

---

# ANIMAL POPULATION HEALTH INSTITUTE

2012 Biennial CIOSU Review

## INSTITUTE ORIGINS

The Animal Population Health Institute (APHI) was formed in 2002, thereby blending the structure and scope of three separate groups. Two of these were officially recognized CSU Centers at the time APHI was formed: the Center of Veterinary Epidemiology and Animal Disease Surveillance Systems (CVEADSS) and the Center of Economically Important Infectious Animal Diseases (CEIAD). The third group included into APHI at that time was the Integrated Livestock Management (ILM) Program, which had been a strong area of activity within the Department of Clinical Sciences for more than a decade (<http://www.cvmb.colostate.edu/ilm>). The formation of APHI provided a framework for growth beyond the original intent of these centers.

With its establishment in 1992 under the leadership of Dr. Mo Salman, CVEADSS provided an initial structure for sharing information, expertise, and facilities among Colorado State University, collaborating institutions, and government agencies throughout the United States and the world. CVEADSS had been a recognized reference center for the United Nations - Food and Agriculture Organization (FAO) in the field of veterinary epidemiology and animal disease surveillance systems since its inception. The focus of CVEADSS' activities was the development and refinement of surveillance and survey methodologies that incorporate disease diagnostic techniques. CVEADSS' original role, focus, and overall mission, which was to coordinate collaborative, multidisciplinary basic and applied research to improve animal health using veterinary epidemiological tools and to establish training activities in veterinary epidemiology, was integrated into APHI's research focus and outreach activities.

In 1998, the allocation of federal funds for the purpose of coordinating research activities on economically important infectious animal diseases resulted in the establishment of CEIAD under the leadership of Dr. Mo Salman. Before CEIAD, no organization provided an arena for timely, multidisciplinary research that synthesized information and data to pilot an animal disease concern from its roots in basic science through the development of policy. Since its inception and initial funding, this unique center was continually on the forefront in addressing the most challenging questions in veterinary epidemiology, food safety, risk assessment, trade economics, and diagnostic strategies for infectious animal diseases. These activities continued with the establishment of APHI.

The Integrated Livestock Management (ILM) Program was formed in 1994 under the leadership of Dr. Frank Garry. The mission of the ILM Program has been to provide creative solutions for the challenges that face the US livestock industries through research, dissemination of valuable information, and training highly skilled personnel. ILM activities link a graduate studies program with research and outreach activities. Because ILM research activities focus on livestock producer problems, students explore real, relevant issues in the field and provide a valuable service to producers. Animal production areas include dairy, cow-calf, feedlot, sheep and wildlife.

## INSTITUTE ORGANIZATION, VISION, & MISSION

Dr. Mo Salman founded the Institute and served as its first director until 2006. Dr. Paul Morley was named Director until June 2010 when additional administrative responsibilities required him to resign. At that time, Institute faculty met to discuss the past and current value of APHI and to suggest various strategies to sustain and

move the Institute forward to meet the changing needs of Colorado State University and society. The following recommendations were made and undertaken:

1. It is essential for APHI to develop operating procedures (a code) to ensure future Institute direction, structure, and function.
  - The APHI code was drafted and approved by Institute members in December 2010. A copy is provided in Appendix A.
2. The Institute needs strong leadership to survive and promote its mission and to be an advocate within Colorado State University, its departments and colleges and abroad.
  - Dr. Mo Salman was elected as the new Institute Director in January 2011.
  - Dr. Barbara McCarthy was appointed Associate Director to handle daily activities and represent APHI when Dr. Salman is travelling.
3. APHI is a cross-departmental and cross-college entity; the Institute needs a strong Internal Advisory Board who will represent all faculty to move forward to meet the changing needs of members.
  - An Internal Advisory Board was elected by Institute faculty and staff. The Advisory Board members are listed in Appendix B.
4. The Institute should reach out to reconnect with scientists from the USDA's Centers for Epidemiology and Animal Health (CEAH) as in past years.
  - This was addressed by electing two CEAH scientists to serve on the Internal Advisory Board.

Through the 2010-2011 organization process, Institute members wrote updated vision and mission statements, which are provided below. Through these statements, the core Institute values are brought into focus.

## INSTITUTE VISION

APHI strives to be an internationally recognized leader in animal population health research and outreach through effective multidisciplinary collaboration and the development and implementation of creative solutions for animal population health issues.

## INSTITUTE MISSION

The Animal Population Health Institute initiates, coordinates and conducts multidisciplinary research and outreach programs that serve to improve the health and well-being of animal populations, to prevent and control infectious and other important diseases of animals, and to contribute to national and international animal disease policymaking processes by providing a better understanding of disease epidemiology and pathogenesis.

## INSTITUTE PERSONNEL & PARTNERSHIPS

The Animal Population Health Institute is comprised of 21 faculty members, who have a diversity of expertise to carry out the Institute's mission. While APHI is centered in the Clinical Sciences Department within the College of Veterinary Medicine and Biomedical Sciences (CVMBBS), it has collaborative ties across departments, across colleges, and outside of the university. APHI's collaborative relationships are built on natural professional affinities and are a fundamental building block of Institute activities. More than 30 affiliate faculty and research collaborators worked with APHI faculty, staff and graduate students in research and outreach in 2010 and 2011. The list of current faculty members, research associates / administrative staff, graduate students, and affiliate faculty members and research collaborators, is provided in Appendix C. Additionally, a list of the 21 graduate students who completed their degrees in 2010 or 2011 is provided.

APHI personnel continue to have extraordinarily strong collaborative relationships with the U.S. Department of Agriculture (USDA). APHI investigators collaborate with USDA's Center for Epidemiology and Animal Health, USDA's APHIS Western Region headquarters, USDA's National Wildlife Research Center, and USDA's Foreign Agricultural Service. In addition, APHI faculty members collaborate with the University of California – Davis, European Food Safety Authority (EFSA), the European Commission – Animal Health Program and other international agencies.

## INSTITUTE ACCOMPLISHMENTS

The historical foci of APHI activities continue to be strong areas of effort, which included veterinary epidemiology training programs and collaborative, multidisciplinary research to improve animal health. APHI research and outreach activities have both a global and local perspective. Activities address livestock population issues and include those allied with the intersection of animal infectious diseases and public health including biosecurity, antimicrobial resistance, the livestock-wildlife interface, and zoonoses. While the clear focus of all APHI activities is the development and implementation of creative solutions for animal population health issues, specific activities conducted by Institute scientists, students, and collaborators involve an extremely diverse range of expertise and talents. APHI collaborative activities combine expertise from disciplines focused on the macro perspective involving populations of animals to those focused on basic sciences related to molecular, genetic, and immunological characteristics of disease agents.

APHI activities are grouped into four categories as given and explained below:

- **Global, emerging infectious animal diseases** or those considered to need of immediate action and response such as Bovine Spongiform Encephalopathy (BSE), Foot & Mouth Disease (FMD), and avian influenza. APHI has particularly emphasized developing and refining surveillance methods for these important diseases.
- **Endemic animal diseases that impact animals** such as chronic wasting disease of elk and deer (CWD), Scrapie, vesicular stomatitis, *Mycobacterium bovis* infection (tuberculosis), *E. coli* O157, brucellosis, Johne's disease, Bovine Viral Diarrhea (BVD), clostridial diseases of horses and cattle, influenza virus infections in dogs and horses, and herpesvirus infections in horses. This category includes:
  - Development and use of risk and decision analysis models for improving our understanding of the impacts related to spread of contagious diseases in animal populations.
  - Antimicrobial drug use and antimicrobial resistance related to animals populations.
  - Livestock population issues affecting the health, productivity, and wellbeing of dairy cattle, beef cattle and sheep populations.
  - Wildlife population issues, including management of infectious diseases affecting these populations directly and those that impact public health and livestock health (e.g. tuberculosis, brucellosis, chronic wasting disease). APHI has also worked on wildlife overpopulation and human-wildlife interface issues.
  - Equine population health issues, including prevention and control of contagious diseases such as *Salmonella*, *Strep. equi*, influenza, herpesvirus myelitis. APHI has also worked on other health related problems such medication rules for performance horse populations that affect animal wellbeing and public perception.
  - Companion animals population issues affecting the health and wellbeing of dogs and cats, such as health and well-being at animal shelters, pet relinquishment and over-population issues, human animal bond and animal well-being, risk factors and prevention of cancer in pet populations.
- **Biosecurity** regarding infectious disease control in veterinary hospitals, animal premises (e.g. farms, feedlots, livestock auction markets, animal shelters, training facilities, etc.) and control of zoonotic diseases among personnel that manage these animals.
- **Development and delivery of specialized training and education regarding APHI mission areas.** This includes advanced training for scientists and professionals working in related areas, international training to promote

development of veterinary and public health infrastructure, training to promote safe and effective management of livestock personnel, Spanish language training for veterinarians and livestock workers, and education of the public regarding the important issues related to animal populations and human-animal interactions.

In the past two years, APHI activities have resulted in 71 peer-reviewed publications, more than \$13 million in funded projects, and numerous outreach activities. A complete list of refereed and non-refereed publications is provided in Appendix D. The following summary, based on the Institute's activity focus areas, provides highlights of successful outcomes within the past 24 months.

#### GLOBAL, EMERGING INFECTIOUS ANIMAL DISEASES

- Participation in the global and national science-based policy making process for emerging pathogens in animal populations. (Salman)
- Engagement in risk based approach for animal health and animal welfare in Europe through the contribution to the scientific panel of European Food Safety Authority. (Salman)
- Active participation in the construction and validation of simulation model to assess the strategies and options to control foreign animal diseases that can threaten the economic well being of the USA. (Salman)
- Support and enhancement of the animal health infrastructure in several countries with the aim to spread of highly contagious animal diseases to other parts of the world. (Salman)
- Participate in the global animal health and public health initiatives for better food security and quality of human life. (Salman)
- Member of the European Union Task Force of Animal Disease Surveillance Systems (Salman)
- Initiated and secured funding for USAID project entitled "Adapting Livestock System for Climate Changes" (Salman, Gillette)
- Worked to enhance animal and public health services in selected countries in East Europe and Asia. (Salman)
- Support the World Animal Health Organization (OIE) in the development of international standards; chair of the OIE ad hoc group on epidemiology; member of the OIE ad hoc groups on classical swine fever, foot and mouth disease, and risk analysis (Zepeda)
- Serve on the steering committee of the OIE-FAO network on animal influenza (OFFLU); chair of the Applied Epidemiology group (Zepeda)
- Peer reviewer for Preventive Veterinary Medicine & the OIE Scientific and Technical Review (Zepeda)
- Interact with international organizations OIE, FAO, IICA, ILRI, EFSA, EMBRAPA (Zepeda)
- Consolidated and expanded research with other institutions including Department of Agriculture, Food and Fisheries in Ireland, Palm Beach Zoo in Florida, Disney Animal Kingdom in Florida, Kruger National Park in South Africa, University of Guelph in Ontario Canada, Department of Agriculture (SAG) in Chile, and the United States Department of Agriculture. (Olea-Popelka)
- Generated new collaboration with the EpiCenter at the Norwegian Veterinary School, the Veterinary School at the University of Zambia and the Department of Health Sciences at the Evelyn Hone College, in Lusaka, Zambia. (Olea-Popelka)
- Elected as the world Program Secretary for Zoonotic Tuberculosis section by the International Union against Tuberculosis and Lung Disease. (Olea-Popelka)

#### ENDEMIC ANIMAL DISEASES THAT IMPACT ANIMALS

- Continued development and validation of the North American Animal Disease Simulation Model. More than 450 NAADSM (North American Animal Disease Simulation Model) registered and/or trained users from 35 different countries worldwide. (Reeves, Salman)

- Constructed and applied disease simulation models to assess strategies for the introduction and the spread of trans-boundary diseases. (Salman)
- Learned that exogenous growth hormone did not influence immune response in beef cattle. (Engle)
- Research indicated that deworming prior to or at vaccination reduced parasite burden, decreased rectal temperature elevation and reduced titer fluctuations for BVD compared to control animals. (Engle)
- Manuscript accepted for publication in Preventive Vet Med - a retrospective study reproductive evaluation of a large Western U.S. ram population. This study was an internal analysis of hospital case records of over 11,000 rams evaluated by CSU; this was self-guided research that did not require external funding. (Van Metre)
- Participated in several scientific assessment and surveillance designs for tuberculosis, brucellosis, avian influenza, and pseudorabies. (Salman)
- Development and assessment of a TB assay for diagnosis of TB in elephants. (Salman lab)
- Molecular detection and distinction of New Jersey and Indiana strains of the VS virus. (Salman lab)
- Development and assessment of pen-site assay for the screening of Strangles in equidae. (Salman lab)

#### BIOSECURITY

- Member of scientific team that conducted a Biosafety and Biosecurity Mitigation Risk Assessment for the National Bio and Agro-Defense Facility in Manhattan, Kansas. (Pendell)
- International collaboration on development of surveillance methods for antimicrobial resistance. (Morley)
- Continued refinement of infection control methods for veterinary hospitals. (Morley)
- Creation of the Equine Biosecurity Calculator. (Traub-Dargatz)
- Biosecurity assessment of CSU Equine Reproduction facility. (Traub-Dargatz)

#### SPECIALIZED TRAINING AND EDUCATIONAL PROGRAMS

- Directed the Annual Biosafety and Biosecurity Training Course in Fort Collins (Ellis)
  - APHI sponsored part of the Biosafety and Biosecurity Training Course (BBTC) held annually during July in Fort Collins. APHI personnel were faculty (Paul Morley) and trainee (Joni Triantis Van Sickle). Robert Ellis is the Founder and Director of the BBTC, which is a 6 ½ day course covering General, Animal and Plant Biosafety and Biosecurity.
- Coordinated the Foreign Animal Disease Training course for veterinary professionals in 2010 and 2011 with attendance of 40 veterinarians from multiple states. (Knight, McCarthy)
  - Transitioned into a leadership role for organization of the Animal Population Health Institute's summer Foreign Animal Disease Training Course. (Van Metre)
- Provided three training courses in veterinary epidemiology to international veterinary medicine professionals. (McCarthy, Salman, Zepeda)
- Provided two one-week training courses in risk analysis. (Zepeda, McCarthy)
- Provided two one-week training courses in epidemiologic simulation modeling. (Reeves, Salman, McCarthy)
- Provided training in veterinary epidemiology to USDA,APHIS,VS Animal Health Technicians and Veterinary Medical Officers. Two separate week-long workshops were held in 2011. (Salman, McCarthy)
- Provided a series of six one-week training workshops in epidemiology to animal health professionals in Turkey. (Zepeda, Salman)
- Recipient, the 2011 Piersen-Jensen Award for Excellence in Teaching, Student Chapter of the American Association of Bovine Practitioners, College of Veterinary Medicine and Biomedical Sciences, Colorado State University. (Van Metre)

- Recipient, the 2011 Exceptional Practice Management Skills Award in the Professional Veterinary Medical Curriculum, College of Veterinary Medicine and Biomedical Sciences, Colorado State University. (Van Metre)
- Provide training on veterinary epidemiology and risk analysis to foreign veterinarians in a series of different workshops in Taiwan, China, Kazakhstan, Peru, and Mexico. (Zepeda)
- Planned and Directed the annual CRWAD meeting (Ellis)
- Instructors for the Laboratory Diagnostic Procedures Training Workshop; Erbil, Iraq. June 28-July 9, 2010. (Duncan, Pabilonia)
- Hosted/trained Indonesian visiting scientist for 3 months in laboratory, 2011. (Hyatt)
- Conducted Expert Elicitation Workshop, Spring, 2011. (Gillette, Salman, Traub-Dargatz)

## BUDGET SUMMARY

APHI has \$13,258,028 from funded research grants and contracts in 2010 & 2011. There is also \$2,192,019 currently associated with grant proposals that have been submitted with funding decisions pending. A list of active and pending projects is given below.

### ACTIVE RESEARCH PROJECTS, 2010 & 2011 (SORTED BY SPONSOR)

Title	Sponsor	Funding Amount	Years
Development of a longitudinal antimicrobial resistance and antimicrobial use surveillance program for the feedlot sector in Canada	Advancing Canadian Agriculture and Agri-Food (ACAAF) Program	\$873,770	2006-2011
Biosecurity Calculator for Equine Facilities	American Association of Equine Practitioners	\$ 9,600	2010-2011
Evaluation of a rapid test for detection of Salmonella	College Research Council, College of Veterinary Medicine and Biomedical Sciences,	\$21,000	2010-2011
Comparison of Lecithinase Activity of Clostridium perfringens Type A from the Gastrointestinal Tract of Dairy Cows with Hemorrhage Bowel Syndrome and Dairy Cows with Left Displaced Abomasum	CSU CVMBS College Research Committee	\$11,000	2009-11
Influence of timing exogenous growths on growth, carcass characteristics, and immune function if beef cattle	CSU Department of Animal Science		2011
CSU Masters in Public Health Graduate Research Assistant funding	CSU Graduate Program in Public Health	\$10,000	2011-2012
A tracing back system for Bovine Tuberculosis cases detected in slaughter plants: A proposal to enhance the current United States system	CSU/CRC	\$19,500	2009-2010
Effects of Acid-Base, Electrolyte, Energy, and Cardio-Respiratory Imbalances during Capture and Confinement on Boma Adaptation in White Rhinoceros	International Rhino Foundation	\$36,280	2009-2010

Animal Population Health Institute-2012 Biennial CIOSU Review

Title	Sponsor	Funding Amount	Years
Developing Capacity to Conduct a Market Chain Analysis: A Method That Identifies Key Activities to Stop the Spread of Avian Influenza	Ministry of Public Health (Thailand)	\$ 65,935	2010-11
Evaluation of Positive Molecular Vaccine Markers Expressed in Mycobacterium bovis BCG in a Ruminant Model	Morris Animal Foundation	\$8,100	2010-11
Interaction of copper source and bile composition on microbial growth in swine	Novus, Int.	\$ 56,503	2010-2011
Evaluation of environmental Salmonella distributions from Egg layers and Pullet growers operations using MLVA, serotyping, phagetyping and antimicrobial resistance	Poultry Industry Council (Canada)(Canadian \$\$)	\$ 32,000	2009-2010
USA Poultry movements/contacts survey	USDA	\$ 135,000	2009-2010
Practical interventions to effectively manage antibiotic resistance in beef and dairy cattle systems: A fully integrated approach	USDA National Integrated Food Safety Initiative, Project # 2010-01501	\$2,000,000	2010-2012
Introduction to Risk Analysis for Animal Health	USDA-APHIS- Animal Plant Health Inspection Service	\$ 73,249	2010-11
Integration of Veterinary Epidemiology in the Development of International Standards and Collaboration with International Animal Health Organizations	USDA-APHIS- Animal Plant Health Inspection Service	\$ 163,613	2010-11
A New Tool to Detect Disease-Specific Volatile Organic Compounds (VOCs) and/or Nucleic Acids Present in Oral Fluids, Breath, Feces, or Urine of Tuberculosis Infected Animals	USDA-APHIS- Animal Plant Health Inspection Service	\$ 77,770	2010-11
Use of Volatile Organic Compounds and Bacterial Nucleic Acids as a Means of Detecting Tuberculosis and Brucellosis in Animals: A Feasibility Study	USDA-APHIS- Animal Plant Health Inspection Service	\$ 84,000	2010-11
Integration of Veterinary Epidemiology in the Development of International Standards and Collaboration with International Animal Health Organizations	USDA-APHIS- Animal Plant Health Inspection Service	\$ 241,113	2010-11
Application of the North American Animal Disease Spread Model for Validation	USDA-APHIS- Animal Plant Health Inspection Service	\$ 220,000	2010-11
Introduction to Risk Analysis for Animal Health	USDA-APHIS- Animal Plant Health Inspection Service	\$ 66,790	2010-11

Animal Population Health Institute-2012 Biennial CIOU Review

Title	Sponsor	Funding Amount	Years
Detection of Volatile Organic Compounds and Bacterial Nucleic Acids in Animals as a Means of Conducting Surveillance in Wildlife for Brucellosis and Tuberculosis: A Feasibility Study	USDA-APHIS- Animal Plant Health Inspection Service	\$ 75,000	2010-11
North American Animal Disease Spread Model: Development and Evaluation	USDA-APHIS- Animal Plant Health Inspection Service	\$ 280,000	2010-11
Integration of Veterinary Epidemiology in the Development of International Standards and Collaboration with International Animal Health Organizations	USDA-APHIS-Animal Plant Health Inspection Service	\$ 125,246	2010-11
Evaluation of a Newly Developed Approach to Detect Cattle with Johne's Disease and to Predict Disease Development.	USDA-CSREES.	\$ 375,000	2009-2012
Program for Economically Important Infectious Animal Diseases	USDA-CSREES	\$ 533,122	2010-11
Enhancement of the Technical Capability of the National Animal Health and Food Safety Services System in Republic of Georgia	USDA-Foreign Agricultural Service	\$ 755,306	2010-11
Fostering Public-Private Veterinary Partnership	USDA-Foreign Agricultural Service	\$ 59,763	2010-11
Caribbean Veterinary Epidemiology Project (VEP): Training Program in Veterinary Epidemiology	USDA-Foreign Agricultural Service	\$ 991,650	2010-11
Enhancement of the Armenian National Animal Health Program: Development and Implementation	USDA-Foreign Agricultural Service	\$ 716,214	2010-11
National Animal Health Capacity Building Program for Iraq	USDA-Foreign Agricultural Service	\$ 960,242	2010-11
Development of Master Plan for Establishment of FMD-Free Zones in Namibia	USDA-Foreign Agricultural Service	\$ 97,415	2010-11
Model Veterinary Epidemiology Course and Provincial/District Epidemiology Courses: Indonesia	USDA-Foreign Agricultural Service	\$ 3,274,513	2010-11
Animal Health Database	USDA-Foreign Agricultural Service	\$ 4,400	2010-11
Direct and Indirect Contacts among Livestock Operations in Colorado, Kansas, and New Mexico as Potential Transmitters of Foot and Mouth Disease	USDA-NIFA-National Institute of Food and Agriculture	\$200,000	2010-11
Program for Economically Important Infectious Animal Diseases	USDA-NIFA-National Institute of Food and Agriculture	\$ 604,934	2010-11



## PENDING RESEARCH PROPOSALS

Title	Sponsor	Funding Amount	Years
Inclusion of Amaize® in steam-flaked corn-based finishing diets.	Alltech, Inc.	\$138,348	2011-12
Prevalence of Methicillin Resistant Staphylococcus aureus in Dairy Cattle in Colorado	Western Dairy Association	\$50,000	2012 -2013
Survey of antimicrobial prescribing practices by European equine veterinarians.	Federation of European Equine Veterinary Associations (FEEVA) (Sponsor)		2012-2013
The study of factors relevant to the control of bovine and badger tuberculosis in Ireland	Department of Agriculture Food and Fisheries, Ireland	\$57,069	2012
A new Tool to Detect Disease-Specific Volatile Organic Compounds (VOCs) and/or Nucleic Acids present in Oral Fluids, Breath, Feces, or Urine of Tuberculosis	USDA-APHIS	\$77,770	2011-2012
Detection of Tuberculosis & Paratuberculosis in Animals by use of Nanosensor Technology	BARD – Binational Agricultural Research & Development	\$154,300	2012-2015
Preventing influenza infection with a novel host-viral RNAi targeting technology	National Institutes of Health	\$1,128,745	2012-2016
Brucellosis in domestic and feral swine: Vaccine efficacy and novel approaches in diagnostic assays	National Pork Board	\$85,792	2012-2014
Evaluation of different marketing strategies of culled dairy cows to reduce transmission of food borne pathogens and likelihood of product contamination at slaughter	USDA-NIFA AFRI	\$499,995	2012-2014

## INSTITUTE FUTURE PLANS (2010-2012)

Faculty and staff within the Institute plan to continue their current research and outreach efforts. Specific plans, which are organized by area of emphasis, are provided below.

### GLOBAL, EMERGING INFECTIOUS ANIMAL DISEASES

- Study of factors relevant to the control of bovine and badger tuberculosis in Ireland. (Olea-Popelka)
- Research the effects of Acid-Base, Electrolyte, Energy, and Cardio-Respiratory Imbalances during Capture and Confinement on Boma Adaptation in White Rhinoceros (*Ceratotherium simum*). (Olea-Popelka)
- Validation and Application of Blood-Based Field Test for Evaluating Tuberculosis in Lions. (Olea-Popelka)

- Assessment of the Cardiopulmonary Effects of Etorphine, Azaperone, Butorphanol and Oxygen in African Elephants (*Loxodonta africana*) in Kruger National Park. (Olea-Popelka)
- Disease Risk Analyses for Tuberculosis Detection and Prevalence in Elephants. (Olea-Popelka)
- Isolation and differentiation of *Mycobacterium tuberculosis* complex species from human TB patients in contact with cattle and wildlife infected with *Mycobacterium* spp in Namwala, Zambia, Africa. (Olea-Popelka)
- Initiate a research idea related to global food security with particular emphasis on urbanization. (Salman)
- Initiate the application of the North American Animal Disease Simulation Model in endemic areas with selected trans-boundary diseases. (Salman)
- Maintain the involvement in building and enhancing animal and public health services in selected new countries in East Europe and Asia. (Salman)
- Develop a nutritional management plan at two locations (Pokhara and Chitwan areas) within Nepal where raising buffalo constitutes the majority of income for that location. (Engle)
- Initiate a biosecurity workshop in India. (Salman)

## ENDEMIC ANIMAL DISEASES THAT IMPACT ANIMALS

- Conduct survey-based research on antimicrobial use practices of food animal veterinarians and ranchers. (Van Metre)
- Complete development of strip test for strangles. (Traub-Dargatz)
- A tracing back system for Bovine Tuberculosis cases detected in slaughter plants: A proposal to enhance the current United States system. (Olea-Popelka)
- Evaluation of environmental *Salmonella* Distributions from Egg Layer and Pullet Grower operations using MLVA genotyping, serotyping, and antimicrobial resistance. (Olea-Popelka)
- Implement measures for preventing and managing livestock disease. (Engle)
- Continue the development and validation of the North American Animal Diseases Simulation Model (NAADSM) for better preparedness for controlling foreign animal diseases in case of introduction, (Salman)
- Continue the explorations of solutions for the wildlife domestic interface for animal diseases (Salman, Rhyan, Nol)
- Describe direct and indirect contact networks among livestock producers in Colorado, Kansas, and New Mexico to improve simulation modeling of Foot and Mouth Disease (Salman)
- Developing and evaluating rapid diagnostics for bovine tuberculosis, brucellosis, and other wildlife-livestock interface diseases (Salman lab)
- Continue work with industry partner to finalize and validate rapid strip tests (Salman lab)

## BIOSECURITY

- With Dr. Andrea Beam (USDA-VS-APHIS-CEAH), analyze data on small livestock holdings for descriptive analysis of small holdings biosecurity practices. (Van Metre)
- International collaboration on development of surveillance methods for antimicrobial resistance. (Morley)
- Continued refinement of infection control methods for veterinary hospitals. (Morley)

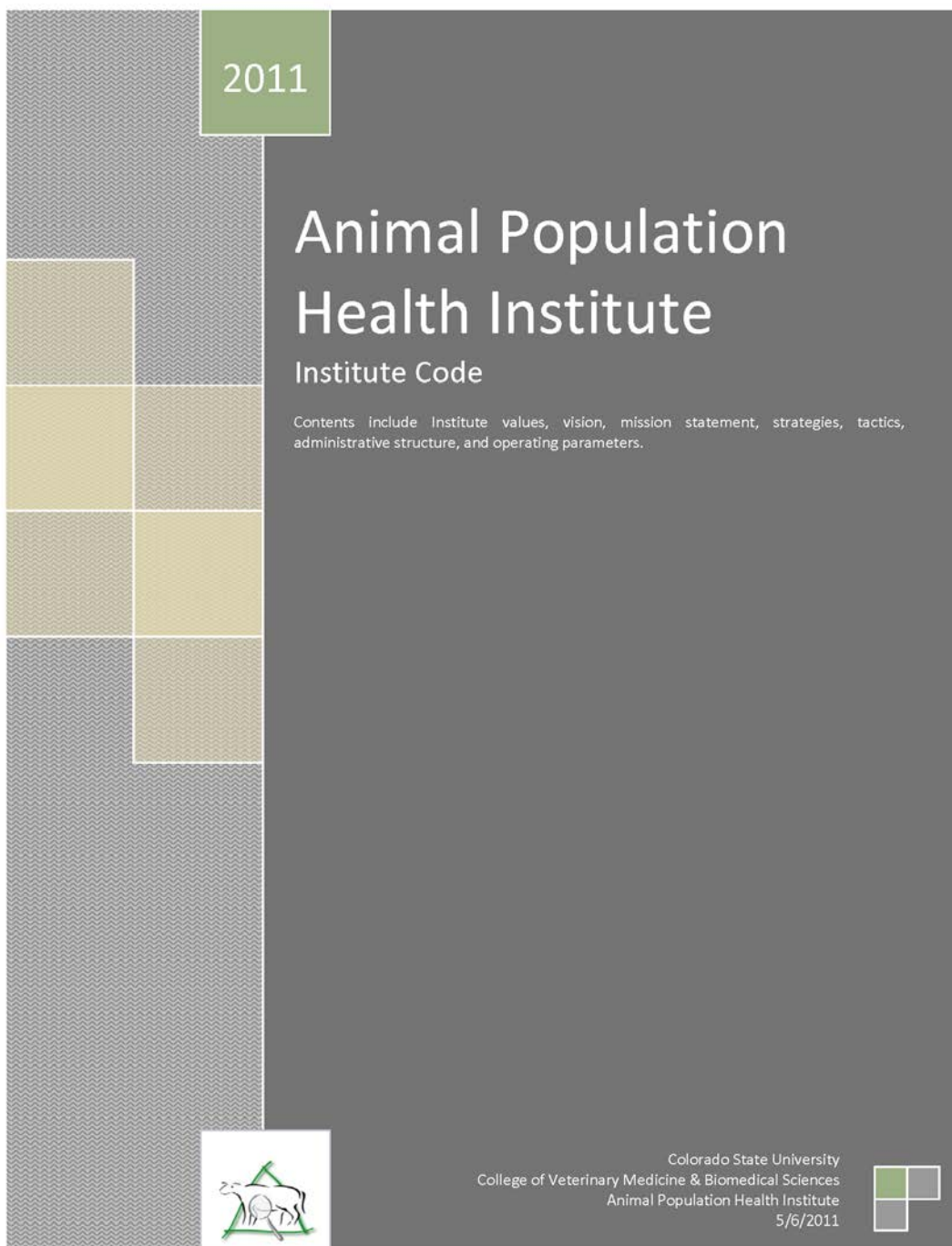
## DEVELOPMENT & DELIVERY OF SPECIALIZED TRAINING & EDUCATION

- Direct the Annual Biosafety and Biosecurity Training Course in Fort Collins (Ellis)
- Foreign Animal Disease Training course for veterinary practitioners and regulatory / industry professionals in July 2012 (Knight, Van Metre, McCarthy)
- Continue to conduct training sessions in basic veterinary epidemiology, risk analysis, and infectious animal diseases. (Salman, McCarthy)
- Refine veterinary epidemiology training workshops to accommodate shortened schedule. (McCarthy)
- Explore areas on International training to promote development of veterinary and public health infrastructure. (Rao)
- Serve as Extension Veterinarian (shared position with 2 other faculty) for Colorado State University. (Knight, Van Metre)
- Plan and Direct the annual CRWAD meeting (Ellis)
- Continued development of public health training for veterinarians. (Morley)
- Organize awareness activities (similar to extension meetings) within communities to disseminate information to the farmers and especially to the women who often do the majority of the animal husbandry. (Engle)

## APPENDIX A

### ANIMAL POPULATION HEALTH INSTITUTE CODE

Follow this bookmark to the complete file. (At the end of this report)



## APPENDIX B

### MEMBERS OF THE INSTITUTE'S INTERNAL ADVISORY BOARD

Board Members		Title; Affiliation
Dargatz	David	Veterinary Epidemiologist; USDA, APHIS, VS, CEAH, NCAHS
Duncan	Colleen	Assistant Professor; Department of Microbiology, Immunology, Pathology
Engle	Terry	Professor; Department of Animal Sciences
Knight	Anthony	Professor; Department of Clinical Sciences
Lombard	Jason	Veterinary Epidemiologist; USDA, APHIS, VS, CEAH, NAHMS
McCarthy	Barbara	Research Associate; Department of Clinical Sciences
McCluskey	Brian	Chief Epidemiologist; USDA, APHIS, VS
Pendell	Dustin	Assistant Professor; Department of Agriculture & Resource Economics
Salman	Mo	Professor; Department of Clinical Sciences
Triantis Sickle	Van Joni	Research Associate; Department of Clinical Sciences
<b>Alternate:</b>		
Wagner	Bruce	Director and Statistician; USDA, APHIS, VS, CEAH, NAHMS

## APPENDIX C - CURRENT APHI PERSONNEL

## FACULTY (LISTED ALPHABETICALLY)

Name	Department	Expertise
Ballweber, Lora	MIP	Parasitology
Belk, Keith	Animal Sciences	Red Meat Safety; Meat Quality; International Trade
Byers, Stacy	Clinical Sciences	Large Animal Internal Medicine
Callan, Rob	Clinical Sciences	Food Animal Internal Medicine; Immunology and Virology
Duncan, Colleen	MIP	Veterinary Pathology; Epidemiology; Wildlife Disease
Ellis, Robert	MIP	Biosafety and Biosecurity; Pathogenic Bacteriology; Immunology
Engle, Terry	Animal Sciences	Animal Nutrition
Garry, Frank	Clinical Sciences	Large Animal Internal Medicine; Food Animals
Gillette, Shana	Clinical Sciences	Risk Communication
Goehring, Lutz	Clinical Sciences	Large Animal Internal Medicine; Virology
Goodridge, Lawrence	Animal Sciences	Food Microbiology
Hyatt, Doreene	MIP	Bacteriology; Pre-Harvest Food Safety
Knight, Tony	Clinical Sciences	Foreign Animal Diseases; Zoonotic Diseases; Plant Toxicology
Morley, Paul	Clinical Sciences	Epidemiology; Biosecurity; Large Animal Internal Medicine; Public Health
Olea-Popelka, Francisco	Clinical Sciences	Epidemiology; Tuberculosis
Pabilonia, Kristy	MIP	Avian Disease Diagnostics
Pendell, Dustin	Agriculture & Resource Economics	Agricultural Economics
Roman-Muniz, Noa	Animal Sciences	Animal Health and Well-being; Dairy Worker Training; Human Safety & Health on Livestock Operations
Salman, Mo	Clinical Sciences	Veterinary Epidemiology and Infectious Animal Diseases
Traub-Dargatz, Josie	Clinical Sciences	Large Animal Internal Medicine; Equine Infectious Diseases; Biosecurity
Van Metre, David	Clinical Sciences	Large Animal Internal Medicine; Biosecurity and Surveillance; Worker Training

## STAFF (LISTED ALPHABETICALLY)

Name	Title	
Adams	Ragan	Research Associate -- ILM Program; CSU Veterinary Extension Coordinator
Bishop	Jeanette	Molecular Diagnostics Lab Manager-Veterinary Diagnostics Lab
Bolte	Denise	Laboratory Technologist
Bradley	Michele	Administrative Staff
Linke	Lyndsey	Research Associate -- Laboratory
Magnuson	Bobbi	Research Associate -- Laboratory
McCarthy	Barbara	Research Associate -- Associate Director & Outreach Program Coordinator
Nichols	Jerusha	Veterinary Technologist -- Avian Diagnostics; ILM Program; CSU Veterinary Extension

Name		Title
Rao	Sangeeta	Research Scientist--Epidemiology & Biostatistics
Schmalholz	Shawna	Administrative Staff
Timms	Pamela	Administrative Staff
Triantis Van Sickle	Joni	Research Associate -- Laboratory Coordinator
Zepeda	Cristóbal	Research Scientist -- Coordinator of International Activities; USDA, APHIS, VS, CEAH

## CURRENT GRADUATE STUDENTS

Name		Department	Program
Beam	Andrea	Clinical Sciences	MS
Benson	Jeret	MIP	MS
Brenman	Kristina	Animal Science	MS
Burgess	Brandy	Clinical Sciences	PhD
Caldera	Emmanuel	Animal Sciences	MS
Erales	Jose	Clinical Sciences	PhD
Evans	Rebecca	Clinical Sciences	PhD
Herman	Julia	Clinical Sciences	MS
Howard	Scott	Animal Sciences	PhD
Igo	Jessica	Animal Sciences	PhD
Limhapirom	Patchara	Clinical Sciences	MS
Linke	Lyndsey	Clinical Sciences	PhD
Mann	Heather	Clinical Sciences	MS
McCollum	Matt	Clinical Sciences	MS
Neary	Joe	Clinical Sciences	MS
Neuhold	Kelley	Animal Sciences	PhD
Noyes	Noelle	Clinical Sciences	PhD
O'Quinn	Travis	Animal Sciences	PhD
Orahood	Darcy	Clinical Sciences	MS
Palomares	Jairo	Clinical Sciences	MS
Pittman	Curtis	Animal Sciences	PhD
Poppy	Gerald	Clinical Sciences	PhD
Reeves	Aaron	Clinical Sciences	PhD
Ruple-Czerniak	Audrey	Intra-University; Cell and Molecular Biology	PhD
Tangtrongsup	Sahatchai	Clinical Sciences	PhD
Thigeel	Hanaa	Clinical Sciences	PhD
Thompson	Katelyn	Animal Sciences	MS
Tomlinson	Sarah	Clinical Sciences	MS
White	Kate	Animal Sciences	MS
Yang	Xiang (Crystal)	Animal Sciences	MS
Zagmutt	Francisco J	Clinical Sciences	PhD

## AFFILIATE FACULTY AND KEY APHI COLLABORATORS

AFFILIATE FACULTY		Title; Affiliation
Berentsen	Are	Second Secretary at Norwegian Ministry of Foreign Affairs
Booker	Calvin	Epidemiologist and Beef Production Specialist; Feedlot Health Management Services
Dennis	Michelle	Senior Lecturer, Veterinary Pathology; University of Sydney, Australia
Ebel	Eric	Epidemiologist; USDA, APHIS, VS
Fossler	Charles	Veterinary Epidemiologist; USDA, APHIS, VS, CEAH, NAHMS
Freier	Jerome	Biologist & GIS Specialist; USDA, APHIS, VS, CEAH, OICC
Garber	Lindsey	Veterinary Epidemiologist; USDA, APHIS, VS, CEAH, NAHMS
Gidlewski	Thomas	USDA, APHI, Wildlife Services
Groenendaal	Huybert	Risk Analyst; Vose Consulting US
Hungerford	Laura	Veterinary Epidemiologist; University of Maryland
Kane	Albert	Veterinarian; USDA, APHIS, VS, NCAHP, BLM / WHB Partnership
Lombard	Jason	Veterinary Epidemiologist; USDA, APHIS, VS, CEAH
Olson	Patricia	CEO, Morris Animal Foundation
Reynolds	Debby	Retired Chief Veterinary Officer, United Kingdom
Rhyan	Jack	Wildlife Disease Investigator; USDA, APHIS, VS, WR, WiLDIT
Stärk	Katharina	Professor of Veterinary Public Health; Royal Veterinary College, University of London
Wagner	Bruce	Director and Statistician; USDA, APHIS, VS, CEAH, NAHMS
Weber	Stephen	Director; USDA, APHIS, VS, CEAH, Office of International Collaboration & Coordination (OICC)
Weese	J. Scott	Associate Professor, University of Guelph
Wongsathapornchai	Kachen	Veterinary Epidemiologist; Thailand

COLLABORATORS		Title; Affiliation
Bischoff	Barbara	Veterinary Epidemiologist; USDA, APHIS, VS, CEAH, NAHMS
Brigner	Tiffany	Laboratory Director, Rocky Mountain Regional Animal Health Laboratory Animal Industry Division Colorado Department of Agriculture
Corso	Barbara	Veterinary Epidemiologist; USDA, APHIS, VS, CEAH, CAHIA
Dargatz	David	Veterinary Epidemiologist; USDA, APHIS, VS, CEAH, NCAHS
Granger	Larry	Director; USDA, APHIS, VS, Centers for Epidemiology and Animal Health (CEAH)
McCluskey	Brian	Chief Epidemiologist; USDA, APHIS, VS
Nol	Pauline	Wildlife Disease Investigator; USDA, APHIS, VS, WR, WiLDIT
Pelzel	Angela	Regional Epidemiologist - Poultry, Equine; USDA, APHIS, VS, Western Region
Portacci	Katie	Veterinary Medicine Officer - Risk Analyst; USDA, APHIS, VS, CEAH, CAHIA
Roehr	Keith	State Veterinarian; Colorado Department of Agriculture
Stone	Kristyn	Agricultural Economist; USDA, APHIS, VS, CEAH, CAHIA
Titus	Simone	Animal Health Technical Expert - Caribbean Region
Wineland	Nora	Director; Center for Animal Welfare, USDA, APHIS, AC



## STUDENTS COMPLETING DEGREE PROGRAMS IN 2010 &amp; 2011

Student Name		Degree	Thesis/Dissertation Title	Graduation Semester
Adams	Ashley	MS	Dairy Cow Handling Systems: Current Use and Needs of Colorado Dairies	Summer 2011
Arnold	Marcus	MS	The effect of copper supplementation on postweaning performance and the isolation of enteric bacterial pathogens in piglets	Fall 2010
Benedict	Katharine	PhD	Surveillance for antimicrobial resistance in feedlot cattle	Spring 2010
Benson	Jeret	MS	Development of a murine model for <i>Coxiella burnetii</i>	Summer 2011
Bolling	Bethany	PhD	Flavivirus superinfection in <i>Culex</i> species mosquitoes.	Spring 2010
Cozzens	Tyler	MS	Economic Impact of Feral Swine Transmitting Foot-and-Mouth Disease to Livestock in Kansas	Summer
Domby	Elizabeth	MS	The effect of feed additive program in steam-flaked corn diets containing wet distiller's grains on feedlot performance and carcass merit in yearling feedlot steers	Summer 2011
Fielitz	Kelly A.	MPH	Evaluating strategies for the control of highly pathogenic avian influenza among commercial poultry in South Carolina.	Summer 2010
Greathouse	Brian	MS	Vaccination Strategies for a Foot-and-Mouth Disease Outbreak in Southwest Kansas	Spring
Havas	Karyn	PhD	"A System Analysis of Sheep Associated Brucellosis in the Republic of Georgia: A model for development of control strategies"	Summer 2011
Ketusing	Naree	MS	Evaluation of strategies for eradication of Aujeszky's Disease (Pseudorabies) in commercial swine farms in Chiang-Mai and Lamphoon Province, Thailand	Spring 2010
McConnel	Craig	PhD	Dairy Cow Mortality	Summer 2010
McGrew	Ashley (Linton)	PhD	"Toxicoparasitology of Hg and piscivory: an assessment of gastrointestinal parasitism and its role in Hg absorption and biotransformation in a pinniped host"	Fall 2010
Nol	Pauline	PhD	"Efficacy of oral and parenteral routes of <i>Mycobacterium bovis</i> bacille Calmette-Guerin vaccination against experimental bovine tuberculosis in white-tailed deer ( <i>Odocoileus virginianus</i> )"	Spring 2010
Premashthira	Sith	PhD	Efficient Management Strategies for a Contagious Animal Disease Outbreak: Probability Distributions of Economic Impacts from Foot-and-Mouth Disease	Fall 2010
Raksakul	Duangdao	MS	"Risk factor associated with seropositive tests for brucellosis in goat and sheep populations in Ratchaburi Province, Thailand"	Spring 2010
Ruple	Audrey	MS	Nosocomial infection rates in veterinary referral hospitals	Spring 2011
Scapa	Jackie	MS	Pathogenesis of Hypoxia in the guinea pig model of tuberculosis.	Summer 2010
Schutz	Jennifer	PhD	Impact of gastrointestinal parasites on antibody titer responses to vaccination and IBR challenge in Holstein calves.	2011

Student Name		Degree	Thesis/Dissertation Title	Graduation Semester
Smith	Emily	MS	Characterization and Network Analysis of Backyard Flocks in Colorado	Spring 2011
Wiedenheft	Alyson	MS	The Use of On-line Continuing Education Modules to Improve Awareness of African Horse Sickness among U.S. Equine Veterinarians	Fall 2011

## APPENDIX D

### 2010 & 2011 PUBLICATIONS

#### REFEREED PUBLICATIONS (LISTED ALPHABETICALLY BY FIRST AUTHOR)

##### Refereed Publications: 2010-2011

Adams, Mackenzie K . Dean A Hendrickson, Sangeeta Rao, Francisco Olea-Popelka, Denise Bolte. 2010. The Bacteria Isolated from the Skin of 20 Horses at a Veterinary Teaching Hospital. *Journal of Equine Veterinary Science*. Volume 30, Issue 12, December 2010, Pages 687-695.

Arshed MJ, Magnuson RJ, Triantis J, Abubakar M, Campen HV, Salman M. Comparison of RNA extraction methods to augment the sensitivity for the differentiation of vesicular stomatitis virus Indiana1 and New Jersey. *J Clin Lab Anal*. 2011;25(2):95-98.

Barrell EA, Pecoraro HL, Torres-Henderson C, Morley PS, Lunn KF, Landolt GA. Seroprevalence and risk factors for canine influenza virus exposure in household dogs in Colorado. *J Vet Intern Med* 2010; 24:1524–1527 [doi: 10.1111/j.1939-1676.2010.0616.x].

Benedict KM\*, Gow SP, Reid-Smith RJ, Booker CW, Morley PS. Metrics for quantifying antimicrobial use in beef feedlots. *Can Vet J* [Accepted, E-2010-3409].

Bolling, Bethany G., Francisco J. Olea-Popelka, Lars Eisen, Chester G. Moore, and Carol D. Blair. Transmission dynamics of an insect-specific flavivirus in a naturally infected *Culex pipiens* laboratory colony and effects of co-infection on vector competence for West Nile virus. *Virology*. (Accepted)

Burgess BA\*, Tokatelloff N, Manning S, Lohmann KL, Lunn DP, Hussey SB, Morley PS. Nasal shedding of Equine Herpesvirus-1 from horses in an outbreak of Equine Herpes Myeloencephalopathy in Western Canada. *J Vet Intern Med* [In Press, JVIM-SA-11-166].

Burgess BA, Noyes NR, Hyatt DR, Van Metre DC, Morley PS. Rapid Salmonella detection in experimentally-inoculated equine feces using two commercially available lateral flow antigen detection tests (poster). 2011 Forum, American College of Veterinary Internal Medicine, Denver, CO, June 2011.

Buss, Peter; Michele Miller, Francisco Olea-Popelka, Laura Rosen, Jenny Joubert, Nomkhosi Maseko Markus Hofmeyr, Marius Kruger, Johan Steenkamp, and Stuart McKernan. Comparison of cardiopulmonary effects of butorphanol administration in darts versus post-immobilization in free-ranging white rhinoceros (*Ceratotherium simum*). *Journal of Zoo and Wildlife Medicine*. (Accepted)

Carlson JC, Clark L, Antolin MF, Salman MD. Rock pigeon use of livestock facilities in northern Colorado: implications for improving farm bio-security. *Human-Wildlife Interactions* 5(1). Spring 2011.

daSilva EG, Gionfriddo JR, Hudacheck SF, Gustafson DL, Olea-Popelka FJ, Scofield VL, Powell CC, Hill A. 2011. Evaluation of the ocular penetration of topical alpha luminal (Galavit/GVT). *Veterinary Ophthalmology*, May 2011, Vol. 14, Issue 3, pp. 180-185.

Duffy, Amanda L. Francisco J. Olea-Popelka, James Eucher, Dahlia M. Rice, Steven W. Dow. 2010 Serum concentrations of monocyte chemoattractant protein-1 in healthy and critically ill dogs. *Veterinary Clinical Pathology*, April 2010, pp. 1-4.

Gingrich E.N. , A.V. Scorza, E.L. Clifford, F.J. Olea-Popelka, M.R. Lappin. 2010 Intestinal parasites of dogs on the Galapagos Islands. *Veterinary Parasitology* 169, pp 404–407.

Goehring LS, Landolt G, Morley PS. Detection and management of an outbreak of EHV-1 infections and associated neurological disease in a veterinary teaching hospital. *J Vet Intern Med*. 2010; 24:1176-1183. [doi:0.1111/j.1939-1676.2010.0558.x].

**Refereed Publications: 2010-2011**

Goehring LS, Wagner B, Bigbie R, Hussey SB, Rao S, Morley PS, Lunn DP. Control of EHV-1 viremia and nasal shedding by commercial vaccines. *Vaccine* 2010; 28:5203-5211 [doi:10.1016/j.vaccine.2010.05.065].

Grant, Krystan R., Terry W. Campbell, Tawni I. Silver, and Francisco J. Olea-Popelka. Validation of an ultrasound-guided technique to establish a liver-to-coelom ratio and a comparative analysis of the ratios among acclimated and recently wild-caught Southern stingrays, *Dasyatis americana*. *Journal of Zoo Biology*. (Accepted)

Hartnack AK\*, Van Metre DC, Morley PS. The risk of gastrointestinal disease and mortality among horses infected with *Salmonella enterica* during hospitalization and among their stablemates. *J Am Vet Med Assoc* [Accepted JAVMA-10-10-0584].

Havas KA, Burkman KD, Heaton P, Salman MD. A Retrospective Time-to-Event Analysis of Military Working Dog Discharges from 2003 to 2006. *JAVMA*. Accepted for Publication April 2010.

Henneveld, Kerstin, Rodney A. W. Rosychuk, Francisco J. Olea-Popelka, Doreene R. Hyatt, Sonja Zabel. *Corynebacterium* spp. in dogs and cats with otitis externa and/or media: a retrospective study. *Journal of the American Animal Hospital Association*. July 2011. Accepted.

Hinchcliff KW, Morley PS, Jackson MA, Brown JA, Dredge AF, O'Callaghan PA, McCaffrey JP, Slocombe RF, Clarke AF. Risk factors for exercise-induced pulmonary hemorrhage in Thoroughbred racehorses. *Equine Vet J* 2010; 42(Suppl 38):228-234. [doi: 10.1111/j.2042-3306.2010.00245.x].

Johnson SR, Rao S, Husse SB, Morley PS, Traub-Dargatz JL. Thermographic eye temperature as an index to body temperature in ponies. *J Eq Vet Sci* 2011; 31:63-66.

Kay MK, Linke L, Trantis J, Salman MD, Larsen RS. Evaluation of DNA Extraction techniques for detecting *Mycobacterium tuberculosis*-complex organisms in Asian elephant trunk washes. *J Clin Microbiol*. 2010 Dec 15.

Ketusing, Naree; Aaron Reeves, Katie Portacci, Terdsak Yano, Francisco Olea-Popelka, Thomas Keefe, Mo Salman. Evaluation of strategies for eradication of Aujeszky's Disease (Pseudorabies) in commercial swine farms in Chiang-Mai and Lamphoon provinces, Thailand. *Preventive Veterinary Medicine*. (Accepted)

Kirby AT, Traub-Dargatz JL, Hill AE, Kogan L, Morley PS, Heird J. Development, application and validation of an assessment tool on infectious disease control practices for equine boarding facilities. *J Am Vet Med Assoc* 2010; 237:1166-1172 [doi: 10.2460/javma.237.10.1166].

Magnuson R, Van Metre D, Triantis J, Morley P, Salman M (2010). Lecithinase production by *Clostridium perfringens* HBS and LDA isolates utilizing drop-plate method of enumeration in conjunction with microplate and agar egg yolk assays. *Proceedings of the 2010 Meeting of the Conference of Research Workers in Animal Diseases*. Abstract #115, Chicago, IL.

McConnel CS, Garry FB, Hill AE, Lombard JE, Gould DH. Conceptual modeling of postmortem evaluation findings to describe dairy cow deaths. *J. Dairy Sci*, 93:373-386, 2010.

Miller Michele , Jennifer Joubert, Nomkhosi Mathebula, Lin-Marie De Klerk-Lorist, Konstantin P. Lyashchenko, Roy Bengis, Paul van Helden, Markus Hofmeyr, Francisco Olea-Popelka, Rena Greenwald, Javan Esfandiari, and Peter Buss. Detection of antibodies to tuberculosis antigens in free-ranging lions (*Panthera leo*) infected with *Mycobacterium bovis* in Kruger National Park, South Africa. *Journal of Zoo and Wildlife Medicine*. October 2011. Accepted

Miller, Michele., Francisco Olea-Popelka, Jennifer Joubert, Nomkhosi Mathebula, David Zimmerman, Guy Hausler, Cathy Dreyer, Markus Hofmeyr, and Peter Buss. Serum iron and selected biochemical values in free-ranging black rhinoceros (*Diceros bicornis*) from South Africa. *Journal of Zoo and Wildlife Medicine*. November 2011. Accepted.

Mollenkopf DF, Glendening C, Wittum TE, Funk JA, Tragesser LA, Morley PS. Association of dry cow therapy with the antimicrobial susceptibility of fecal coliform bacteria in dairy cows. *Prevent Vet Med* 2010; 96:30-35 [doi:10.1016/j.prevetmed.2010.05.014].

**Refereed Publications: 2010-2011**

Morkel Peter vdB., Michele Miller, Mark Jago, Robin W. Radcliffe, Pierre du Preez, Francisco Olea-Popelka, Jennifer Sefton, Arthur Taft, Daryl Nydam, and Robin D. Gleed. Serial temperature monitoring and comparison of rectal and muscle temperatures in immobilized free-ranging black rhinoceros (*Diceros bicornis*). *Journal of Zoo and Wildlife Medicine*. November 2011. Accepted.

Morley PS, Dargatz DA, Hyatt DR, Dewell GA, Patterson G, Wittum TE. Effects of restricted antimicrobial exposure on antimicrobial resistance in *Escherichia coli* from feedlot cattle. *Foodborne Pathog Dis* 2011; 8: 87-98 [doi:10.1089/fpd.2010.0632].

Nol P, Kato C, Reeves WK, Rhyan J, Spraker T, Gidlewski T, VerCauteren K, Salman M. Epizootic hemorrhagic disease outbreak in a captive facility housing white-tailed deer (*Odocoileus virginianus*) bison (*Bison bison*), elk (*Cervus elaphus*), cattle (*Bostaurus*), and goats (*Capra hircus*) in Colorado, U.S.A. *J Zoo Wildl Med*. 2010 Sep: 41(3): 510-513.

O'Connor A, Sargeant J, Gardner I, Dickson J, Torrence M, Dewey C, Dohoo I, Evans R, Gray J, Greiner M, Keefe G, Lefebvre S, Morley PS, Ramirez A, Sisco W, Smith D, Snedeker K, Sofos J, Ward M, Wills R. The REFLECT statement: Methods and processes of creating reporting guidelines for randomized control trials for livestock and food safety. *Prev Vet Med* 2010; 93:11-18 [simultaneous publication].

O'Connor A, Sargeant J, Gardner I, Dickson J, Torrence M, Dewey C, Dohoo I, Evans R, Gray J, Greiner M, Keefe G, Lefebvre S, Morley PS, Ramirez A, Sisco W, Smith D, Snedeker K, Sofos J, Ward M, Wills R. The REFLECT statement: Methods and processes of creating reporting guidelines for randomized control trials for livestock and food safety. *J Vet Intern Med* 2010; 24:57-64 [simultaneous publication].

O'Connor A, Sargeant J, Gardner I, Dickson J, Torrence M, Dewey C, Dohoo I, Evans R, Gray J, Greiner M, Keefe G, Lefebvre S, Morley PS, Ramirez A, Sisco W, Smith D, Snedeker K, Sofos J, Ward M, Wills R. The REFLECT statement: Methods and processes of creating reporting guidelines for randomized control trials for livestock and food safety. *J Food Prot* 2010; 73:132-139 [simultaneous publication].

O'Connor A, Sargeant J, Gardner I, Dickson J, Torrence M, Dewey C, Dohoo I, Evans R, Gray J, Greiner M, Keefe G, Lefebvre S, Morley PS, Ramirez A, Sisco W, Smith D, Snedeker K, Sofos J, Ward M, Wills R. The REFLECT statement: Methods and processes of creating reporting guidelines for randomized control trials for livestock and food safety. *Swine Health Prod* 2010;18:18-26 [simultaneous publication].

O'Connor A, Sargeant J, Gardner I, Dickson J, Torrence M, Dewey C, Dohoo I, Evans R, Gray J, Greiner M, Keefe G, Lefebvre S, Morley PS, Ramirez A, Sisco W, Smith D, Snedeker K, Sofos J, Ward M, Wills R. The REFLECT statement: Methods and processes of creating reporting guidelines for randomized control trials for livestock and food safety. *Zoonoses Public Health* 2010; 57:105-136 [simultaneous publication].

Olea-Popelka, Francisco J., Zach Freeman, Paul W. White, Eamonn Costello, James O'Keeffe, Klaas Frankena, S. Wayne Martin and Simon J. More. Relative effectiveness of Irish factories in the surveillance of slaughtered cattle for visible lesions of tuberculosis, 2005-2007. *Irish Veterinary Journal*. November 2011. Accepted.

Patyk, Kelly A., Julie Helm, Michael K. Martin, Kimberly N. Forde-Folle, Francisco J. Olea-Popelka, John Hokanson, Tasha Fingerlin, Aaron Reeves. An epidemiologic simulation model of the spread and control of highly pathogenic avian influenza (H5N1) among commercial and backyard poultry flocks in South Carolina, United States. *Preventive Veterinary Medicine*. (Accepted)

Pendell, D.L., G.W. Brester, T.C. Schroeder, K.C. Dhuyvetter, and G.T. Tonsor. 2010. "Animal Identification and Tracing in the United States." *American Journal of Agricultural Economics* 92(4):927-940.

**Refereed Publications: 2010-2011**

Premashthira S, Salman MD, Hill AE, Reich RM, Wagner BA. Epidemiological simulation modeling and spatial analysis for foot-and-mouth disease control strategies: a comprehensive review. *Anim Health Res Rev.* 2011 Dec;12(2):225-34. PMID: 22152294 [PubMed – in process]

Rao S\*, Lana S, Eickhoff J, Marcus E, Avery P, Morley PS, Avery A. Class II MHC expression and cell size independently predict survival in canine B cell lymphoma. *J Vet Internal Med* 2011; 25:1097–1105 [doi: 10.1111/j.1939-1676.2011.0767.x]

Rao S\*, Van Donkersgoed J, Bohaychuk V, Besser TE, Song XM, Wagner B, Hancock D, Renter D, Dargatz DA, Morley PS. Antimicrobial drug use and antimicrobial resistance in enteric bacteria among cattle from Alberta feedlots. *Foodborne Pathog Dis* 2010; 7:449-457. [doi:10.1089/fpd.2009.0400.]

Roman-Muniz IN, Van Metre DC (2011). Development of a bilingual training tool to train dairy workers on the prevention and management of non-ambulatory cows. Accepted for publication, *Journal of Extension*.

Salman MD, Doherr MG, Erb HN, Frankena K, Gardner IA, Stegeman JA, Stryhn H, Ward MP, Wiegel R. 100 Volumes of Preventive Veterinary Medicine—The past, the present and the future. *Prev Vet Med.* 2011 Jun;100(1): 1-3.

Sargeant JM, O'connor AM, Gardner IA, Dickson JS, Torrence ME, Dohoo IR, Lefebvre SL, Morley PS, Ramirez A, Snedeker K. The REFLECT Statement: Reporting Guidelines for Randomized Controlled Trials in Livestock and Food Safety: Explanation and Elaboration. *J Food Prot* 2010;73:579-603 [simultaneous publication].

Sargeant JM, O'connor AM, Gardner IA, Dickson JS, Torrence ME, Dohoo IR, Lefebvre SL, Morley PS, Ramirez A, Snedeker K. The REFLECT Statement: Reporting Guidelines for Randomized Controlled Trials in Livestock and Food Safety: Explanation and Elaboration. *Zoonoses Public Health* 2010; 57:95-104 [simultaneous publication].

Schultheiss, Patricia C. David W. Gardiner, Sangeeta Rao, Francisco Olea-Popelka, Joanne L. Tuohy, 2011. Association of histologic tumor characteristics and size of surgical margins with clinical outcome after surgical removal of cutaneous mast cell tumors in dogs. *Journal of the American Veterinary Medical Association*, June 1, 2011, Vol. 238, pp. 1464-1469

Schumaker BA, Corso BA, Rhyan JC, Philo LM, Salman MD, Gardner IA. Evaluation of the fluorescence polarization assay for the detection of *Brucella abortus* antibodies in bison in a natural setting. *Comp Immunol Microbiol Dis.* 2010 Aug 19.

Schutz, J. S., E. D. Sharman, N. E. Davis, T. Shelton, S. Nordstrom, J. Hutcheson, and T. E. Engle. 2012. Impact of gastrointestinal parasites on antibody titer responses to vaccination and IBR challenge in Holstein calves. *J. Anim. Sci.* (In press)

Singer A, Salman MD, Thulke H. Reviewing model application to support animal health decision making. *Pre Vet Med.* Volume 99, Issue 1, 1 April 2011, Pages 60-67.

Slota, Katharine E., Ashley E. Hill, Thomas J. Keefe, Richard A. Bowen, Kristy L. Pabilonia. Biosecurity and Bird Movement Practices in Upland Game Bird Facilities in the United States. *Avian Diseases*, 55(2):180-186. 2011.

Slota, Katharine E., Ashley E. Hill, Thomas J. Keefe, Richard A. Bowen, Ryan S. Miller, Kristy L. Pabilonia. 2011. Human–Bird Interactions in the United States Upland Gamebird Industry and the Potential for Zoonotic Disease Transmission. *VECTOR-BORNE AND ZOONOTIC DISEASES* 11 (8),pp. 1115-1123.

Sottnik JL, Rao S, Lafferty MH, Thamm DH, Morley PS, Withrow SJ, Dow SW. Association of blood monocyte and lymphocyte count and disease-free interval in dogs with osteosarcoma. *J Vet Intern Med.* 2010; 24:1439-1444. [doi: 10.1111/j.1939-1676.2010.0591.x].

Steneroden KK\*, Van Metre DC, Jackson CR, Morley PS. Detection and control of a nosocomial outbreak caused by *Salmonella* Newport at a large animal hospital. *J Vet Intern Med* 2010; 24:606-616. [doi: 10.1111/j.1939-1676.2010.0484.x]

**Refereed Publications: 2010-2011**

Steneroden KK, Hill AE, Salman MD. A needs-assessment and demographic survey of infection-control and disease awareness in western US animal shelters. *Prev Vet Med.* 2010 Nov 30.

Steneroden KK, Hill AE, Salman MD. Zoonotic Disease Awareness in Animal Shelter Workers and Volunteers and the Effect of Training. *Zoonoses Public Health.* 2011 Feb 22.

Steneroden KK, Hill AE, Salman MD. A needs-assessment and demographic survey of infection-control and disease awareness in western US animal shelters. *Prev Vet Med.* 2011 Jan 1; 98(1):52-7.

Steneroden KK, Hill AE, Salman MD. Environmental Sampling for Salmonella spp. in Colorado Animal Shelters. *Zoonoses and Public Health.* 2010 Nov 18.

Steneroden KK, Van Metre DC, Jackson CR, Morley PS (2010). Detection and control of a nosocomial outbreak caused by Salmonella Newport at a large animal hospital. *J Vet Intern Med* 24:606-616.

Tempia S, Salman M.D., Keefe T, Freier J.E., DeMartini J.C., Wamwayi H.M., Njeumi F, Soumare B, Abdi A.M. A sero-survey of rinderpest in nomadic pastoral systems in central and southern Somalia from 2002 to 2003, using a spatially integrated random sampling approach. *Rev. sci tech. Off. Int. Epiz.*, 2010, 29

Tempia S, Salman MD, Keefe T, Morley PS, Freier JE, DeMartini JC, Wamwayi HM, Njeumi F, Soumaré B, Abdi AM. A sero-survey of rinderpest in nomadic pastoral systems in central and southern Somalia from 2002 to 2003, using a spatially integrated random sampling approach. *Rev Sci Tech.* 2010; 29:497-511.

Traub-Dargatz J, Koprak C, Wagner B. Relationship of biosecurity practices with use of antibiotics for the treatment of infectious diseases on U.S. equine operations. *Preventive Veterinary Medicine*, 2011

Van Metre DC (2010). Farm Health and Productivity Management of Dairy Young Stock, S.J. Boersema, J. Cannas da Silva, et al. Wageningen Academic Publishers, The Netherlands, 2010. *Preventive Veterinary Medicine* (98) 79-80.

Van Metre DC, Anderson DE (2010). Repair of fractures in the field. *Proceedings, 43rd Annual Conference, American Association of Bovine Practitioners*, 26-31.

Van Metre DC, Fraser JN, Morley PS. Breeding soundness examination in Western U.S. Rams: 12,716 cases (2000-2007). Abstract # 148; *J Vet Int Med* 24: 716, 2010.

Van Metre DC, Rao S, Morley PS (2011). Factors associated with failure in breeding soundness examination of western USA rams. Accepted for publication, *Prev Vet Med*.

Van Metre DC, Rao S, Morley PS. Breeding soundness examination in rams in the western U.S. *Prev Vet Med* [Accepted, PREVET-11-207].

Weaver DR\*, Newman LS, Lezotte DC, Morley PS. Perceptions regarding workplace hazards at a veterinary referral and teaching hospital. *J Am Vet Med Assoc* 2010; 237:93-100. [doi: 10.2460/javma.237.1.93]

Wieland B, Dhollander S, Salman M, Koenen F. Qualitative risk assessment in a data-scarce environment: A model to assess the impact of control measures on spread of African Swine Fever. *Pre Vet Med.* Volume 99, Issue 1, 1 April 2011, Pages 4-14.

Zepeda C. (2010). Análisis de riesgo en salud animal. In: Jaramillo C, Martínez J (eds). *Epidemiología Veterinaria, El Manual Moderno*, Mexico D.F. pp 177-188.

Zepeda C. (2011). Education and training needs to improve animal disease surveillance systems. *Proceedings of the First OIE Global Conference on Evolving Veterinary Education for a Safer World.* World Organization for Animal Health, Paris, France pp 51-56.

SELECTED NON-REFEREED PUBLICATIONS (LISTED ALPHABETICALLY BY FIRST AUTHOR)

**Non-Refereed Publications**

Austin, K. A., J. L. Seabrook, T. E. Engle, R. K. Peel, C. M. McAllister, B W. Bringham, R. M. Enns, R. L. Weaver, H VanCampen, G. H. Loneran, J. L Salak-Johnson, and C. C. L. Chase. 2010. The effect of morbidity on feedlot performance and carcass quality on feedlot steers. *J. Anim. Sci.* 88 (Suppl.2): 10.

Berrian, Amanda M., James O'Keeffe, Paul White, Francisco Olea-Popelka. RISK OF BOVINE TUBERCULOSIS (BTB) FOR CATTLE SOLD OUT FROM ATTESTED HERDS DURING YEAR 2005 IN IRELAND. 2010 Abstract. Center for Veterinary Epidemiology and Risk Analysis (CVERA), University College Dublin, Ireland, Biannual Report 2010.

Bischoff BA, Traub-Dargatz JL: Prevalence of Elevated Temperatures Among Horses Presented for Importation to the United States. Proceedings 57th Annual Convention of the American Association of Equine Practitioners. San Antonio, TX. November 18-22, 2011. pgs 252-260.

Burgess BA, Morley PS. Contagious and zoonotic disease matrix for the JLV-VTH. This matrix describes the species affected, recommended infection control measures, and essential points of communication for 57 infectious agents. Colorado State University. December, 2011.

Cruz-Romero Anabel, Dora Romero-Salas, Silvia Lopez-Ortiz, Zeferino Garcia-Vazquez, Francisco Olea-Popelka. Risk Factors associated with bovine leptospirosis in the State of Veracruz, Mexico. VII Reunion de la International Leptospirosis Society. September 19th to 22nd, Merida 2011 Mexico.

Engle, T. E. 2010. Interactions of trace minerals and immunity in ruminants. California Animal Nutrition Conference. (CANC). Pp. 1-8.

Garry F. C McConnel. Do you know how many cows die? Rocky Mountain Milk Peak, June 2010, pp 4-5.

Garry F. Managing Mortality Losses in Dairy Herds. Proc Mid-South Ruminant Nutrition Conference 2011, pp25-28.

Garry, F. Are you ready for a crisis? *Progressive Dairyman*, 25;17: 32-33, Nov 21, 2011

Garry, F. How big of a problem is dairy cow mortality in the U. S.? *Progressive Dairyman*, 25;6: 4-6, April 12, 2011.

Garry, F. Rethink your dairy cow mortality rates and their cost. *Progressive Dairyman*, 25;12: 79-81, Aug 11, 2011.

Gillette S, Fiege JK, Traub-Dargatz JL. Equine Infectious Disease Priorities Based on a 2010 On-Line Survey. Proceedings of the 2011 CVMBBS Research Day. Fort Collins, CO. March 5, 2011. pg 39.

Haley C\*, Olea-Popelka F, Wagner B and Dargatz D. Analysis of antimicrobial susceptibility profiles of Salmonella Serotypes using survival analysis, in Proceedings, of the 21st International Pig Veterinary Society Congress Vancouver, Canada, July 18th – 21st, 2010.

L. Linke, J. Triantis, F. Olea-Popelka, M. D. Salman. Effective small interfering RNA cocktails targeting viral and avian genes as an alternative to vaccination for avian influenza. 12th Annual CVMBBS Research Day, March 5, 2011, Fort Collins, CO, USA.

Leon-Velarde, C., S. Chen, F. Olea-Popelka, J. Odumeru. Characterization and distribution of Salmonella from egg layer and pullet grower operations in Ontario, Canada, by MLVA molecular typing. CRWAD, Chicago, USA, December 5th-7th, 2010. (Poster Presentation)

Malama S , R Basaraba, A Berentsen, J Godfroid, J Muma, M Mulenga, T Bjordal-Johansen, F Olea-Popelka. Isolation and differentiation of Mycobacterium tuberculosis complex species from human TB patients in contact with cattle and wildlife infected with Mycobacterium spp in Namwala, Zambia, Africa. 42nd International Conference on Tuberculosis and Lung Disease. Lille, France.

Mann, H., K. Orloski, M. Salman, R. Basaraba, and F.J. Olea-Popelka. Bovine tuberculosis slaughter surveillance system in the USA and the ability to trace infected cattle back to the herd of origin. 12th Annual CVMBBS Research Day, March 5, 2011, Fort Collins, CO, USA. (Oral Presentation)



### Non-Refereed Publications

Mann, H., R. Basaraba, M. Salman, K. Orloski and F. Olea-Popelka. Bovine tuberculosis slaughter surveillance system in the USA and the ability to trace infected cattle back to the herd of origin. CRWAD, Chicago, USA, December 5th-7th, 2010. (Oral Presentation)

Mealey RH, Ueti MW, Traub-Dargatz JL, Pelzel AM, Knowles DP: Equine Piroplasmiasis: Concepts for treatment and prevention. Proceedings of the 2011 ACVIM Forum. Denver, CO. June 15-18, 2011. pgs 270-272.

Morley PS, Van Metre DC, Burgess BA, Steneroden KK, Dunowska M, and the JLV-VTH Biosecurity Committee. Biosecurity Standard Operation Procedures for the James L. Voss Veterinary Teaching Hospital. Colorado State University, February, 2007. Major revision July 2010. 148 pp. [Available: [http://csuvets.colostate.edu/biosecurity/biosecurity\\_sop.pdf](http://csuvets.colostate.edu/biosecurity/biosecurity_sop.pdf)]

Morley PS, Van Metre DC, Rao S (2010). Causes of failure on breeding soundness examination in Western U.S. rams, 2000-2007. Proceedings of the 2010 Meeting of the Conference of Research Workers in Animal Diseases. Abstract #14, Chicago, IL.

Olea-Popelka F.J. Bovine Tuberculosis Slaughter Surveillance. Bovine Tuberculosis International Seminar, Santiago, Chile, January 14th -15th, 2010 (Oral Presentation)

Olea-Popelka F.J. Epidemiological studies applied to TB control programs. Bovine Tuberculosis International Seminar, Santiago, Chile, January 14th -15th, 2010 (Oral Presentation)

Olea-Popelka, F.J., Basaraba, R. and Rao, S. The importance of extra-pulmonary tuberculosis caused by Mycobacterium bovis: developing a guinea pig model using the oral route of infection. 41st Union against TB-HIV and Lung disease conference, Berlin, Germany, November 11th -15th, 2010. (Oral Presentation)

Olea-Popelka, F.J., Z. Freeman, P. White, E. Costello, J. O'Keeffe, K. Frankena, S.W. Martin and S.J. More. Quantification of the relative efficiency of factory surveillance in the disclosure of tuberculosis lesions in attested Irish cattle, 2005-2007. 2010 Abstract. Center for Veterinary Epidemiology and Risk Analysis (CVERA), University College Dublin, Ireland, Biannual Report 2010.

Pabilonia, Kristy. Final Report: Laboratory Diagnostic Procedures Training Workshop in Erbil, Iraq from June 28-July 9, 2010.

Pattison K, Burgess BA, Morley PS. Pamphlets and informational brochures regarding education and management zoonotic diseases in veterinary patients and their owners. These include various types of documents related to Salmonella, MRSA, MRSP, Leptospirosis, hand hygiene, environmental disinfection, etc. Colorado State University. 2011-2012.

Traub-Dargatz JL, Bischoff B, Koprak C, Rodriguez J. Prevalence of Elevated Temperatures Among Horses Presented for Importation to the United States. Proceedings of the 87th Annual Meeting of the Conference of Research Workers in Animal Diseases, Chicago, 2011.

Traub-Dargatz JL, Pelzel AM, Knowles DP, Mealey RH: Equine Piroplasmiasis: Overview and current status in the U.S.A. Proceedings of the 2011 ACVIM Forum. Denver, CO. June 15-18, 2011. pgs 267-269.

Traub-Dargatz JL, Short MA, Pelzel AM, Norman TE, Knowles DP. Equine Piroplasmiasis. Proceedings of the 13th Annual AAEP Resort Symposium. St. Michael, Barbados. January 24, 2011. 1 hr. pgs 54-65.

Van Metre D. Antibiotics in Cow-Calf Operations: Which, when, and why? Colorado State University Veterinary Extension Website, available at: <http://veterinaryextension.colostate.edu/menu2/Cattle/Antibiotics.pdf>

Van Metre D. Antibiotics in cow-calf operations: Which, when, and why? Colorado State University Veterinary Extension website, 2010. Available at: <http://veterinaryextension.colostate.edu/menu2/Cattle/Antibiotics.pdf>

Van Metre D. Abomasal Bloat and Abomasitis in Calves, Posted 17 November 2010; <http://veterinaryextension.colostate.edu/menu2/Cattle/Abomasitis.pdf>

Van Metre D. Calf scours 101: Basics of calf diarrhea for the beef cattle producer. Colorado State University Veterinary Extension website, 2010. Available at: <http://veterinaryextension.colostate.edu/menu2/cattle.shtml>

### Non-Refereed Publications

Van Metre D. Caseous lymphadenitis in small ruminants. Colorado State University Veterinary Extension website, 2010. Available at: <http://veterinaryextension.colostate.edu/menu2/smruminants.shtml>

Van Metre D. Copper poisoning in small ruminants. Colorado State University Veterinary Extension website, 2010. Available at: <http://veterinaryextension.colostate.edu/menu2/smruminants.shtml>

Van Metre D. Gastrointestinal parasites in sheep and goats: Frequently asked questions. Colorado State University Extension Fact Sheet #8.019, posted 20 May 2010. Available at: <http://www.ext.colostate.edu/pubs/livestk/o8o19.html>

Van Metre D. H1N1 Influenza and pigs. Colorado State University Extension Fact Sheet #8.021, posted 20 May 2010. <http://www.ext.colostate.edu/pubs/livestk/o8o21.html>

Van Metre D. Pneumonia in sheep and goats. Colorado State University Veterinary Extension website, 2010. Available at: <http://veterinaryextension.colostate.edu/menu2/smruminants.shtml>

Van Metre D. Pregnancy Toxemia. Colorado State University Veterinary Extension website, 2010. Available at: <http://veterinaryextension.colostate.edu/menu2/smruminants.shtml>

Van Metre DC. Localization of the jugular vein in small ruminants and camelids. Colorado State University Veterinary Extension website, June 2011, available at: <http://www.ext.colostate.edu>

Van Metre DC. Localization of the jugular vein in small ruminants and camelids. Colorado State University Veterinary Extension website, June 2011, available at: <http://www.ext.colostate.edu>

Van Metre DC. Pre-breeding management of rams and ewes. Colorado State University Veterinary Extension website, November 2011, available at: <http://www.ext.colostate.edu>

Van Metre DC. Pre-breeding management of rams and ewes. Colorado State University Veterinary Extension website, November 2011, available at: <http://www.ext.colostate.edu>

Van Metre DC. Prevention of urolithiasis in livestock. Colorado State University Veterinary Extension website, November 2011, available at: <http://www.ext.colostate.edu>

Van Metre DC. Prevention of urolithiasis in livestock. Colorado State University Veterinary Extension website, November 2011, available at: <http://www.ext.colostate.edu>

Van Metre DC. Zoonotic diseases: When your work can make you sick. Colorado State University Veterinary Extension website, November 2011, available at: <http://www.ext.colostate.edu>

Van Metre DC. Zoonotic diseases: When your work can make you sick. Colorado State University Veterinary Extension website, November 2011, available at: <http://www.ext.colostate.edu>

Van Metre DC. Breeding soundness examination of the ram and buck. Colorado State University Veterinary Extension website, November 2011, available at: <http://www.ext.colostate.edu>

Van Metre DC. Breeding soundness examination of the ram and buck. Colorado State University Veterinary Extension website, November 2011, available at: <http://www.ext.colostate.edu>

Van Metre DC. Lameness in Cattle: Rules of Thumb. Posted 17 November 2010; <http://veterinaryextension.colostate.edu/menu2/Cattle/Lameness%20rules%20of%20thumb.pdf>

Wiedenheft A, Traub-Dargatz JL, Salman MD, Gillette S, O'Keefe G. African Horse Sickness: the Knowledge Base of U.S. Equine Veterinarians and the Effectiveness of Online Education. Proceedings of the 2011 CVMB Research Day. Fort Collins, CO. March 5, 2011. pg 19.

2011

# Animal Population Health Institute

## Institute Code

Contents include Institute values, vision, mission statement, strategies, tactics, administrative structure, and operating parameters.



CONTENTS

- Institute Values..... 1
- Institute Vision..... 1
- Institute Mission ..... 1
  - Strategies to achieve mission: ..... 1
  - Tactics to implement strategies: ..... 1
- Administrative Structure ..... 3
- Internal Advisory Board..... 3
  - Composition:..... 3
  - Selection Process: Nomination & Vote ..... 3
  - Term..... 4
  - Roles & responsibilities..... 4
- External Advisory Group..... 4
- Director..... 4
  - Selection Process: Nomination & Vote ..... 4
  - Term..... 5
  - Roles & Responsibilities ..... 5
- Associate Director..... 5
  - Selection Process: Appointment..... 5
  - Term..... 5
  - Roles & Responsibilities:..... 5
- Membership ..... 6
  - Membership Expectations ..... 6
- Operation procedures ..... 7
  - Meetings..... 7
  - Institute evaluation..... 7
  - Review of code ..... 7

---

# ANIMAL POPULATION HEALTH INSTITUTE

## INSTITUTE VALUES

Animal population health is essential for enhancing animal well-being and productivity; humans and the environment benefit from healthy animal populations within the United States and throughout the world.

Population-based research, regardless of political boundaries, is necessary to prevent and control animal disease and provide tangible benefits to producers, livestock owners, managers, consumers, and the global economy.

Population-level research to address animal health issues requires a multidisciplinary approach and use of both field and laboratory-based studies.

## INSTITUTE VISION

APHI strives to be an internationally recognized leader in animal population health research and outreach through effective multidisciplinary collaboration and the development and implementation of creative solutions for animal population health issues.

## INSTITUTE MISSION

The Animal Population Health Institute initiates, coordinates and conducts multidisciplinary research and outreach programs that serve to improve the health and well-being of animal populations, to prevent and control infectious and other important diseases of animals, and to contribute to national and international animal disease policymaking processes by providing a better understanding of disease epidemiology and pathogenesis.

## STRATEGIES TO ACHIEVE MISSION:

- Initiate, conduct, and coordinate research and outreach programs.
- Conduct objective, hypothesis-driven, nonpartisan research concerning animal health and well-being using population-based approaches.
- Assemble appropriate subject matter and technical experts to ensure that well-planned and high quality applied veterinary research projects and activities are completed in a timely manner.
- Share research project outcomes, subject matter knowledge and technical expertise in animal population health by developing outreach programs for local and global presentation to a variety of audiences.
- Enhance learning opportunities for graduate, undergraduate, and professional veterinary medicine students through mentoring and training activities.
- Encourage and promote multidisciplinary collaboration and communication related to animal health issues among CSU departments, federal, state, and local agencies.

## TACTICS TO IMPLEMENT STRATEGIES:

### CREATE INFRASTRUCTURE

- Institute an external advisory group comprised of representatives from animal industries, state animal health officials, and USDA:APHIS:VS to forecast needs of the animal industry.

- Have an institute director and associate director to spearhead activities and direction and to guide activities through a periodic seminar series and through prioritization in granting funding from the Program for Economically Important Infectious Animal Diseases (PEIIAD).
- Create an internal advisory board who represent the various disciplines/functions/activities of the APHI mission.
- Report activities to APHI administration for annual report needs.
- Develop a departmental, college, and university presence to allow APHI to be at the table for discussions regarding future priorities and funding.
- Work to have some available administrative and/or laboratory support for APHI members.
- Work to recruit junior faculty as members and engage them in Institute leadership roles.

#### ARRANGE MEETINGS, SEMINARS, & SOCIAL ACTIVITIES

- Schedule at least one annual meeting of APHI members for sharing activities, accomplishments, and future projects.
- Create additional opportunities for increased collaboration and communication between APHI members.
- Develop local collaborations through educational and social opportunities.

#### PROVIDE RESEARCH/OUTREACH FOCUS

- Prioritize animal population needs that APHI can address on a yearly basis.
- Suggest goals for funding/publications/presentations/outreach activities in relevant areas.
- Engage in laboratory-based research activities such as laboratory test development or validation with a goal of application at the field level.
- Engage in activities to improve tools for detection of animal diseases.
- Engage in activities to measure disease occurrence and identify manageable factors associated with disease occurrence in animal populations.
- Provide seminars and training about APHI work to animal industries.

#### PROVIDE MEMBERSHIP FOCUS

- Enhance membership in APHI by “advertising for those who can build on our areas of expertise and enhance areas that are forecasted to be important in the future” and addressing why an individual should be a member of APHI.
- More clearly define APHI and its purpose so that concrete objectives can be established and attained. “Advertise available resources – personnel and monetary”.
- Strive to have each faculty member engaged in at least one externally-funded grant each year.
- Encourage APHI name/logo use on business cards and in all member presentations. Members may not have a choice to include APHI logo/name when business cards are provided by other departments and entities. However, presentations on APHI-sponsored research/outreach activities should include the Institute name and logo.
  - APHI administrative structure can provide PowerPoint templates for presentations, letterhead, easily downloadable APHI logos, and the like for individuals to use when communicating about APHI projects.

#### FUTURE ISSUES

- Work to secure 9 months of funding for the Associate Director to ensure Institute continuity and support.
- Work to provide administrative support in the area of grant preparation and outreach activities.

---

# ADMINISTRATIVE STRUCTURE & OPERATIONS

## ADMINISTRATIVE STRUCTURE

### **INTERNAL ADVISORY BOARD: EXTERNAL ADVISORY GROUP: DIRECTOR: ASSOCIATE DIRECTOR: MEMBERS**

Neither a “program” structure nor a formal section format is desired within APhi. Rather, the Institute should provide focus by “key areas”, as broadly defined in the mission statement and allow groups to develop over time as affinity groups. Outreach is an inherent function in all key areas.

## INTERNAL ADVISORY BOARD

### COMPOSITION:

The Internal Advisory Board is comprised of a maximum of 7 voting members and includes the following:

- Institute Director
  - The Institute Director is an *ex officio* but *nonvoting* member.
    - The Director receives advice and recommendations from the Internal Advisory Board. However, the Director has the prerogative to accept or reject the Internal Advisory Board recommendations with reasons.
- Associate Director is an *ex officio* but *voting* member
- APhi staff representative
- Faculty members who represent key functions, disciplines, and areas as broadly defined in the mission statement in order to be a dynamic entity.
  - The Advisory Board should include at least one junior-level faculty member.
  - The Advisory Board has the opportunity to include up to 5 faculty members to assure coverage of all key areas and disciplines.
- CEAH Representative
  - The CEAH representative is an *ex officio*, non-voting member.
- At-large Representative
  - The at-large representative nominee shall be an APhi member or collaborator who is not a faculty member, staff member, or CEAH employee. These restrictions facilitate broad representation from outside entities that collaborate with APhi.
  - The at-large representative is a non-voting member.
- The Internal Advisory Board has the opportunity to include up to 3 ex-officio liaison representatives from APHIS with CEAH having a permanent position.

### SELECTION PROCESS:

- Nomination Guidelines
  - APhi faculty and staff shall be invited to provide nominations for board membership. The Associate Director will facilitate this process using electronic communications. Within the announcement communiqué, the criteria for advisory board membership shall be provided.
  - Nominee must be a member of APhi.
  - Nominee must accept nomination and be willing to serve in light of likely time commitment.
- A review of the nominee slate will be done by Director and Associate Director to ensure representativeness.

## APHI STRUCTURE & OPERATIONS

- Vote
  - The APhi staff representative is selected by vote of APhi staff members.
  - APhi faculty representatives and the CEAH and at-large representatives are selected by vote of APhi faculty members.

### TERM:

- 3 years, staggered to ensure continuity.
  - Initial election to the Internal Advisory Board will be for a 1, 2, or 3 year term. Thereafter, elections will be for 3-year terms.
- Maximum of 2 back-to-back 3-year terms. An individual can be re-elected to the Advisory Board after an absence of at least a year.

### ROLES & RESPONSIBILITIES:

Internal Advisory Board members provide recommendations to the Director concerning key Institute activities, which are identified in part by the Institute vision, funding potential, global priorities, and appropriate personnel. Internal Advisory Board members participate in the internal management of Institute day-to-day activities, including budgeting issues, at the Director's request.

- Participate in Advisory Board quarterly meetings (conference call acceptable means of participation) or send representative.
- Attend quarterly *combined* Board/entire APhi personnel meetings.
- Work with Institute Director and Associate Director to formulate a priority list of activities & research directions, to implement a collaborative leadership & management plan, and to devise a communication plan to build a cohesive team.
- Be a representative of their area of expertise and provide integration and commitment to APhi's foci at the top level of administrative structure.
- At the discretion of the Institute Director, represent the Institute at meetings and other activities, as needed.

## EXTERNAL ADVISORY GROUP

- The purpose of the External Advisory Group is twofold -- to help APhi stay on course with global matters and external needs and to promote APhi for extramural funding and exposure.
- The composition of the External Advisory Group will be determined by the Internal Advisory Board.
- The External Advisory Group shall meet once per year and/or as needed.

## DIRECTOR

### SELECTION PROCESS:

- Nomination
  - The Internal Advisory Board is the nominating body and shall prepare a ballot of candidates for consideration after meeting with each potential candidate, who can accept/decline the nomination.
  - Full professors within Colorado State University who are members of APhi are eligible for nomination.



## APHI STRUCTURE & OPERATIONS

- Vote
  - Vote by the APHI voting body, which is comprised of APHI faculty and staff members. Graduate students are not considered staff members, unless they have a dual appointment.

### TERM:

- 4 years to coincide with a scheduled University Centers, Institutes, and other Special Units (CIOSU) renewal process, which is held every 2 years.
- The Director is eligible for reappointment with approval and support of Internal Advisory Board and the APHI voting body.

### ROLES & RESPONSIBILITIES:

The Institute Director is the chief administrative officer of the Animal Population Health Institute. The Director has the general responsibility for directing and coordinating all Institute activities necessary to position the Institute to meet its strategic objectives based on input from the Internal Advisory Board and the External Advisory Group.

The Director is responsible for activities and collaborations required to:

- Ensure appropriate representation and promotion of the Institute within Colorado State University and to appropriate external entities.
- Build Institute structure to promote the APHI mission.
- Provide an annual report to Institute members summarizing APHI activities in relation to Institute strategic objectives; the report shall identify and prioritize strategic objectives for the coming year.
- Identify and secure funding for the Institute through submission and administration of relevant grants.
- Foster collaboration among Institute members and identify funding opportunities.
- Supervise Institute staff members within the University rules.
- Serve as a role model and mentor for faculty in conducting interdisciplinary research projects.

## ASSOCIATE DIRECTOR

### SELECTION PROCESS:

- Appointed by the Director with approval of Internal Advisory Board.

### TERM:

- 2 year initial appointment; reappointment with Director and Internal Advisory Board approval.

### ROLES & RESPONSIBILITIES:

The Associate Director (AD) is the chief operating officer of the Animal Population Health Institute. The AD works with the Institute Director to promote the consistent achievement of the Institute mission. The AD works to create and sustain working relationships with Institute faculty, staff, student members and with the University system and advisory boards as deemed necessary by the Institute Director. The AD reports directly to the Institute Director.

The AD is responsible for activities and collaborations required to:

- Build Institute structure to promote the APHI mission;
  - a. Provide leadership in developing programs and plans to build Institute structure with the Institute Director and Advisory Boards and to carry out plans as authorized by the Director.

- b. Coordinate and facilitate meetings, seminars, and other events among APHI faculty, staff, and students.
- Manage day-to-day operations to maintain Institute structure within the Department of Clinical Sciences and the University at large including;
  - a. Maintain official records and documents as necessary.
  - b. Maintain a current roster of faculty, staff and student members.
  - c. Complete University CIOU reports and required communiqués in conjunction with Institute Director.
  - d. Ensure completion of activities necessary to maintain Institute structure as designated by the Institute Director.
- Support the Institute Director, including acting as director when director is absent.
- Maintain APHI webpage.
- Attend all meetings of Advisory committees.
- Work with the Director to provide an annual report of APHI activities to Institute members.

## MEMBERSHIP

Institute membership is open to Colorado State University faculty, administrative professionals, students, Federal/State employees, and Industry personnel in good standing in their current position, and who have an interest in research and outreach as defined by the Institute's mission. Interested faculty, administrative professionals, and research/outreach collaborators should contact the Associate Director to be included in the Institute. Graduate and undergraduate students must be sponsored by a current APHI member who should forward the names to the Associate Director.

- APHI provides a focus and forum for individuals with common research and outreach goals; membership facilitates collaboration to accomplish professional goals.
- Members are eligible for leadership roles within the Institute and receive access to Institute resources.
- Colorado State University faculty and staff who are APHI members constitute the Institute voting body.

## MEMBERSHIP EXPECTATIONS:

- Membership entails a commitment to abide by the Institute code, attend at least 50% of the quarterly Institute meetings, contribute to Institute seminar programs, and support the Institute by responding to administrative requests in a timely manner.
- There is no formal departmental compensation for time spent on APHI administrative duties. Thus, all who consider serving in an administrative capacity must thoughtfully consider the potential ramifications.
  - Informal compensation comes in the form of research collaboration, outreach programs, and just getting things done. These activities can be folded into the departmental evaluation of an APHI member in the form of research grants, publications, and outreach.
- All APHI members adhere to the principles of scientific integrity, responsibility, accountability, and creativity in research and outreach activities.
- An Institute member can be removed at any time due to unethical behavior or lack of fulfillment of his/her commitment to participate in Institute activities. Removal is based on a majority vote of the Internal Advisory Board.

## OPERATION PROCEDURES

### MEETINGS

- Meetings of the Institute general assembly are held quarterly at a time arranged by the Institute Director in conjunction with the Internal Advisory Board.
  - General Assembly meetings are regularly scheduled and announced in advance to all members.
  - Meeting agendas are distributed at least one week before the regularly scheduled General Assembly meeting. The agenda can include but is not limited to presentations regarding ongoing activities and new projects.
  - The General Assembly meeting is the selected venue for new member introductions who will be asked to provide a short update on their research and outreach activities.
  - The General Assembly meetings will be held jointly with USDA, Centers for Epidemiology and Animal Health.

### INSTITUTE EVALUATION

- The value of the Institute is demonstrated through successful accomplishments in research and outreach activities and is assessed *annually* by its funding, publications, outreach activities, national/international reputation, and other key result areas such as facilities and personnel development.
  - The annual evaluation process will be developed by the Internal Advisory Board, distributed for review by all Institute faculty members, and codified by the APHI voting body.
  - The annual evaluation report shall be based on faculty member responses to requested information and include an assessment of Institute direction and progress toward strategic objectives.
- The annual evaluation report is to be distributed by the Internal Advisory Group to all faculty members and the External Advisory Group for feedback.

### REVIEW OF CODE

The code will be reviewed at least every 5 years or sooner if requested by the Internal Advisory Board. Changes to the code must be approved by two-thirds of the APHI voting body.