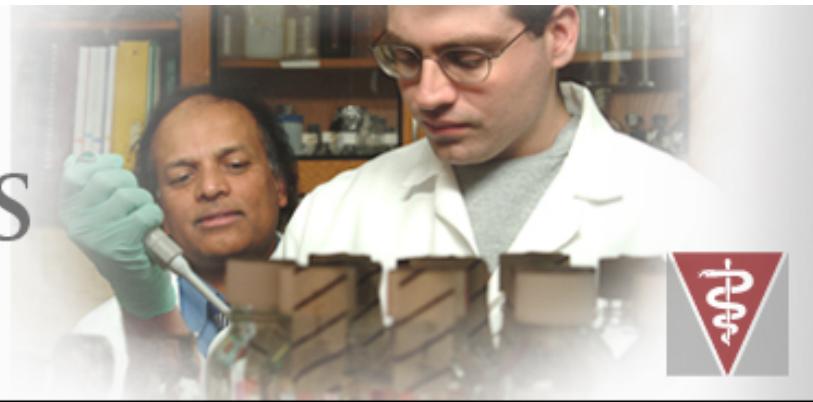


VITAL SIGNS



NEWS FROM THE VIRGINIA-MARYLAND REGIONAL COLLEGE OF VETERINARY MEDICINE

April 2008

The Steady Pace of Progress

Dear Friends and Colleagues,

For decades, research in infectious diseases was a hallmark of excellence in our college's predecessor institutions, the departments of veterinary science at Virginia Tech and the University of Maryland at College Park.

For example, a hemorrhagic enteritis (HE) vaccine invented by Virginia Tech emeriti professor Dr. Charles Domermuth was credited with saving the poultry industry \$300 million. On the College Park campus, noted virologist and Associate Dean Dr. Siba Samal continues to guide a program that has developed national recognition for its historic work with avian infectious diseases, including a major research effort underway on Avian Influenza H5N1.



Given that heritage, it is logical that academic strength in infectious disease research has been a major initiative for our college from the beginning, and it remains a central component of our strategic plan for the future. The establishment of our Center for Molecular Medicine and Infectious Disease in the 1980's provided a powerful platform that led to several major advancements in immunology and vaccine production.

More recently, Virginia Tech's decision to support a campus-wide "cluster hire" of infectious disease scholars several years ago enabled us to substantially build our virology team, a step that is beginning to generate considerable signs of progress. Focused on examining the pathogenesis of disease and the development of vaccines through the elucidation of host-pathogen interactions, we are making considerable progress.

In just the past year, our virology team, anchored by Dr. X. J. Meng, has been awarded close to \$4 million in new sponsored research funding. Meng's prolific work in several areas is internationally recognized and his laboratory is developing as a global center for Hepatitis E research. In just a few months, our virology team will occupy new

space in the Integrated Life Sciences Research Building rapidly taking shape at Virginia Tech's Corporate Research Center. And we are just over a year away from breaking ground on a new infectious disease research facility.

As you will read below, recognition of our emerging strength as a research center is occurring in other areas as well. There are many among us who deserve commendation for the role they played in the international effort led by MIT to help resolve the global public health threat from contaminated heparin.

Our leadership team is providing vision and guidance toward our institutional goal of achieving credible success as a translational research center. There are many emerging opportunities for collaboration and advancement, including the new Carilion-Virginia Tech College of Medicine, the Virginia Via College of Osteopathic Medicine and the Institute for Critical Technologies and Science. This fall our college will play a leading role in presenting the Dean's Forum on Infectious Diseases.











Our ultimate success, of course, will depend upon the efforts of our faculty, whose day-to-day efforts shape the destiny of our college. Viewing our recent faculty achievements in this area and others, I see a bright future ahead for our developing research initiatives.

Sincerely,

Gerhardt G. Schurig

Dean

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How can I help make a difference?

VMRCVM Research Team Contributes to Landmark Heparin Study

VMRCVM researchers have provided critical support for an international research effort led by the Massachusetts Institute of Technology (MIT) that is helping resolve the global public health threat caused by contaminated heparin.

Heparin, a blood thinner commonly used in kidney dialysis and heart surgery, has been linked to allergic reactions, hypotension and other medical disorders that have led to 81 deaths in the United States and Germany so far.

Government officials and scientists from countries around the world have been working since January 2008 to learn more about mysterious adverse patient reactions associated with heparin. U.S. Food & Drug Administration (FDA) officials believe the contaminant originated from Chinese factories that manufacture the drug for Baxter International.

The MIT-led multi-institutional study, which was recently published in the *New England Journal of Medicine* and *Nature Biotechnology*, has demonstrated a biologic linkage between the suspected contaminant --over-sulfated chondroitin sulfate (OSCS) -- and the onset of clinical disease. Establishing this relationship will play an important role in helping authorities determine the safety of the global heparin supply and help prevent the deadly problem from occurring again.

The story of the college's role in the multi-center research effort is an example of the unexpected opportunities that can arise from routine scientific inquiry and academic collegiality. It also speaks to the dedication and agility of a team of Virginia Tech researchers, administrators, and technical personnel who were able to design and obtain approval for the project, assemble the needed resources, and perform and complete the critically needed scientific experiments within a short time period.

Existing research conducted by Dr. Ram Sasisekharan and colleagues at the Massachusetts Institute of



VMRCVM researchers have provided critical support for an international research effort led by the Massachusetts Institute of Technology (MIT) that is helping resolve the global public health threat caused by contaminated heparin. The drug, a blood thinner commonly used in kidney dialysis and heart surgery, has been linked to allergic reactions, hypotension and other medical disorders.

Technology had established that the contaminant, OSCS, was responsible for the clinical problems that were being observed in humans, but the biological link for proving OSCS induced the adverse events was needed for further validation. Sasisekharan's team at MIT had *in vitro* data to indicate that the contact system was activated in plasma from pigs when exposed to OSCS or contaminated heparin. The FDA wanted animal modeling work conducted for further validation.

[Dr. Elankumaran Subbiah](#), a virologist and assistant professor in the Department of Biomedical Sciences and Pathobiology (DBSP), had an existing collaboration with Sasisekharan at MIT on influenza A viruses. Faced with the urgent FDA request for rapid animal modeling work, Sasisekharan decided to contact Subbiah to see if the veterinary college could conduct the critical animal modeling work in an extremely fast time-frame.

Subbiah immediately contacted [Dr. Nammalwar "Nathan" Sriranganathan](#), a professor in the DBSP and senior researcher in the [Center for Molecular Medicine and Infectious Disease](#); [Dr. Kevin Pelzer](#), an associate professor in the Department of Large Animal Clinical Sciences (DLACS) also joined the team. Sriranganathan set the ball rolling by contacting all the administrative links and assembled all the resources necessary for this "Herculean" task.

Facing a daunting task but understanding the urgency of the global public health problem at hand, the team decided to proceed. Working feverishly into the night, the group established a study design and had it approved by the Virginia Tech's Institutional Animal Care and Use Committee (IACUC) within nine hours. This would not have been possible without the cooperation of the IACUC team, and Associate Vice Provost for Research Compliance [Dr. David Moore](#), who signed off on the project at 2 a.m. from India.

The team then worked with Dr. Cynthia Wood in Virginia Tech's [College of Agriculture and Life Sciences](#) to procure the research animals. Thus began an arduous, two-week, 24/7 marathon process that ultimately concluded that the OSCS might in fact activate the suspected pathways in pigs, just as they were believed to do in people, mimicking the adverse events reported. The work played a pivotal role in validating the MIT hypothesis. Additional experiments are being planned at the VMRCVM to determine the dose response as well as effects of routes of administration to confirm the findings.

"Every single star aligned properly to get this done," said Subbiah, adding that the work could have never been accomplished without the support and collaboration from many different sectors of the Virginia Tech research community, from the IACUC team to members of the VMRCVM administration to Veterinary Teaching Hospital Director Dr. William Pierson and anesthesiologist Dr. Cindy Hatfield to the swine facility.

Project team members included Subbiah, Sriranganathan, Pelzer, and graduate student Thomas Rogers-Cotrone. Key assistance was also provided by Teaching and Research Animal Care Support Services (TRACCS) members

Pete Jobst and Andrea Aman, according to Subbiah.

The result of this landmark study was published in the [New England Journal of Medicine](#) as an advanced online publication on April 23, 2008.

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Veterinary College to Offer Free Eye Exams for Service Dogs

The Virginia Maryland-Regional College of Veterinary Medicine at Virginia Tech will collaborate with the American College of Veterinary Ophthalmologists (ACVO) and Pet Health Systems (PHS) during the first ACVO® National Service Dog Eye Exam on Friday, May 16. Meril, Inc. is the official event sponsor.

Over 140 board-certified veterinary ophthalmologists and 1,300 general practice veterinarians from across the United States are expected to work together to provide sight-saving eye examinations and preventative health reports for service dogs at no cost to their owners/agents during the event.

Service dogs include guide dogs, handicapped assistance dogs, bomb and drug detection dogs, K-9 dogs, and search and rescue dogs.

“Excellent vision in a service dog is mandatory,” said [Dr. Phillip Pickett](#), a veterinary ophthalmologist and professor in the Department of Small Animal Clinical Sciences ([DSACS](#)). “In some cases, the good vision of the service dog is the ‘vision’ of the owner.”

In addition to the eye examination, participants will receive a Pet Wellness Report™ including a lifestyle assessment and comprehensive serum chemistry profile conducted by their primary care veterinarian at no cost to the patient or doctor. That service is sponsored by Pet Health Systems.

The goal of the program is to foster the health and well-being of the service dogs that play such an important role in the lives of individuals and organizations that promote public safety and well-being, according to the organizers.



The VMRCVM will participate in the first ACVO® National Service Dog Eye Exam on Friday, May 16. Dr. Phillip Pickett (left) will join with other veterinary ophthalmologists from across the nation to provide sight-saving eye examinations and preventative health reports for service dogs at no cost to their owners/agents.

Program organizers estimate nearly \$1 million in services will be provided for the 5,000 to 10,000 service dogs that may be evaluated during the event.

The veterinary college has offered free screening examinations and consultations for service dogs for more than 20 years, according to Pickett. "This is our way of giving back to the community and to those individuals whose lives depend on the health and well being of their service dog," he said.

In order to qualify for participation in the program, service dogs must be "working dogs" which have been certified through a formal training program or organization. Those wishing to learn more about the program or register to participate can do so at the following website: www.ACVOeyeexam.org

The American College of Veterinary Ophthalmologists is an approved veterinary specialty organization of the American Board of Veterinary Specialties, and is recognized by the American Veterinary Medical Association. Its mission is "to advance the quality of veterinary medicine through certification of veterinarians who demonstrate excellence as specialists in veterinary ophthalmology." To become board certified a candidate must complete their DVM program, a one year internship, a three year residency and pass a series of credentials and examinations.

The following non-profit organizations are supporting this effort: American Animal Hospital Association, American Veterinary Medical Association, state Veterinary Medical Associations (USA and Canada), American Society of Veterinary Medical Association Executives, Veterinary Hospital Managers Association, Veterinary Ophthalmic Technicians Society, Guide Dogs for the Blind, Guiding Eyes for the Blind, North American Police Dog Association, National Narcotic Detection Dog Association, Patriot Paws Service Dogs, and Service Dogs of America. More organizational support is pending.

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OTS National Service Dog of the Year Recognized

[VMRCVM Open House](#) visitors recently packed one of the college's auditorium style classrooms to witness [Omega Tau Sigma's](#) annual "Service Dog of the Year" award presentation.

The 2008 winner was Ellie, a black Labrador retriever that was trained by the St. Francis of Assisi Service Dog Foundation in Roanoke, Va.

"I'm so proud of OTS for having come up with this idea," said Mrs. Carol Willoughby, founder of the St. Francis of Assisi Service Dog Foundation, noting

that the award was being presented for the 12th time.

A formal oil portrait of Willoughby's service dog Booker painted by artist Mark Young hangs in the lobby of the college's Veterinary Teaching Hospital.

"We've come a long way," said Willoughby, concerning service dogs and service dog training programs. "But we're still the 'new kids on the block'."

Willoughby then proceeded to detail the origins of service dog training programs in the United States. In 1974, she said, a California special education teacher named Bonnie Bergen was traveling in Asia and she noticed how dogs were helping some disabled individuals lead productive lives.

"She suddenly got the idea that maybe dogs could help people in wheel chairs," said Willoughby. Bergen returned to the United States and took a job in a kennel for \$2 an hour where she began working with dogs.

One day, Willoughby said, an elegant woman who had heard of the work that Bonnie Bergen was doing drove up in a Rolls Royce and presented her with a check for \$10,000. That private gift provided the foundation of what has grown into a major national training effort. The first service dog, a Labrador named Abdoul, was placed in 1976, she said.

Booker came into Willoughby's life in 1986, and was named the American Animal Hospital Association's National Service Dog of the Year in 1988. Inspired by her relationship with Booker and the need to create opportunities for others, Willoughby established the St. Francis of Assisi Service Dog Foundation in 1996.

"The fundamental value of a service dog is not physical, it is spiritual," said Willoughby. "They open doors for people. They give them hope. That is what a service dog does."

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Second Annual Lisa Marie Tedora Lecture Held

The second annual "Lisa Marie Tedora Lecture" was recently held on the VMRCVM's Blacksburg campus. Dr. Susan Barnes of the Animal Emergency Hospital and Referral Center in Leesburg, Va. presented "Trauma and Life Threatening Emergencies."



Ellie, a black Labrador retriever trained by the St. Francis of Assisi

Willoughby, Bergen returned to the United States and took a job in a kennel for \$2 an hour where she began working with dogs. She was honored by the college's chapter of Omega Tau Sigma as "Service Dog of the Year." She is pictured with "her person," Miss Bethany Deckard.

The Lisa Marie Tedora Lecture Series in Critical Care/ Emergency Medicine is supported by the Lisa Marie Tedora Memorial Fund. These annual lectures are held each spring and address cutting edge issues, diagnostics and treatments related to critical care/emergency veterinary medicine. All lectures are offered to VMRCVM students at no charge.



“This is a wonderful opportunity for students to learn about emergency medicine and critical care,” said Amanda Dymacek, assistant director of development, who helps oversee both the VMRCVM’s Backburg Memorial Fund

The second annual “Lisa Marie Tedora Lecture” was recently established by family and friends in memory of Dr. Lisa Marie Tedora, a member of the VMRCVM’s class of 2000.

sponsored by the Lisa Marie Tedora Memorial fund, The fund was established by memorial donations made by family and friends in memory of Dr. Lisa Marie Tedora, a member of the VMRCVM’s class of 2000, passed away on April 22, 2006 in her home in Manassas, Va. after a courageous battle against melanoma.

Tedora was a graduate of Yale University where she received her B.S. in English. During her time in the VMRCVM, she focused specifically on equine and small animal medicine. After graduation, Tedora practiced veterinary medicine at Animal Emergency Hospital and Referral Center in Leesburg, Va.

“The lecture series serves as a cheerful reminder of how Dr. Tedora’s life was spent, helping animals and people and being dedicated to emergency medicine and critical care,” said Dymacek. “We look forward to growing the Lisa Marie Tedora Memorial Fund to continue to make these lectures possible.”

If you are interested in contributing to the Lisa Marie Tedora Memorial Fund or desire more information, please call 540-231-4259 or visit www.vetmed.vt.edu/development/waystogive.asp and click the link for the online giving page.

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Thatcher Named Dean at Arizona State

Dr. Craig Thatcher, former head of the Department of Large Animal Clinical Sciences ([DLACS](#)), will leave the VMRCVM to become dean of the School of Applied Arts & Sciences at Arizona State University effective June 30.

Thatcher joined the VMRCVM in 1983 and has served the college and the university in a variety of ways over the past 25 years. As one of the leading veterinary nutritionists in the nation, Thatcher played an important role in the development of the college’s teaching, research and service programs in

clinical nutrition and production management medicine.

He has also helped lead a major \$3.2 million National Science Foundation (NSF) graduate education and research program at Virginia Tech.

"Craig has made lasting contributions to our college in many different ways and we wish him luck and success in this new leadership position," said VMRCVM [Dean Gerhardt Schurig](#). "His highly collaborative approach to problem-solving and program development should serve him well as an academic dean."

Since stepping down as head of the DLACS in 2004, Thatcher chaired the Food Nutrition and Health Advisory Committee in the Institute for Biomedical and Public Health Sciences. He co-directs the NSF Macromolecular Interfaces with Life Sciences Integrated Graduate Education and Research Traineeship (MILES-IGERT).

He earned his Ph.D., and M.S. in nutritional physiology and his D.V.M. in veterinary medicine all from Iowa State University, and his B.S. in animal husbandry from Delaware Valley College of Science and Agriculture.

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Turnwald Completes Appointment as Associate Dean

[Dr. Grant Turnwald](#), who has served the college as associate dean of academic affairs for the past ten years, has announced that he will vacate the post effective May 31, 2008 and retire from the faculty in 2009.

"Our academic programs operate at the heart of what a college or university is all about, and we are very grateful for the outstanding leadership Dr. Turnwald has provided for these efforts," said VMRCVM [Dean Gerhardt Schurig](#).

Turnwald said he is pleased by the progress that has been made in a number of different areas during his administration.

"I think we have accomplished some important changes, both inside and outside of the curriculum, that will enhance our students' technical, personal and professional development," said Turnwald. "I believe these changes will



Dr. Craig Thatcher (above), who joined the VMRCVM in 1983, will leave the college to become dean of the School of Applied Arts & Sciences at Arizona State University effective June 30. As one of the leading veterinary nutritionists in the nation, Thatcher played an important role in the development of the college's teaching, research and service programs in clinical nutrition and



Dr. Grant Turnwald (above), who has served the college as associate dean of academic affairs for the

help make our graduates more successful in their careers.”

A new core/track/elective curriculum that was several years in planning and development was introduced soon after his arrival. “I am very pleased that our students now have an opportunity to focus on their area of interest beyond the core curriculum via newly developed track courses,” he said, adding that elective offerings have been expanded to include courses ranging from behavior medicine to complementary medicine.

Turnwald said he is also pleased that in the new curriculum that has less core material, VMRCVM students have maintained the same high pass rate on the national licensing exam that was achieved in the previous traditional curriculum. In response to the 1999 AVMA economic study and VMRCVM outcomes assessment data, four core credits and one elective credit are now included in the curriculum to focus on personal and business finance, teamwork, law and ethics, communications, business management, career development and other topics, he said.

He is also pleased with the success of the student/practitioner mentorship program that was established with the Virginia and Maryland Veterinary Medical Associations in 2000 to better acquaint students with the real world of private and public veterinary practice. "That's been a very successful program that continues to expand," he said. "I'm especially grateful to all of the veterinarians who recognize the value of this program and are willing to invest their time in insuring its continuing success."

During his administration, the first-year student orientation was expanded from a three-day information dissemination session to a week-long personal and professional development exercise, complete with a low ropes course, team-building sessions, as well as communications and leadership training.

Turnwald said he is proud of the progress that has been made in developing policies and procedures for the DVM curriculum and the development of multiple databases and procedures manuals related to the academic affairs program.

“I am pleased to be at a college where good teaching is both valued and rewarded,” he said. He feels privileged to have the opportunity to interact with some truly outstanding faculty, staff, and students.

Turnwald earned his Bachelor of Veterinary Science in 1966 from the University of Sydney, Australia and his M.S. in 1979 from Texas A & M University.

Prior to joining the college in 1998, he was professor and head of veterinary medicine and surgery at Oklahoma

past ten years, has announced that he will vacate the post effective May 31, 2008 and retire from the faculty in 2009. Turnwald said he is proud of the progress that has been made in developing policies and procedures for the DVM curriculum and the development of multiple databases and procedures manuals related to the academic affairs program during his administration.

State University. He was also an assistant/associate professor at Louisiana State University and has been in large and small animal private practice in New Zealand and Australia.

He is board certified by the American College of Veterinary Internal Medicine and is a member of the American Veterinary Medical Association, the American College of Veterinary Internal Medicine, and the Virginia Veterinary Medical Association. He currently serves on the Editorial Board of the Journal of Veterinary Medical Education. He consults with the AVMA in quality assurance of the Clinical Proficiency Examination for foreign veterinary graduates seeking U.S. licensure.

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Faculty CE Commitment Part of VMRCVM Culture

Veterinary continuing education (CE) has become big business over the past couple of decades. Colossal CE meetings like the Western Veterinary Conference ([WVC](#)) in Las Vegas and the North American Veterinary Conference ([NAVC](#)) in Orlando typically enroll several thousand veterinarians.

The information explosion and new technologies in veterinary medicine have made CE more important than ever before for veterinarians who need to keep abreast of current approaches and techniques. This has led to an increased number of CE events at the state, regional and national level.

Many of the registrants at these regional and national events may be learning about the newest aspects of veterinary medicine from VMRCVM faculty members, who are routinely invited to present at major conferences like WVC, NAVC, and others presented by professional societies like the American Veterinary Medical Association and specialty colleges like the American College of Veterinary Internal Medicine and the American College of Veterinary Surgeons.

Providing CE presentations keeps VMRCVM professors in touch with practitioners in the field and it provides dividends for the reputation of the college.



Twice a year, the college offers a CE endoscopy training program, once for residents and once for practitioners. Dr. Michael Leib (right) and his colleagues present numerous hours of continuing education in the college and at regional and national events. Providing CE presentations keeps VMRCVM professors in touch with practitioners in the field and it provides dividends for the reputation of the college.

“It keeps me in touch with the veterinary clinical community and the problems and concerns they face on a daily basis,” said [Dr. Don Waldron](#), a professor in the Department of Small Animal Clinical Sciences ([DSACS](#)) and board-certified veterinary surgeon, who is frequently invited to lecture at national meetings. “It also puts the VMRCVM ‘label’ on expertise in my field which gives the college and university credibility.”

Waldron believes veterinary faculty members have a unique ability to “distill” the massive amounts of information being generated these days into something that fits the needs of a clinical practitioner.

[Dr. Martha Moon Larsen](#), a professor in the DSACS and board certified veterinary radiologist participates in about a half-dozen continuing education programs a year. She believes that CE is more important than ever before and views it as part of her job. “It helps bring attention to the VMRCVM and adds to its reputation,” she said. “The same is true of local meetings, where it is important to maintain good relations with our referring DVM’s.”

[Dr. Michael Leib](#), a professor in DSACS and board-certified veterinary internist who specializes in gastrointestinal disorders, is perhaps one of the most frequently sought speakers on faculty in the college. Leib agrees that VMRCVM faculty play an important “reputation building role” for the college.

He also suggests there is a special need for board-certified specialists in academia to lecture at these CE events because the business model in the private sector makes it challenging for board-certified specialists in private practice to participate.

The availability of so many opportunities to procure continuing education has led some colleges of veterinary medicine to reduce their programming in this area, but providing continuing education for practicing veterinarians has been a part of the college’s public service mandate since its founding.

The VMRCVM provides CE courses throughout the course of the year in areas like internal medicine, surgery, ultrasound, and others. But it has developed a national reputation for excellence in providing focused multi-day, laboratory programs in introductory endoscopy and orthopedic surgery.

“Our niche is in the laboratory courses,” said Leib. “I think we have a very good reputation for the ‘in-house’ laboratory courses.”

The college offers an intensive three-day CE course in surgery twice a year, once for orthopedic surgery and once for soft-tissue surgery, according to CE Coordinator Ann Cinsavich. The intensive endoscopy training program is also offered twice a year, once for residents and once for practitioners. Both are extremely popular, she said.

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Meng Accorded Honorary Diplomate Status in ACVM

[Dr. X. J. Meng](#) has recently been elected as an Honorary Diplomate in the [American College of Veterinary Microbiology](#). The honor is reserved for those individuals who have “achieved unquestioned eminence in veterinary microbiology,” according to Dr. Jim Roth, the president of the ACVM and director of the Center for Food Security and Public Health at Iowa State University.

“The ACVM Board of Governors and the ACVM membership have each voted by an overwhelming majority to extend Honorary Diplomate to you,” wrote Roth in a communication informing Meng of the honor. “Your many contributions to veterinary microbiology are highly valued. The ACVM is honored to count you among our most valued colleagues.”

The ACVM is the American Veterinary Medical Association recognized specialty college for veterinarians with special expertise in microbiology.

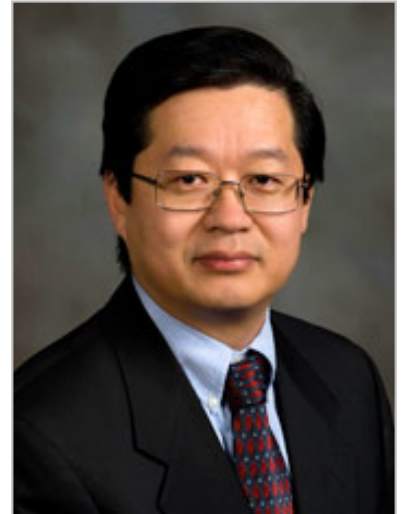
Meng was recognized for the many contributions he has made to the field of veterinary microbiology throughout his career. The award will be formally presented to Meng during the 2008 annual meeting of the Conference for Research Workers in Animal Disease in Chicago later this year.

Meng, a professor in the Department of Biomedical Sciences and Pathobiology ([DBSP](#)), operates a world-renowned laboratory in the college’s Center for Molecular Medicine and Infectious Disease ([CMMID](#)) that is exploring hepatitis E virus as well as several other zoonotic diseases.

His research interests include studying the molecular mechanisms of viral replication and pathogenesis, developing vaccines against viral diseases, the study of emerging and re-emerging zoonotic viral diseases, human, swine and avian hepatitis E viruses, porcine reproductive and respiratory syndrome virus and porcine circovirus.

Prior to joining the VMRCVM in 1999, Meng served as senior staff fellow of the Molecular Hepatitis Section of the Laboratory of Infectious Diseases at the National Institutes of Health’s National Institute of Allergy and Infectious Diseases ([NIAID](#)).

Meng earned an M.D. from Binzhou Medical College in Binzhou, Shandong, People’s Republic of China; a M.S. in microbiology and immunology from the Virus Research Institute, Wuhan University College of Medicine, Wuhan,



Dr. X. J. Meng (above) has recently been elected as an Honorary Diplomate in the American College of Veterinary Microbiology. The award will be formally presented to Meng during the 2008 annual meeting of the Conference for Research Workers in Animal Disease in Chicago later this year.

Hubei, Peoples Republic of China; and a Ph.D. in immunobiology from the Department of Microbiology, Immunology and Preventive Medicine at the Iowa State University College of Veterinary Medicine.

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NIH Administrator Speaks to Public Practice Club

Dr. Robert J. Hoyt, chief of the Laboratory of Animal Medicine and Surgery at the National Heart, Lung and Blood Institute in the National Institutes of Health ([NIH](#)), recently visited the college to deliver a lecture entitled "Veterinarians: Key Members of the Research Team."

The event, sponsored by the Public Veterinary Practice Club ([PVPC](#)), sought to introduce students to the career opportunities that exist in biomedical research for veterinarians. A 2005 study published by the National Research Council has identified the need to train more veterinary researchers.

"As students, we must be proactive in searching out diversity in veterinary medicine, and the PVPC is happy to help provide that by hosting speakers in international, governmental, wildlife, or lab animal medicine," said Tiffany Borjeson, president of the PVPC and a member of the Class of 2010. "Dr. Hoyt is a dynamic speaker and renowned veterinarian and I believe his presentation helped to increase interest in non-traditional veterinary medicine."

Hoyt told the students that veterinarians are valuable as toxicologists, pathologists, and in laboratory animal medicine in biomedical research for a variety of reasons. They are generally very adaptable to changing circumstances and can adapt accordingly, they are not afraid to tackle new and different things, and most importantly, they are trained across a variety of species. In Hoyt's laboratory, he works with everything from mice to rabbits to primates.

Hoyt also discussed his work on transmural revascularization (TMR), a procedure where a surgeon uses a laser to "drill" a series of holes from the outside of the heart into the heart's pumping chamber. The procedure



Dr. Robert J. Hoyt (above), chief of the Laboratory of Animal Medicine and Surgery at the National Heart, Lung and Blood Institute in the National Institutes of Health, recently visited the college to deliver a lecture entitled "Veterinarians: Key Members of the Research Team." The event, sponsored by the Public Veterinary Practice Club, sought to introduce students to the career opportunities that exist in biomedical research for veterinarians.

seeks to relieve severe angina or chest pain in very ill patients who aren't candidates for bypass surgery or angioplasty.

Currently Hoyt is involved as a collaborator and surgeon in a number of research projects including the development of both animal models and gene therapy delivery techniques for atherosclerosis, coronary artery disease, cystic fibrosis, hemophilia and other cardiovascular-related diseases. He has also been the only veterinarian on the NIH Institutional Biosafety Committee for over 12 years.

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Clinical Research Update

Editor's note: Excellence in clinical care is a result of progress in clinical research. Funded with resources developed through the [Veterinary Memorial Fund](#), clinical researchers in the college are probing scientific frontiers that will help create better methods for managing disease and trauma.

A Biomechanical Comparison of Locking Compression Plates to Limited Contact Dynamic Compression Plates in a Distal Humeral Metaphyseal Gap Model

[D Filipowicz](#), [O Lanz](#), R McLaughlin, S Elder, S Werre

Virginia-Maryland Regional College of Veterinary Medicine, Virginia Tech, Blacksburg, VA.

[Overall Goal of Study](#)

Evaluate a new type of bone plate system for fracture repair.

[Importance to our Patients](#)

We have many patients presented to the Veterinary Teaching Hospital for traumatic injuries resulting in long bone fractures. Our goal is to stabilize these fractures and return the animal's function as soon as possible. There are many treatment options to repair these fractures. The best techniques involve systems that provide rigid stabilization of the fracture fragments, are strong enough to hold the fracture components together while the body can heal, and are applied with minimal damage to the surrounding soft tissues.

[Reason for performing this research](#)

The type of stabilization depends on severity of the fractures. Severe fractures are often stabilized by application of a bone plate that spans the area of the fracture. The bone plate must support the weight of the animal and maintain strength through sustained and cyclic

stresses. The speed in which the fracture heals is dependent on several factors. Two of the most important are the severity of the fracture and the blood supply to the fracture area. Preserving the blood supply to the fracture site is an important consideration. The outer portion of the bone receives its blood from the periosteum, which envelops the cortex. The physical presence of the bone plate disrupts the periosteal blood supply to the bone. A new type of bone plate was developed which preserves



the periosteum by limiting the contact between the bone plate and the cortex of the bone. Researcher at the VMRCVM are testing the biomechanical properties of the new locking compression plate (LCP) to determine if it is similar to the traditional bone plate, the limited contact dynamic compression plate (LC-DCP). If so, the new locking compression plate could improve the healing rate of long bone fractures in our patients.

Dr. Otto Lanz (right) performs surgery in the college's Veterinary Teaching Hospital. Lanz and his colleagues are currently evaluating a new type of bone plate system for fracture repair in small animals.

Research Methods

The humeri were harvested from the cadavers of 30 adult, large breed dogs. The bones were segregated into three groups, each having 10 pair of humeri. A locking compression plate (LCP) was placed on one humerus from each pair and the other humerus was plated with a limited contact dynamic compression plate (LC-DCP). After the plate was applied, a 20 mm long section of bone was removed from the distal segment of the humerus under the plate. Each of the 3 groups were subjected to different biomechanical forces (1: monotonic axial compression to failure, 2: cyclic axial compression, 3: cyclic torsion to failure). Biomechanical data and mechanisms of failure were recorded for all pairs.

Research Findings

The results of this biomechanical study indicate that the stiffness of the repair stabilized with locking plates (LCP) or with limited contact dynamic compression plate (LC-DCP), was dependent on whether the pressures applied to the repaired bone and plate are constantly increasing (monotonically loaded) or cyclically in nature. The locking plates (LCP) were stronger when monotonically loaded but the stiffness was decreased when exposed to torsional or axial compression. The LC-DCP were stronger when cyclically loaded.

Conclusions

Further work is needed to determine if the decrease in stiffness in torsion or in axial compression of the lock plate (LCP) is clinically relevant. Further testing, including clinical trials, are needed to determine if the biological benefits of the LCP could outweigh the costs of this potential instability.

Future Plans

This is the first biomechanical study in veterinary medicine to compare the stiffness of LCPs to LC-DCPs in cyclical torque to failure, cyclical axial compression, and monotonic axial compression to failure in a metaphyseal gap model, therefore clinical trials are necessary to determine the true benefits of locking plate technology.

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