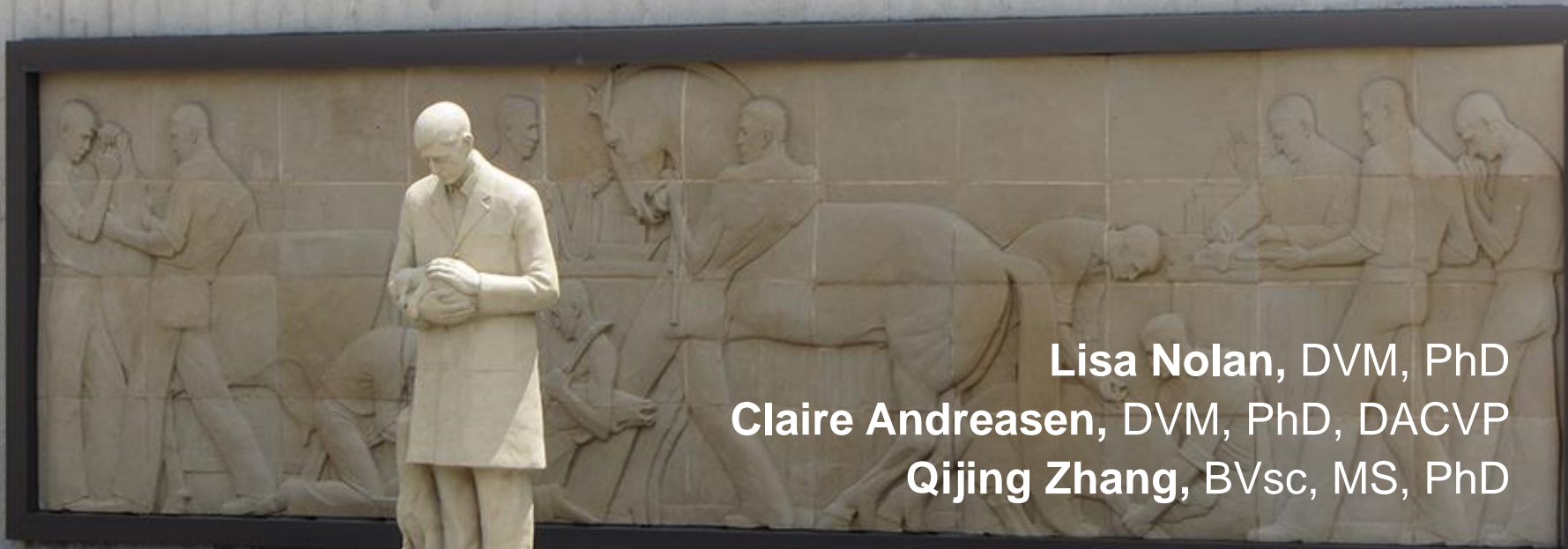


One Health Initiative at Iowa State

Connecting Education, Research, and Outreach



Lisa Nolan, DVM, PhD

Claire Andreasen, DVM, PhD, DACVP

Qijing Zhang, BVsc, MS, PhD

IOWA STATE UNIVERSITY
College of Veterinary Medicine



College of Veterinary Medicine

- First public veterinary college in the US (1879)
- Internationally known for veterinary education, research and service

College of Veterinary Medicine

- We are Iowa State's only professional college
- Ames harbors one of the country's largest concentrations of animal health professionals
- Focus on animal and human health, food safety and animal welfare to the benefit of animal agriculture, economic development, and the health and well-being of humans and their animals





College of Veterinary Medicine

Academic departments:

- Biomedical Sciences
- Clinical Sciences
- Pathology
- Microbiology & Preventive Medicine
- Diagnostic & Production Animal Medicine

Service Units:

- Lloyd Veterinary Medical Center
- Veterinary Diagnostic Laboratory
- Field Services

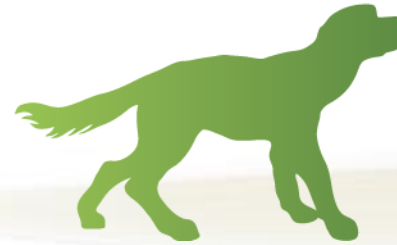
One Health Approach



One Health is the collaborative effort of multiple health science professions, together with their related disciplines and institutions – working locally, nationally, and globally – to attain optimal health for people, domestic animals, wildlife, plants, and our environment.

Source: One Health Commission website

Integrated One Health Health Initiative

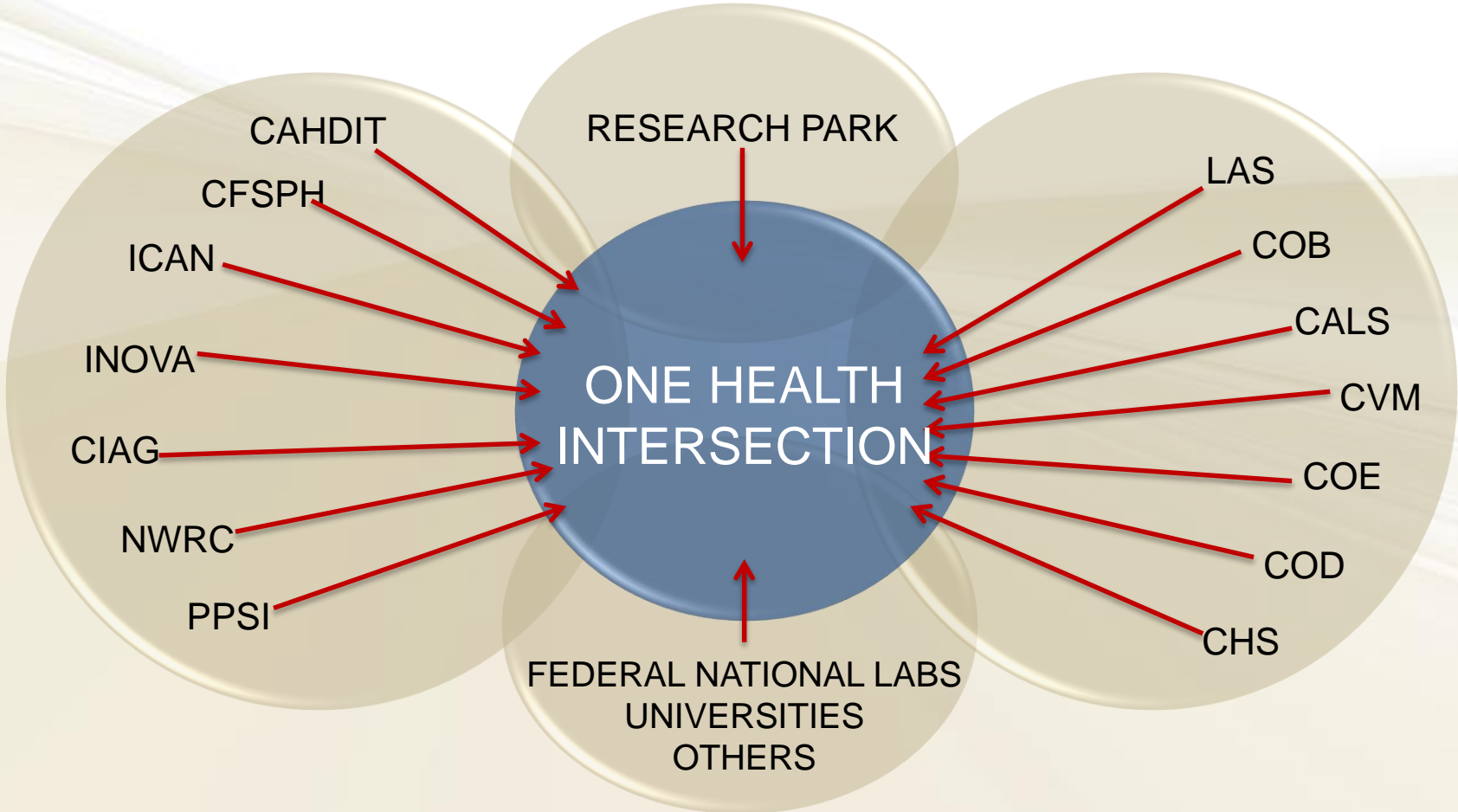


Based on land-grant universities' strengths in human, animal, plant, and environmental health, how can we strategically collaborate to expand our research capabilities?

Land-Grant Institutions are Ideally Positioned

- Quality of faculty
- Breadth of research (basic, applied, clinical, and translational)
- Convergence of disciplines in the biological, physical, social, and clinical sciences
- Established partnerships
- Complementary colleges
- Incubators and Research Farms
- Institutes and Centers
- Relationships with Federal Labs (e.g., USDA and DOE)
- Industry ties and community outreach and service
- Interdisciplinary culture

Concept for a One Health Approach at the Convergence of the Biological, Physical, Social and Clinical Sciences



Land-Grant Research Foci

Integrated One Health

- Health, nutrition, & food security and safety

Biorenewables

- Products & energy

New Technologies

- Materials to systems

Environment

- Climate change to ecosystem degradation

Integration
with
Behavioral
and Social
Sciences

Quality
of Life

Interconnected Research Foci

The Pillars on which ISU will Continue to Build

- Transform the Research Enterprise at Iowa State by building on its pillars of strength in one health
- Create a “self-sustaining” pipeline that translates bench-top discovery into health innovations
- Continue to build a foundation of research capabilities that will ‘stand the test of time’



Interconnected Research Foci

Healthy
Humans



Healthy
Animals



Healthy
Plants



Healthy
Environment



Bioinformatics
& Computational
Biology

Biomedical
Nanotechnology
& Translational
Discovery
Research

Food, Nutrition
& Health, and
Food Safety

Structural
Biology, Cell
Biology, Disease
Control &
Prevention, and
Animal Models

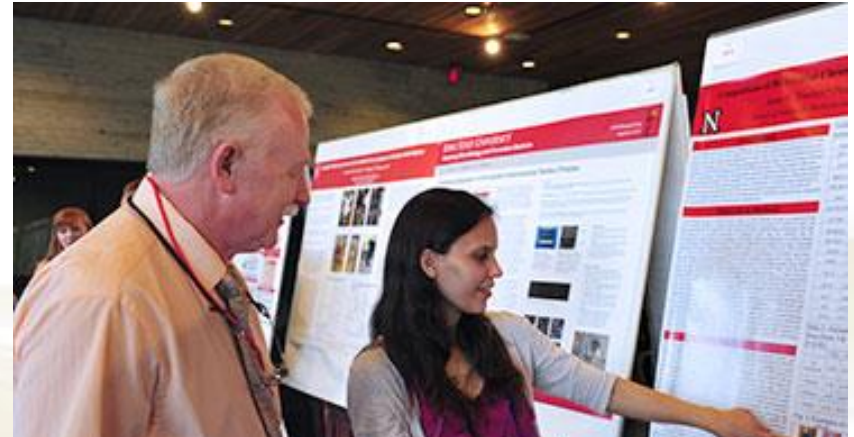
Plant Health

Decision-
Based Health
Informatics

Infectious
& Emerging
Diseases, and
Translational
Preventive
Medicine

Outreach, Research and Teaching

- Added to Iowa State's strategic plan
- Research symposium for Iowa State researchers and students
- University planning committee
- Funding for seed grants
- One Health Endowed Lecture Series
- New Presidential Hires



Think you are not eligible for NIH funding? *Think again.*
Join your colleagues to discover your role in the 'One Health' World.



ONE Health Symposium

People, Plants & Animals

09.15.10
Scheman Building, Benton Auditorium

Guest Speakers

Dr. Roger Mahr
Chief Executive Officer
of the One Health Commission

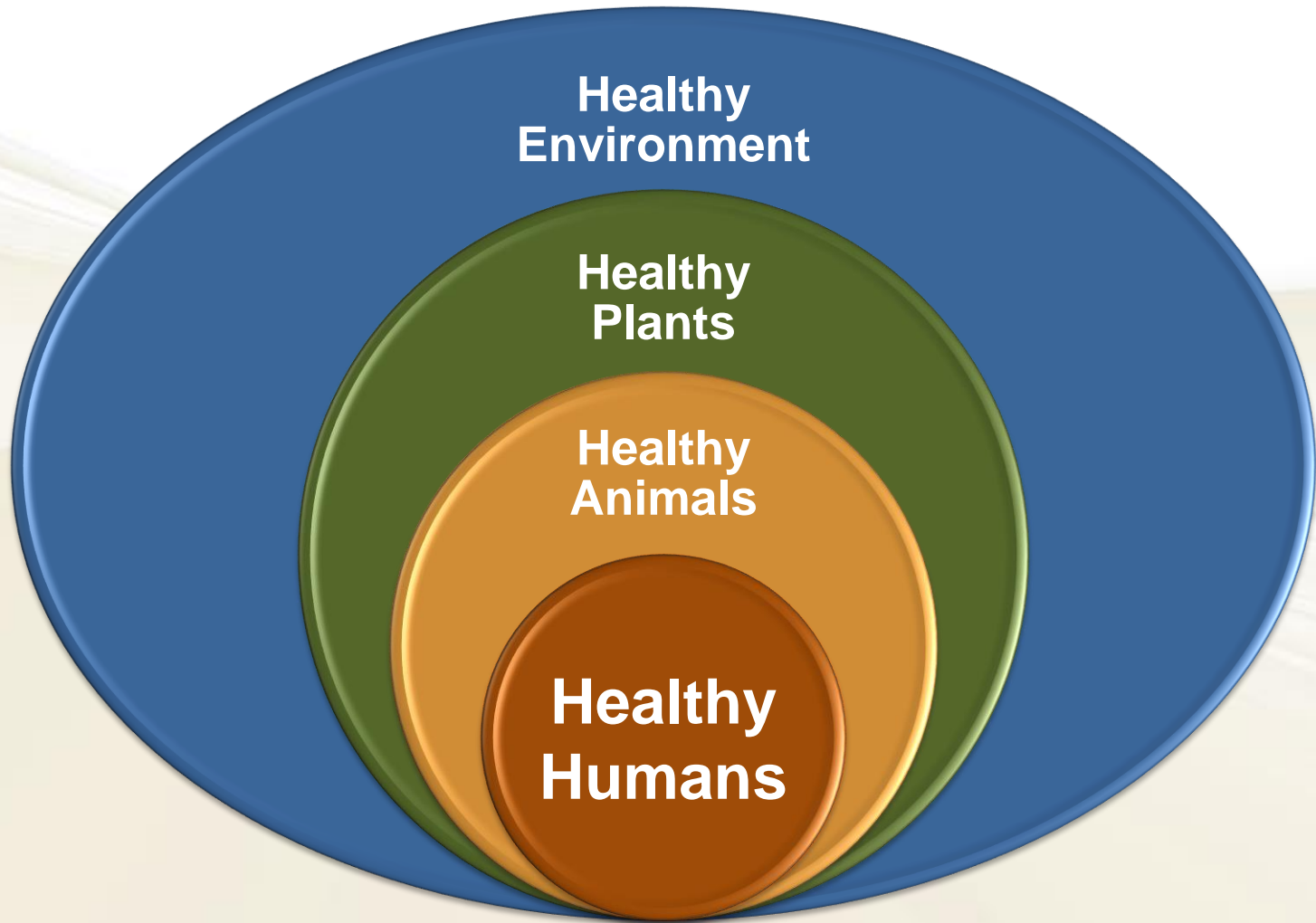
Dr. Josephine Briggs
Director of NIH National Center for
Complementary & Alternative Medicine

- ▶ **Session One**
Regulation of Cell Processes
- ▶ **Session Two**
Environmental Impact on Health
- ▶ **Session Three**
Prevention Sciences, Behavior, & Wellness
- ▶ **Session Four**
Animal & Plant Diseases Impacting Humans

▶ **Register ONLINE**
OneHealthSymposium.vpresearch.iastate.edu

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Integrated One-Health Initiative



EDUCATIONAL AND
OUTREACH RESOURCES
COLLEGE OF VETERINARY MEDICINE



Center for Food Security and Public Health Mission

- Established in 2002 by the CDC
- To increase national and international preparedness for accidental or intentional introduction of disease agents which threaten *food security* or *public health*



The screenshot shows the website's homepage. At the top left is the center's logo. A search bar is in the top right. Below the header is a large image of a herd of black and white cows. To the right of the image are sections for 'Bovine Resources' and 'Animal Diseases', each with a 'more information' link. A 'CFSPH Main Menu' is on the left, listing categories like 'Products', 'Animal Disease Information', 'Zoonotic Diseases', 'Infection Control', 'Emergency Response', 'Secure Food Supply', 'Education and Training', 'Upcoming Meetings', 'Vaccines', 'Video Library', and 'Affiliated Websites'. A 'Diseases and Resources by Species' section in the center lists Aquatic Animals, Bovine, Canine, Cervids, Equine, Feline, Human, Non-poultry Birds, Pocket Pets, Poultry, Small Ruminants, and Swine. A 'News' section at the bottom left features a date 'April 27, 2012' and a link to a registration program. On the right, there is a 'Vaccines & Diagnostics' banner for a 'save the date' event on 'SEPTEMBER 17-19, 2012 AMES, IOWA USA' and a 'Handbook for Zoonotic Diseases of Companion Animals'.

Education Materials

- Bioterrorism and Agroterrorism
 - PowerPoints, fact sheets, handouts, disease wall charts
- Emerging and Exotic Diseases of Animals
 - Fact sheets, textbook, online course, Spanish
- Zoonotic Diseases
 - Textbook, fast facts, handouts
- Biological Risk Management
 - PowerPoints, handouts, online database

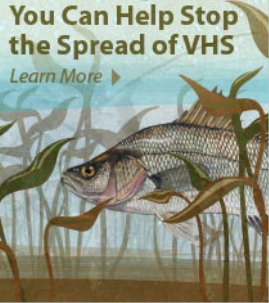


www.cfsph.iastate.edu

CFSPH Main Menu

- Products
- Animal Disease Information
- Zoonotic Diseases
- Infection Control
- Emergency Response
- Education and Training
- Vaccines**
- Video Library
- Affiliated Websites
- About the CFSPH
- Contact Us

You Can Help Stop the Spread of VHS
Learn More



Animal Disease Resource Index

Disease PowerPoints	Image Database	Factsheets
Speaker Notes	Vaccine Directory	Fast Facts

Acariasis	Influenza
African Horse Sickness	Israel Turkey Meningoencephalitis
African Swine Fever	<i>Ixodes ricinus</i>
Aino Disease	Japanese Encephalitis
Akabane	Larva Migrans
<i>Amblyomma hebraeum</i>	Leishmaniasis
<i>Amblyomma variegatum</i>	Leptospirosis
Anthrax	Listeriosis
Aujeszky's Disease	Louping Ill
Avian Influenza (Highly Pathogenic)	Lumpy Skin Disease
Avian Mycoplasmosis	Lyme Disease
Baylisascariasis	Lymphocytic Choriomeningitis
Blue Eye Disease	Maedi-Visna
Bluetongue	Malignant Catarrhal Fever
Botulism	Marburg Fever
Bovine Babesiosis	Melioidosis
Bovine Ephemeral Fever	Menangle
Bovine Spongiform Encephalopathy	Methicillin Resistant <i>Staphylococcus aureus</i>
Bovine Tuberculosis	Monkeypox
<i>Brucella abortus</i>	Mycobacteriosis
<i>Brucella canis</i>	Nairobi Sheep Disease
<i>Brucella melitensis</i>	Newcastle Disease
<i>Brucella ovis</i>	Nipah
<i>Brucella suis</i>	<i>Oncorhynchus masou</i> Virus Disease
Brucellosis	Ovine Pulmonary Adenomatosis
Brucellosis (Marine Mammals)	Parafilariasis
Camel pox	Paratuberculosis
Campylobacteriosis	Peste des Petits Ruminants
Canine Influenza	Plague
Caprine Arthritis Encephalitis	Porcine Epidemic Diarrhea
Cat Scratch Disease	Porcine Reproductive Respiratory Syndrome (PRRS)
Chagas (Trypanosomiasis-American)	
Chlamydiosis (Avian)	

- 160 disease fact sheets
- 100 Diseases with images
- 56 PPTs
 - Speaker notes
- 91 1-page *Fast Facts*

Disease Fact Sheets

Foot and Mouth Disease
Fiebre Africa

Last Updated: September 24, 2007

Importance
Foot-and-mouth disease (FMD) is a highly contagious viral disease that primarily affects cloven-hooved livestock and wildlife. Although adult animals generally recover, the morbidity rate is very high in naive populations, and significant pain and distress occur in some species. Sequelae may include decreased milk yield, permanent hoof damage and chronic mastitis. High mortality rates can be seen in young animals. Although foot-and-mouth disease was once found worldwide, it has been eradicated from some regions including North America and most of Europe. Where it is endemic, this disease is a major constraint to the international livestock trade. Unless strict precautions are followed, FMD can be readily re-introduced into disease-free livestock. Once this occurs, the disease can spread rapidly through a region, particularly if detection is delayed. Outbreaks can severely disrupt livestock production, result in embargoes by trade partners, and require significant resources to control. Direct and indirect economic losses equivalent to several billion US dollars are not uncommon. Since 1997, a PanAsia lineage virus has caused a series of outbreaks in Asia, Africa, the Middle East and Europe. Some outbreaks, particularly those in Taiwan and the United Kingdom, have been devastating.

Etiology
The foot-and-mouth disease virus (FMDV) is a member of the genus *Aphthovirus* in the family Picornaviridae. There are seven immunologically distinct serotypes - O, A, C, SAT 1, SAT 2, SAT 3 and Asia 1 - and over 60 strains within these serotypes. New strains occasionally develop spontaneously.

FMDV serotypes and strains vary within each geographic region. Serotype O is the most common serotype worldwide. This serotype is responsible for a pan-Asian epidemic that began in 1990 and has affected many countries throughout the world. Other serotypes also cause serious outbreaks. Immunity to one serotype does not provide any cross-protection to other serotypes. Cross-protection against other strains varies with their antigenic similarity.

Species Affected
FMDV can infect most or all members of the order Artiodactyla (cloven-hooved mammals), as well as a few species in other orders. Each species varies in its susceptibility to infection and clinical disease, as well as its ability to transmit the virus to other animals. Livestock susceptible to FMD include cattle, pigs, sheep, goats, water buffalo and reindeer. Llamas, alpacas and camels can be infected experimentally, but do not appear to be very susceptible. FMDV can also infect at least 70 species of wild animals including African buffalo (*Synoterus caffer*), kudu (*Tragelaphus sylvaticus*), elk, moose, chamois, giraffe, wildebeest, blackback, warthogs, kudus, impalas, and several species of deer, antelope and gazelles. Susceptible non cloven-hooved species include hedgehogs, armadillos, kangaroos, nutria, capybara, guinea pigs, rats and mice. Infections have been reported in African and Asian elephants in zoos; however, African elephants are not considered susceptible to FMD under natural conditions in southern Africa.

On most continents, cattle are usually the most important maintenance hosts for FMDV, but some virus strains are primarily found in pigs, sheep or goats. Cattle and African buffalo are the usual maintenance hosts for FMDV in Africa. African buffalo are currently thought to carry only the SAT serotype. With this exception, wildlife hosts do not seem to be able to maintain FMD viruses, and are usually infected by contact with domesticated livestock. Early reports suggested that transmission also occurred between cattle and European hedgehogs, but there is no evidence that this species has helped to propagate FMDV in the last 40 years.

Geographic Distribution
Foot-and-mouth disease is endemic in parts of Asia, Africa, the Middle East and South America. In parts of Africa, virus persistence in wild African buffalo makes eradication unfeasible. North America, New Zealand, Australia, Greenland, Iceland

Foot and Mouth Disease
FMDV can be transmitted on fomites including flies, as well as mechanically by animals and other vectors. Airborne transmission can occur under suitable climatic conditions. FMDV is thought to have been transmitted via aerosols from Brittany to Jersey (approximately 30 miles or 48 km) and for approximately 100 miles (163 km) from Jersey to the Isle of Wight. There is limited information on the survival of FMDV in the environment, but most studies suggest that it remains viable, on average, for three months or less. In very cold climates, survival up to six months may be possible. Virus titer increases at lower temperatures; in cell culture at 4°C (39°F), this virus can remain viable for up to a year. It was reported to survive on bran and hay for at least three months in a laboratory. It can also remain viable for approximately two months on wool at 4°C, with a 50% reduction in survival when the temperature rises to 18°C (64°F), and for 2 to 3 months in bovine manure. Organic material protects the virus from drying, enhances its survival on fomites. Virus survival is enhanced when FMDV is protected from sunlight. UV is inactivated at pH below 6.5 or above 11. This can persist in meat and other animal products when pH remains above 6.0, but it is inactivated by fixation of muscles during rigor mortis. It can survive for periods in chilled or frozen lymph nodes or bone marrow.

In humans, FMDV may be carried in the nasal mucus for a period of time. In one study, this virus was shed in the nasal passages of one of eight people 28 hours after exposure to infected animals, and from none of eight at 48 hours. More recent studies have found FMDV is not transmitted by people when personal hygiene and biosecurity protocols are followed, and that nasal carriage of the virus may be important. The discrepancy between these studies is to be resolved.

Incubation Period
In cattle, the incubation period varies from two to 14 days depending on the dose of the virus and route of infection. In pigs, the incubation period is usually two to four days, but can be as short as 18-24 hours. The incubation period in sheep is usually 3 to 8 days, depending on the dose as short as 24 hours and as long as 12 days have been reported in this species after experimental infection.

Clinical Signs
Foot-and-mouth disease is characterized by fever and vesicles (blisters) on the feet, in and around the mouth, on the mammary gland. Occasionally, vesicles may appear at other locations including the vulva, prepuce or coronary band on the legs. Vesicles often rupture rapidly, leaving erosions. Pain and discomfort from the lesions to a variety of symptoms including depression, anorexia, excessive salivation, lameness and reluctance to move or rise. Lesions on the coronary band may cause

Foot and Mouth Disease
FMDV may also be noted on the teats, and in the vulva or prepuce. Milk production may drop, but can be reluctant to mate. Ewes may abort. Up to 10% of infected sheep remain asymptomatic, and 20% abort only at one site. Young lambs and kids may be able to heart failure, without vesicles. In some cases, large numbers of lambs may fall down dead.

Animal lesions and fever have been reported in which rarely become anorexic or demonstrate pain discomfort.

Signs in wildlife resemble those seen in domestic livestock. Vesicles and erosions may be on various sites, particularly on the feet and in the mouth. Severe lesions occur where there is frequent lateral trauma, e.g. on the feet and snout of stags or at joints of warthogs. Loss of horns has also been reported. Some wildlife species typically experience mild infections or mild disease, while others experience severe, acute disease. Infections with SAT-type 1 in African buffalo are often subclinical, although mouth and/or foot lesions have been reported. In the United States, FMDV has been documented in mountain sheep, impalas, blackback, white tailed-deer, warthogs and giraffes. In one outbreak in mountain gazelles, at least the animals died due to heart failure and the atrophy and necrosis. Young animals of any age can die suddenly of myocarditis.

Worment Lesions [Click to view images](#)
A characteristic lesion of foot-and-mouth disease is a characteristic lesion of foot-and-mouth disease is a multiple, fluid-filled vesicles or bullae from 10 to 10 cm in diameter. The earliest lesions can be small pale areas or vesicles. Some vesicles may form bullae. Vesicles are generally present for short periods. Once they rupture, red, eroded areas will be seen. These erosions may be covered by a gray fibrous coating, and a demarcation line of developing epithelium may be noted. Loss of fluid through the erosions can lead to the onset of "dry" lesions, which appear necrotic and vesicular. Dry lesions are particularly common oral cavity of pigs.

Location and prominence of FMD lesions varies by species. In cattle, numerous erosions, ulcers or may be found in the oral cavity. In pigs, sheep and goats, these lesions may be more common on the coronary band and interdigital cleft of the feet. Some may extend to the skin. Coronitis may be seen on feet, and animals with severe disease may slough hooves or claws. In addition, vesicles may be found on the teats and udder, pressure of the legs, ruminal pillars, prepuce or vulva. In animals, cardiac degeneration and necrosis can occur or yellow streaking in the myocardium; these are sometimes called "tiger heart" lesions.

Foot and Mouth Disease

Foot and Mouth Disease
security measures should be practiced on farms to prevent entry of the virus. Vaccination may be used to reduce the spread of FMD or to protect specific animals (e.g. those in collections) during some outbreaks. The vaccine is complex, and varies with life, economic, political and societal factors. Vaccines must closely match the serotype and the infecting strain. Vaccination with one does not protect the animal against other and may not protect the animal completely or other strains of the same serotype. Currently, universal FMD vaccine. Vaccine banks contain a variety of strains, particularly those judged to be at threat of introduction, for use in an outbreak. Many countries maintain individual vaccine banks. There are international vaccine banks: the North FMD Vaccine Bank (for Canada, the U.S. and the E.U.), Vaccine Bank (for all EU countries) International Vaccine Bank (for a variety of countries including Australia, New Zealand and some nations).

Animals are thought to carry FMDV mechanically for a period of time, based on a study that found this virus in the nasal passages of one of eight people 28 hours had been exposed to infected animals and none of eight at 48 hours. People who have been exposed to infected animals should avoid susceptible for a designated period, usually a few days to a week. Recent studies suggest that extended periods may not be necessary if good practices, including effective personal hygiene (showing or washing hands, and changing clothes) are followed. The discrepancy between these studies remains to be resolved, and government recommendations should be consulted for the most recent FMD recommendations.

Mission of FMDV from wildlife in southern Africa is controlled by separating wildlife from domestic livestock with fences, and by vaccination of

Foot and Mouth Disease
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Foot and Mouth Disease

Foot and Mouth Disease
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Foot and Mouth Disease
Foot-and-mouth disease is not considered to be a health problem. FMDV infections in humans are with approximately 40 cases diagnosed since 1946. Lesions including the teats or udder; pressure of the legs, ruminal pillars, prepuce or vulva. In animals, cardiac degeneration and necrosis can occur or yellow streaking in the myocardium; these are sometimes called "tiger heart" lesions.

3 to 28 pages in length

CFSPH Main Menu

- Products ▶
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- Infection Control ▶
- Emergency Response ▶
- Secure Food Supply ▶
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Disease Images: Foot and Mouth Disease

[Additional resources for Foot and Mouth Disease](#)



[Enlarge Photo](#)

Description:
Bovine, gingiva. There is an elongate erosion (ruptured vesicle) ventral to the incisors.

Credit: PIADC
Photo ID: FMD_001



[Enlarge Photo](#)

Description:
Goat, oral mucosa. There is a large erosion (ruptured vesicle) on the rostral mandibular buccal mucosa.

Credit: PIADC
Photo ID: FMD_002



[Enlarge Photo](#)


Description:
Goat, oral mucosa. There is a large, partially re-epithelialized (healing) erosion on the rostral mandibular buccal mucosa.

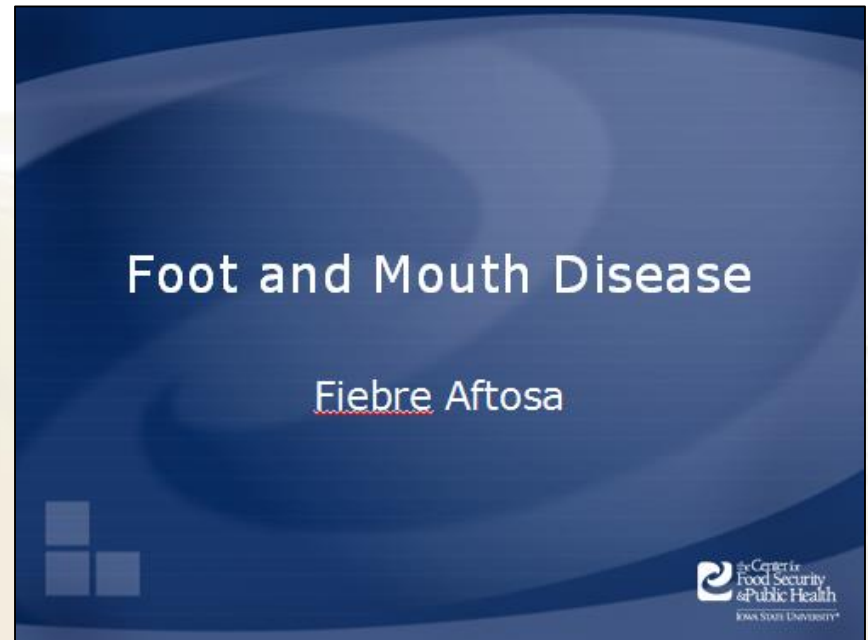
Credit: PIADC
Photo ID: FMD_003

Image Database

- 100 Diseases
- One to several clinical images
- Annotated by board certified pathologists

Speaker Notes

S l i d e 1	<p>Foot and Mouth Disease</p> <p>Foot and Mouth Disease</p> <p>Fiebre Aftosa</p>	
S l i d e 2	<p>Overview</p> <ul style="list-style-type: none">• Organism• Economic Impact• Epidemiology• Transmission• Clinical Signs• Diagnosis and Treatment• Prevention and Control• Actions to take 	<p>In today's presentation we will cover information regarding the organism that causes foot and mouth disease and its epidemiology. We will also talk about the economic impact the disease has had in the past and could have in the future. Additionally, we will talk about how it is transmitted, the species it affects (including humans), clinical and necropsy signs seen, and diagnosis and treatment of the disease. Finally, we will address prevention and control measures for the disease, as well as actions to take if foot and mouth disease is suspected.</p>
S l i d e 3	<p>The Organism</p>	
S l i d e 4	<p>The Virus</p> <ul style="list-style-type: none">• Picornaviridae, <i>Aphthovirus</i><ul style="list-style-type: none">- 7 distinct serotypes- not cross protective• Affects cloven-hoofed animals• Inactivation<ul style="list-style-type: none">- pH below 6.5 and above 11• Survives in milk, milk products, bone marrow, lymph glands	<p>Foot and mouth disease virus (FMDV) is in the family Picornaviridae, genus <i>Aphthovirus</i>. There are 7 immunologically distinct serotypes which do not cross protect. There are over 60 subtypes; these subtypes develop spontaneously making effective vaccination difficult. FMDV primarily affects cloven-hoofed domestic and wild animals such as cattle, sheep, goats, pigs, deer, and water buffalo. It can also affect hedgehogs, armadillos, nutrias, elephants, capybaras, rats and mice. African buffalo are the maintenance host for the SAT serotype in Africa. Wildlife, other than African buffalo, do not seem to maintain the FMD viruses and usually only become infected after contact with infected livestock. FMDV is inactivated at a pH below 6.5 or above 11 (acidic or very basic conditions). The pH drop that occurs in muscle tissue post-mortem will inactivate the virus. It can survive in milk and milk products, frozen bone marrow, and lymph glands with stability increasing at lower temperatures. It can remain active on surfaces for days to weeks and survives drying if it is in serum.</p>



FAST FACTS

Avian Influenza Bird Flu

What is avian influenza and what causes it?

Avian Influenza is a viral disease that can affect bird species throughout the world. The disease can vary from mild to severe, depending on the virus strain involved. The most severe strain, called highly pathogenic avian influenza (HPAI), is caused by viruses with the H5 or H7 surface proteins. Human cases have occurred in people who had close contact with sick birds. Outbreaks have occurred in many countries, including the U.S., China and parts of Europe.

What animals get avian influenza?

Bird species, both domestic and wild, can be affected by avian influenza. Waterfowl can carry the disease without becoming sick. Poultry are very susceptible to the disease and can die in large numbers.

How can my animal get avian influenza?

Avian influenza is spread by **direct contact** with the fecal droppings or respiratory secretions of infected birds. The virus can live for a long time in the environment and can also be spread by objects that have been contaminated with the virus (e.g., shoes, clothing, equipment).

How does avian influenza affect my animal?

Poultry affected by avian influenza will have depression with ruffled feathers, unwillingness to eat. Birds may have watery diarrhea that starts off bright green and changes to white. The combs and wattles are often swollen and can turn blue. Swelling may occur around the eyes

and neck. Legs may have pin-point hemorrhages. Egg production typically stops. Rare cases can affect the spread to the brain causing twisted heads, circling, paralysis. Sudden death may occur.

Can I get avian influenza?

Yes. Avian influenza viruses were once thought to not affect people. In 1997, the first human cases of avian influenza were reported. Additional cases have been reported since. Transmission typically occurs through **direct contact** with sick poultry.

Clinical signs in people can include swelling and reddening of the tissues around the eyes (conjunctivitis), flu-like illness (fever, body aches). Death can occur in rare cases.

Who should I contact, if I suspect avian influenza?

In Animals – Contact your veterinarian immediately.

In Humans – Contact your physician. Tell him or her you have been in contact with birds with avian influenza.



Avian Influenza
is a viral disease
of wild and domestic birds.
It can cause illness in
poultry and humans.

Photo from USDA Online Photography Center

How can I protect my animals from avian influenza?

Prevent your birds from becoming exposed to infected birds or waterfowl. Biosecurity measures, such as cleaning and disinfection of bird-housing facilities is very important. Rodent and insect control measures should be used to prevent spread by these vectors. Vaccines may be used to help control an outbreak.

How can I protect myself from avian influenza?

Avian influenza infection in people is rare. Most reported cases occurred in persons in close contact with infected birds. When working with birds or poultry, especially those that are ill, wear protective clothing such as masks, gloves, and safety glasses. Avoid touching your eyes until hands have been washed thoroughly with soap and water. Antiviral medication may be prescribed during an outbreak situation. People working with the virus in laboratories or on vaccination crews should take extra precautions.

For More Information

CFSPH Technical Fact Sheets. Avian influenza at <http://www.cfspjhastate.edu/DiseaseInfo/>

CDC website. Avian Influenza (Bird flu) at <http://www.cdc.gov/flu/avian>

USDA website. Highly pathogenic avian influenza at http://www.waphis.usda.gov/opa/pubs/sheet_faqs_nitice/fs_ahavianflu.html



Iowa State University

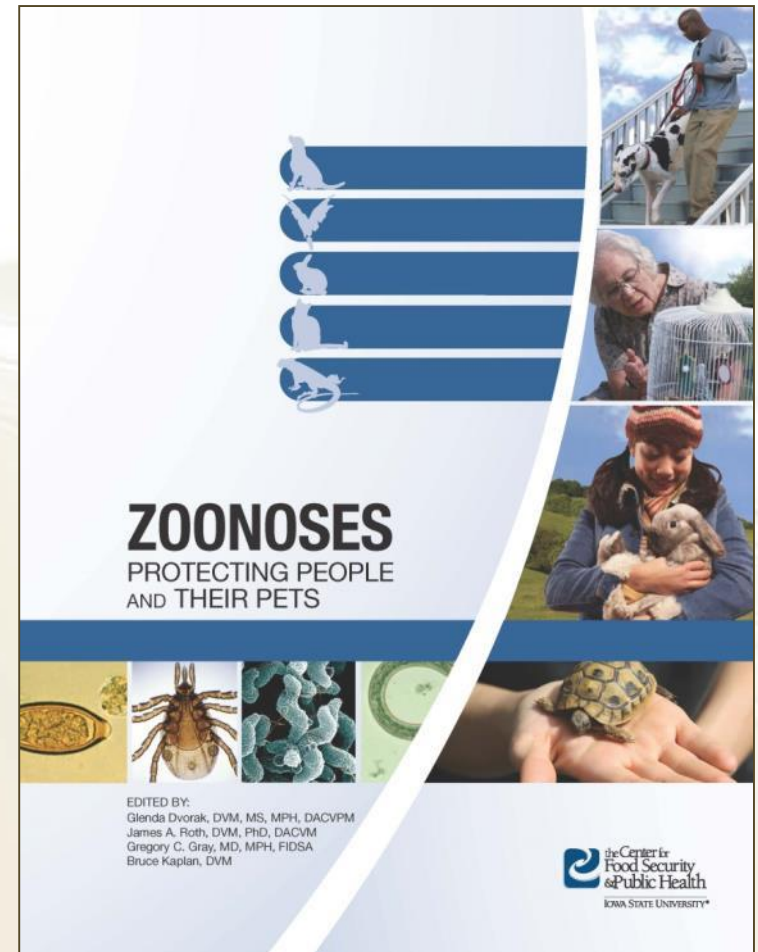
General Public Factsheets...

Fast Facts

- 91 one-page fact sheets on diseases written for the general public

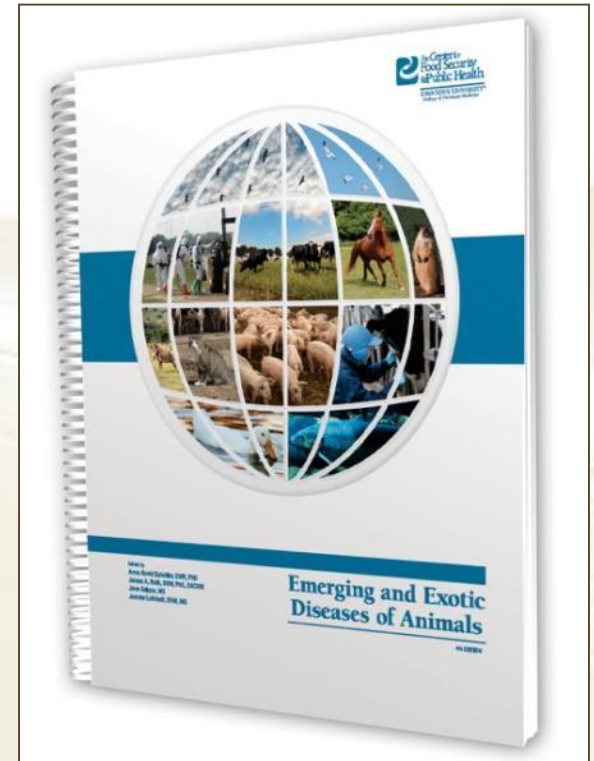
Zoonoses: Protecting People and Their Pets

- Textbook - 1st Ed.
- 7 chapters
 - Overview, Human-animal bond, Bites/scratches, Children, Shared risks
- Color images
- Handouts
- 220 pages




Emerging and Exotic Diseases of Animals

- Online course
- 28 Colleges of Veterinary Medicine
 - Incorporates USDA Initial Accreditation Training
- Continuing education
 - Offered on VIN for practitioners



Infection Control


- Infection Control Manual for Animal Shelters
- Free assessment tool for shelters
- Identify disease risk areas
- Implement prevention practices and training
 - Maddie's Shelter Funding




BOOK INFORMATION

BOOK RESOURCES

PURCHASE



The Pit Rescue Foundation



MANUAL CONTENTS

Chapter 1—
Introduction to Infection Control for Animal Shelters

Chapter 2—
Principles of Infection Control for Animal Shelters

Chapter 3—
Disinfection 101

Chapter 4—
Developing Infectious Disease Policies and Protocols in an Animal Shelter

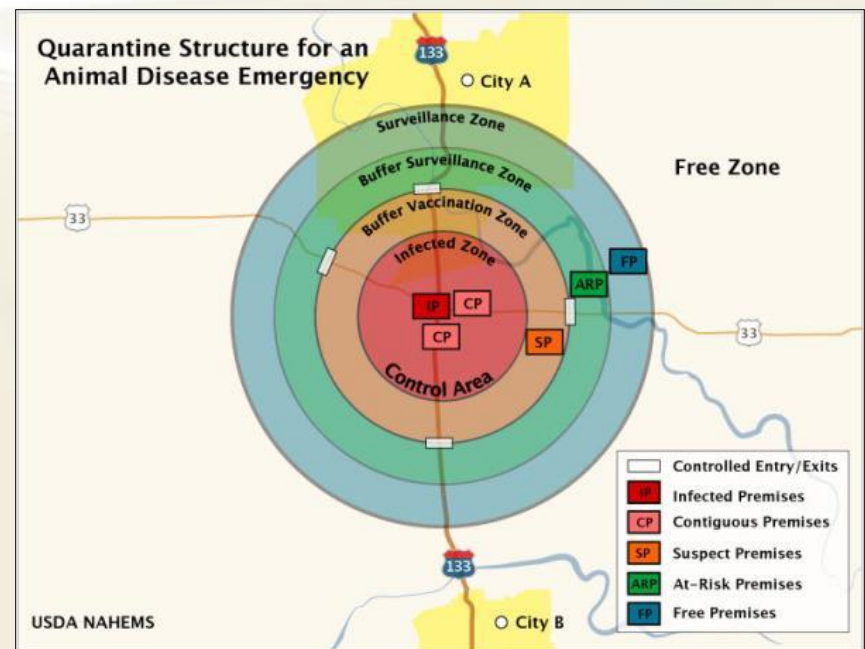
Chapter 5—
Infection Control Training and Educational Tools

MADDIE'S® INFECTION CONTROL MANUAL FOR ANIMAL SHELTERS FOR VETERINARY PERSONNEL
Edited by: Christine A. Petersen, DVM, PhD
Glenda Dvorak, MS, DVM, MPH, DACVPM
and Anna Rovio Spickler, DVM, PhD

One of the greatest challenges facing animal shelters is controlling infectious diseases in an environment where the population changes constantly, animals carrying disease agents may enter the facility daily, overcrowding facilitates disease transmission, and funding is limited. Maddie's® Infection Control Manual for Animal Shelters was developed as a resource for veterinarians and veterinary students involved in animal shelter medicine. The purpose of this handbook is to enhance knowledge about infection control measures in the shelter environment, and to aid veterinary professionals in the development and implementation of infection control protocols.

Animal Disease Emergency Local Preparedness Program

- Training curriculum for Iowa
 - Preparedness, response, developing, testing local response plans
- PowerPoints, handouts
- 5 target audiences:
 - Animal industry
 - Local government
 - Local business owners
 - First responders
 - General public



Master of Public Health (MPH) Degree

- **Cooperative agreement 2002**

University of Iowa, College of Public Health

Iowa State University, CVM

- Graduates:

43 practicing veterinarians – MPH

22 concurrent veterinary students – DVM/MPH

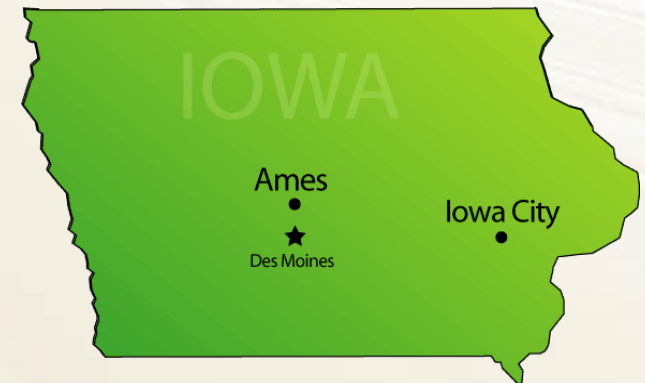
- Enrolled as of May 2013:

31 practitioners, 14 veterinary students

- **Distance Learning – Summer Institutes**

- 2 weeks in Iowa City (year 1)

- 2 weeks in Ames (year 2)



2013 One Health Lecture – *Zoobiquity*

Iowa State University College of Veterinary Medicine hosted the second One Health Endowed Lecture in April 2013:



- Authors of *Zoobiquity*
- Presentation for community, lecture for CVM students
- Animals and humans share the same diseases
- Draws on:
 - Latest in medical and veterinary science
 - Evolutionary and molecular biology

2014 One Health Lecture – Gorilla Doctors



Photo Source: gorilladoctors.org

A One Health Approach to Mountain Gorilla Conservation

presentation by Dr. Mike Cranfield, *co-director of Gorilla Doctors* –
April 24

Dedicated to saving the endangered mountain and Grauer's gorillas

RESEARCH



Iowa State has Embraced One Health

- In 2013, 8 of 12 funded Health Research Initiative projects at Iowa State were awarded to CVM faculty
- Teams working to create novel vaccines for new and emerging pathogens; two of the 4 presidential initiatives are on vaccine development
- Faculty new hires in strategically important areas: Translational Health and Pathogenomics



Research Leadership at the Intersection of Animal & Human Health



Translational Research

- Alzheimer's, Cancer, Parkinson's stroke & prion diseases (mad cow)
- Respiratory (Syncytial), vision (glaucoma, retinal diseases); digestive diseases
- PEDV, PRRS, HIV, influenza, etc
- Vaccine development & delivery

Animal & Public Health

- *Campylobacter* – a major foodborne pathogen worldwide
- *E. coli*-caused colibacillosis - #1 worldwide bacterial poultry disease

One Health in South Africa



Participation



IOWA STATE UNIVERSITY



UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA



Universiteit Utrecht

New Insights into One Health

- Disease management
- Differences in one health perception
- Industry - wildlife - local population interface
- Wildlife conservation vs environmental conservation
- Network with folks from five universities from around the world interested in one health research
- Develop collaborations



One Health in China

- Collaboration with Multiple institutions in China (e.g. Nanjing Agricultural University, China Agricultural University)
- Research: Detection, ecology, transmission of pathogens
- Advanced diagnostic service
- Surveillance: A network monitoring antimicrobial resistance of animal origin
- Education: training of graduate students and visiting scholars



QUESTIONS?

