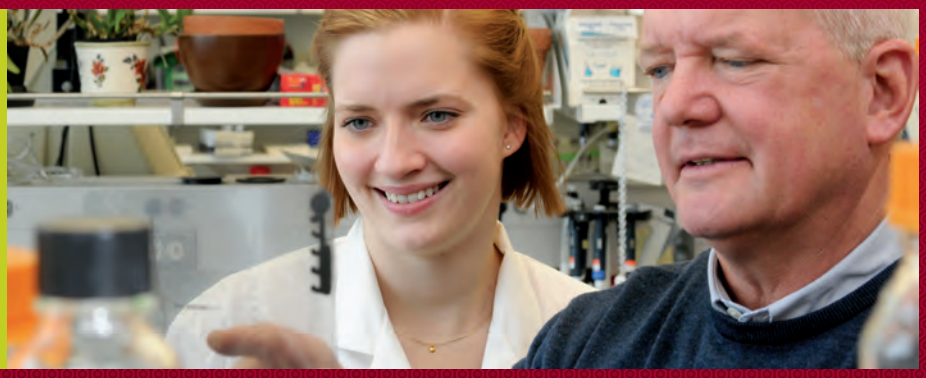
College of Veterinary Medicine

WASHINGTON STATE UNIVERSITY

Healthy **Animals**, Healthy **People**, Healthy **Planet**

EDUCATION

RESEARCH



SERVICE

College of Veterinary Medicine

EDUCATION ■ RESEARCH ■ SERVICE

PHOTO BY HENRY MOORE JR.

Legacy: *Bustad Veterinary Science Building, named for Dr. Leo K. Bustad '49, opened in 1978.*

At Washington State University's College of Veterinary Medicine,

we are dedicated to improving the lives of animals and people through enhancing health and well-being. WSU has one of the nation's top veterinary and biomedical colleges, and our distinguished faculty members are recognized as leaders in the field. Students work side-by-side with accomplished researchers in highly ranked programs for scientific investigation, clinical specialties, and diagnostic capabilities. Graduates from the college go on to be leading clinicians, diagnosticians, researchers, and professors across the globe.

Our mission is to provide exceptional:

- Professional veterinary medical education
- Undergraduate, graduate, and resident education in the health sciences
- Basic and clinical biomedical research
- Public service through clinical care, diagnostic services, continuing education, and outreach

Established in 1899, the Washington State University College of Veterinary Medicine is proud of its distinguished past as one of the oldest veterinary colleges in the United States. The college is fully accredited by four key national accrediting agencies: the American Veterinary Medical

Washington State University History

The University, founded in 1890 in Pullman, Washington, is the state's land-grant research institution. WSU is recognized nationally and offers top-ranked undergraduate and graduate academic programs. WSU Cougar Athletics is a proud member of the Pacific-12 (Pac-12) Conference. Today, in addition to the main campus colocated in Pullman and Spokane, WSU has campuses in Vancouver and the Tri-Cities (Richland, Pasco, and Kennewick).

Pullman, Washington, and Surrounding Community

Pullman is located in the Palouse region of the Inland Northwest, which has one of the most beautiful and unique landscapes in the world. Rolling hills and wide-open skies give the Palouse region its distinctive appeal. Residents enjoy outdoor activities and the benefits of small-town living with the cultural richness of bigger city life. Pullman is home to the Washington Idaho Symphony, civic theater groups, and local dance companies. Washington State University also offers music performances by faculty and students, and fine art exhibits in the WSU Museum of Art.

PHOTO BY HENRY MOORE JR.

The Caring Call: *Dedicated September 29, 1990,* The Caring Call *bronze statue, depicting a 1940s era veterinarian caring for a boy's young calf, was the vision of Dr. Bernard R. Pinckney '44. The statue, which graces the grounds outside Bustad Veterinary Science Building, commemorates the veterinary profession and symbolizes the philosophy of the college.*

Association Council on Education (AVMA-COE), the Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC), the American Association of Veterinary Laboratory Diagnosticians (AAVLD), and the American Animal Hospital Association (AAHA). The college is also ranked among the top U.S. veterinary colleges in extramural research support.

Education and Research

PHOTO BY HENRY MOORE JR.

An Exceptional Education: *Working alongside leading faculty, WSU's veterinary students receive the highest quality education in medicine, research, and animal care. Here Andrea Barten '08 works in the examination room with Dr. Jim Lincoln, Veterinary Clinical Sciences professor emeritus.*

PHOTO BY HENRY MOORE JR.

Discover: *Students study in WSU's nationally acclaimed learning laboratories and learn from the unique specimens in the Worthman Veterinary Anatomy Teaching Museum. Here Shaun Vaniman '08 assembles a cougar skeleton in an anatomy laboratory.*

The College of Veterinary Medicine at Washington State University

is unrelenting in its commitment and dedication to world-class education and research. WSU is nationally recognized for biomedical research and for its innovative educational curriculum. Faculty members in the college's three departments—the Department of Veterinary Clinical Sciences (VCS), the Department of Integrative Physiology and Neuroscience (IPN), and the Department of Veterinary Microbiology and Pathology (VMP)—are accomplished educators, researchers, and leaders in their fields, including veterinary surgery, immunology and infectious diseases, physiology, pharmacology, neurobiology, and clinical practice. The Paul G. Allen School for Global Animal Health brings together top scientists, making the college a leader in solving the global health challenge.

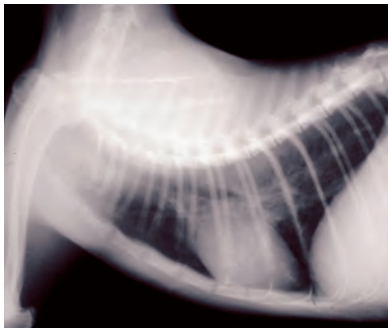
The School of Molecular Biosciences (SMB) moved to the college in 2010 to create a larger group of biomedical research scientists. Established in 1999, SMB houses biochemistry, genetics and cell biology, and microbiology. The move strengthened existing collaborative research by SMB and CVM faculty and our students are benefitting from those collaborations with expanded opportunities.

In addition to the doctor of veterinary medicine (DVM) degree, the College of Veterinary Medicine's three academic departments and two schools offer master of science (M.S.) and doctor of philosophy (Ph.D.) degrees. The college also offers a bachelor of science (B.S.) in neuroscience, biochemistry, genetics and cell biology, and microbiology. Working alongside skilled researchers and scientists, WSU students receive the highest quality veterinary education and in turn take that knowledge to practices and research programs around the globe.

The Department of Veterinary Clinical Sciences

PHOTO BY HENRY MOORE JR.

Grace: *Equine athletes run on a high-speed treadmill to test for orthopedic injuries, heart and lung problems, and muscle disorders.*



Exotics service: *specializing in raptors, reptiles, small mammals, and wildlife.*

PHOTO BY HENRY MOORE JR.

Hands-on Training: *Students at WSU learn from top scientists and clinicians in some of the nation's best learning laboratories.*

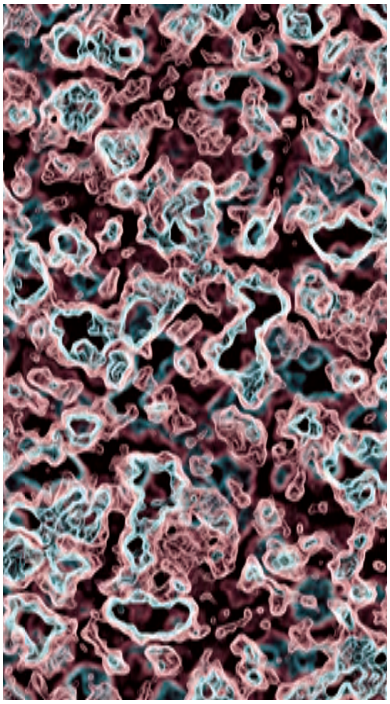
The Department of Veterinary Clinical Sciences (VCS) is the largest department in WSU's College of Veterinary Medicine. The department, which also includes the Veterinary Teaching Hospital, is organized into these divisions:

- **Small animal:** specialty areas in cardiology, oncology (cancer), soft tissue and orthopedic surgery, internal medicine, dermatology, dentistry, and neurology.
- **Exotics service:** specializing in raptors, reptiles, small mammals, and wildlife.
- **Equine:** specialty areas in internal medicine, orthopedic and soft tissue surgery, pain management, and lameness evaluation.
- **Agricultural animal:** specialty areas in individual and population medicine, epidemiology, and theriogenology (reproductive medicine).
- **Clinical support services:** specialty areas in radiology, anesthesiology, and clinical pathology.

VCS has an extraordinary record of service in the diagnosis, treatment, and management of clinical problems, including cancer and using the most sophisticated diagnostic and therapeutic technology. Faculty members in the department also teach clinical subjects in medicine, surgery, radiology, anesthesiology, animal reproduction, and clinical pathology.

Through outstanding applied research, VCS faculty members have made significant advances in the diagnosis and treatment of brain tumors and neurological problems in dogs, cancer disease, animal pain management, non-invasive surgical techniques, population medicine, theriogenology, and equine exercise physiology. WSU is a leader in advanced medical imaging, especially for horses. Researchers also investigate field diseases affecting herds and flocks, which is vital for food safety and the spread of disease in animals and humans. Veterinary students have the opportunity to work alongside leading faculty conducting groundbreaking research with regional, national, and international importance.

PHOTO BY HENRY MOORE JR.



World-Class Research: *Dr. Mohamed Jabbes' cancer research on photodynamic therapy, an alternative or complementary treatment to conventional cancer therapy, will help save lives.*

Field Disease Investigation Unit

The Field Disease Investigation Unit (FDIU), part of the College of Veterinary Medicine's Agricultural Animal Health Program, investigates diseases that threaten herd animals in the Pacific Northwest and around the country. Working closely with the Washington Animal Disease Diagnostic Laboratory (WADDL), the FDIU advises practicing veterinarians, animal industry groups, producers, and state and federal regulatory agencies on regional and national animal diseases and public health issues such as salmonella and *E. coli* O157. FDIU also conducts research using hypothesis-based field trials to address problems of regional importance to agricultural animal producers in Washington state.

Veterinary students accompany FDIU teams to field sites for investigations. Our students are trained in the general aspects of herd investigations and population medicine, which provides them with a basic understanding of the epidemiological approach to solving herd disease problems.

The Veterinary Teaching Hospital

Serving the Community: *WSU's Veterinary Teaching Hospital provides general and specialized care, including advanced cancer treatments, to clients from the Pacific Northwest, Canada, and around the United States.*

PHOTO BY HENRY MOORE JR.

A Sense of Place: *The lobby of the state-of-the-art teaching hospital, which opened in 1996, provides a welcoming, sunny place for patients and clients.*

The Veterinary Teaching Hospital (VTH), part of the Department of Veterinary Clinical Sciences, is one of the best-equipped teaching hospitals in the world and offers a wide range of specialty services in oncology, cardiology, orthopedic and soft tissue surgery, internal medicine, dermatology, dentistry, and neurology. Faculty and students have access to the most advanced medical imaging devices used in veterinary medicine including magnetic resonance imaging (MRI), computerized tomography (CT scan), and nuclear scintigraphy for both large and small animals. Faculty and students at the VTH also use other sophisticated diagnostic and treatment technologies such as ultrasound, endoscopy, arthroscopy, and radiation therapy to ensure all animals get the best possible care.

The teaching hospital provides around-the-clock, fee-based veterinary services to the public, giving residents of Pullman and the surrounding communities access to some of the best veterinary care in the country. The hospital is also a veterinary referral center for practitioners in the Pacific Northwest and western Canadian provinces. People from the Northwest and all over the nation bring their animals to the WSU teaching hospital to receive unmatched specialized care, including advanced cancer treatments, using the latest medical technologies.

Care: *Our veterinarians, residents, interns, and technicians provide exceptional care to all our patients.*

PHOTO BY HENRY MOORE JR.

Educating Tomorrow's Veterinarians: *Dr. Colleen Engel received her DVM from WSU's College of Veterinary Medicine in 2006. She works in small animal private practice.*

Veterinary Careers

Our students choose careers in

- **Private practice** working in small animal clinics, farm and agricultural animal health, or equine medicine
- **Local, state, and federal agencies** working as a state veterinarian, a USDA inspector, or with the Centers for Disease Control (CDC)
- **Public health** working to improve human health through disease control and prevention or ensuring a safe food supply
- **Academia** working as researchers and professors

RESEARCH SPOTLIGHT: Advanced Neurological Care

Our neurology service provides unsurpassed care for companion animals. As leaders in neurologic assessment, we use specialized medical imaging equipment such as an MRI or multi-slice CT scan to provide the fastest and most accurate diagnosis. Our veterinary rehabilitation facility also helps neurologic patients recover after spinal or brain surgery and eases other neurodegenerative conditions. Leading neurology researchers are evaluating the advantages of underwater treadmill therapy, with preliminary findings of the ongoing study showing that animals begin walking sooner and recover more quickly when hydrotherapy is added to their treatment plan. WSU also provides students with the highest quality veterinary neurology education, bringing knowledge to practices across the globe.

"Hope resides here."

—Russell Lee, oncology client at WSU's Veterinary Teaching Hospital

PHOTO BY HENRY MOORE JR.

State-of-the-Art Technology: *The therapeutic underwater treadmill helps animals recover faster.*

Education Innovation

In the Diagnostic Challenges, students are given real-world cases to practice their skills. Collaboration between WSU faculty and veterinarians who volunteer to be facilitators makes this class unique in veterinary education nationwide.

"We want to do the best job we can for the students adding excellence to our already strong curriculum."

—Dr. Steve Hines, associate dean for Teaching and Learning at the WSU College of Veterinary Medicine

The Teaching Academy, the first of its kind in veterinary medicine, was created in July 2010 to continue to foster innovative curriculum at the college. The academy supports faculty dedicated to teaching and learning and brings educators together to help integrate common elements in the curriculum.

Some of the innovative educational DVM programs at the college are:

Diagnostic Challenges. Case-based exercises are conducted collaboratively with faculty in pathology, clinical pathology, bacteriology, virology, immunology, and radiology. Visiting veterinarians, who are WSU alumni of the college, come to college as volunteer case facilitators to give back to their school and work with current students. Collaboration between WSU faculty and veterinarians who volunteer to be facilitators makes this class unique in veterinary education.

Clinical and Professional Skills Lab. Teaches students clinical skills, such as communication, that veterinarians need to be competitive in today's workforce and practice the best medicine possible. The WSU veterinary clinical communications class uses real cases (with identities changed) and is simulated with trained actors or voluntary community members. Each class is overseen by a faculty coach who facilitates the simulated scenarios.

Cougar Orientation Leadership Experience (COLE). An off-site retreat designed to promote leadership skills and team building that started in 2002. COLE brings students from different places and connects them to WSU, acclimates them to professional school, and sets the foundation for cooperation and teamwork over the next four years.

Animal Health Policy Program. Graduate students have the opportunity to investigate the impact of science, politics, and beliefs on animal health and food security policy. They learn about policy-making and implementation at local, national, and international levels. Each is a case-based course conducted on- and off-campus through a series of experiential learning opportunities based on relevant animal health issues. Students have visited Olympia, Washington and Washington, D.C. to gain hands-on experience.

WSU is a pioneer in bringing clinical communication training to veterinary students. Students can practice their skills in a safe, simulated environment.

Over the last two decades, the WSU College of Veterinary Medicine has developed an innovative veterinary curriculum to develop students' professional skills along with their medical training, making them more competitive for top jobs once they graduate. But, before students even take their first veterinary class, they begin their education with the **Cougar Orientation and Leadership Experience (COLE)**, an off-site retreat designed to promote leadership skills and team building that started in 2002. COLE sets the foundation for cooperation and teamwork over the next four years. Students learn a wide range of professional competencies not generally taught in traditional veterinary medicine curricula.

To learn more about education innovation at the college visit www.vetmed.wsu.edu/Education Innovation

Trust: *COLE teaches students professional leadership, teamwork, and communication skills.*

RESEARCH SPOTLIGHT: Individualized Veterinary Medicine

Saving Lives: *"Cash," a Miniature Australian Shepherd with the MDR1 gene mutation, was treated for accidental ivermectin toxicity. Commonly used to remove worms, ivermectin is safe at prescribed doses for many animals. But for dogs like Cash that have the genetic mutation, ivermectin can be toxic even at prescribed doses.*

Why can medicines that usually cure also sometimes be deadly? That is a question Dr. Katrina Mealey, WSU professor and veterinary pharmacogenetics specialist, wanted to answer. She discovered that certain breeds of dogs have a genetic mutation (MDR1) that predisposes them to drug sensitivity. Three out of four Collies, for instance, have the genetic mutation that can cause a fatal drug reaction. Researchers in the Individualized Veterinary Medicine Program, the first of its kind in the world, work to identify genetic mutations to improve diagnostics and customize treatment options for their animal patients.

Innovation: *Drs. Michael Court and Katrina Mealey, WSU veterinary professors and leaders in the field of pharmacogenetic research, are working to help save the lives of animals by identifying genetic mutations that cause adverse reactions to certain medications.*

"Individualized medicine for veterinary patients allows us to go beyond the 'one-size-fits-all' approach to treating diseases."

—Dr. Katrina Mealey, WSU veterinary professor and genetics specialist. The Individualized Veterinary Medicine Program at the WSU College of Veterinary Medicine is the first of its kind in the world.

ANIMAL SPOTLIGHT: Gamera

Skilled Surgeons: *Gamera can now go almost anywhere he wants on his prosthetic wheel.*

When the 12-year-old, African spur-thighed tortoise arrived at the WSU Veterinary Teaching Hospital, he was in bad shape. The tortoise's left front leg had been badly burned and later became infected.

Surgeons Dr. Courtney Watkins, a surgery resident, and Dr. Nickol Finch, head of WSU's Exotic Animal Service, had to amputate the limb at the shoulder. To help him regain mobility after surgery, they attached a small swiveling ball-type caster to his shell with an epoxy adhesive. The tortoise, now named Gamera, took to his new prosthetic quickly with little encouragement and walks well on most surfaces.

To read more about Gamera visit www.vetmed.wsu.edu/Gamera.

ANIMAL SPOTLIGHT: Chester

"Chester" was lethargic and didn't play before his surgery.

The ICU staff saw that Chester was having trouble sleeping with the bright lights and all the tests, so they made an eye mask to help him relax. He also received round-the-clock care.

Roya Eshragh and Gyan Harwood of Vancouver, British Columbia, wanted a cat. So they did what many animal lovers do—they went to their local shelter to adopt an adult animal in need of a home. They fell in love with an orange tabby, and named him "Chester" (he had previously been called "Cheetoh," but they thought he looked more like a "Chester"). On January 30, 2012—Chester's adoption day—his life changed forever.

Roya and Gyan noticed right away that Chester didn't seem to play like a young cat would. He had little energy, his breathing was not quite right, and his body also had an unusual shape. After a few trips to the veterinarian it was discovered that Chester had a diaphragmatic hernia (a tear in the diaphragm) that caused his internal organs—stomach, small intestines, liver, spleen—to move into his chest, which affected his breathing. Because he also had a healed pelvic fracture, it was thought that Chester had been hit by a car.

They drove Chester from Canada to the WSU Veterinary Teaching Hospital where Dr. Might told them about the risks and benefits of having surgery to correct the diaphragmatic hernia. He also told them that the surgery would cost between $3,000 and $4,000. As graduate students, that kind of surgery seemed financially out of reach. Dr. Might realized they would need help, so he told us about the Good Samaritan Fund. Roya and Gyan received $1000 to partially pay for Chester's medical expenses, which ended up totaling nearly $5000.

"Our doctors were amazing. We definitely owe his life to them and all of the staff in the ICU."

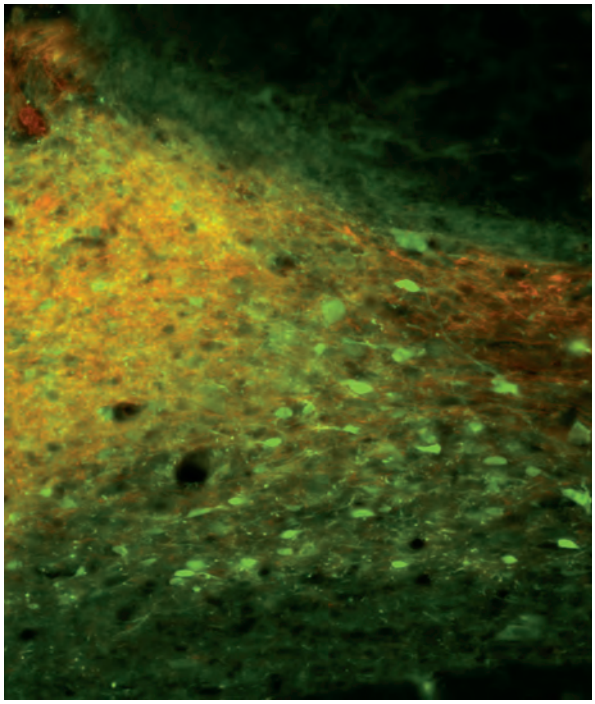
—Roya Eshragh, Chester's owner

Dedicated Service: *Chester's team (left to right) Krystal Fortier ('13 DVM); Elizabeth Nordeen ('13 DVM); Dr. Boel Fransson, WSU veterinary surgeon; and Dr. Kelly Might, WSU veterinary surgery resident*

Chester today, healthy and happy.

WSU's Good Samaritan Fund is used to help animals treated at the WSU Veterinary Teaching Hospital that are in need of special care, but are ownerless or whose owners cannot afford care.

The Department of Integrative Physiology and Neuroscience



The brain is one of the most complex organs in medicine. An image of a rat's brainstem illuminating neurological activity (red) and vagus sensory nerves (green) can help scientists understand how information is processed in the central nervous system (the yellow shows where the red and green overlap).

PHOTO BY HENRY MOORE JR.

Learning About the Brain: *Undergraduate neuroscience student Tiffany Ludka (WSU B.S. '04) alongside Dr. James Krueger, IPN professor and sleep expert. Tiffany went on to medical school specializing in internal medicine and pediatrics.*

Faculty members in the Department of Integrative Physiology and Neuroscience (IPN) are working to answer some of the most fundamental questions in basic biomedical sciences. They are also dedicated to teaching veterinary students and providing undergraduate, graduate, and post-doctoral education in neuroscience and veterinary sciences.

Neuroscience is the study of the brain. One of the most important yet least understood organs in animal or human medicine, the brain and nervous system control bodily functions and produce emotions, sensation, behaviors, cognition, learning, and memory. Our programs integrate biomedical knowledge from the molecular and cellular level up to an explanation of animal behavior. World renowned WSU neuroscientists and physiologists use advanced instrumentation to better understand the function of proteins, genes, and synapses in brain and cardiac tissue. What happens at the cellular level can inform us about control of muscle contraction, sleep, emotions, vision, or behaviors such as addiction and feeding. Veterinary students, working alongside faculty, have the opportunity to participate in groundbreaking research. Faculty and students use well-equipped laboratories with sophisticated technologies in the state-of-the-art Veterinary and Biomedical Research Building completed in 2013.

Research programs in IPN have made important advances in understanding fundamental functions of the nervous system and cardiac muscle. Our enhanced knowledge of animal and human physiology may one day lead to improved therapeutic treatment of both animals and humans.

The department is also home to the Northern Rocky Mountain Chapter of the Society for Neuroscience and houses WSU's graduate and undergraduate programs in neuroscience.

IPN Research Programs

- Sleep
- Emotions and Behavior
- Eating Disorders and Obesity
- Drug Abuse and Addiction
- Brain Synaptic Function
- Vision
- Circadian Rhythms
- Muscle Contraction
- Cardiovascular Regulation

RESEARCH SPOTLIGHTS:

What is Sleep?

Sleep is essential for health, memory, and longevity. Sleep researchers in the WSU College of Veterinary Medicine are at the forefront of answering what controls sleep and why sleep is so important for physiological and behavioral functions. From sophisticated gene manipulations in animals to innovative technology for real-time, ambulatory evaluation in humans, our scientists are answering fundamental questions that may one day better diagnose and treat many disorders of the brain caused by poor or inadequate sleep.

Emotions and Well-being

Key to improving animal and human well-being is understanding the neuroscience of emotion. Emotions are fundamental in why humans and animals behave the way they do. But we are only just beginning to better understand how emotional states emerge from the brain. Neuroscientists at WSU's College of Veterinary Medicine are probing into fundamental processes that underlie emotional behaviors. Insights from these programs will not only improve the well-being of animals and understanding of the human-animal bond, but may also lead to insights into human depression and autism.

Eating and Obesity

The brain controls what and how much food is eaten and how it is metabolized. In the WSU College of Veterinary Medicine, scientists study how the brain is organized to receive information about current body fat, the amount of food in the stomach, and blood sugar levels. The brain uses this information to produce feelings of hunger or fullness, and to precisely control blood sugar. Malfunction of these sensing and integrating mechanisms can lead to obesity, diabetes, and metabolic disorders. Ongoing studies by WSU veterinary neuroscientists are defining the neurobiology of these behaviors, leading to solutions to obesity, diabetes, and other metabolic problems vital to animal and human health.

"Understanding the mechanisms that control food intake could lead to more effective treatments for loss of appetite that occurs during infection, anorexia, and cancer therapies."

—Dr. Robert Ritter, professor, WSU Integrative Physiology and Neuroscience

The Department of Veterinary Microbiology and Pathology

PHOTO BY SHELLY HANKS, WSU PHOTOGRAPHER

Cutting-edge research: *Our scientists conduct groundbreaking research in WSU's nationally acclaimed laboratories. Lwiindi Mudenda (right), a graduate research assistant, works alongside Dr. Wendy Brown, professor in the VMP department. Dr. Brown's lab works to better understand infectious diseases and develop vaccine strategies.*

The Department of Veterinary Microbiology and Pathology (VMP) faculty and scientists and those in collaborating units—including the Paul G. Allen School for Global Animal Health, the Washington Animal Disease Diagnostic Laboratory (WADDL), the WSU Field Disease Investigation Unit, the U.S. Department of Agriculture's Agricultural Research Service–Animal Disease Research Unit, and research entities worldwide—conduct research programs to understand and control infectious diseases. Major programs of research include food and waterborne diseases, insect borne diseases, diseases of wild sheep, fish diseases that affect our food supply, and others. The faculty is a strong interdisciplinary group of investigators dedicated to understanding and controlling globally important diseases, especially in livestock.

Faculty members also provide core instruction in the veterinary curriculum, specifically in bacteriology, immunology, parasitology, pathology, public health, and virology. Veterinary students work alongside faculty conducting groundbreaking research on some of the most important infectious disease issues that affect animal and human health. The department maintains a rigorous graduate education program with emphasis on research training for the doctoral degree. The graduate training program in immunology and infectious diseases is widely recognized by its peers as one of the premier programs in the world. The department's veterinary pathology graduate training program, conducted in association with WADDL, is internationally recognized for its quality, its graduates, and its long-standing excellence.

RESEARCH SPOTLIGHT: Infectious Diseases

WSU College of Veterinary Medicine is recognized as a leader in infectious disease research with experts seated on many of the world's most important disease control agencies. Innovative research involves understanding complex diseases that can devastate animal health, particularly in developing nations, in order to develop vaccines and other control methods. Our researchers are developing innovative livestock vaccines and, through animal models, are contributing vital knowledge that may one day provide clues to help control deadly human pathogens that have eluded vaccine development, such as malaria, using mechanisms similar or identical to the animal pathogens under study.

Washington Animal Disease Diagnostic Laboratory

The Washington Animal Disease Diagnostic Laboratory (WADDL), one of the top diagnostic labs in the nation, conducts critical surveillance programs for diseases such as avian influenza, West Nile virus, Bovine Spongiform Encephalopathy (BSE, or mad cow disease), and foot-and-mouth disease. The laboratory also helps keep our nation's food supply safe through monitoring and diagnostic services that can prevent the spread of disease such as *E. coli* O157 and mad cow disease.

WADDL, which opened in 1974, is one of the twelve original members of the federal National Animal Health Laboratory Network and is a living laboratory for veterinary students training in diagnostics and clinical service. Integral to supporting animal and public health, the laboratory provides services to the Pacific Northwest and the WSU community including the WSU Veterinary Teaching Hospital, WSU herds and flocks, WSU laboratory animal programs, and the Field Disease Investigation Unit (FDIU). WADDL faculty members also instruct students in the DVM and graduate programs in the College of Veterinary Medicine.

"An hour delay in the diagnosis of foot and mouth disease can have disastrous consequences. It can literally mean millions of dollars in additional losses because the virus can spread so quickly."

—Dr. Terry McElwain, professor and executive director of WADDL

Keeping Our Food Safe: *Preventing the spread of disease in the nation's food supply, such as* E. coli *O157 and mad cow disease, has been the mission of the Washington Animal Disease Diagnostic Laboratory (WADDL) in WSU's College of Veterinary Medicine since 1974.*

Animal Disease Research Unit, U.S. Department of Agriculture–Agricultural Research Service

USDA scientists in the Animal Disease Research Unit (ADRU) scientists collaborate with the College of Veterinary Medicine faculty to discover research-based solutions for infectious diseases that have an economic impact on livestock and international trade. In a combined effort with the college, scientists from ADRU work with the Department of Veterinary Microbiology and Pathology (VMP), the Paul G. Allen School of Global Animal Health, and the Washington Animal Disease Diagnostic Laboratory (WADDL) to control infectious diseases such as Babesiosis, a tick-borne infection in cattle and horses that causes severe anemia, and malignant catarrhal fever, a contagious viral disease that can decimate a cattle herd.

The Paul G. Allen School for Global Animal Health

Reducing Global Poverty: *In villages where the average herd size is less than 10, the loss of one animal can devastate a family. The economic impact from the loss of several animals can destroy a village.*

Improving Health Around the Globe: *The Paul G. Allen Center for Global Animal Health provides research and educational space for faculty, staff, and students and supports the Allen School's missions of infectious disease research and animal diagnostics.*

Guy Palmer, Creighton Endowed Chair and Director of the Paul G. Allen School for Global Animal Health, in Africa.

A young girl in rural Africa has the opportunity to stay in school because her family has milk to sell from one healthy goat. One family is spared the devastating effects of economic hardship when a cow receives a life-saving vaccine. Early disease detection prevents a world-wide pandemic. At the Paul G. Allen School for Global Animal Health, our scientists recognize the importance of addressing local problems that can become global issues. Building on multidisciplinary strengths across the university and with partners worldwide, scientists in the Paul G. Allen School for Global Animal Health are developing innovative strategies for the treatment and control of infectious diseases that directly affect human health and economic development, making WSU a leader in solving the global health challenge.

The Allen School's mission is to provide innovative solutions to global health challenges through research, education, global outreach, and application of disease control at the animal-human interface. Scientists are working to solve public health and global poverty challenges on three fronts:

- **Detection of emerging pathogens and diseases.** Global commerce and international travel help emerging disease spread quickly. Our researchers are currently identifying emerging pathogens that will allow early intervention by global healthcare organizations—before there is a widespread outbreak.
- **Control disease transmission from animals to humans.** Infectious diseases transmitted from animals to humans strike hardest in less developed countries. Our scientists are pursuing innovative solutions for the prevention of zoonotic disease—diseases transmitted from animals to animal humans—through strategic interventions that reduce pathogen levels in animal populations. We target major infectious animal diseases, such as rabies, that directly affect human health and economic development.
- **Vaccine development and deployment.** In developing countries where human health and well-being are dependent on healthy livestock, tropical infectious diseases can have a devastating impact. Our researchers are creating new vaccines to control major vector-borne diseases in livestock—diseases that cripple economic progress across Africa, Asia, and Central and South America.

RESEARCH SPOTLIGHT: Life-saving vaccines

Washington State University scientists take the lead in creating vaccines to control major diseases in livestock—diseases that cripple economic progress in developing countries. A family's livestock may be its primary source of income and livelihood. Farming families in sub-Saharan Africa, for example, depend on small herds of cattle or goats for meat and milk; for labor such as pulling carts or plows and carrying loads; and for social and economic status. Loss of a single animal to an infectious disease can have profound effects on families, which may mean less food on the table or children leaving school to work at home. Through improving the health of animals in developing countries, scientists at the Paul G. Allen School for Global Animal Health will enhance human health and well-being worldwide.

"The health of people worldwide depends upon the health of animals. Disease does not recognize borders."

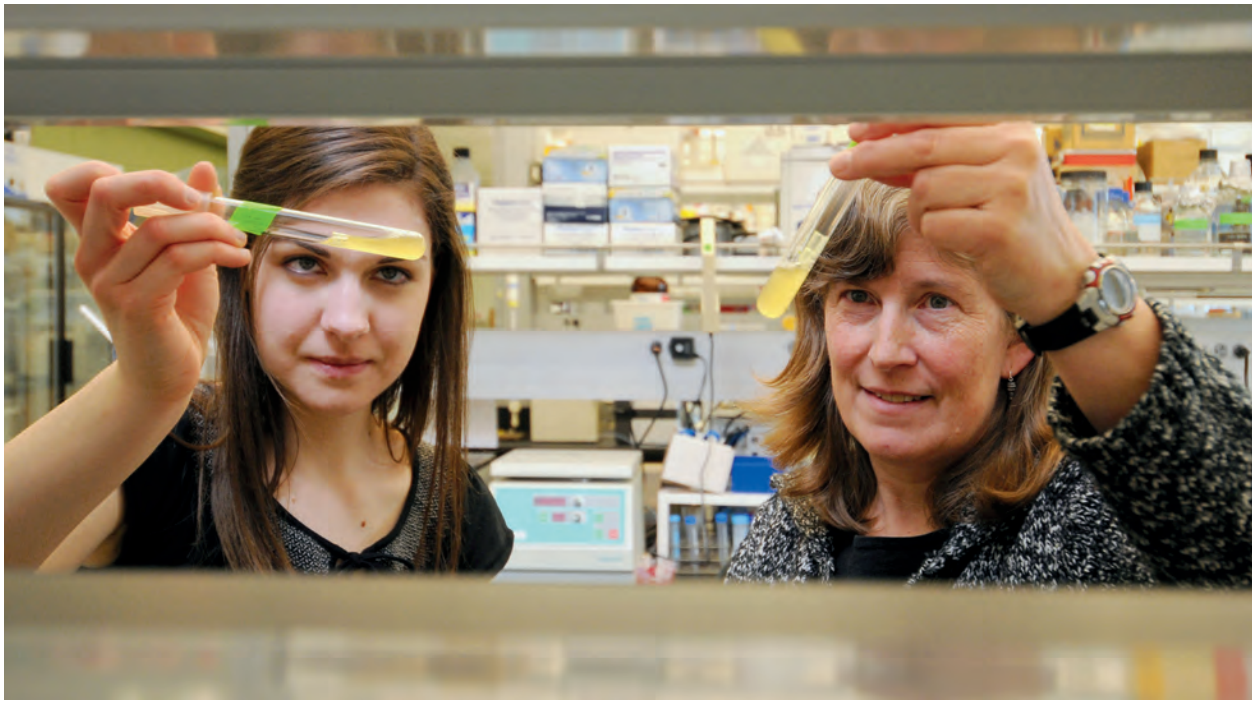
—Dr. Guy Palmer, the Creighton Endowed Chair and director of the Paul G. Allen School for Global Animal Health

Food- and Water-borne Disease Research Group

Zoonotic infectious diseases—those transmitted from animal to human—are a major public health concern. The WSU Food- and Water-borne Disease Research Group conducts research on food- and water-borne zoonotic diseases such as Salmonella and E. coli in an effort to make food safer for everyone. Researchers also investigate the prevalence of these diseases, where they are located, their resistance to antibiotics, and how they transmit from animals to people. The group works in collaborations with many partners including Washington State's Public Health Laboratory and the Department of Ecology, the WSU Field Disease Investigative Unit, the Washington Animal Disease Diagnostic Laboratory, and the Veterinary Clinical Sciences and Veterinary Microbiology and Pathology departments at WSU.

Preventing Outbreaks: *Salmonella, a common cause of food-borne illness, causes about two million deaths globally each year. Scientists in the Food- and Water-borne Disease Research Group are working to understand how some Salmonella strains are able to spread more rapidly across regions, which one day may help to prevent widespread outbreaks.*

The School of Molecular Biosciences



Innovative Education: *Dr. Margaret Black (right) and STARS student Nicole Clark*

The School of Molecular Biosciences (SMB), established in 1999, houses biochemistry, genetics and cell biology, and microbiology and offers programs leading to bachelor's of science, master's of science, and doctoral degrees.

In 2010 SMB moved to the college to create a larger group of biomedical research scientists and scientific resources. The merger strengthened existing collaborative research by SMB and CVM faculty and we expect to foster even more of these collaborative efforts.

The state-of-the-art Biotechnology–Life Sciences building that houses SMB has exceptional laboratory facilities for scientists and students to conduct research and enhance learning. The recently completed Veterinary and Biomedical Research Building adjoins the Biotechnology–Life Sciences building, creating one of the best concentrations of biomedical laboratory facilities on the WSU campus.

State-of-the-Art Facilities: *The SMB Biotechnology–Life Sciences building provides exceptional laboratory facilities for scientists and students.*

STARS—Students Targeted toward Advanced Research Studies

Training Tomorrow's Scientists: *Ross Rowsey, STARS student, and his mentor Dr. Terry Hassold, School for Molecular Biosciences.*

"The STARS program has been an extremely enjoyable and beneficial experience for me. With early integration into the laboratory setting and lab work starting my freshman year, I am truly ahead of the curve compared to my peers."

—Ross Rowsey, STARS student in the School of Molecular Biosciences.

Educating the next generation of top scientists requires the best training. Biochemistry, genetics and cell biology, or microbiology students in the School of Molecular Biosciences at Washington State University can begin that training as freshmen through the Students Targeted toward Advanced Research Studies (STARS) program. STARS gives select students a chance to *accelerate* learning and earn a doctorate in as little as seven years after leaving high school.

From their very first semester, WSU freshmen in the STARS program are immersed in research and receive one-on-one mentorship from faculty members. STARS students perform independent research in multiple labs supported through annual stipends. By the end of the fourth year, they are also completing their first year of graduate coursework.

Since the program began, STARS students have been recognized by the Barry M. Goldwater Scholarship and Excellence in Education Program in science and engineering, published scholarly papers, and finished their undergraduate degrees a full semester ahead of schedule.

Public Service

The College of Veterinary Medicine at Washington State University is committed to serving the community through public service, outreach, and education. By bringing animals and humans together, faculty, students, and community volunteers work to educate people about responsible pet ownership, provide horseback riding to children and adults with disabilities, and help those grieving after the loss of a beloved pet. The college also provides educational programs, such as the WSU Raptor Rehabilitation Program, that connect people with wildlife and nature.

The Pet-People Partnership (PPP), a public service program in the Center for the Study of Animal Well-Being in the College of Veterinary Medicine, was created to more fully understand the human–animal bond and to promote the humane treatment of companion animals. Through education, research, and outreach PPP provides a number of important public services, including:

- **Palouse Area Therapeutic Horsemanship (PATH):** A program that provides recreational therapeutic horseback riding to people with emotional, mental, and physical disabilities.
- **PATH to Success:** An equine-assisted growth and learning program that is directed at healthy youth development.
- **Human–Animal Interaction Research:** Our research seeks to better understand the significant bond between animals and humans, how caring for animals enhances human well-being, and how the bond between animals and humans influences veterinary medicine. See: www.vetmed.wsu.edu/depts-pppp/hai.aspx.
- **Pet Education Partnership (PEP):** An online curriculum to teach children responsible pet ownership.

Palouse Area Therapeutic Horsemanship

Connection: *Children and adults learn to ride, groom, and care for horses. Caring for the horses strengthens the human–animal bond, and gives the riders another way to work and form friendships with these beautiful animals.*

Serving the Community: *PATH, the only therapeutic riding program in eastern Washington and northern Idaho within a 100-mile radius of WSU, gives children and adults with disabilities an opportunity they may not otherwise have—the joy of riding a horse.*

Imagine for a moment a 10-year-old girl with cerebral palsy. She is very bright and cheerful, even though she struggles to walk with the aid of arm braces and is unable to participate in the same sports and activities as her peers. Once a week, however, she comes to **Palouse Area Therapeutic Horsemanship (PATH)** where she can set her mobility challenges aside for an hour while she learns to ride a horse.

The joy of sitting astride and controlling a horse is an empowering experience for children and adults with physical or mental challenges. PATH's mission is to provide recreational, therapeutic horseback riding for people with various disabilities including developmental disabilities, mental retardation, blindness, deafness, multiple sclerosis, Down syndrome, autism, and Attention-Deficit/Hyperactivity disorder (ADHD). Horseback riding gives individuals with disabilities a chance to strengthen and relax muscles, increase joint mobility, and improve balance, posture, and coordination in a way that makes learning fun and interesting. Acquiring these skills fosters the development of confidence and self-reliance while riders learn the basics of caring for a horse.

A Premier Accredited Center of the North American Riding for the Handicapped Association (NARHA), PATH benefits riders, their families, community members, and Washington State University students and staff who volunteer their time and talents to make this program a success. The program was founded in 1979 by Dr. Leo K. Bustad, former dean of the College of Veterinary Medicine and a pioneer in the field of the human–animal bond.

PATH is the only therapeutic riding program serving the greater Palouse region. Through generous private gifts, many children and adults in the greater Palouse area are able to experience the joy and freedom of mobility that riding offers, as well as the exceptional physical, cognitive, and emotional benefits. As one young rider said, "I love riding because it makes me feel like I can do something just like the other kids. It also makes me feel free."

The Palouse Area Therapeutic Horsemanship (PATH) program is supported largely through private donations and community volunteers.

Raptor Rehabilitation Program

PHOTO BY HENRY MOORE JR.

A Place to Call Home: *"Amicus," a golden eagle, came to WSU from northeastern Washington in 2006. Completely blind because of traumatic injury or disease, Amicus is currently living at WSU's College of Veterinary Medicine. Here Amicus is with WSU Raptor Club volunteer Alicia Pike (DVM '08).*

WSU's College of Veterinary Medicine Teaching Hospital treats hundreds of sick and injured raptors and other wildlife every year. Raptors, or birds of prey such as eagles, owls, hawks, and falcons, are often brought to the teaching hospital after being hit by automobiles, burned by power lines, poisoned, or found starving because of loss of prey. The Raptor Rehabilitation Program provides medical care to sick or injured birds, returning them to the wild whenever possible.

Resident birds, those that are not able to be release back into the wild, are cared for by the college and participate in public education programs through the WSU Raptor Club, a nonprofit volunteer organization founded in 1981. The raptors and club volunteers visit service organizations, fairs, and summer camps to educate children and adults about raptor conservation and the lives of these magnificent birds.

Homecoming: *A falcon is released after receiving care at WSU's veterinary teaching hospital.*

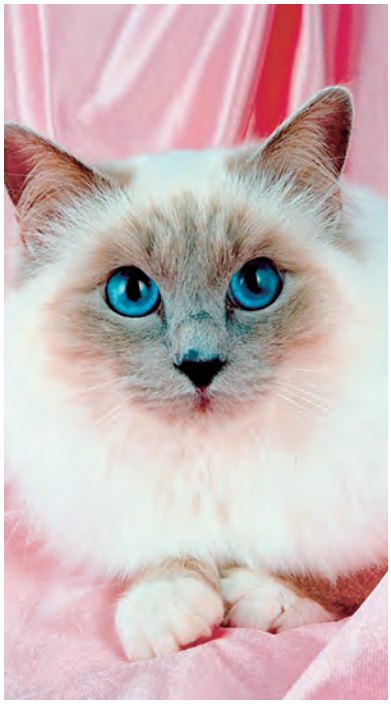
"It's exciting to see these magnificent animals returned to their natural environment."

—Dr. Nickol Finch, clinician in the wildlife section at WSU's Veterinary Hospital

Through private donation, the WSU College of Veterinary Medicine's "Adopt-a-Raptor" program provides food, shelter, and medical care to injured birds each year. Visit www.vetmed.wsu.edu/Raptors.

Pet Loss Hotline and Pet Memorial Program

Companionship: *Animals of all shapes and sizes become trusted friends and companions. The Pet Loss Hotline and Pet Memorial Programs offer support and comfort to pet owners.*



Caring: *The Pet Loss Hotline can help a grieving pet owner cope after the loss of a beloved animal companion.*

Compassion: *The Pet Memorial Program offers a way for friends and family to express sympathy for grieving pet owners.*

Pet owners and their companion animals have special bonds. Since the relationship between pets and their owners can closely resemble that of a life-long friend, or even a family member, it can be difficult to cope when a pet dies. The **Pet Loss Hotline** and **Pet Memorial Program** at WSU's College of Veterinary Medicine offer support to help pet owners during this difficult time.

Our **Pet Loss Hotline** volunteer staff are WSU veterinary students who have been trained in grief education by a licensed therapist. Many have also experienced the loss of a beloved pet and, by helping others through this painful time, they hope to become better, more compassionate veterinarians.

Pet Loss Hotline
866-266-8635 (toll free)
509-335-5704 (local calls)
E-mail: plhl@vetmed.wsu.edu
www.vetmed.wsu.edu/PLHL

The **Pet Memorial Program** provides a way for friends and family to express sympathy and compassion to grieving pet owners. Once a pet has been memorialized, pet owners can send a story, photo, or simply the pet's name to post on our Web site at www.vetmed.wsu.edu/PetMemorial.

"Thank you so much for your Pet Memorial Web site. It is just terrific and comforting as we grieve the loss of these special family members. I was most appreciative of the letter I received from your school telling me of the donation from my veterinary clinic. Thank you so much!"

—Anonymous

Development and External Relations

The College of Veterinary Medicine's development and external relations officers support veterinary medicine through fundraising efforts, external relations, and outreach. Both public and private investments allow the college to conduct research, teach, and serve the greater community. In recent years, however, as less public money has gone to support state schools, private external funding from individuals, organizations, and corporations has become even more vital to maintain exceptional programs in teaching and research, create student scholarships, and provide state-of-the-art technologies. Private funding ensures a margin of excellence in academics and outreach; our faculty and students succeed because of the generosity of alumni and friends.

The college's development officers carry out all private fundraising efforts in cooperation with the WSU Foundation, and coordinate college-sponsored alumni events. Our public information and communications officers direct all external publications, public information, media relations, and coordinate these activities with the WSU central News Services.

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