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Animal Health MATTERS Newsletter

Veterinary and Biomedical Sciences

8-15-2010

Animal Health MATTERS

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Animal Health MATTERS

Vol. 13, Issue 2

August 2010



New Department Name Introduced in Campus Ceremony “Veterinary and Biomedical Sciences Department” reflects the broad mission of the department

Jarett Bies, SDSU Ag-Bio Communications

South Dakota State University officials announced the new name of a department within its College of Agriculture and Biological Sciences.

The SDSU Veterinary and Biomedical Sciences Department name was introduced July 9 at a ceremony in Brookings. The new name more accurately reflects the broad mission and role of the department, according to its head and director, David Zeman.

“This is a historic evolution in our department’s name, and this department has served in a role the name describes for many years,” said Zeman. “As we work to protect and improve animal health, we are simultaneously protecting and improving human health. The two goals are inextricably linked, and they serve as the essence of the ‘One Health Initiative.’”

The One Health Initiative aims to unite human and veterinary medicine as co-equal, all-inclusive collaborations between scientists, doctors, and veterinarians. Groups such as the American Veterinary Medical Association and the American Medical Association endorse the initiative.

Speakers at the name-changing event included John Kirby, director of the South Dakota Agricultural Experiment Station. He said the new name is a reflection of what the department does for all South Dakotans.

“This department has always focused

New Name (Continued on page 2)



SDSU officials speaking at the ceremony recognizing the department name change (L-R): Drs. John Kirby, Director, South Dakota Agricultural Experiment Station; Barry Dunn, Dean, College of Agriculture and Biological Sciences; David Zeman, Department Head, Veterinary and Biomedical Sciences; and Laurie Stenberg-Nichols, Provost and Vice President of Academic Affairs.

Director's Message: What's in a Name?

David H. Zeman, DVM, PhD



What’s in a name? For the former Veterinary Science Department, the answer is one more descriptive word; the word *biomedical*. Following approval by the SDSU administration and

the SD Board of Regents, the new department name was celebrated during a picnic on our front lawn and announced to the public in a ceremony that followed. The new name more accurately describes what we have been doing for many years; now we are claiming the role in our name to make it more visible to our stake-

Director’s Message
(Continued on page 2)

New name

(Continued from page 1)

on the health and well-being of both animals and humans, and the change in name will help those outside of it to understand that more clearly,” Kirby said. “Under Dr. Zeman’s leadership, the SDSU Veterinary and Biomedical Sciences Department will continue to be an entity that gives agricultural producers and the general public in our state many advantages and invaluable knowledge.”

SDSU College of Agriculture and Biological Sciences Dean Barry Dunn said the SDSU Veterinary and Biomedical Sciences Department, and the laboratories it operates, including the South Dakota Animal Disease Research and Diag-

nostic Laboratory, are crucial to successful and healthy state populations of pets, wildlife, livestock, and people.

“More people will have a better understanding of what the department does, and they will continue the excellent work they are known for, regardless of the name,” Dunn said. “We considered this change for some time, and I speak for everyone at SDSU when I say the new name is a great fit for a truly top-notch element within our university.”

For more information about the One Health Initiative, visit its website at this link: <http://www.onehealthinitiative.com/>.

Director’s Message

(Continued from page 1)

holders. Many diseases impact both animals and humans, and frequently they are shared across species (e.g. rabies, anthrax, E. coli, Salmonella, influenza, and even non-infectious diseases). As we work to improve and protect animal health, we are simultaneously doing the same for public health. However, some things remain unchanged; our unwavering dedication to our customers and stakeholders, and our enthusiasm for battling disease and improving health.

VBS Department Faculty Make Connections in China

Drs. David Zeman, Jane Christopher-Hennings, and Ying Fang, Veterinary and Biomedical Sciences Department faculty members, recently completed a three-week trip to China meant to further develop relationships between SDSU’s faculty and scientists and those at several Chinese universities. Future collaborations in diagnostic test development, graduate student training, and emerging disease investigation were the subject of meetings throughout the country. Zeman, Veterinary and Biomedical Sciences Department Head, said, “The trip advanced the sharing of many ideas, especially graduate student training and collaborative research projects.”

Presentations were made at ten different institutes and universities during the trip, and included: “An overview of veterinary diagnostic medicine in the U.S. with an introduction to the SDSU ADRDL,” (Dr. Zeman); “A historical perspective on applying science for the diagnosis and control of PRRSV,” (Dr. Hennings); and “Structural and function of PRRSV nonstructural proteins: implications in vaccine and diagnostic assay development,” (Dr. Fang).

Institutes, universities, and cities visited included: Hong Kong University; Guangdong Academy of Agricultural Science, Southern China Agriculture University (Guangdong); Shanghai Academy of Agricultural Sciences, China Academy of Agricultural Sciences (Shanghai); Huazhong Agriculture University (Wuhan); Northwest Forestry and Agriculture University (Xian); China Agriculture University, China Institute of Veterinary Drug Control/Center for Veterinary Drug Evalua-



Veterinary and Biomedical Sciences faculty are pictured with their host at Huazhong Agricultural University (L-R): Drs. Ying Fang, Assistant Professor; Jane Christopher-Hennings, Professor; David Zeman, Professor and Department Head, and Ming Sun, Associate Director of State Key Laboratory for Agricultural Microbiology.

tion, Institute of Microbiology, and the Chinese Science of Academy (Beijing). In addition, the group visited several swine production sites across the country.

ADRDL Personnel Gain Additional Proficiency Training for Foreign Animal Disease Testing, Embark on Test Validation Studies

Personnel from SDSU's ADRDL have specialized proficiency training in the use of real time PCR techniques to detect several serious diseases foreign to United States livestock. Senior Microbiologist, Travis Clement, recently attended sessions at Plum Island, NY, for training in African Swine Fever (ASF) and rinderpest diagnostics. This expertise is now added to the Molecular Diagnostic Section's ability to test for other foreign animal diseases including Classical Swine Fever (CSF), Foot and Mouth Disease (FMD) and Exotic Newcastle Disease (END).

As a result of these abilities, South Dakota State University's ADRDL, as a

member of the National Animal Health Laboratory Network (NAHLN), has been chosen as one of 11 states to participate in studies meant to validate some of these tests on a widespread basis. South Dakota, along with Kansas and Texas, will provide samples from normal beef cattle and use them in the tests for FMD and rinderpest, in order to help prove the accuracy of the test on normal, negative animals.

These testing procedures do not involve the use of any live virus. Negative animal samples, consisting of oral swabs, conjunctival swabs, and whole blood from beef cattle, may be obtained from routine laboratory submissions, or from

cooperating veterinarians and beef producers. If any routine laboratory submissions are utilized, there will be no charges or reporting of results to submitting veterinarians or producers.

In addition to proving the accuracy of these tests on negative animals, these procedures will also help the NAHLN labs assess their laboratory procedures, information technology, and communication methods in the context of testing for these important foreign animal diseases.

If you have any questions about these procedures, contact Dr. Zeman at 605-688-5171.

Veterinary & Biomedical Sciences Department Launches New Website: www.sdstate.edu/vs

Visitors to the newly updated Veterinary and Biomedical Sciences Department website, located at www.sdstate.edu/vs will enjoy a much more streamlined and organized experience in accessing departmental information. The department home page supplies ready access to pages for the ADRDL, Veterinary Extension, research, and teaching, among other useful links.

The ADRDL page provides easy access to the VADDS Report Generator, along with forms, fee schedules, test setup schedules, and submission guidelines. The Veterinary Extension page provides current information on a host of animal health topics for

all species, along with past Animal Health Matters Newsletters, the "What's Up Doc?" feature, and other subjects. Visitors to the department home page will find information on the depart-

ment's pre-veterinary studies program, research programs, and graduate studies as well.

Explore the new website at www.sdstate.edu/vs, and update your browser bookmarks. Please contact Dr. Daly or Jon Gresteth at 605-688-5171 with questions or comments about the new site.

Histopathology and the Histology Laboratory at SDSU's ADRDL

Russ Daly, DVM; Tanya Graham, DVM, DACVP

It's unlikely that most livestock producers or pet owners could easily define the term "histopathology." But the histopathology section within the South Dakota Animal Disease Research and Diagnostic Laboratory plays a key role in the diagnosis of animal diseases—not only in animals that have died (as part of the necropsy), but in animals that are still alive as well (biopsies).

The term, "histopathology" comes from the combination of "histology" (the microscopic anatomy of animal tissues) + "pathology" (the study of disease). The histology laboratory creates the microscope slides of diseased tissues that are examined by ADRDL pathologists to identify the specific disease processes occurring in an animal. This histopathologic diagnosis is a key part of the overall diagnosis, especially with infectious diseases. Diagnostic procedures such as bacteriology, virology, or molecular diagnostics can detect many bacteria and viruses in animals, but might not indicate whether those agents are causing the disease. By detecting microscopic damage in animal tissue that is related to those infectious agents, the pathologist can come up with a comprehensive diagnosis. This in turn will help the veterinarian manage the disease process.

The work of the histology lab begins with the submission of animal tissues, whether from a post-mortem examination in the field or a surgical biopsy from a live animal, in neutral buffered formalin. After the tissue has been adequately fixed in the formalin, the tissue is



ADRDL Histology Section Staff (L-R): Rebecca Whitlock, Student Worker; Karen Belau, Lab Technician; Dr. Tanya Graham, Section Leader; Frank Qin, Senior Microbiologist; Margaret Perry, Senior Microbiologist; Amanda Oppold, Lab Technician; Cassy Steinle, Student Worker.

trimmed down by technicians, placed in small cassettes, and embedded in paraffin. Microtomes are used to slice the tissue into very thin slices (the width of a human hair). These slices of tissue are placed on microscope slides, stained, and delivered to the pathologist for evaluation. In FY 2009, nearly 17,000 histopath slides were created by the section for use in ADRDL disease diagnostics and research projects.

In addition, specialized staining techniques such as immunohistochemistry (IHC) are utilized by the histology section. Immunohistochemistry involves treating tissue sections with stains that attach to a specific pathogen present in the tissues, such as BVD virus in an ear

notch. These techniques are used to help diagnose conditions such as Chronic Wasting Disease in deer and elk, Scrapie in sheep, and West Nile virus infections in birds.

When biopsy specimens from live animals are submitted, the ADRDL pathologist first determines whether the submitted specimen is cancerous or due to another process. If a lesion is cancerous, the pathologist then sets out to determine what type of tumor it is, and gain some indication whether it is benign or malignant. IHC can be used to identify the type of tumor present, making the diagnosis of some tumors much easier. This information can then aid the treating veterinarian in developing the appro-

appropriate chemotherapy or surgical protocol.

An experienced staff of four full-time personnel and several student workers carry out the duties of the histology section at SDSU:

- **Dr. Tanya Graham, DVM, DACVP**, is the histology lab's section leader. She

holds a BS degree in Ag Economics and a DVM, both from Oklahoma State University, and became a Diplomate of the American College of Veterinary Pathology in 1999. She has served as section leader since coming to SDSU in August 2000. Her section leader duties include supervising the section's technicians and part-time student workers, assisting personnel with troubleshooting, and overseeing changes in laboratory operations. Dr. Graham also is involved with organization of the laboratory, writing proposals for obtaining new equipment, and developing quality control procedures and new techniques.

- **Margaret Perry, BS**, Senior Microbiologist, is a board certified histotechnician with over 27 years of laboratory experience at SDSU, the past 11 years within the histology section. As laboratory manager for the IHC section of the laboratory, Margaret performs IHC procedures and writes protocols for new IHC test development.

- **Frank Qin, MBA**, Senior Microbiologist, has nine years of experience within the SDSU histopathology section and serves as laboratory manager. Prior to coming to SDSU, Frank had nine years of experience in research

Recipe: Neutral Buffered Formalin, 10% solution

- **Formaldehyde (37-40%)** ----- 100 ml
- **Distilled water** ----- 900 ml
- **NaH₂PO₄ (Sodium Phosphate, Monobasic, Monohydrate)** ----- 4.0 g
- **Na₂HPO₄ (Sodium Phosphate, Dibasic, Anhydrous)** ----- 6.5 g

Mix to dissolve

Source: SDSU ADRDL User Guide: www.sdstate.edu/vs/adrdl

work at the University of Kansas Medical Center.

- **Karen Belau**, Laboratory Technician, handles the tissue preparation part of the laboratory, working with submissions from the necropsy floor and samples sent in from veterinarians. She has 20 years of experience at the ADRDL, both on the necropsy floor and within the histopathology section. She attended SDSU for biology and microbiology, and holds a degree in Veterinary Office Management from Pipestone Vocational School.

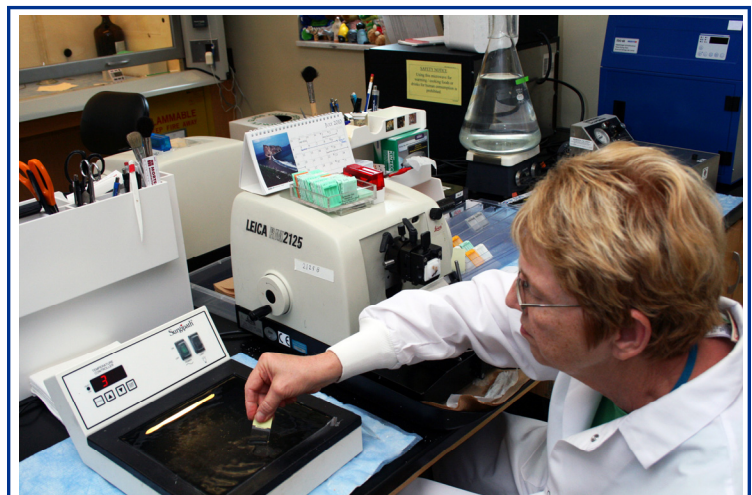
- **Amanda Oppold, BS**, Laboratory Technician, started working in the section with tissue preparation as a student in 2005. She graduated in May 2009 with a B.S. degree in animal science and began full-time work in the histopathology section in August 2009. Amanda's

main responsibilities involve routine processing and staining of diagnostic and research specimens.

- **Cassy Steinle**, Student Worker, has worked within the histopathology section since she was in high school. She is currently an SDSU student and helps within the laboratory

doing embedding and cutting in of sections.

- **Rebecca Whitlock**, Student Worker, will graduate from SDSU in May 2011 with a BS degree in animal science. She has worked in the tissue preparation portion of the laboratory since September 2009, helping to trim in tissues in addition to other laboratory duties. Rebecca graduated from Webster High School and has plans of becoming a large animal veterinarian.



Senior Microbiologist Margaret Perry prepares a histology slide by placing a thinly sliced tissue section onto a glass microscope slide from a water bath (Photo: SDSU University Relations)

Pieces and Parts

Dunn Begins Work as Dean of SDSU College of Agriculture & Biological Sciences

Dr. Barry Dunn, an agricultural academic administrator with South Dakota ties, began work as dean of the College of Agriculture and Biological Sciences at South Dakota State University on May 22, 2010.

An SDSU alumnus, Dunn served as executive director and the Kleberg Endowed Chair at the King Ranch Institute for Ranch Management at Texas A&M University-Kingsville since 2004. Dr. Dunn was a member of the SDSU animal and range sciences faculty from August 2000 to January 2004. He holds three academic degrees from SDSU—a bachelor of science in biology in 1975, a master of science in animal and range sciences in 1977 and his doctor of philosophy, also in animal and range sciences, in 2000.

During his six years at Kingsville, Dunn was instrumental in fundraising and development of a masters curriculum in ranch management. On July 8, 2010, the South Dakota Corn Utilization Council presented Dunn with a \$2 million endowment that will help him position the college for leadership in research, teaching, and outreach.

Dunn brings a broad range of experience as a rancher, producer, and researcher to the dean's office. He worked for the South Dakota Cooperative Extension Service, operated a moderate-sized grain and livestock farm near Brookings and ran a ranch near Mission for many years.

The new dean and his wife, Jane, a 1977 SDSU College of Nursing alumna, have two grown sons: Thomas, currently serving in the security forces of the U.S. Air Force, and Michael, a Spring 2010 microbiology graduate of SDSU and student employee within the serology and molecular diagnostics sections of the ADRDL. (SDSU Ag Bio Communications)



Hennings to Address International Pig Veterinary Society

Dr. Jane Christopher-Hennings was among the lead speakers who addressed attendees at the 21st International Pig Veterinary Society (IPVS) Congress in Vancouver, British Columbia, Canada, July 18 - 21, 2010. Her talk, entitled, ““Progress in porcine reproductive and respiratory syndrome virus (PRRSV): What we know about PRRSV, from basic to applied science: A historical perspective” reviewed achievements related to PRRSV diagnosis and control and areas needing additional research to fulfill the theme of IPVS, “Sharing ideas—Advancing pig health.” Over 2600 attendees from 66 different countries attended the meeting.

SDSU Faculty to Co-Author “Diseases of Swine” Chapter

Dr. Jane Christopher-Hennings, SDSU Veterinary and Biomedical Sciences Department, has been selected as lead author for a new chapter to be included in the upcoming 10th edition of *Diseases of Swine*, entitled, “Diagnostic tests, test performance, and considerations for interpretation.” Dr. Eric Nelson, also from SDSU, will co-author, along with Drs. Gene Erickson (North Carolina State University) and Simone Olivera (University of Minnesota). The various editions of *Diseases of Swine* have been widely recognized as the most complete and current resources available on swine diseases.

Group Invited to Present Paper at Austrian Scientific Meeting

Steve Lawson, Dr. Eric Nelson, Craig Welbon, Travis Clement, Dr. Ying Fang, and Dr. Jane Christopher-Hennings, SDSU Veterinary and Biomedical Sciences Department, were part of a group invited to give a presentation at a conference organized by the Luminex Corporation in Vienna, Austria, October 20-21, 2010. The two day conference attracts an international audience of over 500 participants who will learn about the latest advances in diagnostic applications and life science research. The presentation will be based on the group's paper, "Development of an 8-plex Luminex assay to detect swine cytokines for vaccine development: Assessment of immunity after porcine reproductive and respiratory syndrome virus (PRRSV) vaccination" that was recently published in the journal *Vaccine*. The paper detailed an assay that simultaneously detected eight different cytokines (immune system products) in pig serum. Such an assay will have broad applications for measuring the effectiveness of swine vaccines against PRRSV and other swine pathogens.

“Animal Diseases and their Control” Students Evaluate Area Farm’s Disease Control Practices

Towards the end of each Spring semester, students in Dr. Russ Daly’s VET 403/503 course, “Animal Diseases and their Control,” have the daunting task of visiting a local livestock farm and examining their disease control practices. As a starting point, students use materials from Iowa State University’s Center for Food Security and Public Health to focus on specific actions the farm takes, or should be taking, to keep animal diseases out of the farm, or limit their spread.

Students break into teams, each of which covers a specific aspect of the farm: everything from visitor policies to calf feeding to milking procedures are examined. Students use the concepts they learned earlier in the semester to come up with recommendations

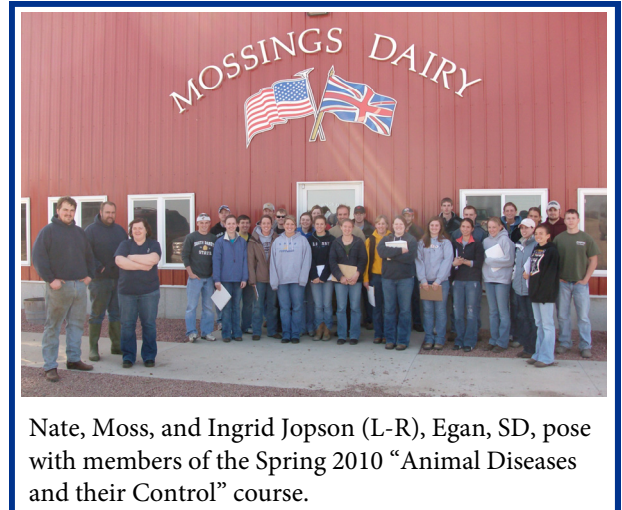
for improvements and to recognize the effective actions the farm currently takes. Each team prepares a written and oral report of their findings, which is presented to the farm owner on the last day of class.

According to Daly, “The project allows students to get a ‘real world’ picture of animal disease control. The comment I hear from many students is that some of the procedures we talk about in class sound pretty simple until you go to the farm and try to put them into action.”

Students taking the course include pre-vet, animal science, wildlife and fisheries, and dairy

majors.

This year, students visited Mossings Dairy near Egan, SD.



Nate, Moss, and Ingrid Jopson (L-R), Egan, SD, pose with members of the Spring 2010 “Animal Diseases and their Control” course.

SDSU Faculty Case Reports at SDVMA Annual Meeting

Dr. Regg Neiger: Tuberculosis in South Dakota Cattle--Diagnostics and Case Investigation

Dr. Dale Miskimins: Toe Abscesses in Feeder Cattle; Disseminated *Halocephaloglobus gingivalis* Infection in a Mare; *Listeria* Metritis in a Jackrabbit; Ascarid Larval Migration Encephalitis in a Kangaroo; *Demodex* sp. Dermatitis in a Whitetail Doe

Dr. Tanya Graham: Canine Distemper; Streptococcal Meningitis in a Kitten

Dr. Dave Knudsen: Ensuring Success with Diagnostic Cytology

Presentations are scheduled for 3:00 PM, Tuesday, August 10 at the SDVMA meeting

Calendar of Events

August 8-11, 2010

South Dakota Veterinary Medical Association Annual Meeting
Ramkota Inn, Sioux Falls, SD

Large and small animal sessions: Large animal welfare concerns; current aspects of bovine respiratory disease; pinkeye; equine and companion animal wound repair and management; companion animal dentistry with wetlab; alternative therapies for companion animals, pain relief and anesthesia for companion animals, SDSU case reports, much more. 605-688-6649 or www.sdvmed.org

August 4-6, 2010

North Dakota Veterinary Medical Association Annual Meeting
Doublewood Inn, Bismarck, ND <http://www.ndvma.com>

August 19 - 21, 2010

Academy of Veterinary Consultants/ American Association of Bovine Practitioners Joint Meeting, Albuquerque Convention Center, Albuquerque, NM
<http://www.avc-beef.org/> or <http://www.aabp.org/meeting/default.asp>

August 28-31, 2010

Central Veterinary Conference, Kansas City Convention and Entertainment Centers, Kansas City, MO <http://www.thecvc.com>

September 16-17, 2010

Iowa Veterinary Medical Association Annual Meeting
Scheman CE Center, Ames, IA <http://www.iowavma.org/>

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Animal Health MATTERS

The SDSU Veterinary and Biomedical Sciences Department conducts research, teaching, professional service, and extension service to South Dakota and the surrounding region. Entities within the department include the South Dakota Animal Disease Research and Diagnostic Laboratory, the Olson Agricultural Analytical Service Laboratory, and the Center for Infectious Disease Research and Vaccinology.

The South Dakota Animal Disease Research and Diagnostic Laboratory is a full-service, all-species diagnostic laboratory accredited by the American Association of Veterinary Laboratory Diagnosticians (AAVLD). The AAVLD accreditation program complies with international expectations for quality diagnostic services under the guidance of the World Organization for Animal Health (the OIE). The ADRDL collaborates with the USDA National Veterinary Services Laboratory on many federal disease monitor and eradication programs and is a member of the National Animal Health Laboratory Network. For information regarding the laboratory's Quality System, contact Rajesh Parmar – ADRDL Quality Manager, at 605 688 4309.

Editor: Russ Daly, DVM

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