
				Timoney, Pet...	MaireO'Brien	EEE, WNE and VS 090612	Thu 9/6/2012 2...	38 KB		
				Timoney, Pet...	Maire O'Brien	EEE, WNE and VS Updates	Tue 9/4/2012 2...	38 KB		
				Timoney, Pet...	Maire O'Brien	EEE and WNE 082312	Thu 8/23/2012 1...	38 KB		
				Timoney, Pet...	Maire O'Brien	VS Update	Fri 8/17/2012 10...	37 KB		
				Timoney, Pet...	Maire O'Brien	EEE and WNE 081512	Wed 8/15/2012 ...	38 KB		
				Timoney, Pet...	Maire O'Brien	EEE, WNE and VS 081312	Mon 8/13/2012 ...	38 KB		
				Timoney, Pet...	MaireO'Brien	VS Update 080312	Fri 8/3/2012 11...	37 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 073112	Wed 8/1/2012 1...	37 KB		
				Timoney, Pet...	MaireO'Brien	Diseases Updates	Fri 7/27/2012 11...	38 KB		
				Timoney, Pet...	MaireO'Brien	EEE Update	Fri 7/20/2012 3...	36 KB		
				Timoney, Pet...	MaireO'Brien	Interim Report 072012	Fri 7/20/2012 11...	38 KB		
				Timoney, Pet...	MaireO'Brien	US 2012 Second Qtr Report	Tue 7/17/2012 1...	54 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 071312	Fri 7/13/2012 8...	57 KB		
				Timoney, Pet...	MaireO'Brien	Interim Report 061512	Fri 6/15/2012 9...	37 KB		
				Timoney, Pet...	MAIRE O'BRIEN	RE: EEE Update	Thu 6/14/2012 1...	34 KB		
				Timoney, Pet...	MaireO'Brien	EEE Update	Wed 6/13/2012 ...	37 KB		
				Timoney, Pet...	MaireO'Brien	Interim Report 060712	Thu 6/7/2012 4...	38 KB		
				Timoney, Pet...	IBM Secretariat	RE: IBM 2012	Mon 6/4/2012 3...	29 KB		
				Timoney, Pet...	MaireO'Brien	Interim Report 052212	Tue 5/22/2012 3...	20 KB		
				Timoney, Pet...	MaireO'Brien	Interim Report 051812	Fri 5/18/2012 3...	39 KB		
				Timoney, Pet...	MAIRE O'BRIEN	RE: Interim Report 050112	Fri 5/4/2012 3:4...	43 KB		
				Timoney, Pet...	MAIRE O'BRIEN	RE: Interim Report 050112	Thu 5/3/2012 3...	32 KB		

**T.O.B.A.**

**Infectious Disease Report: USA  
February 2014 - July 2015**

Outbreaks of a diversity of equine infectious diseases have occurred in the USA during the 18 month period under review. The vast majority of such occurrences were caused by viruses, bacteria or other infectious agents that are endemic in the resident equine population in the country. A notable and important exception was the incursion of vesicular stomatitis, a transboundary/foreign animal disease with respect to the USA, in 2014 and again in 2015. Other reports of cases/outbreaks of transboundary diseases involved equine piroplasmiasis and glanders.

In the last two years, there have been significant advances in the development of a National Equine Health Plan spearheaded by a Task Force set up by the American Association of Equine Practitioners (AAEP) under the chairmanship of Dr. Nat White. An integral and important functional component of such a plan is the establishment of an Equine Disease Communication Center. Considerable progress has been achieved in finalizing a blueprint of such a center and in defining its function and on-going role in national monitoring, surveillance and reporting of outbreaks of equine diseases, especially those of importance to the equine industry. Current efforts are directed at identifying sources of financial support that will be required not only to activate but also to maintain such a center in future years.

In this summary of the equine disease situation in the USA over the last 18 months, it is proposed initially to deal with the transboundary disease incursions that occurred during this period followed by consideration of those endemic diseases that continue to result in economic losses for the country's equine industry.

Transboundary (Foreign Animal) Diseases

*Vesicular stomatitis (VS)*: Reintroduction of VS into the USA was confirmed in late May 2014 with diagnosis of the virus infection (New Jersey serotype) on an equine premises in Kinney County, Texas. This was the VS virus index premises for an extensive outbreak of the disease that continued over the rest of the year and only concluded mid-March 2015 with lifting of quarantine restrictions on the last infected premises in Arizona. The disease was confirmed in four states, Arizona, Colorado, Nebraska and Texas and involved 435 positive premises in some 32 countries between the four affected states. The majority of the outbreaks occurred in Colorado which had 84% of the total of 587 confirmed cases of VS in equines and 80% of 60 virus positive bovines. The 2014 outbreak was the worst occurrence of VS in the USA since 2005, the financial impacts of which were felt at various levels within the equine industry. Sources of economic losses included but were not limited to veterinary bills with respect to supportive care for clinically affected horses, control measures to reduce the risk of fly transmission, extended quarantine periods, impact on equine events in VS affected states and movement restrictions on both interstate and international travel.

Very regrettably, VS reappeared in the USA in 2015. In early May, the disease was confirmed in a horse in Grant County, New Mexico. It has since spread to five additional states, Arizona,

## T.O.B.A.

Utah, Texas, Colorado, Wyoming and South Dakota, at this point involving a total of 45 premises in 19 counties in the seven affected states. It remains to be seen whether the 2015 event will be as significant as that experienced in 2014. What is certain, however, is that the equine industry in affected states will once again have to bear the brunt of the economic and other consequences of this disease.

*Equine piroplasmiasis (EP)*: USDA, APHIS, VS continues to monitor and test for EP in the USA, particularly in the Quarter Horse racehorse populations in the border states of Texas, New Mexico, Arizona and California. Well over 250,000 horses have been screened since November 2009, when the EP surveillance program was introduced. A limited number of infected horses were detected in the first nine months of 2014, the vast majority Quarter Horse racehorses, some engaged in non-sanctioned (“bush track”) racing, others illegally imported from Mexico or previously legally imported from known EP endemic countries. Most of the cases were detected in Texas, California and Florida. The majority of serologically positive horses were asymptotically infected with *Theileria equi*. California reported 11 cases of EP in horses that were also co-infected with equine anemia virus, suggestive evidence of the practice of “blood doping.” In a majority of these cases, transmission of infection was believed to be iatrogenic since positive horses were epidemiologically linked to the same trainer/owner. Most of the seropositive horses were euthanized; a few were enrolled in a treatment research program for *T. equi* infected animals.

It is worth noting that a limited number of instances have been encountered over the past 18 months involving horses recently imported into the USA that tested negative for EP on the commercial cELISA assays for *T. equi* and *Babesia caballi* but which were positive in the complement fixation (CF) test for antibodies to *T. equi*. These animals were quarantined, re-bled 2 to 3 weeks later and retested using both cELISA and CF assays. On retest, all of these cases had seroconverted and became positive in the cELISA. This experience confirms the value of the CF test for detecting early cases of EP infection before antibodies can be detected in the cELISA; these cases although infrequent, serve to emphasize the importance of using a combination of the CF test and cELISA to optimize detecting early and late or chronic stages of EP in the horse on post-entry testing into the country.

The USDA’s monitoring, tracing and testing program for EP will continue until further notice.

*Glanders*: A donkey that strayed across the border from Mexico into Texas was reported in early April 2015 as testing positive for CF antibodies to *Burkholderia mallei*, the cause of glanders. The animal was one of a group of five donkeys, all of which were clinically normal. All five subjects were impounded after being rounded up and with the one exception, they tested negative for glanders. Although the status of the positive donkey was down-graded to suspect on re-testing, it was euthanized. Equine glanders is a transboundary disease in the USA; the last case diagnosed in the country was 1942

### Endemic diseases

*Equine herpesvirus-1 (EHV-1) related diseases*: Similar to very many other countries, EHV-1 infection is ubiquitous in various equine populations in the USA regardless of breed or type of

## T.O.B.A.

management system. It should come as no surprise that cases of EHV-1 related respiratory disease, abortion, deaths in neonatal foals and neurologic disease were reported during the period under review.

Of all the endemic equine diseases in the USA, the one that continues to dominate media attention among owners, breeders, trainers and event organizers is EHV-1 myeloencephalopathy or equine herpesvirus neurologic disease. Much of the heightened concern can be attributable to the ease with which this respiratory-borne infection can be transmitted among horses closely congregated together at shows and other performance events and how readily EHV-1 can be spread both within and between states through the movement of horses either incubating the infection or asymptotically infected with the virus. Of additional importance is the high clinical attack rate and associated case-fatality rate that has been a feature of some of the recorded outbreaks of the disease.

Over the past 18 months, outbreaks of EHV-1 and 4 respiratory diseases have been reported by various states in young foals and yearlings. Not infrequently, such outbreaks have also been associated with infection with equine herpesvirus-2 and/or 5. Cases of EHV-1 abortion were principally limited to the second quarter in 2014 and 2015, with 19 and 8 cases respectively recorded in each year. As in prior years, equine herpesvirus-1 neurologic disease or EHM tended to be seasonal in occurrence with the vast majority of outbreaks recorded during the first six months of the year. The first reported disease event in 2014 took place in Minnesota in March. The disease was subsequently confirmed on four other premises in the state, later spreading to a premises in Wisconsin and another in Iowa. The disease was primarily confirmed to Quarter Horses and spread of the virus believed to have taken place at a barrel racing event. Case totals on affected premises were low and strains of EHV-1 isolated from a number of infected horses were determined to be of the non-neuropathogenic genotype. A further outbreak of EHM occurred on a premises in Colorado that was epidemiologically unrelated to the earlier occurrences in Minnesota.

The second quarter of 2014 saw a sharp increase in the prevalence of EHM, with outbreaks confirmed in Wisconsin (1), Virginia (1), North Dakota (1), Pennsylvania (2), Kansas (1), South Dakota (1), Colorado (2) and Massachusetts (1). Quarter Horses were primarily involved and many cases were linked to exposure at barrel racing events. The majority of the outbreaks were associated with EHV-1 strains of the non-neuropathogenic genotype. In the latter part of the year, an additional outbreak of EHM was reported in Oregon with the loss of both affected horses.

The first half of 2015 saw a very similar pattern of occurrence. Sporadic cases of the disease were initially diagnosed in Ohio (three cases), together with single cases in each of Minnesota, Virginia and Michigan. Some of the outbreaks were associated with the neuropathogenic genotype of EHV-1. Reports of EHM continued into the late spring and early summer, with disease outbreaks confirmed in seven states, California, Iowa, Illinois, Maryland, Oregon, Pennsylvania and Virginia, with more than one affected premises in three of the states. Most of the outbreaks involved isolated cases of the disease.

## T.O.B.A.

*Equine influenza (EI)*: Outbreaks of EI were recorded throughout the period of the review, regardless of season of the year. However, the majority were confirmed during the autumn, winter and spring. The disease was diagnosed on 28 premises in 19 states in 2014 and in Kentucky, Michigan, South Dakota, Oregon, Tennessee and Minnesota during the first half of 2015. The clinical severity of infection varied from mild to moderately severe. Strains of equine influenza virus that were characterized from some of these outbreaks belonged to the equine-2 (H3N8) American lineage, clade 1 Florida sublineage. The practice of regular vaccination against EI is variable, depending on the sector of the industry involved.

*Strangles*: Strangles is an endemic disease that occurs annually in the USA. Outbreaks are characterized by disease of variable clinical severity, depending on age and vaccination status of affected animals. There is no evidence of a seasonal preference in terms of the peak incidence of strangles. Reported cases/outbreaks represent an estimate of disease occurrences and likely do not reflect the extent of the problem strangles presents for the equine industry. The number of states recording outbreaks of strangles over the 18 months of the review has varied from seven to 16 per annual quarter. It is evident that based on confirmed cases/outbreaks, the disease is widely distributed; it is not uncommon for states to report multiple outbreaks of strangles within a given time frame.

*Easter Equine Encephalomyelitis (EEE)*: Eastern equine encephalomyelitis occurs annually in the USA. Climate related factors play a major role in the prevalence of the disease in any one year. Very frequently, Florida is the first state to record cases of EEE. By the end of June 2014, 13 equine cases had already been reported, the vast majority in Florida. The number of cases increased significantly over the following three months at which time they had reached a total of 118 with 58 being confirmed in Florida alone. The annual number of 139 cases involving 16 states was less than that recorded in previous years. The first case of EEE in 2015 was diagnosed in Florida in March. By the end of the review period, the number of cases has risen to 18, of which most have been recorded in Florida and Texas. It is certain this total will increase significantly in the coming months when maximal transmission of this virus takes place. Regrettably, similar to previous years, the vast majority of equine cases of EEE are in unvaccinated horses or less frequently, those with an incomplete vaccination history against the disease. Greater efforts are called for to educate horse owners in states in which this disease tends to occur every year, of the proven value of vaccination as a means of preventing EEE.

*West Nile Encephalitis (WNE)*: The number of cases of WNE recorded during the 18-month review period dropped significantly from that recorded in the previous two years. Following confirmation of a single case in Alabama in June 2014, the figure rose to 66 by the end of the third quarter, 32 states reporting cases of the disease. By year's end, an additional 74 cases had been confirmed bringing the annual total to 140 involving 34 states. Following the first recorded case of WNE in Oklahoma in 2015, the disease has subsequently been confirmed in Washington State and Texas. The current national total stands at nine of which six have occurred in Washington. As has been the experience with EEE, the vast majority of cases of WN virus infection were in unvaccinated horses.

## T.O.B.A.

*Rabies:* Cases of equine rabies occur every year. Fortunately, they are isolated and invariably are the result of an unvaccinated horse been bitten by a rabid wild animal, skunks, raccoons or other. Horse owners are strongly recommended to vaccinate their horses against the disease.

*Equine Infectious Anemia (EIA):* The disease continues to be identified but at a very low prevalence level in the tested equine population in the USA. The national total of cases reported for 2014 was 63. There have been the occasional outbreaks in closed herd of horses involving clusters of cases of infection as was reported on two management-linked premises in Tennessee in early 2014. The initial indication of a problem was a horse consigned for sale from one of the premises testing positive for EIA. Testing of all horses on the originating premises turned up five more cases of infection. The disease was also confirmed in California in Racing Quarter horses, some but not all engaged in non-sanctioned racing. California recorded 41 of the overall national total of 63 cases for 2014. A significant percentage of the EIA positive animals also tested positive for EP. There was evidence linking some of these cases to horses illegally introduced into the state. Additional cases of EIA have also been confirmed so far in 2015, being identified at a number of locations in Tennessee. As in years past, the prevalence of EIA is likely to be highest in those southern states in which there is year-round vector activity. The untested equine population is considered the reservoir of the causal virus and the source of infection for the cases that are detected, the majority at time of sale or interstate movement of horses.

*Salmonellosis:* Salmonellosis is a disease that has been endemic in the equine population in the USA for many years. Cases/outbreaks due to Group B, C1 and C3 salmonella species were reported during the period under review. A limited number of cases were confirmed in the first half of 2015, some associated with untyped salmonella species.

*Rhodococcal disease:* Although not a reportable disease in any state, pneumonic disease in young foals due to infection with *R. equi* is widespread and of significant concern as it is in many other countries. Numerous outbreaks were recorded during the 18 month period of the review, some of which were also associated with joint and/or gastrointestinal involvement. Many cases of the disease go unreported.

*Corynebacterium pseudotuberculosis infection:* Outbreaks of infection with *C. pseudotuberculosis* have become more numerous and more widespread within the country over the past several years. The disease is no longer confined in terms of its distribution to the Western states, being diagnosed with increasing frequency in different southeastern and Midwestern states. The increased prevalence of the disease is a source of growing economic concern to the equine industry.

*Assorted other endemic diseases:* A wide range of other infectious equine diseases were recorded during the period under review. Among those associated with abortion, infection with *Leptospira kennewicki* was diagnosed in 2014 (10 cases) and 2015 (2 cases). Cases of nocardioform placentitis and abortion were also reported, the majority due to infection with *Amycolatopsis* spp with a lesser number caused by *Crossiella equi*. One case of Mare Reproductive Loss Syndrome was confirmed in 2015.

## T.O.B.A.

The principal infectious agents associated with enteritis/enteropathy in young foals were *Clostridium perfringens* and *C. difficile* and *Lawsonia intracellularis*. Based on reported outbreaks, rotavirus infection appeared to be less prevalent than in previous years. Cases of *C. perfringens* enteritis were associated with toxin type A strains and in the case of *C. difficile* toxin type A and B strains. Cases/outbreaks of *Lawsonia* infection were reported principally in early and late 2014.

Isolated cases of other infectious diseases to be reported during the period under review included equine monocytic ehrlichiosis, equine coital exanthema, equine adenoviral infection, botulism, tetanus, Tyzzer's disease and Lyme disease.

**January, 2011**

Equine Abortion of Unknown Cause	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17581">http://www.thehorse.com/ViewArticle.aspx?ID=17581</a>
Samples Needed for Wobbler Syndrome Research	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17609">http://www.thehorse.com/ViewArticle.aspx?ID=17609</a>
Weed of the Month: Eastern Poison Ivy	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17612">http://www.thehorse.com/ViewArticle.aspx?ID=17612</a>
Microbial Colonization of the Foal's GI Tract	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17582">http://www.thehorse.com/ViewArticle.aspx?ID=17582</a>
Student Spotlight: Claudia Klein	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17598">http://www.thehorse.com/ViewArticle.aspx?ID=17598</a>
Second Annual Breeders' Short Course Recap	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17610">http://www.thehorse.com/ViewArticle.aspx?ID=17610</a>
CSU Lecture Series Honors Squires	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17595">http://www.thehorse.com/ViewArticle.aspx?ID=17595</a>
Animal Genetics Testing Lab Celebrates 25th Anniversary	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17626">http://www.thehorse.com/ViewArticle.aspx?ID=17626</a>

**February, 2011**

Managing Mud on Kentucky Horse Farms	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17808">http://www.thehorse.com/ViewArticle.aspx?ID=17808</a>
New Strangles Test Offered by UK Veterinary Diagnostic Laboratory	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17828">http://www.thehorse.com/ViewArticle.aspx?ID=17828</a>
Weed of the Month: Musk Thistle	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=14418">http://www.thehorse.com/ViewArticle.aspx?ID=14418</a>
University of Kentucky Pasture Evaluation Program Enjoys Continued Success	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17807">http://www.thehorse.com/ViewArticle.aspx?ID=17807</a>
Horses Needed for Metabolic Syndrome and Laminitis Research	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17834">http://www.thehorse.com/ViewArticle.aspx?ID=17834</a>
Morris Animal Foundation Funds Equine Arteritis Virus Study	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17804">http://www.thehorse.com/ViewArticle.aspx?ID=17804</a>
Gluck Center Graduate Soptlight: Kadie Vanderman, MS	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17806">http://www.thehorse.com/ViewArticle.aspx?ID=17806</a>
KER Establishes Lawrence Fellowship at the University of Kentucky	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17810">http://www.thehorse.com/ViewArticle.aspx?ID=17810</a>
UK Equine Programs on Facebook	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17789">http://www.thehorse.com/ViewArticle.aspx?ID=17789</a>

**March, 2011**

Ed Squires Named new Equine Initiative Director	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17924">http://www.thehorse.com/ViewArticle.aspx?ID=17924</a>
Eastern Tent Caterpillar Egg Hatch Under Way	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17965">http://www.thehorse.com/ViewArticle.aspx?ID=17965</a>
Weed of the Month: Poision Hemlock	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=14522">http://www.thehorse.com/ViewArticle.aspx?ID=14522</a>
University of Kentucky Reporting an Increase in Placentitis Cases	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17849">http://www.thehorse.com/ViewArticle.aspx?ID=17849</a>
Student Spotlight: Kenny Burdine, MS	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17994">http://www.thehorse.com/ViewArticle.aspx?ID=17994</a>
Nielsen Accepts Parasitology Position a the Gluck Center	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17977">http://www.thehorse.com/ViewArticle.aspx?ID=17977</a>
Invasive Plant Species' Abundance Similar at Native and Introduced Sites	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17993">http://www.thehorse.com/ViewArticle.aspx?ID=17993</a>
UK Equine Reproductive Health Group Goals	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17983">http://www.thehorse.com/ViewArticle.aspx?ID=17983</a>
Equine Career Fair	<a href="http://www.thehorse.com/enews/equine-digest/BED-march11.pdf">http://www.thehorse.com/enews/equine-digest/BED-march11.pdf</a>
Comprehensive Planning for Equine Organizations	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17978">http://www.thehorse.com/ViewArticle.aspx?ID=17978</a>

**April, 2011**

UK and UofL Equine Programs Collaborate	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18133">http://www.thehorse.com/ViewArticle.aspx?ID=18133</a>
UKVDL Investigating Reports of Oral Lesions	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18132">http://www.thehorse.com/ViewArticle.aspx?ID=18132</a>
Weed of the Month: Chicory	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18111">http://www.thehorse.com/ViewArticle.aspx?ID=18111</a>
Graduate Spotlight: Rebeka Cosden	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18137">http://www.thehorse.com/ViewArticle.aspx?ID=18137</a>
Time to Assess Eastern Tent Caterpillar Populations	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18135">http://www.thehorse.com/ViewArticle.aspx?ID=18135</a>
Springtime Means Poison Hemlock Control	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18114">http://www.thehorse.com/ViewArticle.aspx?ID=18114</a>
Kentucky Equine Law Journal Ranked inTop 100	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18138">http://www.thehorse.com/ViewArticle.aspx?ID=18138</a>
Commentary: When in France	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18136">http://www.thehorse.com/ViewArticle.aspx?ID=18136</a>
UK Researchers to Speak at Alltech Symposium in May	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18119">http://www.thehorse.com/ViewArticle.aspx?ID=18119</a>
Kentucky Nonprofit Network Holds Town Hall Meetings	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18134">http://www.thehorse.com/ViewArticle.aspx?ID=18134</a>
Gluck Equine Research Foundation Releases Second Research Report	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18129">http://www.thehorse.com/ViewArticle.aspx?ID=18129</a>

**May, 2011**

Equine Herpesvirus Research Ongoing at the UK Gluck Center	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18287">http://www.thehorse.com/ViewArticle.aspx?ID=18287</a>
Best Management Practices for Environmental Systems	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18293">http://www.thehorse.com/ViewArticle.aspx?ID=18293</a>
Weed of the Month: Star-of-Bethlehem	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18059">http://www.thehorse.com/ViewArticle.aspx?ID=18059</a>
Nitrogen Losses in Soil During Wet Weather	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18298">http://www.thehorse.com/ViewArticle.aspx?ID=18298</a>
Quiz Tests Equestrians' Rider Safety	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18288">http://www.thehorse.com/ViewArticle.aspx?ID=18288</a>
Toxin Topic: Landscaping Plants to Avoid	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18303">http://www.thehorse.com/ViewArticle.aspx?ID=18303</a>
New Antibiotic Susceptibility Method Available Through UKVDL	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18297">http://www.thehorse.com/ViewArticle.aspx?ID=18297</a>
UK Equine Initiative Farm and Facilities Expo	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18284">http://www.thehorse.com/ViewArticle.aspx?ID=18284</a>
Grayson-Jockey Club Foundation Funds Wobbler Research	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18283">http://www.thehorse.com/ViewArticle.aspx?ID=18283</a>
UK Graduate Spotlight: Rose Burns McGee	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18301">http://www.thehorse.com/ViewArticle.aspx?ID=18301</a>
UK Veterinary Diagnostic Laboratory Expansion Complete	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18281">http://www.thehorse.com/ViewArticle.aspx?ID=18281</a>

**June, 2011**

Summer Insects: Flies, Ticks, Wasps and Bees	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18404">http://www.thehorse.com/ViewArticle.aspx?ID=18404</a>
Post-Rain Tips for Horse Owners	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18426">http://www.thehorse.com/ViewArticle.aspx?ID=18426</a>
Weed of the Month: Johnsongrass	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18396">http://www.thehorse.com/ViewArticle.aspx?ID=18396</a>
Dealing with Ticks	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18091">http://www.thehorse.com/ViewArticle.aspx?ID=18091</a>
The Changing Face of Mosquito-Borne Diseases	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18051">http://www.thehorse.com/ViewArticle.aspx?ID=18051</a>
Kentucky's Livestock Get Early Dose of Heat Stress	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18432">http://www.thehorse.com/ViewArticle.aspx?ID=18432</a>
UK at the Equine Science Society Symposium	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18421">http://www.thehorse.com/ViewArticle.aspx?ID=18421</a>

**July, 2011**

Climate Change's Effects on Kentucky Horse Pastures	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18570">http://www.thehorse.com/ViewArticle.aspx?ID=18570</a>
Gluck Center Study on Equine Proliferative Enteropathy	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18564">http://www.thehorse.com/ViewArticle.aspx?ID=18564</a>
Weed of the Month: Wild Parsnip	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18556">http://www.thehorse.com/ViewArticle.aspx?ID=18556</a>
Hay Producers: Quality Second Cutting Still Likely	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18569">http://www.thehorse.com/ViewArticle.aspx?ID=18569</a>
Toxin Topic: Snakebites and Horses	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18557">http://www.thehorse.com/ViewArticle.aspx?ID=18557</a>
UKVDL Researcher Evaluates Causative Agents of Abortion	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18563">http://www.thehorse.com/ViewArticle.aspx?ID=18563</a>
Pasture Weeds Video Wins Award	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18562">http://www.thehorse.com/ViewArticle.aspx?ID=18562</a>

**August, 2011**

Endophyte- Infected Tall Fescue and Its Effect on Broodmares	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18709">http://www.thehorse.com/ViewArticle.aspx?ID=18709</a>
Genome Blueprint for Horse and Human Vaccines	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18728">http://www.thehorse.com/ViewArticle.aspx?ID=18728</a>
Weed of the Month: Sandburs	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18699">http://www.thehorse.com/ViewArticle.aspx?ID=18699</a>
Potomac Horse Fever Cases Seen at UKVDL	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18729">http://www.thehorse.com/ViewArticle.aspx?ID=18729</a>
Congenital Flexural Limb Deformities in Foals	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18727">http://www.thehorse.com/ViewArticle.aspx?ID=18727</a>
Laurie Lawrence Recognized with ASAA Fellow Award	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18726">http://www.thehorse.com/ViewArticle.aspx?ID=18726</a>
Searching for UK Alums in the Horse Industry	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18735">http://www.thehorse.com/ViewArticle.aspx?ID=18735</a>
Tips for Overseeding Central Kentucky Horse Pastures	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18703">http://www.thehorse.com/ViewArticle.aspx?ID=18703</a>

**September, 2011**

Lecture: Regulation of Muscle Mass in Horses	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18833">http://www.thehorse.com/ViewArticle.aspx?ID=18833</a>
Weed of the Month: Spiny Pigweed	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18800">http://www.thehorse.com/ViewArticle.aspx?ID=18800</a>
Soil Scientist Works to Preserve Early Equine History	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18802">http://www.thehorse.com/ViewArticle.aspx?ID=18802</a>
Leading Sire Stud Fees: Breeding to Sell	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18831">http://www.thehorse.com/ViewArticle.aspx?ID=18831</a>

Gluck Center Groups Publish Multiple Papers in One Journal	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18865">http://www.thehorse.com/ViewArticle.aspx?ID=18865</a>
Gluck Center Researchers Synthesize ITPP for Upenn	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18854">http://www.thehorse.com/ViewArticle.aspx?ID=18854</a>
UK Graduate Spotlight: Catherine Whitehouse, BSc (Hons)	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18830">http://www.thehorse.com/ViewArticle.aspx?ID=18830</a>
UK Part of Neogen's Animal Safety Success	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18817">http://www.thehorse.com/ViewArticle.aspx?ID=18817</a>
UKVDL Nocardiororm Placentitis Study	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18866">http://www.thehorse.com/ViewArticle.aspx?ID=18866</a>

**October, 2011**

Broodmare Nutrition: Preparing for Fall and Winter	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18994">http://www.thehorse.com/ViewArticle.aspx?ID=18994</a>
Weed of the Month: Henbit	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18993">http://www.thehorse.com/ViewArticle.aspx?ID=18993</a>
Kentucky Equine Receipts May Stabilize in 2011	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18997">http://www.thehorse.com/ViewArticle.aspx?ID=18997</a>
Planning for Winter on Kentucky Horse Farms	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19036">http://www.thehorse.com/ViewArticle.aspx?ID=19036</a>
Adams Named Assistant Research Professor at Gluck Center	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18999">http://www.thehorse.com/ViewArticle.aspx?ID=18999</a>
Mare Response to Endometritis Treatment	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18995">http://www.thehorse.com/ViewArticle.aspx?ID=18995</a>
Nielsen Joins Gluck Center Faculty	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19037">http://www.thehorse.com/ViewArticle.aspx?ID=19037</a>
UK Graduate Spotlight: Katheryn L. Cerny	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18998">http://www.thehorse.com/ViewArticle.aspx?ID=18998</a>

**November, 2011**

Weed of the Month: Perilla Mint	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19161">http://www.thehorse.com/ViewArticle.aspx?ID=19161</a>
New PCR Assay Reduces EHV-1 Testing Costs	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19165">http://www.thehorse.com/ViewArticle.aspx?ID=19165</a>
Strongyle Egg Counts and Race Performance	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18964">http://www.thehorse.com/ViewArticle.aspx?ID=18964</a>
Kentucky Equine Survey Launches	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19184">http://www.thehorse.com/ViewArticle.aspx?ID=19184</a>
Aging Farmers' Health and Safety	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19166">http://www.thehorse.com/ViewArticle.aspx?ID=19166</a>
Saddle Up Safely Wins Award	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19185">http://www.thehorse.com/ViewArticle.aspx?ID=19185</a>
Study: Ocular Fluid Nitrate Concentrations in Foals	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19167">http://www.thehorse.com/ViewArticle.aspx?ID=19167</a>
UK Graduate Student Spotlight: Sydney Hughes	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19168">http://www.thehorse.com/ViewArticle.aspx?ID=19168</a>

**December, 2011**

Relative Feed Value of Hay	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19284">http://www.thehorse.com/ViewArticle.aspx?ID=19284</a>
Relationship between S. neurona and EPM Examined	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19278">http://www.thehorse.com/ViewArticle.aspx?ID=19278</a>
UKVDL Records Rise in Equine Leptospirosis Cases	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19287">http://www.thehorse.com/ViewArticle.aspx?ID=19287</a>
Advances in Equine Neurological Diseases Symposium a Success	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19290">http://www.thehorse.com/ViewArticle.aspx?ID=19290</a>
Kentucky Farm Cash Receipts Exceed \$5 Billion	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19275">http://www.thehorse.com/ViewArticle.aspx?ID=19275</a>
Norm Luba Named 2011 Friend of the UK Equine Initiative	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19293">http://www.thehorse.com/ViewArticle.aspx?ID=19293</a>
UK to Host Equine Showcase and Breeders' Short Course	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19291">http://www.thehorse.com/ViewArticle.aspx?ID=19291</a>

**January, 2012**

Weed of the Month: White Snakeroot	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19492">http://www.thehorse.com/ViewArticle.aspx?ID=19492</a>
Broodmares' Nutritional Needs During Late Gestation	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19493">http://www.thehorse.com/ViewArticle.aspx?ID=19493</a>
Preparing Horse Farms for Winter Weather Disasters	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19402">http://www.thehorse.com/ViewArticle.aspx?ID=19402</a>
UK Study on Muscle Mass in Horses Underway	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19504">http://www.thehorse.com/ViewArticle.aspx?ID=19504</a>
Breeding Soundness Exams for Stallions	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19502">http://www.thehorse.com/ViewArticle.aspx?ID=19502</a>
Central Ky. County Agents Host 'Pastures Please!' Workshops	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19496">http://www.thehorse.com/ViewArticle.aspx?ID=19496</a>
Dates Set for 2012 KENA Meetings	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19491">http://www.thehorse.com/ViewArticle.aspx?ID=19491</a>
Nocardioform Placentitis Affecting Kentucky's 2011 Foal Crop	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19428">http://www.thehorse.com/ViewArticle.aspx?ID=19428</a>
UK Graduate Student Spotlight: Stephen Coleman	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19503">http://www.thehorse.com/ViewArticle.aspx?ID=19503</a>

**February, 2012**

Equine Leptospirosis Abortion Update from the UKVDL	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19637">http://www.thehorse.com/ViewArticle.aspx?ID=19637</a>
Weed of the Month: Yew, <i>Taxus</i>	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19642">http://www.thehorse.com/ViewArticle.aspx?ID=19642</a>
UK's Equine Initiative Renamed UK Ag Equine Programs	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19628">http://www.thehorse.com/ViewArticle.aspx?ID=19628</a>
Equine Showcase and Third Annual Ky Breeders' Short Course	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17498">http://www.thehorse.com/ViewArticle.aspx?ID=17498</a>
Like UK College of Agriculture on Facebook	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19632">http://www.thehorse.com/ViewArticle.aspx?ID=19632</a>
Reproduction Facility Opens at UK Maine Chance Equine Campus	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19629">http://www.thehorse.com/ViewArticle.aspx?ID=19629</a>
UK Graduate Student Spotlight: Sanjay Sarkar	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19639">http://www.thehorse.com/ViewArticle.aspx?ID=19639</a>
UK's Gluck Equine Research Center Celebrates 25 Years	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19538">http://www.thehorse.com/ViewArticle.aspx?ID=19538</a>

**March, 2012**

UK Equine Showcase Presents Young Horse Research	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=17498">http://www.thehorse.com/ViewArticle.aspx?ID=17498</a>
Equine Drug Testing, Medication Regulation Book Released	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19771">http://www.thehorse.com/ViewArticle.aspx?ID=19771</a>
Ionophore Intoxication in Horses	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19766">http://www.thehorse.com/ViewArticle.aspx?ID=19766</a>
Understanding Potomac Horse Fever	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19409">http://www.thehorse.com/ViewArticle.aspx?ID=19409</a>
Leadership Straight from the Horse's Mouth	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19773">http://www.thehorse.com/ViewArticle.aspx?ID=19773</a>
UK Student Spotlight: Yun Young Go	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19772">http://www.thehorse.com/ViewArticle.aspx?ID=19772</a>
UK's Horse Pasture Evaluation Program Accepting Enrollments	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19770">http://www.thehorse.com/ViewArticle.aspx?ID=19770</a>
Weed of the Month: Red Maple	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19776">http://www.thehorse.com/ViewArticle.aspx?ID=19776</a>

**April, 2012**

Updating Equine Influenza Vaccines	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18936">http://www.thehorse.com/ViewArticle.aspx?ID=18936</a>
Weed of the Month: Spiny Pigweed	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=18800">http://www.thehorse.com/ViewArticle.aspx?ID=18800</a>
Exercise-Induced Inflammation and Injury in Racehorses	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19904">http://www.thehorse.com/ViewArticle.aspx?ID=19904</a>
Fertilization and Early Pregnancy Loss in Mares	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19929">http://www.thehorse.com/ViewArticle.aspx?ID=19929</a>
Gluck Center Researchers to Speak at KER Conference	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19927">http://www.thehorse.com/ViewArticle.aspx?ID=19927</a>
Gluck Releases Third Research Report	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19928">http://www.thehorse.com/ViewArticle.aspx?ID=19928</a>
Grayson-Jockey Club Funds Vaccination Immune Response Study	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19926">http://www.thehorse.com/ViewArticle.aspx?ID=19926</a>
UK Graduate Student Spotlight: Elizabeth M. Woodward	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19923">http://www.thehorse.com/ViewArticle.aspx?ID=19923</a>
UK Launching Study of Equine-Guided Leadership in Nurses	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19931">http://www.thehorse.com/ViewArticle.aspx?ID=19931</a>
UK's Lawrence Receives Distinguished Service Professorship	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19930">http://www.thehorse.com/ViewArticle.aspx?ID=19930</a>

**May, 2012**

The Latest in Diagnostic Imaging Modalities for Horses	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=19967">http://www.thehorse.com/ViewArticle.aspx?ID=19967</a>
Joint Disease and Cartilage Repair in Horses	<a href="http://www.thehorse.com/ViewArticle.aspx?ID=20057">http://www.thehorse.com/ViewArticle.aspx?ID=20057</a>

Weed of the Month: Hemp Dogbane  
Ky. Thoroughbred Farms Take Part in L. intracellularis Study  
*Sarcocystis Neurona* Genome Project Almost Complete  
Cloning and Embryo Transfer Legal Issues  
Fourth Annual UK Equine Farm and Facilities Expo Scheduled  
Gluck Center Reproductive Faulty to Speak at WCERS  
Kentucky Hay Yields Down  
New Horseman's Card Supports Equine Research  
Race-Day Drugs, Regulation Discussed by Panel  
Ticks Emerging Earlier than Normal  
UK Graduate Student Spotlight: Ablesh Gautam, BVSc&AH, MS  
Western Kentucky Equine Field Day Scheduled for June 5

<http://www.thehorse.com/ViewArticle.aspx?ID=20058>  
<http://www.thehorse.com/ViewArticle.aspx?ID=20059>  
<http://www.thehorse.com/ViewArticle.aspx?ID=20069>  
<http://www.thehorse.com/ViewArticle.aspx?ID=20060>  
<http://www.thehorse.com/ViewArticle.aspx?ID=20065>  
<http://www.thehorse.com/ViewArticle.aspx?ID=20067>  
<http://www.thehorse.com/ViewArticle.aspx?ID=20066>  
<http://www.thehorse.com/ViewArticle.aspx?ID=20068>  
<http://www.thehorse.com/ViewArticle.aspx?ID=19964>  
<http://www.thehorse.com/ViewArticle.aspx?ID=20064>  
<http://www.thehorse.com/ViewArticle.aspx?ID=20063>  
<http://www.thehorse.com/ViewArticle.aspx?ID=20055>

**June, 2012**

Practical Biosecurity for Horse Farms  
The Older Horse: An Immunological Perspective  
The Evolution of Equine Parasite Control  
Weed of the Month: Broadleaf Plantain  
Environmental Best Practices for Horse Owners  
Equine Reproductive Tract Bacteria Studied  
Gluck Center to Host Infectious Disease Conference

<http://www.thehorse.com/ViewArticle.aspx?ID=20179>  
<http://www.thehorse.com/ViewArticle.aspx?ID=19838>  
<http://www.thehorse.com/ViewArticle.aspx?ID=19859>  
<http://www.thehorse.com/ViewArticle.aspx?ID=17238>  
<http://www.thehorse.com/ViewArticle.aspx?ID=20195>  
<http://www.thehorse.com/ViewArticle.aspx?ID=20181>  
<http://www.thehorse.com/ViewArticle.aspx?ID=20196>

**July, 2012**

Hot, Dry Weather Requires Revised Management Strategies for Hor  
Equine Emerging and Surging Diseases: What's on the Horizon  
Creating Hardened Surfaces in High-Traffic Areas  
Gluck Center Develops New PCR Assay for EHV-1  
Weed of the Month  
UKVDL 2012 Forage Nitrate Testing Guidelines  
Blue-Green Algae Poisoning  
Extension Celebrates 100 Years of County Agents  
2012 Kentucky Equine Survey's Final Fundraising Push  
Dates Set for Gluck Center 25th Anniversary and Equine Research H

for-hot-dry-weather  
<http://www.thehorse.com/articles/29420/equine-emerging-and-surging-diseases-whats-on-the-horizon>  
high-traffic-areas  
for-ehv-1  
<http://www.thehorse.com/articles/27505/weed-of-the-month-johnsongrass-guidelines>  
poisoning  
county-agents  
fundraising-push  
hall-of-fame-dates-set

**August, 2012**

UK Gluck Equine Research Foundation Names Three Inductees to E  
Rotational Grazing: Time it Right for Optimal Pastures  
ELISA Test for EPM  
UK Graduate Student Spotlight: Zhengchun Lu, MD, MSc, PhD  
2012 Kentucky Equine Survey: Clearing up Misconceptions  
Post-Drought Fall Pasture Management  
Watch for Fall Armyworms  
Weaning Stress Horse Course

hall-of-fame-dates-set  
optimal-pastures  
<http://www.thehorse.com/articles/25876/new-elisa-test-for-epm-diagnosis-developed-at-the-gluck-center>  
zhengchun-lu  
<http://www.thehorse.com/articles/29513/weaning-stress-horse-course-archived>

Time to Reseed Pastures	<a href="#">results</a>
UK to Host Lawsonia Symposium	<a href="http://www.thehorse.com/articles/29613/uk-to-host-i-lawsonia-i-symposium">http://www.thehorse.com/articles/29613/uk-to-host-i-lawsonia-i-symposium</a>
<b>September, 2012</b>	
Study: Strongylus Vulgaris Parasite Associated with Selective Deworming	
Kentucky Farm-Level Equine Receipts Increase in 2011	<a href="#">increase-in-2011</a>
Fencing: Is there a Best Choice?	<a href="http://www.thehorse.com/articles/29763/horse-fencing-is-there-a-best-choice">http://www.thehorse.com/articles/29763/horse-fencing-is-there-a-best-choice</a> <a href="http://www.thehorse.com/(F(bDB5Xtn2GZeGNbOnvomTjHClIUQE1WdZvU6LOVtt9PXZ3kBwZqyQF5gFzsmTz3wnxwcjeJPwKa4JCJqla3NsEmKresEgEO16c9rOxhd2rAdcjF9px_d8fOab5J0-yzLCQOqj5X-Fo81vQoMCHBfk07KZK5Pfo22-0mhvjJ3dcXUCJS9JPwvfb2d731tf5eerC7oWYw2))/">http://www.thehorse.com/(F(bDB5Xtn2GZeGNbOnvomTjHClIUQE1WdZvU6LOVtt9PXZ3kBwZqyQF5gFzsmTz3wnxwcjeJPwKa4JCJqla3NsEmKresEgEO16c9rOxhd2rAdcjF9px_d8fOab5J0-yzLCQOqj5X-Fo81vQoMCHBfk07KZK5Pfo22-0mhvjJ3dcXUCJS9JPwvfb2d731tf5eerC7oWYw2))/</a> <a href="#">articles/29785/uk-graduate-high</a>
UK Graduate Student Spotlight: Daniel Andrew Hestad, BS	<a href="#">high</a>
Fall Armyworm Captures Hit All-Time High	<a href="#">sneezeweed</a>
Weed of the Month	<a href="#">critical-funding-goal</a>
2012 Kentucky Equine Survey Reaches Critical Funding Goal	<a href="http://www.thehorse.com/articles/29789/uk-ag-receives-more-than-500-000-to-help-beginning-farmers">http://www.thehorse.com/articles/29789/uk-ag-receives-more-than-500-000-to-help-beginning-farmers</a>
UK Ag Receives More than \$500,000 to Help Beginning Farmers	<a href="#">help-beginning-farmers</a>
<b>October, 2012</b>	
Windrow Composting for Parasite Control and Waste Management	<a href="http://www.thehorse.com/articles/29924/windrow-composting-for-parasite-control-and-waste-management">http://www.thehorse.com/articles/29924/windrow-composting-for-parasite-control-and-waste-management</a>
Annotating the Equine Genome	<a href="http://www.thehorse.com/articles/29919/annotating-the-equine-genome">http://www.thehorse.com/articles/29919/annotating-the-equine-genome</a>
Tips for Environmentally Friendly Muck Storage	<a href="#">muck-storage</a>
UK Graduate Student Spotlight: Lingshuang Sun, Veterinary Medicin	<a href="#">lingshuang-sun</a> <a href="http://www.thehorse.com/articles/29922/gluck-researcher-publishes-equine-parasite-control-handbook">http://www.thehorse.com/articles/29922/gluck-researcher-publishes-equine-parasite-control-handbook</a>
Gluck Researcher Publishes Equine Parasite Control Book	<a href="#">parasite-control-handbook</a>
Weed of the Month	<a href="#">purple-deadnettle</a>
Former UKVDL Bacteriology Chief Receives National Award	<a href="#">receives-national-award</a>
CEM: An Insidious and Potentially Pervasive Disease	<a href="#">pervasive-disease</a>
<b>November, 2012</b>	
UK Launches Thoroughbred Worker Safety Study	<a href="#">health-and-safety-study</a> <a href="http://www.thehorse.com/articles/30911/saddle-up-safely-celebrates-three-years-in-horse-riding-safety-partnership">http://www.thehorse.com/articles/30911/saddle-up-safely-celebrates-three-years-in-horse-riding-safety-partnership</a>
Saddle Up Safely Celebrates Three Years in Horse Riding Safety Part	<a href="#">years-in-horse-riding-safety-partnership</a>
Composting as Horse Carcass Disposal Option	<a href="#">option-for-horse-owners</a> <a href="http://www.thehorse.com/articles/30891/international-conference-on-equine-infectious-diseases-a-success">http://www.thehorse.com/articles/30891/international-conference-on-equine-infectious-diseases-a-success</a>
International Conference on Equine Infectious Diseases a Success	<a href="#">infectious-diseases-a-success</a>
UK Graduate Spotlight: Barry Meade, BS, MA, DVM	<a href="#">meade</a>
Case Clay Named Gluck Equine Research Foundation Chair	<a href="#">research-foundation</a>
Weed of the Month	<a href="#">milkweed</a>
Fluoridated Water and Horses	<a href="http://www.thehorse.com/articles/29869/fluoridated-water-and-horses">http://www.thehorse.com/articles/29869/fluoridated-water-and-horses</a>
<b>December, 2012</b>	
Recap: UK Gluck Center's International Conference on Equine Infectious Diseases	<a href="http://www.thehorse.com/enews/bluegrass-equine-digest/PDF/BED-Dec2012.pdf?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=12-27-2012">http://www.thehorse.com/enews/bluegrass-equine-digest/PDF/BED-Dec2012.pdf?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=12-27-2012</a>
UK Researcher Evaluates Uses for Anti-Mullerian Hormone Testing	<a href="http://www.thehorse.com/articles/31079/uk-researcher-evaluates-uses-for-anti-mullerian-hormone-testing">http://www.thehorse.com/articles/31079/uk-researcher-evaluates-uses-for-anti-mullerian-hormone-testing</a>

http://www.thehorse.com/articles/30989/uk-to-host-2013-  
FVCQwsFHLw8Rvw6aMxDRFB1Fe0G7WmLiuy3MzbRaxmkNMIHWFIKUNdi6d06sX  
2USOpFH5UZYsFRmcf8UQ04D7jsTrGFAnDT\_1TIEzG1F-  
JJ9P38T8\_Wa2g7d\_Cxrqi55JOFqm80-

UK Ag Equine Programs to Host Equine Showcase, Breeders' Short (VHr3TjgJmITNLa9PjNAS4VHd0l6osBEid0))

January, 2013

Kentucky Equine Survey Releases Initial Findings

<http://www.thehorse.com/articles/31254/kentucky-equine-survey-releases-initial-findings>

UKVDL Leptospirosis Update

<http://www.thehorse.com/articles/31246/ukvdl-leptospirosis-update-january-2013>

What's in an OIE Reference Laboratory?

[http://www.thehorse.com/articles/31253/whats-in-an-oie-reference-laboratory?utm\\_source=feedburner&utm\\_medium=feed&utm\\_campaign=Feed%25253a%252bTheHorse%25252fNews%252b\(TheHorse.com%252b-%252bNews\)](http://www.thehorse.com/articles/31253/whats-in-an-oie-reference-laboratory?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%25253a%252bTheHorse%25252fNews%252b(TheHorse.com%252b-%252bNews))

Weed of the Month

<http://www.thehorse.com/articles/26760/weed-of-the-month-eastern-poison-ivy>

Placentitis and Foals' Athletic Prognosis

<http://www.thehorse.com/articles/30874/placentitis-and-foals-athletic-prognosis>

David Switzer Inducted into UK Hall of Distinguished Alumni

<http://www.thehorse.com/articles/31252/david-switzer-inducted-into-uk-hall-of-distinguished-alumni>

Using Mature Hay for Bedding: Potential for Tall Fescue Toxicity

<http://www.thehorse.com/articles/31248/using-mature-hay-for-bedding-potential-for-tall-fescue-toxicity>

UK College of Agriculture Weather Center Warns of Livestock Cold Stress

<http://www.thehorse.com/articles/31245/uk-college-of-agriculture-weather-center-warns-of-livestock-cold-stress>

Central Kentucky County Agents Host Annual Pastures Please! Workshop

<http://www.thehorse.com/articles/31251/central-kentucky-county-agents-host-pastures-please-workshop>

Dates Set for 2013 KENA Networking Meetings

<http://www.thehorse.com/articles/31250/dates-set-for-2013-kena-networking-meetings>

UK Seminar Series Sees Changes in 2013

<http://www.thehorse.com/articles/31249/uk-seminar-series-sees-changes-in-2013>

February, 2013

Off-The-Track Thoroughbred Adoption Issues Examined

<http://www.thehorse.com/articles/31386/study-examines-off-the-track-thoroughbred-adoption-issues>

Eastern Tent Caterpillar Outlook for Spring

<http://www.thehorse.com/articles/31358/eastern-tent-caterpillar-outlook-for-spring-2013>

UK's Horse Pasture Evaluation Program Identifies Kentucky Pasture Trends

<http://www.thehorse.com/articles/31394/uks-horse-pasture-evaluation-program-identifies-kentucky-pasture-trends>

Student Spotlight-Kathryn Smith

smith

Weed of the Month- Buckhorn Plantain

<http://www.thehorse.com/articles/31392/uk-art-museum-features-animal-exhibit>

UK Art Museum Features Animal Exhibit

<http://www.thehorse.com/articles/31393/i-lawsonia-i-prevalence-patterns-investigated>

Lawsonia Prevalence Patterns Investigated

<http://www.thehorse.com/articles/31227/commentary-the-evolution-of-i-equine-disease-quarterly-i>

The Evolution of Equine Disease Quarterly

March, 2013

UK Researcher Awarded \$2.9 Million for EVA Research

research

Exercise, Nutritional Supplement's Effects on Inflammation

<http://www.thehorse.com/articles/31598/exercise-nutritional-supplements-effects-on-inflammation>

Renovating the High-Traffic Paddock

<http://www.thehorse.com/articles/31597/renovating-the-high-traffic-paddock>

UK Gluck Center Faculty Receives \$100,000 for EHV-1 Study

[http://www.thehorse.com/\(F\\_uEPYo/brgvt-So/IUmm6M9UN50Y-gcvJvGWVmoFw55mmIspor-Wlpm8Pij9aaOiyMKbBHOglo\\_3wZBU2pp-ThLQb3ukdKz3HD-8GmHj6mXbGvbdo4VdIOGPBX7InsjapyLrSdz8GBQhmUOj\\_GdTXO1SAHwxgOgqMkdWbUxe075BV-EA37I4GHRiq4MX20ZQHswQ2\)\)/articles/31595/gluck-research-foundation-releases-fourth-research-report](http://www.thehorse.com/(F_uEPYo/brgvt-So/IUmm6M9UN50Y-gcvJvGWVmoFw55mmIspor-Wlpm8Pij9aaOiyMKbBHOglo_3wZBU2pp-ThLQb3ukdKz3HD-8GmHj6mXbGvbdo4VdIOGPBX7InsjapyLrSdz8GBQhmUOj_GdTXO1SAHwxgOgqMkdWbUxe075BV-EA37I4GHRiq4MX20ZQHswQ2))/articles/31595/gluck-research-foundation-releases-fourth-research-report)

Gluck Equine Research Foundation Releases Fourth Research Report  
Student Spotlight- Steffanie Burk

<http://www.thehorse.com/articles/31594/uk-graduate-student-spotlight-steffanie-burk>  
<http://www.thehorse.com/articles/31576/pervious-concrete-reduces-equine-injury-environmental-risks>

Pervious Concrete Reduces Injury, Environmental Risks  
UK College of Law to Host Equine Law Conference

<http://www.thehorse.com/articles/31596/uk-college-of-law-to-host-equine-law-conference>

Kentucky Pasture Weeds

33rd Annual Alfalfa Conference Recap

<http://www.thehorse.com/articles/31589/33rd-annual-alfalfa-conference-recap>

#### April, 2013

Genetic Basis for Establishment of EAV Carrier State

[state  
http://www.thehorse.com/articles/31744/gluck-researchers-study-ways-to-advance-breeding-season](http://www.thehorse.com/articles/31744/gluck-researchers-study-ways-to-advance-breeding-season)

Gluck Center Researchers Study Ways to Advance Breeding Season

<http://www.thehorse.com/articles/31740/aaep-launches-equine-parasite-control-guidelines>

AAEP Launches Equine Parasite Control Guidelines

<http://www.thehorse.com/articles/31741/nielsen-receives-grant-for-parasite-study>

Gluck Center's Nielsen Receives Grayson-Jockey Club Grant for Parasite Study

<http://www.thehorse.com/articles/31735/uk-graduate-student-spotlight-krista-cotten>

Student Spotlight- Krista Cotton

WOM- Spiny pigweed

<http://www.thehorse.com/articles/31651/equine-coat-color-genetics-101>

Equine Coat Color Genetics 101

<http://www.thehorse.com/articles/31742/ky-equine-youth-festival-celebrates-the-horse>

Kentucky Equine Youth Festival Celebrates the Horse and Kentucky's Youth

#### May, 2013

Jill Stowe Named UK Ag Equine Programs Director

<http://www.thehorse.com/articles/31777/stowe-named-uk-ag-equine-programs-director>

Researchers Recommend Three-Tiered EIA Testing

<http://www.thehorse.com/articles/31935/researchers-recommend-three-tiered-eia-testing>

Methods for Controlling Equine Parasites in the Environment

<http://www.thehorse.com/articles/31686/methods-for-controlling-equine-parasites-in-the-environment>

<http://www.thehorse.com/articles/31906/new-tool-detects-effects-of-endophytic-alkaloid-consumption>

A New Tool to Detect the Effects of Endophyte-Infected Tall Fescue in Horses

<http://www.thehorse.com/articles/31932/uk-graduate-student-spotlight-mieke-brummer>

Student Spotlight- Mieke Brummer

<http://www.thehorse.com/articles/31828/new-test-helps-vets-diagnose-placentitis-in-pregnant-mares>

New Test Helps Vets Diagnose Placentitis in Pregnant Mares

<http://www.thehorse.com/articles/27175/weed-of-the-month-star-of-bethlehem>

WOM- Star-of-Bethlehem

<http://www.thehorse.com/articles/27175/weed-of-the-month-star-of-bethlehem>

UK Equine Farm and Facilities Expo to be Held June 19

[june-19](http://www.thehorse.com/articles/31934/ukag-dean-scott-smith-receives-lyons-award)

UK Ag Dean Scott Smith Receives Lyons Award for Outstanding Service

<http://www.thehorse.com/articles/31934/ukag-dean-scott-smith-receives-lyons-award>

Biosecurity for Infectious Disease Control

[control](http://www.thehorse.com/articles/31934/ukag-dean-scott-smith-receives-lyons-award)

#### June, 2013

Understanding the Differences between EMS and PPID

[ppid](http://www.thehorse.com/articles/32078/agricultures-impact-on-kentucky-is-worth-billions)

Agriculture's Impact on Kentucky is Worth Billions

<http://www.thehorse.com/articles/32078/agricultures-impact-on-kentucky-is-worth-billions>

Digestive Capacity in Weanling and Mature Horses Studied

<http://www.thehorse.com/articles/31890/digestive-capacity-in-weanling-and-mature-horses-studied>

Weed of the Month- Musk Thistle  
U.S. Rabies Cases During 2011

<http://www.thehorse.com/articles/23651/weed-of-the-month-musk-thistle>  
<http://www.thehorse.com/articles/31824/equine-rabies-cases-during-2011>  
<http://www.thehorse.com/articles/31947/2013-update-on-nocardioform-placentitis-in-kentucky-mares>

2013 Update on Nocardioform Placentitis in Kentucky Mares  
Feed Choices Can Mean Cost Savings for Horse Owners

<http://www.thehorse.com/articles/31757/equine-neurologic-disease>

Equine Neurologic Diseases in Kentucky  
UK Ag Equine Programs at Annual Equine Science Society Symposium  
Horses Teaching Humans about Leadership  
UK Ag Equine Programs Hosts its Fifth Annual Farm and Facilities Expo

<http://www.thehorse.com/articles/32106/horses-teaching-humans-about-leadership>

**July, 2013**

Insulin Resistance: Not Just an Old, Cushing's Horse Condition  
New Method for Detecting Bloodworms  
Equine Muscle Metabolism

<http://www.thehorse.com/articles/32249/new-method-for-detecting-bloodworms>

UK College of Agriculture, Food and Environment Name Change

<http://www.thehorse.com/articles/32251/uk-college-of-agriculture-food-and-environment-name-change>

Streptococcus zooepidemicus: Only an Opportunist?

<http://www.thehorse.com/articles/32193/em-streptococcus-zooepidemicus-em-only-an-opportunist>

Poison Hemlock

<http://www.thehorse.com/articles/23755/weed-of-the-month-poison-hemlock>

Preserving Rural Landscapes

<http://www.thehorse.com/articles/32191/preserving-rural-landscapes>

Sri Lanka's Ambassador Visits UK, Gluck Center

<http://www.thehorse.com/articles/32250/sri-lankas-ambassador-visits-uk-gluck-center>

EPM Diagnostics

**August, 2013**

UK's Maine Chance Equine Campus Facility Renamed to Honor Area Veterinarian  
Is Your Horse Too Fat? There's an App for That  
Handling Disease Outbreaks

<http://www.thehorse.com/articles/32431/maine-chance-campus-facility-renamed-for-area-veterinarian>

<http://www.thehorse.com/articles/32429/is-your-horse-too-fat-theres-an-app-for-that>

<http://www.thehorse.com/articles/32417/handling-equine-disease-outbreaks>

<http://www.thehorse.com/articles/32411/performance-horse-nutrition-subject-of-sept-kena-meeting>

Performance Horse Nutrition Subject of Sept. KENA Meeting

<http://www.thehorse.com/articles/32252/adams-receives-equine-research-grant>

Gluck Centers Adams Receives Equine Research Grant

<http://www.thehorse.com/articles/32430/the-role-of-interferon-gamma-in-foals>

The Role of Interferon-Gamma in Foals

<http://www.thehorse.com/articles/27808/weed-of-the-month-sandburs>

Sandburs

Selenium Status' Impact on Equine Antioxidant Factors

<http://www.thehorse.com/articles/32428/uk-to-host-endocrine-and-genetic-disorders-symposium>

UK to Host Endocrine and Genetic Disorders Symposium

**September, 2013**

Study Shows Kentucky's Equine Industry has \$3 Billion Economic Impact  
Kentucky Equine Survey's Horse Health Implications

<http://www.thehorse.com/articles/32511/kentuckys-equine-industry-has-3-billion-economic-impact>  
<http://www.thehorse.com/articles/32511/kentuckys-equine-industry-has-3-billion-economic-impact>

Graduate Student Spotlight

UK, Kentucky Horse Park Partner to Improve Watershed  
Stuart Brown Named 2013 Friend of UK Ag Equine Programs  
Bitter sneezeweed  
Weed Management Plans for Horse Pastures

UK Veterinary Diagnostic Laboratory Launches New Website  
Amino Acid Requirements for Horses  
L. intracellularis Research Review

<http://www.thehorse.com/articles/32603/uk-graduate-student-spotlight-brittany-narrow>  
[http://www.thehorse.com/articles/32602/uk-khp-foundation-partner-to-improve-watershed?utm\\_source=feedburner&utm\\_medium=feed&utm\\_campaign=Feed%253a%2BTheHorse%252fNews%2B\(TheHorse.com%2B-%2BNews\)](http://www.thehorse.com/articles/32602/uk-khp-foundation-partner-to-improve-watershed?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%253a%2BTheHorse%252fNews%2B(TheHorse.com%2B-%2BNews))

programs  
<http://www.thehorse.com/articles/29784/weed-of-the-month-bitter-sneezeweed>  
<http://www.thehorse.com/articles/32604/weed-management-plans-for-horse-pastures>  
<http://www.thehorse.com/articles/32605/uk-veterinary-diagnostic-laboratory-launches-new-website>  
<http://www.thehorse.com/articles/32559/amino-acid-requirements-for-horses>  
<http://www.thehorse.com/articles/32424/em-l-intracellularis-em-research-review>

October, 2013

Blue-Green Algae Poisoning

Parasite Egg Shedding on Central Kentucky Horse Farms  
Using Oxytocin to Suppress Estrus in Mares  
Broodmare Nutrition: Preparing for Fall and Winter  
Student Spotlight Breanna Gaubatz

Henbit-Weed of the Month

Planning for Winter on Kentucky Horse Farms

New Real-Time PCR Assay for Diagnosing Potomac Horse Fever  
Walter W. Zent Mare Reproductive Health Facility Dedication Ceremony

2014 UK Equine Showcase, Breeders' Short Course Scheduled  
West Nile Virus and EEE Cases in Kentucky

<http://www.thehorse.com/articles/32748/parasite-egg-shedding-on-central-kentucky-horse-farms>

<http://www.thehorse.com/articles/32749/oxytocin-injections-to-suppress-estrus-in-mares-winter>  
<http://www.thehorse.com/articles/32744/uk-graduate-student-spotlight-breanna-gaubatz>

deadnettle

<http://www.thehorse.com/articles/28141/planning-for-winter-on-kentucky-horse-farms>  
<http://www.thehorse.com/articles/32751/new-real-time-pcr-assay-for-diagnosing-potomac-horse-fever>

<http://www.thehorse.com/articles/32753/2014-uk-equine-showcase-breeders-short-course-scheduled>

<http://www.thehorse.com/articles/32762/west-nile-virus-and-eee-cases-in-kentucky>

November, 2013

Controlling Bush Honeysuckle on Farms

Small Strongyles might be Developing Drug Resistance against Ivermectin  
Elbow Grease Required for Disinfection  
Perilla mint

Fescue Sample Handling and Storage can Affect Analysis Results

Grad Student Spotlight-Laurel Mastro  
Lessons in Agriculture from the Land Down Under  
Rodeo Team Makes its Debut at UK  
Two Upcoming Continuing Education Events

Lloyd's of London Continues Partnership with UK

<http://www.thehorse.com/articles/32900/controlling-bush-honeysuckle-on-horse-farms>  
<http://www.thehorse.com/articles/32901/small-strongyles-might-be-developing-ivermectin-resistance>

<http://www.thehorse.com/articles/28266/weed-of-the-month-perilla-mint>  
<http://www.thehorse.com/articles/32903/fescue-sample-handling-storage-can-affect-analysis-results>

<http://www.thehorse.com/articles/32902/uk-graduate-student-spotlight-laurel-mastro>

<http://www.thehorse.com/articles/32906/lessons-in-agriculture-from-the-land-down-under>

<http://www.thehorse.com/articles/32913/rodeo-team-makes-its-debut-at-uk>

events

<http://www.thehorse.com/articles/32795/lloyds-of-london-univ-of-kentucky-continue-partnership>

December, 2013

Nutrition's Role in Enhancing Aging Horses' Immunity	immunity
Role of Nutrition in Geriatric and EMS Horses	<a href="http://www.thehorse.com/videos/32879/role-of-nutrition-in-geriatric-and-ems-horses">http://www.thehorse.com/videos/32879/role-of-nutrition-in-geriatric-and-ems-horses</a> <a href="http://www.thehorse.com/articles/33080/nielsen-stowe-win-2013-horse-call-grant-award?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=12-29-2013">http://www.thehorse.com/articles/33080/nielsen-stowe-win-2013-horse-call-grant-award?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=12-29-2013</a>
UK Researchers Receive 2013 Horse Call Grant Award	<a href="http://cs.thehorse.com/blogs/horse-sense-and-sensibility/archive/2013/11/27/ethiopian-working-horses-first-impressions.aspx">http://cs.thehorse.com/blogs/horse-sense-and-sensibility/archive/2013/11/27/ethiopian-working-horses-first-impressions.aspx</a>
First Annual Havemeyer Workshop on Infectious Diseases of Working Donkeys	<a href="http://www.thehorse.com/(S(1qa1cf3vu0zt22m1qysrydee))/articles/33098/kentucky-2013-farm-cash-receipts-could-approach-6-billion">http://www.thehorse.com/(S(1qa1cf3vu0zt22m1qysrydee))/articles/33098/kentucky-2013-farm-cash-receipts-could-approach-6-billion</a>
Kentucky 2013 Farm Cash Receipts Could Approach, Exceed \$6 Billion	
Equine Genetic Disorders reviewed	<a href="http://www.thehorse.com/articles/32979/equine-genetic-disorders-reviewed">http://www.thehorse.com/articles/32979/equine-genetic-disorders-reviewed</a>

January, 2014

Equine Parasite Research Crowdfunding Project Launched	<a href="http://www.thehorse.com/articles/33168/equine-parasite-research-crowdfunding-project-launched?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=01-26-2014">http://www.thehorse.com/articles/33168/equine-parasite-research-crowdfunding-project-launched?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=01-26-2014</a> <a href="http://www.thehorse.com/articles/33249/uk-researchers-work-discussed-at-aaep-kester-news-hour?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=01-26-2014">http://www.thehorse.com/articles/33249/uk-researchers-work-discussed-at-aaep-kester-news-hour?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=01-26-2014</a>
UK Researchers' Work Discussed at AAEP Kester News Hour	
New Biomarkers for Diagnosing Bacterial Placentitis in Mares	<a href="http://www.thehorse.com/articles/33218/new-biomarkers-for-diagnosing-bacterial-placentitis-in-mares?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=01-26-2014">http://www.thehorse.com/articles/33218/new-biomarkers-for-diagnosing-bacterial-placentitis-in-mares?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=01-26-2014</a> <a href="http://www.thehorse.com/articles/33246/uks-horohov-page-receive-research-grant?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=01-26-2014">http://www.thehorse.com/articles/33246/uks-horohov-page-receive-research-grant?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=01-26-2014</a>
UK's Horohov, Page Receive Research Grant	
Register Now for UK Equine Showcase, Breeders' Short Course	<a href="http://www.thehorse.com/articles/33243/register-now-for-uk-equine-showcase-breeders-short-course?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=01-26-2014">http://www.thehorse.com/articles/33243/register-now-for-uk-equine-showcase-breeders-short-course?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=01-26-2014</a> <a href="http://www.thehorse.com/articles/33241/em-l-intracellularis-em-infections-in-foals-on-the-rise?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=01-26-2014">http://www.thehorse.com/articles/33241/em-l-intracellularis-em-infections-in-foals-on-the-rise?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=01-26-2014</a> <a href="http://www.thehorse.com/articles/33262/horse-management-tips-for-cold-temperatures?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=01-26-2014">http://www.thehorse.com/articles/33262/horse-management-tips-for-cold-temperatures?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=01-26-2014</a> <a href="http://www.thehorse.com/articles/33263/uk-graduate-student-spotlight-rafaela-de-negri?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=01-26-2014">http://www.thehorse.com/articles/33263/uk-graduate-student-spotlight-rafaela-de-negri?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=01-26-2014</a> <a href="http://www.thehorse.com/articles/33244/uk-seminar-series-kicks-off-jan-30?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-">http://www.thehorse.com/articles/33244/uk-seminar-series-kicks-off-jan-30?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-</a>
L. intracellularis Infections in Foals on the Rise	
Horse Management Tips for Cold Temperatures	
UK Graduate Student Spotlight: Rafaela De Negri	

UK Seminar Series Kicks of Jan. 30

digest&utm\_campaign=01-26-2014  
[http://www.thehorse.com/articles/33242/uk-forage-bowl-team-wins-national-title?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=01-26-2014](http://www.thehorse.com/articles/33242/uk-forage-bowl-team-wins-national-title?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=01-26-2014)

UK Forage Bowl Team Wins National Title

Weed of the Month: Eastern Poison Ivy

<http://www.thehorse.com/articles/26760/weed-of-the-month-eastern-poison-ivy>

**February, 2014**

UK Research: Fescue Toxicosis in Nonpregnant Horses

[http://www.thehorse.com/articles/33413/fescue-toxicosis-in-nonpregnant-horses?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=02-23-2014](http://www.thehorse.com/articles/33413/fescue-toxicosis-in-nonpregnant-horses?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=02-23-2014)  
[http://www.thehorse.com/articles/33398/age-related-susceptibility-to-em-r-equi-em-studied?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=02-23-2014](http://www.thehorse.com/articles/33398/age-related-susceptibility-to-em-r-equi-em-studied?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=02-23-2014)  
[http://www.thehorse.com/articles/33414/uk-graduate-student-spotlight-allen-page?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=02-23-2014](http://www.thehorse.com/articles/33414/uk-graduate-student-spotlight-allen-page?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=02-23-2014)

UK Researchers Study Age-Related Susceptibility to R. Equi

Grad Student Spotlight: Allen Page

NSAIDs Might Impair Horses' Immune Response to Influenza Vaccines

[http://www.thehorse.com/articles/33253/nsaids-might-impair-horses-response-to-influenza-vaccines?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=02-23-2014](http://www.thehorse.com/articles/33253/nsaids-might-impair-horses-response-to-influenza-vaccines?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=02-23-2014)

Weed of the Month: Musk Thistle

[http://www.thehorse.com/articles/23651/weed-of-the-month-musk-thistle?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=02-23-2014](http://www.thehorse.com/articles/23651/weed-of-the-month-musk-thistle?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=02-23-2014)

To Soak or Not to Soak Hay?

[http://www.thehorse.com/articles/33415/hay-to-soak-or-not-to-soak?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=02-23-2014](http://www.thehorse.com/articles/33415/hay-to-soak-or-not-to-soak?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=02-23-2014)

UKAg Using Horses to Teach Emotional Intelligence

<http://www.thehorse.com/articles/33416/ukag-using-horses-to-teach-emotional-intelligence>

Annual Career Fair Unites College Students, Equine Industry

[http://www.thehorse.com/articles/33417/annual-career-fair-unites-college-students-equine-industry?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=02-23-2014](http://www.thehorse.com/articles/33417/annual-career-fair-unites-college-students-equine-industry?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=02-23-2014)

Commentary: 'One Health' Helps Safeguard Horse' Health

[http://www.thehorse.com/articles/33193/commentary-one-health-helps-safeguard-horses-health?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=02-23-2014](http://www.thehorse.com/articles/33193/commentary-one-health-helps-safeguard-horses-health?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=02-23-2014)

**March, 2014**

Winter No Threat to Eastern Tent Caterpillar Eggs

[http://www.thehorse.com/articles/33535/winter-no-threat-to-eastern-tent-caterpillar-eggs?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=03-30-2014](http://www.thehorse.com/articles/33535/winter-no-threat-to-eastern-tent-caterpillar-eggs?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=03-30-2014)

New Statistical Model to Determine Dewormer Efficacy

[http://www.thehorse.com/articles/33599/new-statistical-model-to-evaluate-dewormer-efficacy?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=03-30-2014](http://www.thehorse.com/articles/33599/new-statistical-model-to-evaluate-dewormer-efficacy?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=03-30-2014)

[http://www.thehorse.com/articles/33600/first-uk-equine-research-crowdfunding-project-raises-6-000?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=03-30-2014](http://www.thehorse.com/articles/33600/first-uk-equine-research-crowdfunding-project-raises-6-000?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=03-30-2014)

First UK Equine Research Crowdfunding Project Raises \$6,000

digest&utm\_campaign=03-30-2014  
[http://www.thehorse.com/articles/33592/uk-graduate-student-spotlight-john-e-berth?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=03-30-2014](http://www.thehorse.com/articles/33592/uk-graduate-student-spotlight-john-e-berth?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=03-30-2014)

Grad Student Spotlight: John E. Eberth

Placentitis Could be Detected Early with Hormone Testing

[http://www.thehorse.com/articles/33358/placentitis-could-be-detected-early-with-hormone-testing?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=03-30-2014](http://www.thehorse.com/articles/33358/placentitis-could-be-detected-early-with-hormone-testing?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=03-30-2014)

UKVDL Seeing Increased Lawsonia Submissions

[http://www.thehorse.com/articles/33594/ukvdl-seeing-increased-em-lawsonia-em-submissions?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=03-30-2014](http://www.thehorse.com/articles/33594/ukvdl-seeing-increased-em-lawsonia-em-submissions?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=03-30-2014)

Weed of the Month: Poison Hemlock

[http://www.thehorse.com/articles/23755/weed-of-the-month-poison-hemlock?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=03-30-2014](http://www.thehorse.com/articles/23755/weed-of-the-month-poison-hemlock?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=03-30-2014)

Gluck Equine Research Foundation Releases Fifth Research Report

[http://www.thehorse.com/articles/33595/gluck-foundation-releases-fifth-research-report?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=03-30-2014](http://www.thehorse.com/articles/33595/gluck-foundation-releases-fifth-research-report?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=03-30-2014)

Spring Pasture Management Do's and Don'ts

[http://www.thehorse.com/articles/33604/spring-pasture-management-dos-and-donts?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=03-30-2014](http://www.thehorse.com/articles/33604/spring-pasture-management-dos-and-donts?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=03-30-2014)

Leader in Residence Event Connects Horses and Education

[http://www.thehorse.com/articles/33596/leader-in-residence-event-connects-horses-and-education?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=03-30-2014](http://www.thehorse.com/articles/33596/leader-in-residence-event-connects-horses-and-education?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=03-30-2014)

Graham Motion and Buck Davidson Team Up for UK Lecture Series

[http://www.thehorse.com/articles/33614/graham-motion-and-buck-davidson-team-up-for-uk-lecture?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=03-30-2014](http://www.thehorse.com/articles/33614/graham-motion-and-buck-davidson-team-up-for-uk-lecture?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=03-30-2014)

April, 2014

Health Problems in Newborn Foals

[http://www.thehorse.com/articles/33659/health-problems-in-newborn-foals?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=04-27-2014](http://www.thehorse.com/articles/33659/health-problems-in-newborn-foals?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=04-27-2014)

Deworming: Less is More

[http://www.thehorse.com/articles/33632/deworming-less-is-more?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=04-27-2014](http://www.thehorse.com/articles/33632/deworming-less-is-more?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=04-27-2014)

Weed of the Month: Chicory

[http://www.thehorse.com/articles/27222/weed-of-the-month-chicory?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=04-27-2014](http://www.thehorse.com/articles/27222/weed-of-the-month-chicory?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=04-27-2014)

Study Results: Antibiotics in Semen Extenders can Prevent CEM Bacteria Transmission

[http://www.thehorse.com/articles/33768/study-antibiotics-in-extenders-can-prevent-cem-transmission?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=04-27-2014](http://www.thehorse.com/articles/33768/study-antibiotics-in-extenders-can-prevent-cem-transmission?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=04-27-2014)

[http://www.thehorse.com/articles/33769/tall-fescue-testing-understanding-the-numbers?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-](http://www.thehorse.com/articles/33769/tall-fescue-testing-understanding-the-numbers?utm_source=Newsletter&utm_medium=bluegrass-equine-)

Tall Fescue Testing: Understanding the Numbers

Commentary: Social Media and Equine Crisis Response

Starting and Stopping a Mare's Estrous Cycle

May, 2014

How Many Horses Can Your Farm Hold?

It's Haymaking Season

Weed of the Month: Buttercups

Eastern Tent Caterpillars on the Move in Central Kentucky

Is My Horse a Tick Magnet?

UK Equine Influenza Study Receives Funding from Zoetis

Remember to Follow CEM Sample Collection Guidelines

UKVDL Bulletin Alert: Unapproved Compounded Drugs

Crowdfunding Project Receives Recognition

UK Cooperative Extension Celebrates 100 Years

Gluck to Host Midwestern Conference of Parasitologists

digest&utm\_campaign=04-27-2014

[http://www.thehorse.com/articles/33679/commentary-social-media-and-equine-crisis-response?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=04-27-2014](http://www.thehorse.com/articles/33679/commentary-social-media-and-equine-crisis-response?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=04-27-2014)

[http://www.thehorse.com/articles/33667/starting-and-stopping-a-mares-estrous-cycle?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=04-27-2014](http://www.thehorse.com/articles/33667/starting-and-stopping-a-mares-estrous-cycle?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=04-27-2014)

[http://www.thehorse.com/articles/33905/how-many-horses-can-your-farm-hold?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-25-2014](http://www.thehorse.com/articles/33905/how-many-horses-can-your-farm-hold?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-25-2014)

[http://www.thehorse.com/articles/33906/its-haymaking-season?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-25-2014](http://www.thehorse.com/articles/33906/its-haymaking-season?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-25-2014)

[http://www.thehorse.com/articles/25581/weed-of-the-month-buttercups?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-25-2014](http://www.thehorse.com/articles/25581/weed-of-the-month-buttercups?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-25-2014)

[http://www.thehorse.com/articles/33854/eastern-tent-caterpillars-on-the-move-in-central-kentucky?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-25-2014](http://www.thehorse.com/articles/33854/eastern-tent-caterpillars-on-the-move-in-central-kentucky?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-25-2014)

[http://www.thehorse.com/articles/32774/is-my-horse-a-tick-magnet?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-25-2014](http://www.thehorse.com/articles/32774/is-my-horse-a-tick-magnet?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-25-2014)

[http://www.thehorse.com/articles/33908/uk-equine-influenza-study-receives-funding-from-zoetis?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-25-2014](http://www.thehorse.com/articles/33908/uk-equine-influenza-study-receives-funding-from-zoetis?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-25-2014)

[http://www.thehorse.com/articles/33914/remember-to-follow-cem-sample-collection-guidelines?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-25-2014](http://www.thehorse.com/articles/33914/remember-to-follow-cem-sample-collection-guidelines?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-25-2014)

[http://www.thehorse.com/articles/33909/ukvdl-bulletin-alert-unapproved-compounded-drugs?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-25-2014](http://www.thehorse.com/articles/33909/ukvdl-bulletin-alert-unapproved-compounded-drugs?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-25-2014)

[http://www.thehorse.com/articles/33913/crowdfunding-project-receives-recognition?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-25-2014](http://www.thehorse.com/articles/33913/crowdfunding-project-receives-recognition?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-25-2014)

[http://www.thehorse.com/articles/33911/uk-cooperative-extension-service-celebrates-100-years?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-25-2014](http://www.thehorse.com/articles/33911/uk-cooperative-extension-service-celebrates-100-years?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-25-2014)

[http://www.thehorse.com/articles/33916/gluck-to-host-midwestern-conference-of-parasitologists?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-25-2014](http://www.thehorse.com/articles/33916/gluck-to-host-midwestern-conference-of-parasitologists?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-25-2014)

June, 2014

As Summer Begins, Equine Heat Stress Looms	<a href="http://www.thehorse.com/articles/34095/as-summer-begins-equine-heat-stress-looms">http://www.thehorse.com/articles/34095/as-summer-begins-equine-heat-stress-looms</a>
Weed of the Month: Common Ragweed	<a href="http://www.thehorse.com/articles/24164/weed-of-the-month-common-ragweed">http://www.thehorse.com/articles/24164/weed-of-the-month-common-ragweed</a>
UK Equine Programs on Facebook and Twitter	<a href="http://www.thehorse.com/articles/26933/uk-equine-programs-on-facebook-and-twitter">http://www.thehorse.com/articles/26933/uk-equine-programs-on-facebook-and-twitter</a>
UK Researchers and Students Present at AMCOP	<a href="http://www.thehorse.com/articles/34100/uk-researchers-and-students-present-at-amcop">http://www.thehorse.com/articles/34100/uk-researchers-and-students-present-at-amcop</a>
UK Ag Equine Programs Receives two AHP Awards	<a href="http://www.thehorse.com/(S(1qa1cf3vu0zt22m1qysrydee))/articles/34101/uk-ag-equine-programs-receives-two-ahp-awards">http://www.thehorse.com/(S(1qa1cf3vu0zt22m1qysrydee))/articles/34101/uk-ag-equine-programs-receives-two-ahp-awards</a>
Blue-Green Algae Poisoning in Horses	<a href="http://www.thehorse.com/articles/29469/blue-green-algae-poisoning-in-horses">http://www.thehorse.com/articles/29469/blue-green-algae-poisoning-in-horses</a>
Protecting Horses from Ticks	<a href="http://www.thehorse.com/articles/34096/protecting-horses-from-ticks">http://www.thehorse.com/articles/34096/protecting-horses-from-ticks</a>
Grazing Oat Pastures	<a href="http://www.thehorse.com/articles/24624/grazing-oat-pastures">http://www.thehorse.com/articles/24624/grazing-oat-pastures</a>
UK Ag Equine Program Hosts Two June Equine Field Days	<a href="http://www.thehorse.com/articles/34098/uk-ag-equine-program-hosts-two-june-equine-field-days">http://www.thehorse.com/articles/34098/uk-ag-equine-program-hosts-two-june-equine-field-days</a>
UK Graduate Student Spotlight: Anthony Claes	<a href="http://www.thehorse.com/articles/34097/uk-graduate-student-spotlight-anthony-claes">http://www.thehorse.com/articles/34097/uk-graduate-student-spotlight-anthony-claes</a>

July, 2014

Grazing Summer Grasses: What to Expect	<a href="http://www.thehorse.com/articles/34250/grazing-summer-grasses-what-to-expect?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=07-27-2014">http://www.thehorse.com/articles/34250/grazing-summer-grasses-what-to-expect?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=07-27-2014</a>
UK Researchers Awarded Grant to Study an Avermectin Dewormer	<a href="http://www.thehorse.com/articles/34251/uk-researchers-awarded-grant-to-study-an-avermectin-dewormer?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=07-27-2014">http://www.thehorse.com/articles/34251/uk-researchers-awarded-grant-to-study-an-avermectin-dewormer?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=07-27-2014</a>
Weed of the Month: Nimblewill	<a href="http://www.thehorse.com/articles/25235/weed-of-the-month-nimblewill?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=07-27-2014">http://www.thehorse.com/articles/25235/weed-of-the-month-nimblewill?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=07-27-2014</a>
Reproductive Leptospirosis in Horses	<a href="http://www.thehorse.com/articles/34256/reproductive-leptospirosis-in-horses?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=07-27-2014">http://www.thehorse.com/articles/34256/reproductive-leptospirosis-in-horses?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=07-27-2014</a>
UK to Host Eastern Kentucky Grazing Day	<a href="http://www.thehorse.com/articles/34254/uk-to-host-eastern-kentucky-grazing-day?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=07-27-2014">http://www.thehorse.com/articles/34254/uk-to-host-eastern-kentucky-grazing-day?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=07-27-2014</a>
UKVDL Releases New Test Rates	<a href="http://www.thehorse.com/articles/34252/ukvdl-releases-new-test-rates?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=07-27-2014">http://www.thehorse.com/articles/34252/ukvdl-releases-new-test-rates?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=07-27-2014</a>
	<a href="http://www.thehorse.com/articles/22889/hay-does-fertilization-matter?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-">http://www.thehorse.com/articles/22889/hay-does-fertilization-matter?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-</a>

Hay: Does Fertilization Matter?

digest&utm\_campaign=07-27-2014  
[http://www.thehorse.com/articles/34253/uk-graduate-student-spotlight-jennifer-janes?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=07-27-2014](http://www.thehorse.com/articles/34253/uk-graduate-student-spotlight-jennifer-janes?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=07-27-2014)

UK Graduate Student Spotlight: Jennifer Janes

August, 2014

2014 Equine Research Hall of Fame Inductees Announced

[http://www.thehorse.com/articles/34405/2014-equine-research-hall-of-fame-inductees-announced?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=08-31-2014](http://www.thehorse.com/articles/34405/2014-equine-research-hall-of-fame-inductees-announced?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=08-31-2014)

Algal Blooms Pose Danger to Livestock

[http://www.thehorse.com/articles/34436/algal-blooms-pose-danger-to-livestock?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=08-31-2014](http://www.thehorse.com/articles/34436/algal-blooms-pose-danger-to-livestock?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=08-31-2014)

EIPH Does Not Shorten Racing Careers

[http://www.thehorse.com/articles/34290/study-eiph-does-not-shorten-racing-careers?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=08-31-2014](http://www.thehorse.com/articles/34290/study-eiph-does-not-shorten-racing-careers?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=08-31-2014)

Reducing Risk from Tick-Borne Diseases

[http://www.thehorse.com/articles/34273/reducing-risk-from-tick-borne-diseases?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=08-31-2014](http://www.thehorse.com/articles/34273/reducing-risk-from-tick-borne-diseases?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=08-31-2014)

Saddle Up Safely Releases Booklets on Safe Equine Travel

[http://www.thehorse.com/articles/34431/saddle-up-safely-releases-booklets-on-safe-equine-travel?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=08-31-2014](http://www.thehorse.com/articles/34431/saddle-up-safely-releases-booklets-on-safe-equine-travel?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=08-31-2014)

Late Summer Heatwave Could Stress Livestock

[http://www.thehorse.com/articles/34437/late-summer-heat-wave-could-stress-livestock?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=08-31-2014](http://www.thehorse.com/articles/34437/late-summer-heat-wave-could-stress-livestock?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=08-31-2014)

Recommendations for Overseeding Horse Pastures

[http://www.thehorse.com/articles/27812/recommendations-for-overseeding-horse-pastures?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=08-31-2014](http://www.thehorse.com/articles/27812/recommendations-for-overseeding-horse-pastures?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=08-31-2014)

Weed of the Month: Wild Parsnip

[http://www.thehorse.com/articles/27665/weed-of-the-month-wild-parsnip?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=08-31-2014](http://www.thehorse.com/articles/27665/weed-of-the-month-wild-parsnip?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=08-31-2014)

UK Gluck Center to Host EAV Symposium in November

[http://www.thehorse.com/articles/34439/uk-gluck-center-to-host-eav-symposium-in-november?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=08-31-2014](http://www.thehorse.com/articles/34439/uk-gluck-center-to-host-eav-symposium-in-november?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=08-31-2014)

September, 2014

Growing your Bedding: The Good, the Bad, and the Ugly

[http://www.thehorse.com/articles/34588/growing-your-bedding-the-good-the-bad-and-the-ugly?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=09-28-2014](http://www.thehorse.com/articles/34588/growing-your-bedding-the-good-the-bad-and-the-ugly?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=09-28-2014)

Lessons Learned about Equine Welfare

[http://www.thehorse.com/articles/34412/lessons-learned-about-equine-welfare?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=09-28-2014](http://www.thehorse.com/articles/34412/lessons-learned-about-equine-welfare?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=09-28-2014)

[http://www.thehorse.com/articles/26137/weed-of-the-month-horsenettle?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=09-28-2014](http://www.thehorse.com/articles/26137/weed-of-the-month-horsenettle?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=09-28-2014)

Weed of the Month: Horsenettle

[http://www.thehorse.com/articles/34591/uk-to-host-free-racetrack-injury-prevention-symposium?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=09-28-2014](http://www.thehorse.com/articles/34591/uk-to-host-free-racetrack-injury-prevention-symposium?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=09-28-2014)

UK to Host Free Racetrack Injury Prevention Symposium

Update: Balasuriya's Equine Arteritis Virus (EAV) Research

[http://www.thehorse.com/articles/34589/update-balasuriyas-equine-arteritis-virus-eav-research?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=09-28-2014](http://www.thehorse.com/articles/34589/update-balasuriyas-equine-arteritis-virus-eav-research?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=09-28-2014)

Deworming Dilemma

[http://www.thehorse.com/articles/26798/deworming-dilemma?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=09-28-2014](http://www.thehorse.com/articles/26798/deworming-dilemma?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=09-28-2014)

UK Graduate Student Spotlight: Ashish Tiwari

[http://www.thehorse.com/articles/34590/uk-graduate-student-spotlight-ashish-tiwari?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=09-28-2014](http://www.thehorse.com/articles/34590/uk-graduate-student-spotlight-ashish-tiwari?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=09-28-2014)

October, 2014

Tips for Preparing Your Older Horse for Winter

[http://www.thehorse.com/articles/34746/tips-for-preparing-your-older-horse-for-winter?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=10-26-2014](http://www.thehorse.com/articles/34746/tips-for-preparing-your-older-horse-for-winter?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=10-26-2014)

Myths About Hay Selection

[http://www.thehorse.com/articles/34737/myths-about-hay-selection?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=10-26-2014](http://www.thehorse.com/articles/34737/myths-about-hay-selection?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=10-26-2014)

Weed of the Month: Curly Dock

[http://www.thehorse.com/articles/26273/weed-of-the-month-curly-dock?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=10-26-2014](http://www.thehorse.com/articles/26273/weed-of-the-month-curly-dock?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=10-26-2014)

Commentary: Don't Ignore Exotic Diseases

[http://www.thehorse.com/articles/34716/dont-ignore-exotic-diseases?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=10-26-2014](http://www.thehorse.com/articles/34716/dont-ignore-exotic-diseases?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=10-26-2014)

UK Gluck Center to Host EAV Symposium in November

[http://www.thehorse.com/articles/34439/uk-gluck-center-to-host-eav-symposium-in-november?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=10-26-2014](http://www.thehorse.com/articles/34439/uk-gluck-center-to-host-eav-symposium-in-november?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=10-26-2014)

Gluck Center Interim Leadership Positions Announced

[http://www.thehorse.com/articles/34752/gluck-center-interim-leadership-positions-announced?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=10-26-2014](http://www.thehorse.com/articles/34752/gluck-center-interim-leadership-positions-announced?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=10-26-2014)

2015 Equine Showcase, Breeders' Short Course Scheduled

[http://www.thehorse.com/articles/34753/2015-uk-equine-showcase-breeders-short-course-scheduled?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=10-26-2014](http://www.thehorse.com/articles/34753/2015-uk-equine-showcase-breeders-short-course-scheduled?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=10-26-2014)

Genomics' Contribution to EVA Research and Beyond

[http://www.thehorse.com/articles/34748/genomics-contribution-to-eva-research-and-beyond?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=10-26-2014](http://www.thehorse.com/articles/34748/genomics-contribution-to-eva-research-and-beyond?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=10-26-2014)

UK Graduate Student Spotlight: Ashley Fowler

[http://www.thehorse.com/articles/34739/uk-graduate-student-spotlight-ashley-fowler?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=10-26-2014](http://www.thehorse.com/articles/34739/uk-graduate-student-spotlight-ashley-fowler?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=10-26-2014)

November, 2014

Equipment for Managing Horse Pastures	<a href="http://www.thehorse.com/articles/34925/equipment-for-managing-horse-pastures?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=11-30-2014">http://www.thehorse.com/articles/34925/equipment-for-managing-horse-pastures?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=11-30-2014</a>
Weed of the Month: Wild Violet	<a href="http://www.thehorse.com/articles/24515/weed-of-the-month-wild-violet?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=11-30-2014">http://www.thehorse.com/articles/24515/weed-of-the-month-wild-violet?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=11-30-2014</a>
Study: Hops Can Help Reduce Fructan Fermentation	<a href="http://www.thehorse.com/articles/34844/study-hops-can-help-reduce-fructan-fermentation?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=11-30-2014">http://www.thehorse.com/articles/34844/study-hops-can-help-reduce-fructan-fermentation?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=11-30-2014</a>
Lloyd's of London, UK Partnership Continues	<a href="http://www.thehorse.com/articles/34874/lloyds-of-london-uk-partnership-continues?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=11-30-2014">http://www.thehorse.com/articles/34874/lloyds-of-london-uk-partnership-continues?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=11-30-2014</a>
Early Cold Blast Prompts Livestock Cold Stress Warning	<a href="http://www.thehorse.com/articles/34926/early-cold-blast-prompts-livestock-cold-stress-warning?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=11-30-2014">http://www.thehorse.com/articles/34926/early-cold-blast-prompts-livestock-cold-stress-warning?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=11-30-2014</a>
The Equine Necropsy: A Sensitive but Important Topic	<a href="http://www.thehorse.com/articles/34927/the-equine-necropsy-a-sensitive-but-important-topic?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=11-30-2014">http://www.thehorse.com/articles/34927/the-equine-necropsy-a-sensitive-but-important-topic?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=11-30-2014</a>
Horse Farm Disaster Preparedness	<a href="http://www.thehorse.com/articles/34929/horse-farm-disaster-preparedness?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=11-30-2014">http://www.thehorse.com/articles/34929/horse-farm-disaster-preparedness?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=11-30-2014</a>
Survey: Managers Use Outdated Parasite Control Strategies	<a href="http://www.thehorse.com/articles/34931/survey-managers-use-outdated-parasite-control-strategies?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=11-30-2014">http://www.thehorse.com/articles/34931/survey-managers-use-outdated-parasite-control-strategies?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=11-30-2014</a>
Coffey Named Chair of UK Animal and Food Sciences Department	<a href="http://www.thehorse.com/articles/34928/coffey-named-chair-of-uk-animal-and-food-sciences-department?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=11-30-2014">http://www.thehorse.com/articles/34928/coffey-named-chair-of-uk-animal-and-food-sciences-department?utm_source=Newsletter&amp;utm_medium=bluegrass-equine-digest&amp;utm_campaign=11-30-2014</a>

December, 2014

EVA: A European Perspective	<a href="http://www.thehorse.com/articles/34980/eva-a-european-perspective">http://www.thehorse.com/articles/34980/eva-a-european-perspective</a>
Should I Deworm my Horse in the Winter?	<a href="http://www.thehorse.com/articles/35011/should-i-deworm-my-horse-in-the-winter">http://www.thehorse.com/articles/35011/should-i-deworm-my-horse-in-the-winter</a>
UK Horse Pasture Evaluation Program: 10- year Review	<a href="http://www.thehorse.com/articles/35065/uk-horse-pasture-evaluation-program-10-year-review">http://www.thehorse.com/articles/35065/uk-horse-pasture-evaluation-program-10-year-review</a>
Emma Adam Receives AAEP Foundations Past Presidents' Research Fellow	<a href="http://www.thehorse.com/articles/34985/2014-aaep-foundation-past-presidents-research-fellow">http://www.thehorse.com/articles/34985/2014-aaep-foundation-past-presidents-research-fellow</a>
Extension Agents to Host 8th Annual Pastures Please!!	<a href="http://www.thehorse.com/articles/35064/uk-extension-agents-to-host-8th-annual-pastures-please">http://www.thehorse.com/articles/35064/uk-extension-agents-to-host-8th-annual-pastures-please</a>

Seminar Series Schedule Set for 2015

<http://www.thehorse.com/articles/35066/uk-seminar-series-2015-schedule-set>  
<http://www.thehorse.com/articles/34753/2015-uk-equine-showcase-breeders-short-course-scheduled>  
<http://cs.thehorse.com/blogs/across-the-fence/archive/2014/12/01/a-new-breed-of-funding.aspx>

2015 UK Equine Showcase and Kentucky Breeders' Short Course

A New Breed of Funding

January, 2015

Grad Student Spotlight: Emily Robinson

[http://www.thehorse.com/articles/35212/uk-graduate-student-spotlight-emily-](http://www.thehorse.com/articles/35212/uk-graduate-student-spotlight-emily-rubinson?utm_source=Newsletter&utm_medium=bluegrass-equine)

UK Studies Featured at AAEP Kester News Hour

[http://www.thehorse.com/articles/35224/uk-studies-featured-at-aaep-kester-news-](http://www.thehorse.com/articles/35224/uk-studies-featured-at-aaep-kester-news-hour?utm_source=Newsletter&utm_medium=bluegrass-equine)

Horse Management Tips for Cold Temperatures

[http://www.thehorse.com/articles/35211/horse-management-tips-for-cold-](http://www.thehorse.com/articles/35211/horse-management-tips-for-cold-temperatures?utm_source=Newsletter&utm_medium=bluegrass-equine)

International Research Team to Map Disease Genes in Horses

[http://www.thehorse.com/articles/35096/international-research-](http://www.thehorse.com/articles/35096/international-research-team-to-map-disease-genes-in-horses?utm_source=Newsletter&utm_medium=bluegrass-equine)

32 and My Horse

[http://www.thehorse.com/articles/35214/32-and-my-](http://www.thehorse.com/articles/35214/32-and-my-horse?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=01-25-2015)

What Should I Expect from a Veterinary Visit?

[http://www.thehorse.com/articles/35213/what-should-i-expect-](http://www.thehorse.com/articles/35213/what-should-i-expect-from-a-veterinary-visit?utm_source=Newsletter&utm_medium=bluegrass-equine)

Kentucky Extension Agents to Host 8th Annual Pastures Please!!  
Now You Can Follow Us on Twitter, Too

[http://www.thehorse.com/articles/35064/uk-extension-agents-to-](http://www.thehorse.com/articles/35064/uk-extension-agents-to-host-8th-annual-pastures-please?utm_source=Newsletter&utm_medium=bluegrass-equine)

UK Law Symposium to be Held February 24

[http://www.thehorse.com/articles/35215/uk-law-symposium-to-be-](http://www.thehorse.com/articles/35215/uk-law-symposium-to-be-held-feb-24?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=01-25-2015)

February, 2015

Advancements in Equine Repro Research  
Know Your Pasture Grass

[http://www.thehorse.com/articles/35352/advancements-in-equine-](http://www.thehorse.com/articles/35352/advancements-in-equine-repro-research?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=02-22-2015)

UK Graduate Student Spotlight: Gabriel Monteiro Davolli

[http://www.thehorse.com/articles/35350/uk-graduate-student-](http://www.thehorse.com/articles/35350/uk-graduate-student-spotlight-gabriel-monteiro-davolli?utm_source=Newsletter&utm_medium=bluegrass-equine)  
[http://www.thehorse.com/articles/35273/nutrient-digestibility-in-](http://www.thehorse.com/articles/35273/nutrient-digestibility-in-healthy-adult-and-senior-)  
[healthy-adult-and-senior-](http://www.thehorse.com/articles/35273/nutrient-digestibility-in-healthy-adult-and-senior-)

Nutrient Digestibility in Healthy Adult and Senior Horses

[http://www.thehorse.com/articles/35351/upcoming-conference-celebrates-35-years-of-advancing-alfalfa?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine](http://www.thehorse.com/articles/35351/upcoming-conference-celebrates-35-years-of-advancing-alfalfa?utm_source=Newsletter&utm_medium=bluegrass-equine)

Upcoming Conference Celebrates 35 Years of Advancing Alfalfa  
Pinworm Suspicion

[http://www.thehorse.com/articles/35353/why-do-horses-need-amino-acids-in-their-](http://www.thehorse.com/articles/35353/why-do-horses-need-amino-acids-in-their-diets?utm_source=Newsletter&utm_medium=bluegrass-equine)

Why Do Horses Need Amino Acids in Their Diets?

[http://www.thehorse.com/articles/35354/uk-equine-showcase-breeders-short-course-held-jan-23-](http://www.thehorse.com/articles/35354/uk-equine-showcase-breeders-short-course-held-jan-23-24?utm_source=Newsletter&utm_medium=bluegrass-equine)

UK Equine Showcase, Breeders' Short Course Held Jan. 23-24

[http://www.thehorse.com/articles/35360/parasite-control-in-young-horses?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=02-22-2015](http://www.thehorse.com/articles/35360/parasite-control-in-young-horses?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=02-22-2015)

Parasite Control in Young Horses

Reproduction in the Geriatric Mare

March, 2015

Study: Common Equine Parasite Misidentified in Textbooks

[http://www.thehorse.com/articles/35525/study-common-equine-parasite-misidentified-in-textbooks?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine](http://www.thehorse.com/articles/35525/study-common-equine-parasite-misidentified-in-textbooks?utm_source=Newsletter&utm_medium=bluegrass-equine)  
[http://www.thehorse.com/articles/35526/using-electric-fence-to-improve-pastures?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=03-29-2015](http://www.thehorse.com/articles/35526/using-electric-fence-to-improve-pastures?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=03-29-2015)

Using Electric Fence to Improve Pasture

Bennett Name to UK Positions

[http://www.thehorse.com/articles/35527/bennett-named-to-uk-positions?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=03-29-2015](http://www.thehorse.com/articles/35527/bennett-named-to-uk-positions?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=03-29-2015)  
[http://www.thehorse.com/articles/35460/grayson-jockey-club-funds-equine-research-in-](http://www.thehorse.com/articles/35460/grayson-jockey-club-funds-equine-research-in-2015?utm_source=Newsletter&utm_medium=bluegrass-equine)

Grayson-Jockey Club Funds Equine Research in 2015

[http://www.thehorse.com/articles/35531/annual-career-fair-unites-college-students-equine-](http://www.thehorse.com/articles/35531/annual-career-fair-unites-college-students-equine-industry?utm_source=Newsletter&utm_medium=bluegrass-equine)

Annual Career Fair Unites College Students, Equine Industry

[http://www.thehorse.com/articles/35532/weed-management-in-pastures-hayfields-and-](http://www.thehorse.com/articles/35532/weed-management-in-pastures-hayfields-and-more?utm_source=Newsletter&utm_medium=bluegrass-equine)

Weed Management in Pastures, Hayfields, and More

[http://www.thehorse.com/articles/35530/is-hip-an-effective-treatment-for-em-r-equi-](http://www.thehorse.com/articles/35530/is-hip-an-effective-treatment-for-em-r-equi-em?utm_source=Newsletter&utm_medium=bluegrass-equine)

Is HIP an Effective Treatment for R. equi?

[http://www.thehorse.com/articles/35535/eastern-tent-caterpillar-egg-hatch-begins-in-](http://www.thehorse.com/articles/35535/eastern-tent-caterpillar-egg-hatch-begins-in-kentucky?utm_source=Newsletter&utm_medium=bluegrass-equine)

Eastern Tent Caterpillar Egg Hatch Begins in Kentucky

<http://www.thehorse.com/articles/35529/em-l-intracellularis-em-infection-risk->

L. intracellularis Infection, Risk Evaluated

evaluated?utm\_source=Newsletter&utm\_medium=bluegrass-equine-  
<http://www.thehorse.com/articles/35528/uk-graduate-student-spotlight-igor-canisso>?utm\_source=Newsletter&utm\_medium=bluegrass-equine-

UK Graduate Student Spotlight: Igor Canisso

April, 2015

Cobalt Use in Racehorses

<http://www.thehorse.com/articles/35452/cobalt-use-in-racehorses>?utm\_source=Newsletter&utm\_medium=bluegrass-equine-digest&utm\_campaign=04-26-2015  
<http://www.thehorse.com/articles/35679/uk-presents-conversation-with-leading-reiner-shawn-florida>?utm\_source=Newsletter&utm\_medium=bluegrass-equine-

UK Lecture Series Presents a Conversation with Leading Reiner Shawn Florida

<http://www.thehorse.com/articles/35682/uk-graduate-student-spotlight-macarena-sanz>?utm\_source=Newsletter&utm\_medium=bluegrass-equine-

Grad Student Spotlight: Macarena Sanz

<http://www.thehorse.com/articles/35607/kentucky-equine-market-continues-to-show-improvement>?utm\_source=Newsletter&utm\_medium=bluegrass-

Kentucky Equine Market Continues to Show Improvement

<http://www.thehorse.com/articles/35680/gluck-foundation-releases-sixth-research-report>?utm\_source=Newsletter&utm\_medium=bluegrass-equine-

Gluck Equine Research Foundation Releases Sixth Research Report

<http://www.thehorse.com/articles/35681/uk-equine-farm-and-facilities-expo-to-be-held-june-2>?utm\_source=Newsletter&utm\_medium=bluegrass-equine-

UK Farm and Facilities Expo to be Held June 2

<http://www.thehorse.com/articles/35684/uk-ag-equine-programs-celebrates-10-years>?utm\_source=Newsletter&utm\_medium=bluegrass-equine-

UK Ag Equine Programs Celebrates 10 Years

<http://www.thehorse.com/articles/35553/should-i-worry-about-the-hardness-of-my-horses-water>?utm\_source=Newsletter&utm\_medium=bluegrass-equine-

Water Hardness Worries

May, 2015

McCue, Squires Publish Equine Embryo Transfer Manual

<http://www.thehorse.com/articles/35847/mccue-squires-publish-equine-embryo-transfer-manual>?utm\_source=Newsletter&utm\_medium=bluegrass-equine-  
<http://www.thehorse.com/articles/35518/emerging-equine-diseases-what-you-should-know>?utm\_source=Newsletter&utm\_medium=bluegrass-equine-

Emerging Equine Diseases: What You Should Know

<http://www.thehorse.com/articles/35848/uk-graduate-student-spotlight-kristin-pfahl>?utm\_source=Newsletter&utm\_medium=bluegrass-equine-

Graduate Student Spotlight: Kristin M. Pfahl

<http://www.thehorse.com/articles/35391/integrated-parasite-control-how-to-strike-a-balance>?utm\_source=Newsletter&utm\_medium=bluegrass-equine-

Integrated Parasite Control: How to Strike a Balance

<http://www.thehorse.com/articles/29160/weed-of-the-month-hemp-dogbane>?utm\_source=Newsletter&utm\_medium=bluegrass-

Weed of the Month: Hemp Dogbane

equine-digest&utm\_campaign=05-31-2015  
[http://www.thehorse.com/articles/35849/arabian-roots-exhibit-on-display-at-uk?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-31-2015](http://www.thehorse.com/articles/35849/arabian-roots-exhibit-on-display-at-uk?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-31-2015)  
[http://www.thehorse.com/articles/35850/ukvdl-part-of-larger-animal-health-monitoring-network?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-31-2015](http://www.thehorse.com/articles/35850/ukvdl-part-of-larger-animal-health-monitoring-network?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-31-2015)  
[http://www.thehorse.com/articles/35851/conversation-with-reiner-shawn-florida-held-april-27?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-31-2015](http://www.thehorse.com/articles/35851/conversation-with-reiner-shawn-florida-held-april-27?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-31-2015)  
[http://www.thehorse.com/articles/35681/uk-equine-farm-and-facilities-expo-to-be-held-june-2?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-31-2015](http://www.thehorse.com/articles/35681/uk-equine-farm-and-facilities-expo-to-be-held-june-2?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-31-2015)  
[http://www.thehorse.com/articles/35852/the-equine-genetic-toolbox?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-31-2015](http://www.thehorse.com/articles/35852/the-equine-genetic-toolbox?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-31-2015)

Gluck Center Collaborates With UK Libraries, Keeneland Library for Arabian Roots Exhibit

UK Veterinary Diagnostic Lab Part of Larger Animal Health Monitoring Network

UK Lecture Series Conversation With Reiner Shawn Florida Held April 27 at UK

UK Equine Farm and Facilities Expo to be Held June 2

The Equine Genetic Toolbox

June, 2015

Vaccines, Dewormers, and Nutrition for Senior Horses

[http://www.thehorse.com/articles/35974/vaccines-dewormers-and-nutrition-for-senior-horses?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-31-2015](http://www.thehorse.com/articles/35974/vaccines-dewormers-and-nutrition-for-senior-horses?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-31-2015)  
[http://www.thehorse.com/articles/35979/uk-graduate-student-spotlight-wenyang-zhu?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-31-2015](http://www.thehorse.com/articles/35979/uk-graduate-student-spotlight-wenyang-zhu?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-31-2015)  
[http://www.thehorse.com/articles/35980/using-herbicides-for-horse-pasture-weed-control?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-31-2015](http://www.thehorse.com/articles/35980/using-herbicides-for-horse-pasture-weed-control?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-31-2015)  
[http://www.thehorse.com/articles/34522/what-is-a-neck-threadworm-and-can-it-hurt-my-horse?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-31-2015](http://www.thehorse.com/articles/34522/what-is-a-neck-threadworm-and-can-it-hurt-my-horse?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-31-2015)  
[http://www.thehorse.com/articles/35981/uk-ag-regulatory-services-plays-an-important-role?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-31-2015](http://www.thehorse.com/articles/35981/uk-ag-regulatory-services-plays-an-important-role?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-31-2015)  
[http://www.thehorse.com/articles/35982/uk-equine-law-conference-held-in-april?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-31-2015](http://www.thehorse.com/articles/35982/uk-equine-law-conference-held-in-april?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-31-2015)  
[http://www.thehorse.com/articles/35920/does-equine-ppid-affect-immune-responses-to-vaccination?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-31-2015](http://www.thehorse.com/articles/35920/does-equine-ppid-affect-immune-responses-to-vaccination?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-31-2015)

UK Graduate Student Spotlight: Wenyang Zhu

Using Herbicides for Horse Pasture Weed Control

What is a Neck Threadworm, and Can it Hurt My Horse?

UK Ag Regulatory Services Plays an Important Role

UK Equine Law Conference Held in April

Does Equine PPID Affect Immune Responses to Vaccination?

July, 2015

Wobbler Syndrome: What We Know and Where We're Headed

[http://www.thehorse.com/articles/36020/wobbler-syndrome-what-we-know-and-where-were-headed?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-31-2015](http://www.thehorse.com/articles/36020/wobbler-syndrome-what-we-know-and-where-were-headed?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-31-2015)  
[http://www.thehorse.com/articles/36140/slobbers-in-horses?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=05-31-2015](http://www.thehorse.com/articles/36140/slobbers-in-horses?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=05-31-2015)

Slobbers in Horses

digest&utm\_campaign=07-26-2015  
[http://www.thehorse.com/articles/36139/palli-named-chair-of-uk-department-of-](http://www.thehorse.com/articles/36139/palli-named-chair-of-uk-department-of-entomology?utm_source=Newsletter&utm_medium=bluegrass)

Palli Named Chair of UK Department of Entomology

entomology?utm\_source=Newsletter&utm\_medium=bluegrass-  
[http://www.thehorse.com/articles/36141/equine-tyzzer-disease-update?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=07-26-2015](http://www.thehorse.com/articles/36141/equine-tyzzer-disease-update?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=07-26-2015)

Equine Tyzzer's Disease Update

[http://www.thehorse.com/articles/36142/uk-graduate-student-spotlight-carleigh-](http://www.thehorse.com/articles/36142/uk-graduate-student-spotlight-carleigh-fedorka?utm_source=Newsletter&utm_medium=bluegrass-equine)

UK Graduate Student Spotlight: Carleigh Fedorka

fedorka?utm\_source=Newsletter&utm\_medium=bluegrass-equine-  
[http://www.thehorse.com/articles/36143/advanced-grazing-school-to-focus-on-warm-season-](http://www.thehorse.com/articles/36143/advanced-grazing-school-to-focus-on-warm-season-annuals?utm_source=Newsletter&utm_medium=bluegrass-equine)

Advanced Grazing School to Focus on Warm-Season Annuals

annuals?utm\_source=Newsletter&utm\_medium=bluegrass-equine-  
[http://www.thehorse.com/articles/36144/watch-for-potomac-horse-fever?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=07-26-2015](http://www.thehorse.com/articles/36144/watch-for-potomac-horse-fever?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=07-26-2015)

Watch for Potomac Horse Fever

[http://www.thehorse.com/articles/36145/uk-strongly-represented-at-the-ess-](http://www.thehorse.com/articles/36145/uk-strongly-represented-at-the-ess-symposium?utm_source=Newsletter&utm_medium=bluegrass)

UK Strongly Represented at the ESS Symposium

symposium?utm\_source=Newsletter&utm\_medium=bluegrass-  
[http://www.thehorse.com/articles/36146/stay-weather-aware-at-events?utm\\_source=Newsletter&utm\\_medium=bluegrass-equine-digest&utm\\_campaign=07-26-2015](http://www.thehorse.com/articles/36146/stay-weather-aware-at-events?utm_source=Newsletter&utm_medium=bluegrass-equine-digest&utm_campaign=07-26-2015)

Stay Weather-Aware at Events

[http://www.thehorse.com/articles/36147/uk-gluck-center-to-host-immunology-symposium-in-november?utm\\_source=Newsletter&utm\\_medium=bluegrass-](http://www.thehorse.com/articles/36147/uk-gluck-center-to-host-immunology-symposium-in-november?utm_source=Newsletter&utm_medium=bluegrass)

Gluck Center to Host Immunology Symposium in November

#### August, 2015

The Future of Land Resources

<http://cs.thehorse.com/blogs/across-the-fence/archive/2015/07/20/the-future-of-land-resources.aspx>  
<http://www.thehorse.com/articles/32604/weed-management-plans-for-horse-pastures>

Weed Management Plans for Horse Pastures

<http://www.thehorse.com/articles/36326/recent-kentucky-floods-leave-behind-a-trail-of-debris>

Recent Kentucky Floods Leave Behind a Trail of Debris

spotlight-kelly-prince

Grad Spotlight- Kelly Prince

creeping-charlie

Glechoma hederacea L.

scratches

Dewormer's Effect on Scratches

<http://www.thehorse.com/articles/36332/veterinary-epidemiology-society-recognizes-ukvdl-scientist>

American Veterinary Epidemiology Society Recognizes UKVDL Scientists

#### September, 2015

New Technology Speeds Animal Disease Diagnosis

<http://www.thehorse.com/articles/36463/new-technology-speeds-animal-disease-diagnosis>

Horohov Named Chair of UK Veterinary Science, Director of Gluck Equine Research Center

<http://www.thehorse.com/articles/36416/horohov-named-to-uk-gluck-equine-research-center-positions>  
<http://www.thehorse.com/articles/36464/the-connection-between->

Timely Topic: A Connection Between Moldy Hay and Heaves

moldy-hay-and-heaves

Bennie and Cheryllee Sargent Named 2015 Friend of UK Ag Equine Programs

<http://www.thehorse.com/articles/36422/sargents-named-2015-friends-of-uk-ag-equine-programs>

Grad Student Spotlight- Charlotte Hansen

<http://www.thehorse.com/articles/36465/uk-graduate-student-spotlight-charlotte-hansen>

Your Guide to Horse Hay

hay

Ambitious Undergrad: Sarah Sivinski

<http://www.thehorse.com/articles/36466/uk-undergraduate-student-spotlight-sarah-sivinski>

Q&A: Preventing Hay Fires

<http://www.thehorse.com/articles/36467/preventing-hay-fires>

UK Gluck Center to Host Immunology Symposium in November

<http://www.thehorse.com/articles/36147/uk-gluck-center-to-host-immunology-symposium-in-november>

**October, 2015**

How Sweet is Your Sweet Feed?

feed

Novel Equine Deworming Principles, Procedures in the Works

<http://www.thehorse.com/articles/36473/novel-equine-deworming-principles-procedures-in-the-works>

Getah Virus: Significance as an Equine Pathogen

<http://www.thehorse.com/articles/36536/getah-virus-significance-as-an-equine-pathogen>

Grad Student Spotlight: Tayler Hansen

Broodmare Nutrition: Preparing for Fall and Winter

<http://www.thehorse.com/articles/28101/broodmare-nutrition-preparing-for-fall-and-winter>

UKAg's Barrett Fills Unique Role as EPA Liaison

<http://www.thehorse.com/articles/36604/ukags-barrett-fills-unique-role-as-epa-liaison>

Rider Safety Program Releases New Booklet on Safe Return to Riding

<http://www.thehorse.com/articles/36605/saddle-up-safely-releases-booklet-on-returning-to-riding>

Eastern Equine Encephalomyelitis Update

encephalomyelitis-update

UK Ag Equine Programs to host Equine Showcase, Breeders' Short Course

<http://www.thehorse.com/articles/36606/2016-uk-equine-showcase-breeders-short-course-scheduled>

**November, 2015**

What Impacts Stallions Sperm Output?

sperm-output

Manifestations of Equine Herpesvirus-1

herpesvirus-1

The Grass Guide: Kentucky Bluegrass

bluegrass

UK College of Agriculture, Food and Environment and Lloy's of London Partnership Continues

partnership-continues

Graduate Student Spotlight: Chanhee Mok

<http://www.thehorse.com/articles/36779/uk-graduate-student-spotlight-chanhee-mok>

Disaster Education From Extension Programs

<http://www.thehorse.com/articles/36580/disaster-education-from-extension-programs>

UK Hosts Role of Immunology in Equine Health Symposium

<http://www.thehorse.com/articles/36147/uk-gluck-center-to-host-immunology-symposium-in-november>

## Equine

## Digest

Phosphorus in My Horse's Diet: What is it Good For?

<http://www.thehorse.com/articles/37040/phosphorus-in-my-horses-diet-what-is-it-good-for>

Crowdfunding Studies Instrumental in Securing Five-Year USDA Grant

<http://www.thehorse.com/articles/37041/crowdfunding-studies-instrumental-in-securing-usda-grant>

Understanding Round vs. Square Bale Hay for Horses: Part 2

<http://www.thehorse.com/articles/37044/understanding-round-and-square-bale-hay-for-horses-part-2>

UK Study Vital in Leptospirosis Vaccine Development

<http://www.thehorse.com/articles/37045/uk-study-vital-in-leptospirosis-vaccine-development>

Bermudagrass

<http://www.thehorse.com/articles/37043/the-grass-guide-bermudagrass>

Graduate Student Spotlight: Morgan Pyles

<http://www.thehorse.com/articles/37046/uk-graduate-student-spotlight-morgan-pyles>

Horohov Featured Guest During "UK at the Half"

<http://www.thehorse.com/articles/37062/horohov-featured-guest-during-uk-at-the-half>

UK Researcher Explores the Effects of Climate Change on Soil Microbes

An Equine New Year's Resolution: Better Pasture Management

<http://www.thehorse.com/articles/35210/an-equine-new-years-resolution-better-pasture-management>

Blister Beetles and Alfalfa: A potentially Lethal Mix

<http://www.thehorse.com/articles/36932/blister-beetles-and-alfalfa-a-potentially-lethal-mix>

UK Extension Agents host 9th Annual Pastures Please!!

<http://www.thehorse.com/articles/37051/uk-extension-agents-host-9th-annual-pastures-please>

## February, 2016

A Review of the Many Faces of Placentitis

<http://www.thehorse.com/articles/37103/a-review-of-the-many-faces-of-placentitis>

Simple Steps to Improve Pasture Management

<http://www.thehorse.com/articles/37184/simple-steps-to-improve-pasture-management>

Graduate Spotlight: Emma Adam

<http://www.thehorse.com/articles/37186/uk-graduate-student-spotlight-emma-adam>

UK Lecture Series Presents Conversation with Misdee Wrigley Miller

<http://www.thehorse.com/articles/37185/uk-lecture-series-conversation-with-misdee-wrigley-miller>

Perennial Ryegrass

<http://www.thehorse.com/articles/37183/the-grass-guide-perennial-ryegrass>

Animal Genetic Testing and Research Lab Gets New Name

<http://www.thehorse.com/articles/37182/animal-genetic-testing-and-research-lab-gets-new-name>

UK Student Entrepreneurs Take First Place at Georgia Bowl

<http://www.thehorse.com/articles/37194/uk-student-entrepreneurs-take-first-place-at-georgia-bowl>

UKVDL offers Rhodococcus equi testing

<http://www.thehorse.com/articles/37181/ukvdl-offers-em-rhodococcus-equi-em-testing>

UK's Craig Carter Assumes National Leadership Role

<http://www.thehorse.com/articles/37180/uks-craig-carter-assumes-national-leadership-role>

Equine Lymphosarcoma

<http://www.thehorse.com/articles/36945/equine-lymphosarcoma>

Annual Career Fair Unites College Students, Equine Industry

<http://www.thehorse.com/articles/37179/annual-career-fair-unites-college-students-equine-industry>

UK Ag Equine Programs Welcomes Executive in Residence Susan Lephart

<http://www.thehorse.com/articles/37193/uk-ag-equine-programs-welcomes-lephart>

UK Ag Equine Programs' Researcher Launches Equine Sports Science Initiative

<http://www.thehorse.com/articles/37302/uk-researcher-launches-equine-sports-science-initiative>

Eastern Tent Caterpillar Egg Hatch Begins in Central Kentucky

<http://www.thehorse.com/articles/35535/eastern-tent-caterpillar-egg-hatch-begins-in-kentucky>

Equine Leptospirosis: "Now We Have a Vaccine!" Presented at UK's January Equine Short Course

<http://www.thehorse.com/articles/37295/equine-leptospirosis-now-we-have-a-vaccine>

Ready to Run: 2-Year-Old in Training Breeze Times, Sale Prices, and Racetrack Performance

<http://www.thehorse.com/articles/37296/breeze-times-sale-prices-and-racetrack-performance>

Graduate Spotlight: Kelsey Smith

<http://www.thehorse.com/articles/37298/uk-graduate-student-spotlight-kelsey-smith>

10th International Equine Infectious Diseases Conference

<http://www.thehorse.com/articles/37299/10th-equine-infectious-diseases-conference-scheduled>

Alfalfa (Medicago Sativa)

<http://www.thehorse.com/articles/37294/the-grass-guide-alfalfa>

Hyperimmune Plasma and R. equi Pneumonia Severity

<http://www.thehorse.com/articles/37074/hyperimmune-plasma-and-em-r-equi-em-pneumonia-severity>

UK Researchers Study MicroRNAs Throughout Gestation in Mares

<http://www.thehorse.com/articles/37301/uk-researchers-study-micrnas-throughout-gestation-in-mares>

Serandu Custom Riding Boots Wins UK Venture Challenge

<http://www.thehorse.com/articles/37300/team-serandu-wins-uk-venture-challenge>

**April, 2016**

How Scientists Count Equine Parasites with a Cell Phone

<http://www.thehorse.com/articles/37376/how-scientists-count-equine-parasites-with-a-cell-phone>

Kentucky Mosquitoes' Impact on Horses

<http://www.thehorse.com/articles/37363/kentucky-mosquitoes-impact-on-horses>

Graduate Spotlight: Melissa Siard

<http://www.thehorse.com/articles/37438/uk-graduate-student-spotlight-melissa-siard>

Thirty-Five Countries Gather for Infectious Diseases Conference in Argentina

Bahiagrass (Paspalum Notatum)

<http://www.thehorse.com/articles/37436/the-grass-guide-bahiagrass>

UK Gluck Foundation Seeks Equine Research Hall of Fame Nominations

<http://www.thehorse.com/articles/37440/gluck-seeks-equine-research-hall-of-fame-nominations>

Cicada Emergence This Spring, Little Impact Expected for Kentucky

<http://www.thehorse.com/articles/37439/cicadas-to-emerge-soon-little-kentucky-impact-expected>

Preventing Horse-Related Injuries to Humans

<http://www.thehorse.com/articles/37441/preventing-horse-related-injuries-to-humans>

Nielsen Publishes Three Parasitology Papers in Equine Veterinary Journal Issue

<http://www.thehorse.com/articles/37442/nielsen-publishes-parasitology-papers-in-em-evj-em>

Higgins Receives Bill Barfield Award

<http://www.thehorse.com/articles/37443/higgins-receives-bill-barfield-award>

UK's Veterinary Science Department Hosts Three-Minute Thesis Competition

<http://www.thehorse.com/articles/37444/uk-hosts-three-minute-thesis-competition-for-phd-students>

Inaugural UK Equine Nutrition Short Course to be Held May 14

<http://www.thehorse.com/articles/37454/inaugural-uk-equine-nutrition-short-course-to-be-held-may-14>

# EQUINE DISEASE QUARTERLY

FUNDED BY UNDERWRITERS AT LLOYD'S, LONDON, BROKERS AND THEIR KENTUCKY AGENTS

APRIL 2016

Volume 25, Number 2

●この号の内容	ページ
①時事解説 .....	1
②国際情報 .....	2
ウマヘルペスウイルスによる眼疾患	
③国内情報 .....	4
東部ウマ脳炎	
症候群サーベイランスおよび空間疫学	
④ケンタッキー州情報 .....	6
ケンタッキー州の蚊	

**Vol.25, No.2** (2016年4月号)

軽種馬防疫協議会ホームページ (<http://keibokyo.com/>) でもご覧になれます。  
原文 (英文) については <http://www.ca.uky.edu/gluck/index.htm> でご覧になれます。

**January 2011**

- Microbial Colonization of the Foal's Gastrointestinal Tract
- The Changing Face of Mosquito-Borne Diseases: 2010
- Equine Abortion of Unknown Cause

**April 2011**

- Search for the Cause of Equine Atypical Myopathy
- Rabies: Preventable But Still Invariably Fatal
- Dealing with Ticks
- Leptospiral Abortion: An Update
- Kentucky's 2010 EIA Surveillance and Testing

**July 2011**

- Glanders
- A Distribution Model for an Equine Piroplasmosis Vector, the American Dog Tick
- Biosecurity during Horse Events
- Antimicrobial Susceptibility Testing

**October 2011**

- Hendra Virus
- Equine Borreliosis (Lyme Disease)
- Updating Equine Influenza
- Potential Impacts of Regenerative Medicine

**January 2012**

- Being Prepared for Weather Disasters
- Potomac Horse Fever
- Nocardioform Placentitis Affecting the 2011 Foal Crop
- Map--Eastern Equine Encephalomyelitis Cases
- Map--Kentucky 2011 Rabies

**April 2012**

- Epidemiology in Practice
- Evolution in Equine Parasite Control
- The 'Older' Horse: An Immunological Perspective

**July 2012**

- Dourine in Italy
- Equine Laminitis
- Equine Melanoma and the Nature of Malignancy
- *Corynebacterium pseudotuberculosis* Infections in Horses: A Re-emerging Disease in the USA and Canada
- Spring 2012 Tornadoes

**October 2012**

- CEM - An Insidious and Potentially Pervasive Disease
- Mobile Blue Light Therapy
- Fluoridated Water and Horses
- Recent Changes to the USEF Equine Drugs and Medications Rule

**January 2013**

- Hendra Virus and Protection Adopted by Equine Veterinarians
- Equine Grass Sickness—Still an Enigma
- Kentucky Pastures

**April 2013**

- Changing Tides in Insulin Resistance Interpretation
- EPM Diagnostics
- Rabies Cases During 2011
- Equine Neurologic Disease

**July 2013**

- *Streptococcus zooepidemicus* – Only an Opportunist?
- Pastern Dermatitis – A Pathologist's Perspective
- Snakebite in Horses
- Conducting a Scientific Survey of a State's Equine Population

**October 2013**

- Dying Ash Trees and Wildfire Threat
- Equine Monocytic Ehrlichiosis: Kentucky Case Series; January 2008-August 2013
- The Importance of Nutrition in Enhancing Immunity in the Aging Horse
- Selenium Status in Horses

**January 2014**

- *Trypanosoma evansi* Infection in Horses
- Multisystemic Eosinophilic Epitheliotropic Disease
- Progress Toward New Biomarkers for the Diagnosis of Bacterial Placentitis in Mares
- Equine Encephalitis Cases

**April 2014**

- Emergence of Methicillin-Resistant *Staphylococcus aureus* Sequence Type 398 in Horses
- Epizootic Lymphangitis
- Equine Botulism
- Kentucky's 2013 EIA Surveillance and Testing

**July 2014**

- Reducing Risk from Tick-Borne Diseases
- The Thoroughbred Racehorse Foot
- Equine Lyme Disease
- Reproductive Leptospirosis

**October 2014**

- Equine Pythiosis
- Current Thoughts on the Significance of Mycotoxins
- Equine Cutaneous Leishmaniasis
- State-of-the-Art Imaging Techniques

**January 2015**

- Responsible Interpretation of Polymerase Chain Reaction Assays
- Heaves, COPD, RAO, or Simply Equine Asthma?
- Where Are We Headed with Wobbler Syndrome?
- Diagnostic Sample Submission Guidelines

**April 2015**

- Global Horse Transportation Issues
- Re-emergent Diseases
- Equine Urinary Disease
- Kentucky Equine Market Continues to Show Improvement

**July 2015**

- Working Equids in Low-Income Countries– Impact of Infectious Disease
- Atopic Dermatitis
- --USEF Drugs and Medications Rules
- Economic Impacts of Vesicular Stomatitis Outbreaks
- Equine Tyzzer's Disease Update: January 1993-April 2015

**October 2015**

- Getah Virus: Significance as an Equine Pathogen
- Eastern Equine Encephalomyelitis
- Anhidrosis
- Manifestations of Equine Herpesvirus–1

**January 2016**

- Equine Glanders: A Diagnostic Approach in Germany
- Blister Beetles and Alfalfa: A Potentially Lethal Mix
- Hand Protection
- Equine Lymphosarcoma

**April 2016**

- Equine Herpesvirus Associated Ocular Disease
- Eastern Equine Encephalitis
- Syndromic Surveillance and Spatial Epidemiology
- Kentucky Mosquitoes

**July 2016**

- Vector-borne Diseases and the Emergent Threat They Pose
- Mcr-1 and Other New Resistance Genes: What is the Threat to Horses?
- Using Progesterone as a Diagnostic Tool during Equine Pregnancy
- Equine Congenital Cardiovascular Anomalies

# UNIVERSITY OF KENTUCKY DEPARTMENT OF VETERINARY SCIENCE EQUINE DIAGNOSTIC AND RESEARCH SEMINAR SERIES

Date	Topic	Speaker	Affiliation
1/20/2011	Laminitis	Ray Geor	Michigan State University, Dept. of Large Animal Clinical Sciences
2/24/2011	Ophthalmology	Dennis Brooks	University of Florida, Department of Small Animal Clinical Sciences
3/31/2011	Bacterial and Fungal Skin Infections	Stephen White	University of California, Davis
4/28/2011	Prevention and Treatment	Hilary Clayton	Michigan State University, College of Veterinary Medicine
5/26/2011	Lessons Learnt	Paul Lunn	Sciences
6/23/2011	Horses--Molecular Studies of SRY	Rose Burns McGee	M.H. Gluck Equine Research Center
7/28/2011	Old Grey Mare	John Robertson	Virginia-Maryland Regional College of Veterinary Medicine
8/25/2011	Athletic, and Aging Horses	Kristine Urschel	UK Department of Animal and Food Sciences
9/29/2011	Endometritis	Mats Troedsson	M.H. Gluck Equine Research Center
10/27/2011	in the Horse	Laurent Couetil	Purdue University Department of Veterinary Clinical Sciences
12/6/2011	Advances in Neurological Diseases Symposium	Rob Mackay Jennifer Janes Barrie Grant  Dan Howe Udeni Balasuriya Lutz Goehring	University of Florida M.H. Gluck Equine Research Center Bonsall, CA  M.H. Gluck Equine Research Center M.H. Gluck Equine Research Center Colorado State University
1/26/2012	Case Studies in Equine Toxicology	Cynthia Gaskill	
2/23/2012	Practitioners' Approach to Assisted Reproduction	Rob Foss	Equine Medical Services
3/29/2012	Laminitis	Jim Belknap Kent	Ohio State University
4/26/2012	Lameness and Diagnostic Imaging	Allen	Virginia Equine Imaging
5/31/2012	Equine Parasites	Martin Nielsen	M.H. Gluck Equine Research Center
6/28/2012	Joint Diseases	Alicia Bertone	Ohio State University
7/26/2012	Stress of Weaning	Amanda Adams Macarena Sanz	M.H. Gluck Equine Research Center M.H. Gluck Equine Research Center
8/30/2012	Equine Leptospirosis	Craig Carter	UK Veterinary Diagnostic Laboratory
	Treatment of subchondral bone cysts in the medial femoral condyle of horses using a transcondylar screw	Elizabeth Santschi	Ohio State University
9/27/2012	Equine Piroplasmiasis	Robert Mealey	Washington State University
10/18/2012	Burn Injuries in the Horse	Reid Hanson	Auburn University
11/15/2012	Lawsonia and EPE Symposium	Connie Gebhart Nathan Slovis David Horohov Alan Loynachan Allen Page	University of Minnesota Hagyard Equine Medical Institute M.H. Gluck Equine Research Center UK Veterinary Diagnostic Laboratory M.H. Gluck Equine Research Center

1/18-1/19	UK Equine Showcase and KY Breeders' Short Course	Various Speakers	University of Kentucky
2/28/2013	Placentitis	Barry Ball	M.H. Gluck Equine Research Center
	Placentitis	Karen Wolfsdorf	Hagyard Equine Medical Institute
<i>No seminars in March, April and May</i>			
6/27/2013	Field Anesthesia	Nora Matthews	Texas A & M University
7/25/2013	Podiatry	Scott Morrison	Rood and Riddle Equine Hospital
8/22/2013	Respiratory Endoscopy	Gary Priest	Harhill and Priest Equine Surgery
9/26/2013	The role of nutrition in modulating the immune and metabolic responses of geriatric and EMS horses	Amanda Adams	M.H. Gluck Equine Research Center
	Nutrition and disease interactions: feeding the sick horse	Ginger Rich	Rich Equine Nutrition Consulting
10/24/2013	Cardiology	Michelle Barton	University of Georgia
11/21/2013	Endocrine and Genetic Disorder Symposium	Teri Lear	M.H. Gluck Equine Research Center
		Dianne McFarlane	Oklahoma State University
		Donald Thompson	Louisiana State University
1/30/2014	Inflammatory airway disease	Laurent Couetil	Purdue University Department of Veterinary Clinical Sciences
		Jean-Pierre Lavoie	University of Montreal, Department of Clinical Sciences
2/7/2014	UK Equine Showcase	Laurel Mastro	University of Kentucky
		Bob Coleman	University of Kentucky
		Laura Kennedy	University of Kentucky
		Jill Stowe	University of Kentucky
		Jamie MacLeod	University of Kentucky
		Macarena Sanz	University of Kentucky
		Ernie Bailey	University of Kentucky
		Tom Tobin	University of Kentucky
2/8/2014	Kentucky Breeders' Short Course	Ed Squires	University of Kentucky
		Barry Ball	University of Kentucky
		Igor Canisso	University of Kentucky
		Anthony Claes	University of Kentucky
		Bonnie Barr	University of Kentucky
		Alejandro Esteller-Vico	University of Kentucky
		Mats Troedsson	University of Kentucky
		Karen Wolfsdorf	Hagyard Equine Medical Institute
		Kristina Lu	Hagyard Equine Medical Institute
2/27/2014	11th International Symposium on Equine Repro	Barry Ball	University of Kentucky
		Ed Squires	University of Kentucky
		Mats Troedsson	University of Kentucky
<i>No seminars in March, April, May and June</i>			
7/31/2014	Is the Hoof a Smart Structure?	Debra Taylor	Auburn University
	Equine Welfare	Tom Lenz	Zoetis

8/28/2014	Fluid Therapy Choices for the Sick Foal: When, What and How Much?	Pam Wilkins	University of Illinois
25-Sep	Equine Herpes Virus-1	Udeni Balasuriya Steve Reed	UK Gluck Equine Research Center Rood and Riddle Equine Hospital
10/20/2014	Racetrack Injury Prevention Symposium	Mary Scollay David Horohov John Pelosa	Kentucky Racing Commission UK Gluck Equine Research Center Equine Medical Center of Ocala
11/20/2014	Shock Wave Therapy	Scott McClure	Iowa State University
23-Jan	UK Equine Showcase	Cynthia Gaskill Martin Nielsen Ray Smith Krista Lea Dan Howe Allen Page Amanda Adams Kristine Urschel Peter Timoney	University of Kentucky University of Kentucky
24-Jan	KY Breeders' Short Course	Mats Troedsson Martin Nielsen Fernanda Cesar Mitch Taylor Ed Squires Kathryn Graves Barry Ball Peter Timoney	University of Kentucky University of Kentucky
26-Feb		Elaine Carnevale Rolf Embertson	Colorado State University (web conferenced into VDL from CSU) Rood and Riddle Equine Hospital
<i>No seminars in March, April and May</i>			
25-Jun	Nutrition of the Performance Horse	Brian Nielsen	Michigan State University
30-Jul	Advances in Pain Management in Horses with Colic	Anthony Blikslager	North Carolina State University
27-Aug	Advances and Treatments of Equine Joint Disease	Wayne McIlwraith	Colorado State University
24-Sep	Objective Lameness Determination in Horses: Why, When and How Would You	Kevin Keegan	University of Missouri
29-Oct	Gastric Ulcers	Frank Andrews	Louisiana State University
28-Jan	Reproduction in Sport Horses	Etta Agan Bradecamp	Rood and Riddle Equine Hospital
29-Jan	UK Equine Showcase	Jennifer Janes Laura Kennedy Jill Stowe David Horohov	UK Veterinary Diagnostic Laboratory UK Veterinary Diagnostic Laboratory UK Ag Equine Programs Gluck Equine Research Center

		James MacLeod Laurie Lawrence Fernanda Camargo	Gluck Equine Research Center University of Kentucky University of Kentucky
30-Jan	Kentucky Breeders' Short Course	Barry Ball Peter Morresey David Horohov Alex Esteller-Vico Karen Wolfsdorf Udeni Balasuriya Craig Carter Charlie Scoggin	Gluck Equine Research Center Rood and Riddle Equine Hospital Gluck Equine Research Center Gluck Equine Research Center Hagyard Equine Medical Institute Gluck Equine Research Center UK Veterinary Diagnostic Laboratory Rood and Riddle Equine Hospital
25-Feb	Navicular Disease	Jim Schumacher	University of Tennessee
<i>No seminars in March, April and May</i>			
30-Jun	How tumors develop from transformed cells to cancer models of multi-stage tumor development	David Hurley	University of Georgia
28-Jul	Pushing and pulling across the blood gas barrier mechanisms of EIPH	David Poole	Kansas State University
25-Aug	Animal Genetics Testing and Research Lab Services Parasitology	Kathryn Graves Martin Nielsen	GeTGluck Gluck Equine Research Center
29-Sep	Drug Clearance	Jennifer Davis	North Carolina State University
27-Oct	Sport Horse Lameness	Brett Furlong	B.W. Furlong and Associates
17-Nov	Infectious Disease Diagnosis	Nathan Slovis	Hagyard Equine Medical Institute

## Equine Infectious Disease Reports sent to International Collating Centre, Animal Health Trust, Newmarket, United Kingdom

   From	To	Subject	Sent	Size	Catego...
Timoney, Pet...	'maire.obrien@aht.org....	EHM--Texas	Mon 5/30/2016 ...	7 KB	
Timoney, Pet...	MAIRE O'BRIEN	RE: International Collating Centre - Interim R...	Fri 5/27/2016 7:...	33 KB	
Timoney, Pet...	'MAIRE O'BRIEN'	RE: International Collating Centre - Interim R...	Thu 5/26/2016 2:...	28 KB	
Timoney, Pet...	MAIRE O'BRIEN; RICHA...	Re: International Collating Centre - Interim R...	Wed 5/25/2016 ...	20 KB	
Timoney, Pet...	MAIRE O'BRIEN	Re: International Collating Centre - Interim R...	Tue 5/24/2016 7:...	28 KB	
Timoney, Pet...	MAIRE O'BRIEN; RICHA...	Re: International Collating Centre - Interim R...	Mon 5/23/2016 ...	18 KB	
Timoney, Pet...	RICHARD NEWTON	Re: ICC report today	Fri 5/20/2016 11:...	31 KB	
Timoney, Pet...	'maire.obrien@aht.org....	Strangles	Tue 4/26/2016 3:...	6 KB	
Timoney, Pet...	Maire O'Brien	EIA, EHM update	Fri 4/22/2016 10:...	36 KB	
Timoney, Pet...	Maire O'Brien	First Quarter Report 2016 USA	Wed 4/20/2016 ...	20 KB	
Timoney, Pet...	Maire O'Brien	EHM Update	Wed 4/20/2016 ...	36 KB	
Timoney, Pet...	'maire.obrien@aht.org....	Rabies	Tue 4/19/2016 8:...	6 KB	
Timoney, Pet...	'maire.obrien@aht.org....	EEE	Fri 4/15/2016 8:...	6 KB	
Timoney, Pet...	Maire O'Brien	EHM Update	Tue 4/12/2016 4:...	36 KB	
Timoney, Pet...	'maire.obrien@aht.org....	Interim report	Mon 3/21/2016 ...	6 KB	
Timoney, Pet...	Maire O'Brien	Strangles report	Thu 3/17/2016 2:...	36 KB	
Timoney, Pet...	Maire O'Brien	Getah and VS articles	Fri 3/11/2016 10:...	4 MB	
Timoney, Pet...	Maire O'Brien	EIA and Strangles	Thu 3/10/2016 1:...	36 KB	
Timoney, Pet...	Maire O'Brien	Update on Rabies and Strangles	Tue 3/8/2016 1:...	37 KB	
Timoney, Pet...	Maire O'Brien	Equine herpesvirus 1	Tue 3/1/2016 2:...	36 KB	
Timoney, Pet...	Maire O'Brien	Update on Strangles	Fri 2/26/2016 10:...	36 KB	
Timoney, Pet...	Maire O'Brien	Updates	Tue 2/23/2016 2:...	19 KB	
Timoney, Pet...	maire.obrien@aht.org.uk	Interim Report	Fri 2/19/2016 2:...	5 KB	
Timoney, Pet...	MAIRE O'BRIEN	RE: Un foyer d'anémie infectieuse équine - Fl...	Thu 2/18/2016 1:...	32 KB	
Timoney, Pet...	'MAIRE O'BRIEN'	RE: EHM, Strangles and VS update	Thu 2/11/2016 7:...	17 KB	
Timoney, Pet...	Maire O'Brien	EHM, Strangles and VS update	Wed 2/10/2016 ...	20 KB	
Timoney, Pet...	Maire O'Brien	EHM	Mon 2/8/2016 3:...	36 KB	
Timoney, Pet...	Maire O'Brien	Strangles Update	Thu 2/4/2016 3:...	36 KB	
Timoney, Pet...	Maire O'Brien	EHM Update Feb 4	Thu 2/4/2016 3:...	37 KB	
Timoney, Pet...	Maire O'Brien	Neurologic disease	Thu 2/4/2016 9:...	23 KB	
Timoney, Pet...	Maire O'Brien	EHM Update	Tue 2/2/2016 3:...	36 KB	
Timoney, Pet...	sonia.gonzalez-medina...	Article for the Equine Disease Quarterly	Mon 2/1/2016 4:...	24 KB	
Timoney, Pet...	Maire O'Brien	Fourth Quarter Report	Mon 1/25/2016 ...	38 KB	
Timoney, Pet...	maire.obrien@aht.org.uk	INTERIM REPORTS, EHM, VS, STRANGLES	Sat 1/23/2016 1:...	7 KB	
Timoney, Pet...	MAIRE O'BRIEN	Re: International Collating Centre - Interim R...	Tue 1/19/2016 7:...	6 KB	
Timoney, Pet...	Maire O'Brien	Rabies report	Fri 1/15/2016 3:...	37 KB	
Timoney, Pet...	Maire O'Brien	EHM report	Mon 1/11/2016 ...	38 KB	
Timoney, Pet...	'MAIRE O'BRIEN'	RE: International Collating Centre - Interim R...	Thu 1/7/2016 4:...	13 KB	
Timoney, Pet...	Maire O'Brien	VS Report	Tue 1/5/2016 3:...	54 KB	
Timoney, Pet...	Maire O'Brien	Interim Report	Mon 1/4/2016 4:...	37 KB	
Timoney, Pet...	'MAIRE O'BRIEN'	RE: International Collating Centre - Interim R...	Tue 12/29/2015 ...	13 KB	
Timoney, Pet...	Maire O'Brien	Vesicular Stomatitis report	Mon 12/21/201... 37 KB		
Timoney, Pet...	'maire.obrien@aht.org....	VS update	Thu 12/3/2015 1:...	6 KB	
Timoney, Pet...	'MAIRE O'BRIEN'	RE: Defra/AHT/BEVA Equine Quarterly Diseas...	Tue 12/1/2015 1:...	24 KB	
Timoney, Pet...	'maire.obrien@aht.org....	VS interim report	Mon 11/30/201... 7 KB		
Timoney, Pet...	MAIRE O'BRIEN	RE: Defra/AHT/BEVA Equine Quarterly Diseas...	Sun 11/29/2015 ... 13 KB		
Timoney, Pet...	'maire.obrien@aht.org....	Interim VS report	Thu 11/19/2015 ... 6 KB		
Timoney, Pet...	'maire.obrien@aht.org....	Interim reports	Fri 11/13/2015 5... 7 KB		
Timoney, Pet...	'maire.obrien@aht.org....	Vesicular Stomatitis update	Thu 11/5/2015 8... 7 KB		
Timoney, Pet...	'maire.obrien@aht.org....	Vesicular Stomatitis Update	Fri 10/30/2015 1... 7 KB		

Equine Infectious Disease Reports sent to International Collating Centre, Animal Health Trust, Newmarket, United Kingdom

	From	To	Subject	Sent	Size	Catego...
	Timoney, Pet...	Maire O'Brien	Disease Report from USA, Third Quarter 2015	Thu 10/29/2015 ...	38 KB	
	Timoney, Pet...	'MAIRE O'BRIEN'	RE: PRO/AH/EDR> Equine influenza - USA (0...	Thu 10/22/2015 ...	45 KB	
	Timoney, Pet...	'maire.obrien@aht.org....	Interim Reports	Mon 10/19/201...	7 KB	
	Timoney, Pet...	'maire.obrien@aht.org....	Interim Reports	Fri 10/9/2015 5...	8 KB	
	Timoney, Pet...	Maire O'Brien	WNE & EEE 100215	Fri 10/2/2015 4...	23 KB	
	Timoney, Pet...	Maire O'Brien	VS 100115	Thu 10/1/2015 1...	23 KB	
	Timoney, Pet...	Maire O'Brien	EEE 093015	Wed 9/30/2015 ...	22 KB	
	Timoney, Pet...	MAIRE O'BRIEN	RE: PRO/AH/EDR> Blister beetle poisoning, e...	Thu 9/24/2015 4...	89 KB	
	Timoney, Pet...	Maire O'Brien	EEE & VS 092415	Thu 9/24/2015 4...	24 KB	
	Timoney, Pet...	Maire O'Brien	EEE 092215	Tue 9/22/2015 1...	22 KB	
	Timoney, Pet...	Maire O'Brien	WNE 091815	Fri 9/18/2015 2...	22 KB	
	Timoney, Pet...	Maire O'Brien	VS 091715	Thu 9/17/2015 3...	22 KB	
	Timoney, Pet...	Maire O'Brien	EEE 091615	Wed 9/16/2015 ...	22 KB	
	Timoney, Pet...	Maire O'Brien	WNE, EIA & VS 091415	Mon 9/14/2015 ...	23 KB	
	Timoney, Pet...	'MAIRE O'BRIEN'	RE: Defra/AHT/BEVA Equine Surveillance Rep...	Mon 9/7/2015 1...	15 KB	
	Timoney, Pet...	Maire O'Brien	VS 090315	Thu 9/3/2015 1...	22 KB	
	Timoney, Pet...	Maire O'Brien	WNE 090215	Wed 9/2/2015 1...	24 KB	
	Timoney, Pet...	Maire O'Brien	EEE & WNE 090115	Tue 9/1/2015 4...	22 KB	
	Timoney, Pet...	Maire O'Brien	WNE Update 082815	Fri 8/28/2015 3...	22 KB	
	Timoney, Pet...	Maire O'Brien	WNE 082815	Fri 8/28/2015 9...	23 KB	
	Timoney, Pet...	Maire O'Brien	VS 082715	Thu 8/27/2015 1...	23 KB	
	Timoney, Pet...	Maire O'Brien	EEE 082515	Tue 8/25/2015 9...	22 KB	
	Timoney, Pet...	Maire O'Brien	EEE 082415	Mon 8/24/2015 ...	22 KB	
	Timoney, Pet...	Maire O'Brien	EEE & WNE 082115	Fri 8/21/2015 11...	23 KB	
	Timoney, Pet...	Maire O'Brien	VS & Pythiosis 082015	Thu 8/20/2015 1...	23 KB	
	Timoney, Pet...	Maire O'Brien	EEE & WNE 081715	Mon 8/17/2015 ...	23 KB	
	Timoney, Pet...	Maire O'Brien	WNE 081415	Fri 8/14/2015 11...	19 KB	
	Timoney, Pet...	Maire O'Brien	EEE 081415	Fri 8/14/2015 11...	23 KB	
	Timoney, Pet...	Maire O'Brien	VS 081315	Thu 8/13/2015 1...	24 KB	
	Timoney, Pet...	Maire O'Brien	Anthrax 081315	Thu 8/13/2015 8...	24 KB	
	Timoney, Pet...	'maire.obrien@aht.org....	Interim report on VS	Fri 8/7/2015 7:5...	6 KB	
	Timoney, Pet...	'maire.obrien@aht.org....	Interim Reports, USA	Mon 8/3/2015 2...	7 KB	
	Timoney, Pet...	Maire O'Brien	VS 072915	Wed 7/29/2015 ...	21 KB	
	Timoney, Pet...	Maire O'Brien	EEE 072815	Tue 7/28/2015 1...	23 KB	
	Timoney, Pet...	Maire O'Brien	EEE & WNE 072715	Mon 7/27/2015 ...	23 KB	
	Timoney, Pet...	Maire O'Brien	WNE 072215	Wed 7/22/2015 ...	22 KB	
	Timoney, Pet...	Maire O'Brien	2nd Qtr Report	Wed 7/22/2015 ...	36 KB	
	Timoney, Pet...	Maire O'Brien	VS 071715	Fri 7/17/2015 3...	22 KB	
	Timoney, Pet...	Maire O'Brien	EEE 071715	Fri 7/17/2015 1...	23 KB	
	Timoney, Pet...	Maire O'Brien	EEE 071615	Thu 7/16/2015 1...	23 KB	
	Timoney, Pet...	Maire O'Brien	EEE and VS 071515	Wed 7/15/2015 ...	22 KB	
	Timoney, Pet...	Maire O'Brien	EEE 071315	Mon 7/13/2015 ...	22 KB	
	Timoney, Pet...	Maire O'Brien	Disease report 070915	Thu 7/9/2015 12...	26 KB	
	Timoney, Pet...	maire.obrien@aht.org.uk	Interim reports	Tue 6/23/2015 1...	5 KB	
	Timoney, Pet...	Meade, Barry J - APHIS	Re: International Collating Centre - Interim R...	Sat 6/20/2015 8...	13 KB	
	Timoney, Pet...	Maire O'Brien	Disease reports	Mon 6/8/2015 1...	8 KB	
	Timoney, Pet...	Maire O'Brien	EHM 060415	Thu 6/4/2015 11...	23 KB	
	Timoney, Pet...	Maire O'Brien	EHM & VS 052715	Wed 5/27/2015 ...	23 KB	
	Timoney, Pet...	Maire O'Brien	VS 052615	Tue 5/26/2015 1...	22 KB	
	Timoney, Pet...	Maire O'Brien	EHM & VS 052015	Wed 5/20/2015 ...	23 KB	

Equine Infectious Disease Reports sent to International Collating Centre, Animal Health Trust, Newmarket, United Kingdom

	From	To	Subject	Sent	Size	Catego...
	Timoney, Pet...	Maire O'Brien	EHM 051915	Tue 5/19/2015 4...	23 KB	
	Timoney, Pet...	Maire O'Brien	EHM Report & ICC Reports Data	Mon 5/18/2015 ...	53 KB	
	Timoney, Pet...	RICHARD NEWTON	RE: International Collating Centre - 1Q 2015 ...	Fri 5/15/2015 10...	27 KB	
	Timoney, Pet...	Maire O'Brien	EHM 051415	Thu 5/14/2015 4...	22 KB	
	Timoney, Pet...	Maire O'Brien	VS 051415	Thu 5/14/2015 1...	22 KB	
	Timoney, Pet...	MAIRE O'BRIEN	RE: International Collating Centre - 1Q 2015 ...	Wed 5/13/2015 ...	14 KB	
	Timoney, Pet...	Maire O'Brien	EEE 051215	Tue 5/12/2015 3...	22 KB	
	Timoney, Pet...	'Maire O'Brien'	VS & EHM 051115	Mon 5/11/2015 ...	25 KB	
	Timoney, Pet...	Maire O'Brien	EHM Update 050715	Thu 5/7/2015 11...	23 KB	
	Timoney, Pet...	Maire O'Brien	VS Update 050515	Tue 5/5/2015 3:...	23 KB	
	Timoney, Pet...	Maire O'Brien	EHM & EIA 050415	Mon 5/4/2015 1:...	23 KB	
	Timoney, Pet...	Maire O'Brien	Glanders 050115	Fri 5/1/2015 4:1...	22 KB	
	Timoney, Pet...	Maire O'Brien	VS 043015	Thu 4/30/2015 3...	23 KB	
	Timoney, Pet...	'maire.obrien@aht.org....	EHM event	Thu 4/16/2015 2...	6 KB	
	Timoney, Pet...	Maire O'Brien	1st Qtr. 2015 Report	Wed 4/8/2015 2:...	35 KB	
	Timoney, Pet...	Maire O'Brien	EHM 040815	Wed 4/8/2015 1...	23 KB	
	Timoney, Pet...	Maire O'Brien	EEE 040215	Thu 4/2/2015 9:...	22 KB	
	Timoney, Pet...	Maire O'Brien	EHM 033015	Mon 3/30/2015 ...	23 KB	
	Timoney, Pet...	Maire O'Brien	EHM 032515	Wed 3/25/2015 ...	22 KB	
	Timoney, Pet...	Maire O'Brien	EHM 031615	Mon 3/16/2015 ...	23 KB	
	Timoney, Pet...	'MAIRE O'BRIEN'	RE: PRO/AH/EDR> Equine herpesvirus, equin...	Sat 2/28/2015 1...	23 KB	
	Timoney, Pet...	Maire O'Brien	EHM 022315	Mon 2/23/2015 ...	22 KB	
	Timoney, Pet...	Maire O'Brien	EHM & VS 021315	Fri 2/13/2015 4:...	23 KB	
	Timoney, Pet...	Maire O'Brien	EHV-1 and EHM 020915	Mon 2/9/2015 2:...	24 KB	
	Timoney, Pet...	Maire O'Brien	4th Qtr Report for 2014	Wed 1/14/2015 ...	36 KB	
	Timoney, Pet...	Maire O'Brien	VS 010815	Thu 1/8/2015 3:...	24 KB	
	Timoney, Pet...	'maire.obrien@aht.org....	Vs update	Thu 12/11/2014 ...	6 KB	
	Timoney, Pet...	'MAIRE O'BRIEN'	RE: International Collating Centre - Interim R...	Mon 12/8/2014 ...	13 KB	
	Timoney, Pet...	'maire.obrien@aht.org....	Interim report on vesicular stomatitis	Tue 11/25/2014 ...	7 KB	
	Timoney, Pet...	'maire.obrien@aht.org....		Fri 9/5/2014 11:...	7 KB	
	Timoney, Pet...	'MAIRE O'BRIEN'	RE: VS, EEE & WNE Update 082114	Thu 8/21/2014 1...	16 KB	
	Timoney, Pet...	MAIRE O'BRIEN	RE: Respe/Promed	Mon 8/18/2014 ...	13 KB	
	Timoney, Pet...	MAIRE O'BRIEN	RE: Six foyers de stomatite vésiculeuse - Texa...	Mon 8/11/2014 ...	50 KB	
	Timoney, Pet...	MAIRE O'BRIEN	RE: International Collating Centre - Interim R...	Fri 7/25/2014 12...	11 KB	
	Timoney, Pet...	MAIRE O'BRIEN	RE: Trois nouveaux cas de stomatite vésicule...	Wed 7/23/2014 ...	52 KB	
	Timoney, Pet...	'MAIRE O'BRIEN'	RE: Defra/AHT/BEVA Equine Surveillance Rep...	Fri 7/11/2014 1:...	14 KB	
	Timoney, Pet...	'MAIRE O'BRIEN'	RE: International Collating Centre - Interim R...	Thu 6/12/2014 1...	12 KB	
	Timoney, Pet...	davidtimoney@gmail.c...	RE: EVA	Wed 6/11/2014 ...	28 KB	
	Timoney, Pet...	'MAIRE O'BRIEN'	RE: International Collating Centre - Interim R...	Wed 6/11/2014 ...	12 KB	
	Timoney, Pet...	Fatima Cruz Lopez	RE: EVA	Sat 6/7/2014 7:3...	24 KB	
	Timoney, Pet...	MAIRE O'BRIEN	RE: PRO/AH/EDR> Equine infectious anemia ...	Mon 5/5/2014 1...	33 KB	
	Timoney, Pet...	RICHARD NEWTON	RE: International Collating Centre - Interim R...	Tue 4/29/2014 1...	22 KB	
	Timoney, Pet...	RICHARD NEWTON	RE: EHV-1 Neurologic Disease	Fri 4/11/2014 4:...	19 KB	
	Timoney, Pet...	RICHARD NEWTON	RE: EHV-1 Neurologic Disease	Fri 4/11/2014 4:...	19 KB	
	Timoney, Pet...	MAIRE O'BRIEN	RE: West Nile Virus	Tue 3/18/2014 1...	43 KB	
	Timoney, Pet...	MAIRE O'BRIEN	RE: West Nile Virus	Fri 3/14/2014 10...	33 KB	
	Timoney, Pet...	MAIRE O'BRIEN	RE: West Nile Virus	Wed 3/12/2014 ...	24 KB	
	Timoney, Pet...	Maire O'Brien	EEE & WNE 121613	Mon 12/16/201...	21 KB	
	Timoney, Pet...	Maire O'Brien	EEE & WNE 112613	Tue 11/26/2013 ...	20 KB	
	Timoney, Pet...	Maire O'Brien	EEE & WNE 111413	Thu 11/14/2013 ...	20 KB	

Equine Infectious Disease Reports sent to International Collating Centre, Animal Health Trust, Newmarket, United Kingdom

				From	To	Subject	Sent	Size	Catego...	
				Timoney, Pet...	'MAIRE O'BRIEN'	RE: International Collating Centre 3Q 2013 Re...	Fri 11/8/2013 3:...	10 KB		
				Timoney, Pet...	MAIRE O'BRIEN	RE: 3rd Qtr Report	Thu 11/7/2013 4:...	21 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 110713	Thu 11/7/2013 4:...	21 KB		
				Timoney, Pet...	Maire O'Brien	3rd Qtr Report	Wed 11/6/2013 ...	7 KB		
				Timoney, Pet...	Williams, Neil M	FW: International Collating Centre - Interim R...	Wed 11/6/2013 ...	88 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 110113	Fri 11/1/2013 2:...	20 KB		
				Timoney, Pet...	Maire O'Brien	3rd Qtr Disease Report	Thu 10/17/2013 ...	36 KB		
				Timoney, Pet...	Maire O'Brien	WNE Update 101713	Thu 10/17/2013 ...	20 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE Interim Report 101113	Fri 10/11/2013 4:...	20 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 100413	Fri 10/4/2013 4:...	20 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 092713	Fri 9/27/2013 11:...	20 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 091113	Wed 9/11/2013 ...	20 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 090513	Thu 9/5/2013 2:...	21 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 082913	Thu 8/29/2013 1:...	21 KB		
				Timoney, Pet...	Maire O'Brien	EEE Update	Mon 8/19/2013 ...	19 KB		
				Timoney, Pet...	'MAIRE O'BRIEN'	RE: International Collating Centre - Interim R...	Fri 8/16/2013 8:...	11 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 081513	Thu 8/15/2013 3:...	21 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 080713	Wed 8/7/2013 3:...	20 KB		
				Timoney, Pet...	Maire O'Brien	EEE, WNE & EI 080113	Thu 8/1/2013 11:...	21 KB		
				Timoney, Pet...	Maire O'Brien	EEE Update 072313	Tue 7/23/2013 2:...	20 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE Update 071913	Fri 7/19/2013 3:...	20 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 071813	Thu 7/18/2013 9:...	20 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 070813	Mon 7/8/2013 3:...	19 KB		
				Timoney, Pet...	Maire O'Brien	2nd Qtr Report	Mon 7/8/2013 3:...	38 KB		
				Timoney, Pet...	Maire O'Brien	EEE Update 070113	Mon 7/1/2013 1:...	19 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 062613	Wed 6/26/2013 ...	20 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 062113	Fri 6/21/2013 2:...	21 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 060713	Fri 6/7/2013 4.0:...	20 KB		
				Timoney, Pet...	Fatima Cruz Lopez	RE: EVA	Thu 5/30/2013 3:...	25 KB		
				Timoney, Pet...	Fatima Cruz	EVA	Wed 5/29/2013 ...	9 KB		
				Timoney, Pet...	'MAIRE O'BRIEN'	RE: Interim Report 052213	Thu 5/23/2013 3:...	16 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 052213	Wed 5/22/2013 ...	21 KB		
				Timoney, Pet...	MAIRE O'BRIEN	RE:	Tue 5/21/2013 2:...	19 KB		
				Timoney, Pet...	MAIRE O'BRIEN	RE: International Collating Centre - 1Q 2013 ...	Thu 5/9/2013 1:...	18 KB		
				Timoney, Pet...	MAIRE O'BRIEN	RE: Interim Report 050713	Wed 5/8/2013 1:...	22 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 050713	Tue 5/7/2013 4:...	19 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 050313	Fri 5/3/2013 1:4:...	21 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 040913	Tue 4/9/2013 10:...	36 KB		
				Timoney, Pet...	Maire O'Brien	2013 1st Qtr Report	Tue 4/2/2013 11:...	53 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 032813	Thu 3/28/2013 1:...	36 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 032713	Wed 3/27/2013 ...	36 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 032513	Mon 3/25/2013 ...	36 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 032113	Thu 3/21/2013 1:...	36 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 031213	Tue 3/12/2013 3:...	36 KB		
				Timoney, Pet...	Maire O'Brien	Update	Fri 3/8/2013 4:3:...	36 KB		
				Timoney, Pet...	Maire O'Brien	FW: Interim Report 030713	Thu 3/7/2013 4:...	19 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 030713	Thu 3/7/2013 4:...	23 KB		
				Timoney, Pet...	Maire O'Brien	EHM Update	Mon 3/4/2013 9:...	19 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 030113	Fri 3/1/2013 4:2:...	19 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 022713	Wed 2/27/2013 ...	19 KB		

Equine Infectious Disease Reports sent to International Collating Centre, Animal Health Trust, Newmarket, United Kingdom

				From	To	Subject	Sent	Size	Catego...	
				Timoney, Pet...	MAIRE O'BRIEN	RE: International Collating Centre - 4Q 2012 ...	Wed 2/20/2013 ...	12 KB		
				Timoney, Pet...	MAIRE O'BRIEN	RE: ICC 4Q report	Fri 2/15/2013 11...	13 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 021513	Fri 2/15/2013 11...	21 KB		
				Timoney, Pet...	MAIRE O'BRIEN	RE: Interim Report 020813	Mon 2/11/2013 ...	16 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 020813	Fri 2/8/2013 3:1...	20 KB		
				Timoney, Pet...	Maire O'Brien	FW: EHM Interim Report 013013	Wed 1/30/2013 ...	23 KB		
				Timoney, Pet...	Maire O'Brien		Thu 1/17/2013 4...	20 KB		
				Timoney, Pet...	MaireO'Brien	EHM Interim Report 010713	Mon 1/7/2013 1...	36 KB		
				Timoney, Pet...	MaireO'Brien	2012 4th Qtr Report	Mon 1/7/2013 1...	53 KB		
				Timoney, Pet...	MaireO'Brien	EEE & WNE 121812	Tue 12/18/2012 ...	37 KB		
				Timoney, Pet...	MaireO'Brien	EHM Interim Report 121012	Mon 12/10/201...	37 KB		
				Timoney, Pet...	MAIRE O'BRIEN	RE: Dourine	Tue 12/4/2012 9...	34 KB		
				Timoney, Pet...	MaireO'Brien	Dourine	Mon 12/3/2012 ...	25 KB		
				Timoney, Pet...	MaireO'Brien	EEE & WNE (Nov. 27 update)	Thu 11/29/2012 ...	25 KB		
				Timoney, Pet...	MaireO'Brien	EEE & WNE (week of Nov. 20th)	Wed 11/28/201...	38 KB		
				Timoney, Pet...	MAIRE O'BRIEN	RE: International Collating Centre - 3Q report...	Mon 11/26/201...	43 KB		
				Timoney, Pet...	MaireO'Brien	EEE, WNE & VS 111612	Fri 11/16/2012 1...	39 KB		
				Timoney, Pet...	Dwyer, Roberta M	RE: EDQ grass sickness article	Tue 11/13/2012 ...	28 KB		
				Timoney, Pet...	MaireO'Brien	EEE and WNE 110812	Thu 11/8/2012 4...	38 KB		
				Timoney, Pet...	MaireO'Brien	EEE and WNE 110812	Thu 11/8/2012 4...	25 KB		
				Timoney, Pet...	MaireO'Brien	EEE & WNE 110212	Fri 11/2/2012 10...	38 KB		
				Timoney, Pet...	MaireO'Brien	EEE, WNE, VS & EHM 103012	Tue 10/30/2012 ...	40 KB		
				Timoney, Pet...	MaireO'Brien	EEE and WNE 101912	Fri 10/19/2012 1...	38 KB		
				Timoney, Pet...	MaireO'Brien	EEE & WNE 101012	Wed 10/10/201...	38 KB		
				Timoney, Pet...	MaireO'Brien	3rd Qtr Report and EEE & WNE Updates	Thu 10/4/2012 4...	68 KB		
				Timoney, Pet...	MaireO'Brien	EEE, WNE & VS 092812	Fri 9/28/2012 3...	38 KB		
				Timoney, Pet...	MaireO'Brien	EEE & WNE 092012	Thu 9/20/2012 9...	38 KB		
				Timoney, Pet...	MaireO'Brien	EEE, WNE & VS 091412	Fri 9/14/2012 11...	39 KB		
				Timoney, Pet...	MaireO'Brien	EEE, WNE and VS 090612	Thu 9/6/2012 2...	38 KB		
				Timoney, Pet...	Maire O'Brien	EEE, WNE and VS Updates	Tue 9/4/2012 2...	38 KB		
				Timoney, Pet...	Maire O'Brien	EEE and WNE 082312	Thu 8/23/2012 1...	38 KB		
				Timoney, Pet...	Maire O'Brien	VS Update	Fri 8/17/2012 10...	37 KB		
				Timoney, Pet...	Maire O'Brien	EEE and WNE 081512	Wed 8/15/2012 ...	38 KB		
				Timoney, Pet...	Maire O'Brien	EEE, WNE and VS 081312	Mon 8/13/2012 ...	38 KB		
				Timoney, Pet...	MaireO'Brien	VS Update 080312	Fri 8/3/2012 11...	37 KB		
				Timoney, Pet...	Maire O'Brien	EEE & WNE 073112	Wed 8/1/2012 1...	37 KB		
				Timoney, Pet...	MaireO'Brien	Diseases Updates	Fri 7/27/2012 11...	38 KB		
				Timoney, Pet...	MaireO'Brien	EEE Update	Fri 7/20/2012 3...	36 KB		
				Timoney, Pet...	MaireO'Brien	Interim Report 072012	Fri 7/20/2012 11...	38 KB		
				Timoney, Pet...	MaireO'Brien	US 2012 Second Qtr Report	Tue 7/17/2012 1...	54 KB		
				Timoney, Pet...	Maire O'Brien	Interim Report 071312	Fri 7/13/2012 8...	57 KB		
				Timoney, Pet...	MaireO'Brien	Interim Report 061512	Fri 6/15/2012 9...	37 KB		
				Timoney, Pet...	MAIRE O'BRIEN	RE: EEE Update	Thu 6/14/2012 1...	34 KB		
				Timoney, Pet...	MaireO'Brien	EEE Update	Wed 6/13/2012 ...	37 KB		
				Timoney, Pet...	MaireO'Brien	Interim Report 060712	Thu 6/7/2012 4...	38 KB		
				Timoney, Pet...	IBM Secretariat	RE: IBM 2012	Mon 6/4/2012 3...	29 KB		
				Timoney, Pet...	MaireO'Brien	Interim Report 052212	Tue 5/22/2012 3...	20 KB		
				Timoney, Pet...	MaireO'Brien	Interim Report 051812	Fri 5/18/2012 3...	39 KB		
				Timoney, Pet...	MAIRE O'BRIEN	RE: Interim Report 050112	Fri 5/4/2012 3:4...	43 KB		
				Timoney, Pet...	MAIRE O'BRIEN	RE: Interim Report 050112	Thu 5/3/2012 3...	32 KB		

**Infectious Disease Report: USA  
February 2014 - July 2015**

Outbreaks of a diversity of equine infectious diseases have occurred in the USA during the 18 month period under review. The vast majority of such occurrences were caused by viruses, bacteria or other infectious agents that are endemic in the resident equine population in the country. A notable and important exception was the incursion of vesicular stomatitis, a transboundary/foreign animal disease with respect to the USA, in 2014 and again in 2015. Other reports of cases/outbreaks of transboundary diseases involved equine piroplasmiasis and glanders.

In the last two years, there have been significant advances in the development of a National Equine Health Plan spearheaded by a Task Force set up by the American Association of Equine Practitioners (AAEP) under the chairmanship of Dr. Nat White. An integral and important functional component of such a plan is the establishment of an Equine Disease Communication Center. Considerable progress has been achieved in finalizing a blueprint of such a center and in defining its function and on-going role in national monitoring, surveillance and reporting of outbreaks of equine diseases, especially those of importance to the equine industry. Current efforts are directed at identifying sources of financial support that will be required not only to activate but also to maintain such a center in future years.

In this summary of the equine disease situation in the USA over the last 18 months, it is proposed initially to deal with the transboundary disease incursions that occurred during this period followed by consideration of those endemic diseases that continue to result in economic losses for the country's equine industry.

Transboundary (Foreign Animal) Diseases

*Vesicular stomatitis (VS)*: Reintroduction of VS into the USA was confirmed in late May 2014 with diagnosis of the virus infection (New Jersey serotype) on an equine premises in Kinney County, Texas. This was the VS virus index premises for an extensive outbreak of the disease that continued over the rest of the year and only concluded mid-March 2015 with lifting of quarantine restrictions on the last infected premises in Arizona. The disease was confirmed in four states, Arizona, Colorado, Nebraska and Texas and involved 435 positive premises in some 32 countries between the four affected states. The majority of the outbreaks occurred in Colorado which had 84% of the total of 587 confirmed cases of VS in equines and 80% of 60 virus positive bovines. The 2014 outbreak was the worst occurrence of VS in the USA since 2005, the financial impacts of which were felt at various levels within the equine industry. Sources of economic losses included but were not limited to veterinary bills with respect to supportive care for clinically affected horses, control measures to reduce the risk of fly transmission, extended quarantine periods, impact on equine events in VS affected states and movement restrictions on both interstate and international travel.

Very regrettably, VS reappeared in the USA in 2015. In early May, the disease was confirmed in a horse in Grant County, New Mexico. It has since spread to five additional states, Arizona,

Utah, Texas, Colorado, Wyoming and South Dakota, at this point involving a total of 45 premises in 19 counties in the seven affected states. It remains to be seen whether the 2015 event will be as significant as that experienced in 2014. What is certain, however, is that the equine industry in affected states will once again have to bear the brunt of the economic and other consequences of this disease.

*Equine piroplasmiasis (EP)*: USDA, APHIS, VS continues to monitor and test for EP in the USA, particularly in the Quarter Horse racehorse populations in the border states of Texas, New Mexico, Arizona and California. Well over 250,000 horses have been screened since November 2009, when the EP surveillance program was introduced. A limited number of infected horses were detected in the first nine months of 2014, the vast majority Quarter Horse racehorses, some engaged in non-sanctioned (“bush track”) racing, others illegally imported from Mexico or previously legally imported from known EP endemic countries. Most of the cases were detected in Texas, California and Florida. The majority of serologically positive horses were asymptotically infected with *Theileria equi*. California reported 11 cases of EP in horses that were also co-infected with equine anemia virus, suggestive evidence of the practice of “blood doping.” In a majority of these cases, transmission of infection was believed to be iatrogenic since positive horses were epidemiologically linked to the same trainer/owner. Most of the seropositive horses were euthanized; a few were enrolled in a treatment research program for *T. equi* infected animals.

It is worth noting that a limited number of instances have been encountered over the past 18 months involving horses recently imported into the USA that tested negative for EP on the commercial cELISA assays for *T. equi* and *Babesia caballi* but which were positive in the complement fixation (CF) test for antibodies to *T. equi*. These animals were quarantined, re-bled 2 to 3 weeks later and retested using both cELISA and CF assays. On retest, all of these cases had seroconverted and became positive in the cELISA. This experience confirms the value of the CF test for detecting early cases of EP infection before antibodies can be detected in the cELISA; these cases although infrequent, serve to emphasize the importance of using a combination of the CF test and cELISA to optimize detecting early and late or chronic stages of EP in the horse on post-entry testing into the country.

The USDA’s monitoring, tracing and testing program for EP will continue until further notice.

*Glanders*: A donkey that strayed across the border from Mexico into Texas was reported in early April 2015 as testing positive for CF antibodies to *Burkholderia mallei*, the cause of glanders. The animal was one of a group of five donkeys, all of which were clinically normal. All five subjects were impounded after being rounded up and with the one exception, they tested negative for glanders. Although the status of the positive donkey was down-graded to suspect on re-testing, it was euthanized. Equine glanders is a transboundary disease in the USA; the last case diagnosed in the country was 1942

#### Endemic diseases

*Equine herpesvirus-1 (EHV-1) related diseases*: Similar to very many other countries, EHV-1 infection is ubiquitous in various equine populations in the USA regardless of breed or type of

management system. It should come as no surprise that cases of EHV-1 related respiratory disease, abortion, deaths in neonatal foals and neurologic disease were reported during the period under review.

Of all the endemic equine diseases in the USA, the one that continues to dominate media attention among owners, breeders, trainers and event organizers is EHV-1 myeloencephalopathy or equine herpesvirus neurologic disease. Much of the heightened concern can be attributable to the ease with which this respiratory-borne infection can be transmitted among horses closely congregated together at shows and other performance events and how readily EHV-1 can be spread both within and between states through the movement of horses either incubating the infection or asymptotically infected with the virus. Of additional importance is the high clinical attack rate and associated case-fatality rate that has been a feature of some of the recorded outbreaks of the disease.

Over the past 18 months, outbreaks of EHV-1 and 4 respiratory diseases have been reported by various states in young foals and yearlings. Not infrequently, such outbreaks have also been associated with infection with equine herpesvirus-2 and/or 5. Cases of EHV-1 abortion were principally limited to the second quarter in 2014 and 2015, with 19 and 8 cases respectively recorded in each year. As in prior years, equine herpesvirus-1 neurologic disease or EHM tended to be seasonal in occurrence with the vast majority of outbreaks recorded during the first six months of the year. The first reported disease event in 2014 took place in Minnesota in March. The disease was subsequently confirmed on four other premises in the state, later spreading to a premises in Wisconsin and another in Iowa. The disease was primarily confirmed to Quarter Horses and spread of the virus believed to have taken place at a barrel racing event. Case totals on affected premises were low and strains of EHV-1 isolated from a number of infected horses were determined to be of the non-neuropathogenic genotype. A further outbreak of EHM occurred on a premises in Colorado that was epidemiologically unrelated to the earlier occurrences in Minnesota.

The second quarter of 2014 saw a sharp increase in the prevalence of EHM, with outbreaks confirmed in Wisconsin (1), Virginia (1), North Dakota (1), Pennsylvania (2), Kansas (1), South Dakota (1), Colorado (2) and Massachusetts (1). Quarter Horses were primarily involved and many cases were linked to exposure at barrel racing events. The majority of the outbreaks were associated with EHV-1 strains of the non-neuropathogenic genotype. In the latter part of the year, an additional outbreak of EHM was reported in Oregon with the loss of both affected horses.

The first half of 2015 saw a very similar pattern of occurrence. Sporadic cases of the disease were initially diagnosed in Ohio (three cases), together with single cases in each of Minnesota, Virginia and Michigan. Some of the outbreaks were associated with the neuropathogenic genotype of EHV-1. Reports of EHM continued into the late spring and early summer, with disease outbreaks confirmed in seven states, California, Iowa, Illinois, Maryland, Oregon, Pennsylvania and Virginia, with more than one affected premises in three of the states. Most of the outbreaks involved isolated cases of the disease.

*Equine influenza (EI)*: Outbreaks of EI were recorded throughout the period of the review, regardless of season of the year. However, the majority were confirmed during the autumn, winter and spring. The disease was diagnosed on 28 premises in 19 states in 2014 and in Kentucky, Michigan, South Dakota, Oregon, Tennessee and Minnesota during the first half of 2015. The clinical severity of infection varied from mild to moderately severe. Strains of equine influenza virus that were characterized from some of these outbreaks belonged to the equine-2 (H3N8) American lineage, clade 1 Florida sublineage. The practice of regular vaccination against EI is variable, depending on the sector of the industry involved.

*Strangles*: Strangles is an endemic disease that occurs annually in the USA. Outbreaks are characterized by disease of variable clinical severity, depending on age and vaccination status of affected animals. There is no evidence of a seasonal preference in terms of the peak incidence of strangles. Reported cases/outbreaks represent an estimate of disease occurrences and likely do not reflect the extent of the problem strangles presents for the equine industry. The number of states recording outbreaks of strangles over the 18 months of the review has varied from seven to 16 per annual quarter. It is evident that based on confirmed cases/outbreaks, the disease is widely distributed; it is not uncommon for states to report multiple outbreaks of strangles within a given time frame.

*Easter Equine Encephalomyelitis (EEE)*: Eastern equine encephalomyelitis occurs annually in the USA. Climate related factors play a major role in the prevalence of the disease in any one year. Very frequently, Florida is the first state to record cases of EEE. By the end of June 2014, 13 equine cases had already been reported, the vast majority in Florida. The number of cases increased significantly over the following three months at which time they had reached a total of 118 with 58 being confirmed in Florida alone. The annual number of 139 cases involving 16 states was less than that recorded in previous years. The first case of EEE in 2015 was diagnosed in Florida in March. By the end of the review period, the number of cases has risen to 18, of which most have been recorded in Florida and Texas. It is certain this total will increase significantly in the coming months when maximal transmission of this virus takes place. Regrettably, similar to previous years, the vast majority of equine cases of EEE are in unvaccinated horses or less frequently, those with an incomplete vaccination history against the disease. Greater efforts are called for to educate horse owners in states in which this disease tends to occur every year, of the proven value of vaccination as a means of preventing EEE.

*West Nile Encephalitis (WNE)*: The number of cases of WNE recorded during the 18-month review period dropped significantly from that recorded in the previous two years. Following confirmation of a single case in Alabama in June 2014, the figure rose to 66 by the end of the third quarter, 32 states reporting cases of the disease. By year's end, an additional 74 cases had been confirmed bringing the annual total to 140 involving 34 states. Following the first recorded case of WNE in Oklahoma in 2015, the disease has subsequently been confirmed in Washington State and Texas. The current national total stands at nine of which six have occurred in Washington. As has been the experience with EEE, the vast majority of cases of WN virus infection were in unvaccinated horses.

*Rabies:* Cases of equine rabies occur every year. Fortunately, they are isolated and invariably are the result of an unvaccinated horse been bitten by a rabid wild animal, skunks, raccoons or other. Horse owners are strongly recommended to vaccinate their horses against the disease.

*Equine Infectious Anemia (EIA):* The disease continues to be identified but at a very low prevalence level in the tested equine population in the USA. The national total of cases reported for 2014 was 63. There have been the occasional outbreaks in closed herd of horses involving clusters of cases of infection as was reported on two management-linked premises in Tennessee in early 2014. The initial indication of a problem was a horse consigned for sale from one of the premises testing positive for EIA. Testing of all horses on the originating premises turned up five more cases of infection. The disease was also confirmed in California in Racing Quarter horses, some but not all engaged in non-sanctioned racing. California recorded 41 of the overall national total of 63 cases for 2014. A significant percentage of the EIA positive animals also tested positive for EP. There was evidence linking some of these cases to horses illegally introduced into the state. Additional cases of EIA have also been confirmed so far in 2015, being identified at a number of locations in Tennessee. As in years past, the prevalence of EIA is likely to be highest in those southern states in which there is year-round vector activity. The untested equine population is considered the reservoir of the causal virus and the source of infection for the cases that are detected, the majority at time of sale or interstate movement of horses.

*Salmonellosis:* Salmonellosis is a disease that has been endemic in the equine population in the USA for many years. Cases/outbreaks due to Group B, C1 and C3 salmonella species were reported during the period under review. A limited number of cases were confirmed in the first half of 2015, some associated with untyped salmonella species.

*Rhodococcal disease:* Although not a reportable disease in any state, pneumonic disease in young foals due to infection with *R. equi* is widespread and of significant concern as it is in many other countries. Numerous outbreaks were recorded during the 18 month period of the review, some of which were also associated with joint and/or gastrointestinal involvement. Many cases of the disease go unreported.

*Corynebacterium pseudotuberculosis infection:* Outbreaks of infection with *C. pseudotuberculosis* have become more numerous and more widespread within the country over the past several years. The disease is no longer confined in terms of its distribution to the Western states, being diagnosed with increasing frequency in different southeastern and Midwestern states. The increased prevalence of the disease is a source of growing economic concern to the equine industry.

*Assorted other endemic diseases:* A wide range of other infectious equine diseases were recorded during the period under review. Among those associated with abortion, infection with *Leptospira kennewicki* was diagnosed in 2014 (10 cases) and 2015 (2 cases). Cases of nocardioform placentitis and abortion were also reported, the majority due to infection with *Amycolatopsis* spp with a lesser number caused by *Crossiella equi*. One case of Mare Reproductive Loss Syndrome was confirmed in 2015.

The principal infectious agents associated with enteritis/enteropathy in young foals were *Clostridium perfringens* and *C. difficile* and *Lawsonia intracellularis*. Based on reported outbreaks, rotavirus infection appeared to be less prevalent than in previous years. Cases of *C. perfringens* enteritis were associated with toxin type A strains and in the case of *C. difficile* toxin type A and B strains. Cases/outbreaks of *Lawsonia* infection were reported principally in early and late 2014.

Isolated cases of other infectious diseases to be reported during the period under review included equine monocytic ehrlichiosis, equine coital exanthema, equine adenoviral infection, botulism, tetanus, Tyzzer's disease and Lyme disease.

# External Review

**DEPARTMENT OF VETERINARY SCIENCE**  
**College of Agriculture, Food and Environment**  
**University of Kentucky**

**2016-2017 Periodic Program Review**

**Review Committee site-visit October 23-26, 2016**

**Programs Reviewed:**

Doctoral Degree in Veterinary Science  
Master's Degree in Veterinary Science

**Review Report Submitted January 31, 2017 by:**

Christopher Schardl, Chair, UK Department of Plant Pathology  
Karyn Malinowski, Rutgers University  
Charles Czuprynski, University of Wisconsin  
Martha Peterson, UK College of Medicine  
Cindy Gaskill, UK VSC faculty at VDL  
Martin Nielsen, UK VSC faculty at Gluck  
Debbie Mollett, UK VSC staff at Gluck  
Deborah Maples, UK VDL staff  
Sarah Elzinga, UK VSC graduate student  
Steve Reed, Rood and Riddle Equine Hospital

## Table of Contents

Executive Summary.....	3
Description of Review Committee Membership and Process .....	4
Committee membership.....	4
Review process .....	4
Brief Statements on Evaluation of Quality and Productivity.....	5
Strengths.....	5
Challenges.....	6
Recommendations .....	7
Site-visit Agenda .....	9

## Executive Summary

The Department of Veterinary Science (VSC) is a unique and extremely valuable component of the College of Agriculture, Food and Environment (CAFE) and the University of Kentucky (UK). VSC has no equivalent nationally, and only a few peers internationally, due to its strong and diverse program and resources with a primary equine focus, as befits its location in the renowned “horse capital of the world.” The VSC academic program consists of three collaborative units: The Maxwell H. Gluck Equine Research Center (GERC), the University of Kentucky Veterinary Diagnostic Laboratory (VDL), and the Animal Genetics Testing & Research Laboratory (AGTRL). The VSC has a long history of excellent service to the Kentucky horse industry, as well as the international scientific community interested in equine science. The committee applauds the inspired leadership of Dr. David Horohov, chair of VSC, and Dr. Craig Carter, Director of VDL. It is clear from all communications that faculty, students, staff, and community stakeholders appreciate their leadership.

As the VSC Review Committee (hereafter, the Committee), we believe that the UK and CAFE administrations should strongly support the UK VSC. The need for such support is increasing because VSC is now at a crossroads, experiencing reduced income from endowments as well as federal and state funding, aging facilities, and faculty demographics portending several imminent retirements.

The central recommendation of the Committee is a clear commitment from the UK and CAFE administrations to the continued success of GERC and VDL as entities that clearly serve one of the most socio-economically important industries in the Commonwealth. Such administrative support is needed for enhancement and renovation of both farm and laboratory infrastructures, recruitment of new hires and related startup packages, and staff recruitment to enhance development/fundraising. Additional administrative support is needed to address existing barriers between GERC and VDL, such as the inability to issue internal invoices. The Committee further recommends VSC maintain its focus on the horse as a unique strength.

The Committee considers development/fundraising efforts essential to secure the department’s continued success, and is concerned about declining endowments and the declining value of returns on existing endowments. Thus, the Committee applauds the initiative to hire an Equine Philanthropist and Executive Director of the Gluck Equine Research Foundation Board, who will be instrumental in development/fundraising efforts. It is of utmost importance that all fundraising for equine research be carefully coordinated with the Board. Furthermore, because of the importance of the Gluck Equine Research Foundation Board, which is funding 50% of the Equine Philanthropist/Executive Director position, the incumbent should report to both the equine development director and the chair of the Department of Veterinary Science.

The detailed report of the Committee follows, and is concluded with a list of 11 key recommendations.

## Description of Review Committee Membership and Process

### Committee membership

Christopher Schardl, Chair, UK Department of Plant Pathology  
Karyn Malinowski, Rutgers University  
Charles Czuprynski, University of Wisconsin  
Martha Peterson, UK College of Medicine  
Cindy Gaskill, UK VSC faculty at VDL  
Martin Nielsen, UK VSC faculty at Gluck  
Debbie Mollett, UK VSC staff at Gluck  
Deborah Maples, UK VDL staff  
Sarah Elzinga, UK VSC graduate student  
Steve Reed, Rood and Riddle Equine Hospital

### Review process

- A self-study of the Department of Veterinary Science involved members of the Department of Veterinary Science's Advisory and Planning, Internal Review, and Curriculum committees. Additional input was solicited from faculty, staff, and students where appropriate. Departmental vision, faculty recruitment, and overall program direction and goals were discussed at faculty meetings leading up to this self-study. There was discussion of the process and the content of the self-study document at the regular faculty meeting in September 2016. A mini-retreat was also held to help finalize the document. The final version was distributed to VCS faculty and the VSC Review Committee in October of 2016.
- The Review Committee met in Lexington, KY from October 23-26, 2016. The committee met with the VSC chair the evening of October 23.
- The committee met with College of Agriculture, Food and Environment Dean Nancy Cox and Assistant Dean for Academic Administration Lisa Collins on the morning of October 24 to receive their charge and review of the rules and procedures.
- Then, the chair conducted the committee on a tour of the equine research farm, after which, the director of VDL conducted a tour of that facility.
- The committee then assembled at the GERC to conduct two working days of interviews, from which the VSC chair and VDL director were excluded. All groups had been previously scheduled and personally invited to the interviews, which they attended (or not) voluntarily. Groups interviewed were:
  - Farm Managers (lunch after farm tour)
  - Teaching Faculty
  - Associate Deans of CAFE
  - Clinical and Service/Extension Faculty
  - Research Faculty

- M.S. and Ph.D. Students (Committee members from VSC faculty recused)
- Constituents and Stakeholders
- Staff Scientists, Technicians, and Analysts
- Post-Doctoral and Visiting Scholars
- Office Staff (Committee members from VSC faculty recused)
- Mealtimes meetings with:
  - Case Clay, Gluck Board Chair
  - Stuart Brown, Vice-Chair
  - Pamela Gray, CAFE Director of Philanthropy
  - Jenny Evans, Gluck Equine Research Center Senior Marketing and Promotion Specialist.
- The committee then met to formulate the preliminary oral report and recommendations.
- The committee then met with the CAFE Dean and Executive council to provide and discuss the preliminary oral report and recommendations.
- The Committee Chair drafted this report, based on committee input during the site visit, and the report was further considered and finalized in e-mail consultations with the committee members.

## Brief Statements on Evaluation of Quality and Productivity

### Strengths

The VSC Review Committee concluded that the program has considerable strengths, of which the following are examples:

- Primary equine focus, unique nationally and internationally, and key to the reputation of VSC at UK
- Gluck Equine Research Foundation Board
  - Notably, with the encouragement of the Department Chair Dr. David Horohov, the board has increased its participation in the program. The board now conducts a grants competition for research funds from endowment proceeds, and some board members have provided additional funding for proposed projects.
- Scholarship and productivity of the faculty
  - A strong publication record averaging more than six publications per research FTE per year, which ranks VSC 4<sup>th</sup> out of 14 departments in CAFE.
  - At 299 publications over 5 years, VSC exceeds the productivity of its benchmark veterinary science programs: University of Wyoming, South Dakota State University, Pennsylvania State University, and the University of Connecticut.
- Extramural funding
  - Grants totaling approximately \$2 million/year over the past 5 years.
  - Gifts totaling approximately \$0.74 million/year over the past 5 years.

- Internship funding from Lincoln Memorial University (totaling approximately \$450,000 since the beginning of the contractual agreement in 2014).
- Endowment support, for example
  - Graduate students
  - Travel for faculty, students, and staff.
  - Clay Fellowship for sabbaticals and visiting scientists.
- Reputation, expertise, and influence of VSC faculty nationally and internationally.
- Visibility, outreach and impact in the equine community.
- Collaborations
  - Within VSC, including between GERC-based and VDL-based faculty
    - Such interactions are further promoted by regular VSC talks and meetings at VDL
  - UK Agricultural Equine Programs
  - Lincoln Memorial University
  - Numerous other research institutions both nationally and internationally.
- Specialty herds of horses and ponies, constituting a unique resource for UK VSC research.
- Graduate Students and Post-Doctoral Scholars.
  - Endowment support for graduate student stipends, tuition, etc.
  - Support for attendance of students and VDL staff at scientific meetings
  - VSC at UK has been very attractive to prospective graduate students and postdocs because of the reputation of its faculty and program, availability of funds, the research focus on the horse, and the available resources.

## Challenges

The VSC faces a number of challenges as well, of which the following are particularly important:

- Faculty demographics: several imminent retirements are expected.
- Development
  - The value and return on endowments are not keeping up with needs. Thus, a critical need is to hire an appropriate candidate as the Equine Philanthropist/Executive Director.
- Extramural grants
  - There is little grant funding available to support veterinary research, particularly for the horse. Programs that also have relevance to human disease have considerably more access, for example, to NIH funding. But, of course, not all critical research in equine health is recognized by grant agencies as suitable for such funding.
- Staffing: The equine farm at UK North Farm is understaffed.
- Infrastructure: Renovations are needed to the following
  - Laboratories in GERC are currently inadequate for biosafety level 2 or 3 (BSL2 or BSL3) research. Although there are campus resources for BSL3 (particularly in the UK College of Medicine), BSL2 labs are commonly required for many areas of veterinary science research.
  - Farm: barns, outbuildings, and fencing
  - Teaching facilities, particularly small classrooms, are in short supply in CAFE.

- Financing diagnostic services for research
  - A particularly ironic aspect of the VSC-VDL relationship is that VDL cannot invoice VSC for diagnostics for research by VSC faculty, including allowed costs on grant funds. This situation leads to significant stress, lost time and, potentially, lost research opportunities.
- Status and morale of Clinical Title Series faculty
  - Merit evaluations and promotions: In part due to inherent difficulties in reporting to two supervisors — the VSC chair and the VDL director — and also because there is little consideration of the Clinical Title in the VSC Statement of Evidences, these faculty express significant uncertainty regarding expectations.
  - Special attention should be given to incentives for VDL faculty to collaborate with GERC faculty.
- Graduate program
  - There is room for improvement in communicating program details and expectations to the graduate students. Areas of confusion include the qualifying exams for Ph.D. candidacy and expectations for M.S. theses and Ph.D. dissertations. In addition to discussions with the students, a more comprehensive handbook is desirable.
  - More undergraduate teaching opportunities would enhance satisfaction and career aspirations (curriculum vitae) for graduate students.
- Defining Extension as pertains to VSC. Because of the unique role of UK VSC on a global scale, Extension does not necessarily conform to the typical model.
- Facilitating interaction with other equine-related activities
  - Increased involvement with UK Agricultural Equine Programs is desirable.
  - The VSC and CAFE may consider a true “Gluck Center” with affiliates from other units who have appropriate interests and activities.
- Genetic Testing Laboratory (GTL): As technology advances, the equipment in GTL is no longer optimal for the purposes of this laboratory. Sustainability of the GTL is questionable.

## Recommendations

The VSC Review Committee recommends the following:

1. Enhance development/fundraising efforts by hiring an Equine Philanthropist and by other means.
2. Over the imminent period of faculty turnover, replace faculty while maintaining emphasis on the horse.
3. Provide competitive startup packages for the new faculty hires, including funds for renovation of laboratory facilities, and modernization of equipment at GERC.
4. Improve farm infrastructure and increase staffing at farms.
5. Maintain horse breeding programs for general purpose herds as well as specialty herds (i.e., geriatric, parasitology, and viral arteritis).

6. Facilitate financial transactions of VDL with GERC and other units at UK, in order to better synergize VDL with the VSC research program.
7. Consider mechanisms to expand teaching opportunities for graduate students and postdocs.
8. Explore the possibility of expanding the definition of the “Gluck Equine Center” to allow affiliations of others in Equine Programs and beyond.
9. Explore ways to foster a culture of inclusiveness of all sectors of the department including GERC and VDL affiliates, encompassing all missions including research, teaching, and service.
10. The department should appoint a committee to determine whether or not there is a need to clarify the Statement of Evidences for merit evaluation and promotion as it applies to Clinical Title Series Faculty.
11. Take steps to enhance communication between cohorts in the department (office staff, technical staff, students, postdocs), for example by including representatives of each group in regular departmental meetings, and by providing a more comprehensive graduate student handbook.

## Site-visit Agenda



College of Agriculture, Food and Environment  
Department of Veterinary Science  
Periodic Program Review  
Site Visit Agenda  
October 23-26, 2016

Date:	October 23, 2016
Day 1:	Sunday

12:00 pm – 5:00 pm Reviewers external to UK travel to Lexington

Flight schedules: Dr. Malinowski arrives at Bluegrass Airport at 4:50 pm. Dr. Chris Schardl transports to Hilton Lexington/Downtown, 360 W. Vine St., Lexington, KY, 859-231-9000.

Dr. Czuprynski arrives at Bluegrass Airport on Thursday; he will travel to Nashville and return Sunday night. He will arrange his own transportation to the Hilton.

6:15 pm Dr. Schardl transports Drs. Malinowski and Czuprynski from Hilton Lexington/Downtown to Portofino, 249 E. Main St., Lexington, 859-253-9300.

6:30 pm – 8:00 pm Review Committee has dinner and working session at Portofino. The reservation is under "Chris Schardl." Group is joined by Dr. David Horohov, chair of the Department of Veterinary Science. Dr. Schardl returns reviewers to Hilton Lexington/Downtown.

Date:	October 24, 2016
Day 2:	Monday

7:30 am – 8:30 am Drs. Malinowski, Schardl, and Czuprynski eat breakfast at the Hilton; charge to their rooms.

8:30 am – 9:00 am Dr. Schardl transports reviewers to 118 Gluck. Dr. Schardl will drop off the reviewers at the front entrance to Gluck and a VSC staff person will help him move his car.

9:00 am – 10:00 am Meet with College of Agriculture, Food and Environment Dean Nancy Cox and Assistant Dean for Academic Administration Lisa Collins. Committee receives their charge from Dean Cox and has Q&A; Dr. Collins reviews rules and procedures, 118 Gluck. Coffee and tea will be provided.

10:00 am – 11:00 am Meet Dr. David Horohov, department chair, in 118 Gluck for a departmental facility tour and discussion

11:00 am – 11:30 pm Travel to the North Farm in CAFE bus; load on circle drive in front of Gluck

11:30 am – 12:00 pm Tour of North Farm, ending at Stallion Barn. Dr. Nielsen will narrate. See BSL 2 and Reproduction Complex. Dr. Horohov will meet the group at the farm entrance to join the tour.

12:00 pm – 1:00 pm Lunch with Lynn Ennis, farm manager, farm staff, and Dr. Horohov, Stallion Barn, (boxed lunches from UK Catering)

- 1:00 pm- 1:15 pm Travel to UK Veterinary Diagnostic Laboratory (VDL)
- 1:15 pm – 2:00 pm Meet Dr. Craig Carter, UKVDL Director, in lobby for tour
- 2:00 pm- 2:15 pm Break
- 2:15 pm – 2:45 pm Travel to Gluck Equine Research Center
- 2:45 pm – 3:30 pm Meet with teaching faculty, Room 118, Gluck
- 3:30 pm – 4:30 pm Meet with Associate Deans in 118 Gluck Equine Research Center  
     Dr. Rick Bennett, Research  
     Dr. Larry Grabau, Instruction  
     Dr. Jimmy Henning, Extension  
     Dr. Steve Workman, Administration
- 4:30 pm – 4:45 pm Dr. Schardl transports reviewers to Hilton Lexington/Downtown
- 5:30 pm -6:00 pm Dr. Schardl transports external reviewers from Hilton to Dinner
- 6:00 pm – 7:30 pm Dinner with Gluck Board Chair Case Clay and Vice-Chair Stuart Brown; Pamela Gray, CAFE Director of Philanthropy; and Jenny Evans, Gluck Equine Research Center Senior marketing and Promotion Specialist. Dinner is in the Triangle Grille of the Downtown Hilton. The reservation is under the name Chris Schardl.

Date:	October 25, 2016
Day 3:	Tuesday

- 7:15 am – 8:15 am Drs. Malinowski and Czuprynski eat breakfast at the Hilton; charge to their rooms. Dr. Schardl joins for breakfast.
- 8:15 am – 8:30 am Dr. Schardl transports reviewers to Gluck Equine Research Center.
- 8:30 am – 9:15 am Meet with research faculty, Room 118, Gluck. Coffee and tea will be provided. (17 faculty members)
- 9:15 am – 10:15 am Meet with clinical and service/extension faculty, Room 118, Gluck. Coffee and tea will be provided. (10 faculty members)
- 10:15 am – 10:30 pm Break
- 10:30 am – 11:15 am Meet with research faculty, Room 118, Gluck. Coffee and tea will be provided. (17 faculty members)
- 11:15 am –12:00 pm Meet with departmental MS and PhD students, Room 118, Gluck. Snacks will be provided. Dr. Gaskill and Dr. Nielsen are recused. (18 students)
- 12:00 pm – 1:00 pm Lunch, meet with Ashutosh Verma, PhD, Lincoln Memorial University, Room 118, Gluck.
- 1:00 pm – 2:00 pm Meet with Gluck constituents and stakeholders, Room 118, Gluck Equine Research Center. Snacks will be provided. (6 stakeholders)

- 2:00 pm – 3:00 pm Meet with Veterinary Diagnostic Laboratory constituents and stakeholders, Room 118, Gluck. Snacks will be provided. (10 stakeholders)
- 3:00 pm – 6:00 pm Working session and dinner, Room 118, Gluck. Dinner will be ordered from Columbia's Steakhouse. Dinner at 5:00 pm.
- 6:00 pm Dr. Schardl transports reviewers to Hilton Lexington/Downtown

Date:	October 26, 2016
Day 3:	Wednesday

- 8:00 am – 9:00 am Drs. Malinowski and Czuprynski eat breakfast at the Hilton; charge to their rooms. Dr. Schardl joins for breakfast and helps with checkout.
- 9:00 am – 9:15 am Dr. Schardl transports reviewers to Gluck Equine Research Center
- 9:15 am – 9:45 am Meet with departmental staff scientists, technicians and analysts, Room 118, Gluck. Snacks provided. Dr. Gaskill and Dr. Nielsen are recused.
- 9:45 am – 10:30 am Meet with departmental post-docs and visiting scholars, Room 118, Gluck. Snacks provided. Dr. Gaskill and Dr. Nielsen are recused. (9 staff members)
- 10:30 am – 11:00 am Meet with office staff, Room 118, Gluck. Snacks provided. Dr. Nielsen and Dr. Gaskill are recused (5 staff members)
- 11:00 am – 2:15 pm Working session and lunch, Room 118, Gluck. Lunch will be delivered at noon.
- 2:15 pm – 2:30 pm Break
- 2:30 pm – 3:15 pm Dean of the College of Agriculture, Food and Environment and Executive Council to present preliminary findings, 118 Gluck
- 3:15 pm Dr. Schardl transports reviewers to Bluegrass Airport
- Flight schedules: Dr. Malinowski departs Bluegrass Airport at 5:20 pm.  
Dr. Czuprynski departs Bluegrass Airport at 5:58 pm.

# Implementation Plan

# UK Program Review Implementation Plan

This **required** form is described as Appendix A in

College/Unit: Veterinary Sciences

Date: 2/3/2017

Recommendation/ Suggestion	Source I/E/H*	Accept/ Reject**	Unit Response (resulting goal or objective)	Actions (including needed resources)	Time Line
Enhance development/fundraising efforts by hiring an Equine Philanthropist and by other means.	E	Accept	An equine philanthropy director was hired with goals of improving donor communications and raising funds for lab renovations, farm upgrades and enhancing existing and new endowments.	Update existing donor list and strengthen those relationships; cultivate previous and new donor relationships; develop a philanthropy program and provide updates.	5 years
Over the imminent period of faculty turnover, replace faculty while maintaining emphasis on the horse.	E	Accept	Identify general focus areas in faculty recruitment and give preference to applicants with interest, experience, and funding for conducting research on the horse. Capitalize on current and future chair endowment vacancies.	Continue to obtain needed faculty lines from CAFE while seeking expansion of endowment funding to create and maintain a vibrant and successful faculty.	5 years
Provide competitive startup packages for the new faculty hires, including funds for renovation of laboratory facilities, and modernization of equipment at GERC.	E	Accept	Institute an internal review for prioritizing space, equipment and modernization of facilities needed to attract and retain the next generation of faculty. Strive to maintain pace with contemporary norms for start-up packages and work with the University, College, Department and Foundation to attain those benchmarks.	Create a plan for space, equipment and facility improvements to present to College, University and Foundation authorities.  Help coordinate and facilitate fund raising efforts to generate the funds needed to effect the planned changes.	5 years

<p>Improve farm infrastructure and increase staffing at farms.</p>	<p>E</p>	<p>Accept</p>	<p>Perform significant renovations and implement an effective maintenance plan, including increased staffing and equipment replacement, for the North Farm, Woodford Farm, South Farm, and Gluck Center Animal Annex. Develop a strategic plan for the operation of department's farms.</p>	<p>Work to seek private sponsorship to support needed renovations, maintenance contracts, equipment replacement, and increased staffing. The department's Animal Resources Advisory Committee will develop strategies for the operation of the department's farms.</p>	<p>5 years</p>
<p>Maintain horse breeding programs for general purpose herds as well as specialty herds (i.e., geriatric, parasitology, and viral arteritis).</p>	<p>E</p>	<p>Accept</p>	<p>Improve the department's annual breeding strategy, solidify veterinary support for the farms, and qualitatively repopulate the general herd.</p>	<p>Devise a mechanism for annual breeding decisions, repopulate herds, and work to secure funding for veterinary support and herd maintenance. Develop a process for getting animals on (through donations) and off the farm.</p>	<p>4 years</p>
<p>Facilitate financial transactions of VDL with GERC and other units at UK, in order to better synergize VDL with the VSC research program.</p>	<p>E</p>	<p>Accept</p>	<p>Investigate alternative mechanisms for assigning charges from UKVDL to other accounts within the department.</p>	<p>Identify what diagnostic services are typically provided to research faculty by UKVDL. Determine the cost of these services. Develop an alternative strategy for charging these services to research and other accounts.</p>	<p>2 years</p>

<p>Consider mechanisms to expand teaching opportunities for graduate students and postdocs.</p>	<p>E</p>	<p>Accept</p>	<p>Teaching opportunities will be identified and/or developed for VS graduate students and postdocs who are interested in gaining these experiences.</p>	<p>The department will continue to build on the nascent arrangement with LMU College of Veterinary Medicine for VS grad students/postdocs to provide lectures or serve as laboratory TAs for courses in the LMU DVM curriculum. VS faculty will discuss ways to include grad students/postdocs in the teaching of existing or new courses offered in Veterinary Science.</p>	<p>5 years</p>
<p>Explore the possibility of expanding the definition of the "Gluck Equine Center" to allow affiliations of others in Equine Programs and beyond.</p>	<p>E</p>	<p>Accept</p>	<p>Appoint a committee and initiate a faculty discussion.</p>	<p>Gather and assess mission definitions for existing UK centers/institutes.  Engage Equine Programs  Identify possible models for creating a center.  Compile a list of pros and cons for each of these models.  Committee formed and initial report for discussion within the department expected in the first year.  Make a Veterinary Science Faculty recommendation as to which model to pursue.  Present recommendation to college administration for feedback.  If supported, initiate discussion with potential individuals and entities that could be considered part of the center</p>	<p>5 years  (committee report within one year)</p>

<p>Explore ways to foster a culture of inclusiveness of all sectors of the department including GERC, AGTRL and VDL affiliates, encompassing all missions including research, teaching, and service.</p> <p>Take steps to enhance communication between cohorts in the department (office staff, technical staff, students, postdocs), for example by including representatives of each group in regular departmental meetings</p>	E	Accept	<p>Nurture social interactions, collegiality, joint teaching opportunities, research collaborations, and professional services between the GERC, AGTRL and VDL to enhance inclusiveness of and communication between the units and employees.</p>	<p>Initiate a monthly circular and form staff committee to assist with onboarding new hires. Encourage interunit research, instruction and service opportunities. Have the dept. host a spring picnic or fall football tailgate. Provide incentives for research collaboration between the three units. Provide monetary award for collaborative project between VDL, GERC and AGTRL faculty. Establish list of equipment that can be used and shared between all Vet Science faculty.</p>	5 years
<p>The department should appoint a committee to determine whether there is a need to clarify the Statement of Evidences for merit evaluation and promotion as it applies to Clinical Title Series Faculty.</p>	E	Accept	<p>The committee charged with evaluating this recommendation returned the opinion that criteria should be developed for evaluation and promotion in the Clinical Title Series Faculty and these criteria appended to the department's Statements of Evidence.</p>	<p>Charge the department's Appointments, Promotions and Evaluation committee with developing these criteria.</p>	1 year
<p>Provide a more comprehensive graduate student handbook.</p>	E	Accept	<p>The VS Graduate Program Guidelines and the graduate program assessment plans (PhD and MS) will be updated.</p>	<p>The DGS and VS Teaching and Curriculum Committee will revise the Graduate Program Guide so that it is more informative for graduate students and the VS graduate faculty.</p>	1 year

Explore existing and new avenues/technologies for enhancing the department's public dissemination.	I Accept	Increase presence on social and public media to make scientific more accessible to the public	Establish a group of social media ambassadors to help provide content for social media accounts. Invest in video production capacity for making short online videos. Consider opportunities for online interaction with the public. Make use of online live broadcast of various events.	Five years
--	----------	---	--	------------

\* Source of Recommendation (I = Internal recommendation; E = External Review Committee recommendation; H = Unit Head recommendation)

\*\* Accept/Reject Recommendation (A=Accept; R=Reject)

Unit Head Signature: 

Unit Head Supervisor Signature: Nancy M. Cox

Date: 6-6-2017