



VETERINARY

Summer 2004 EXECUTIVE REPORT

WSU begins mad cow disease testing

Washington State University's College of Veterinary Medicine has begun mad cow disease testing. The college is one of seven nationwide laboratories conducting high volume tests for the U.S. Department of Agriculture.

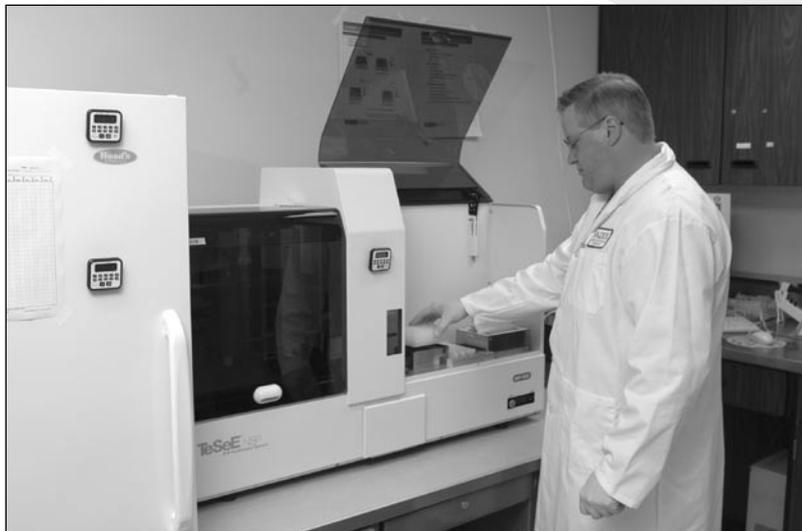
The USDA set aside \$70 million for a sweep of the nation's cattle over the next 18 months as part of its surveillance efforts. Following the first U.S. case of mad cow disease in Mabton, Washington, more than 25 countries banned the import of American beef. This new USDA surveillance program is aimed at convincing other nations to reopen their markets by increasing testing 10-fold, to more than 200,000 animals.

The Washington Animal Disease Diagnostic Laboratory at WSU is now capable of handling up to 1,000 tests per day.

The number and exact origin of samples to be tested in Pullman has not been specified. Speculation is that several thousand samples a year may be tested at WSU's facilities and could come from any region as the USDA assesses their needs.

"We think the location of this lab in Pullman is critical," said Dr. Terry McElwain, executive director of WADDL. "We're pleased and honored to be selected—we've worked very hard to achieve a high level of competency to be able to handle such an important task."

The WADDL laboratory will receive federally funded high throughput equipment and will hire at least two technicians.



Gene Mutation Key to Collie Illness

Kenny, a 5-year-old collie at WSU, has a hidden secret. If given a simple treatment for mites or intestinal worms, he'll die.

Kenny's type of toxic susceptibility is one that has puzzled veterinarians for decades. After years of research, Dr. Katrina Mealey, an assistant professor in the WSU Department of Veterinary Clinical Sciences, has discovered a mutant gene in susceptible collies that is the simple cause of the problem.

In most animals, the gene called MDR1 produces a key protein, called P-glycoprotein. P-glycoprotein acts as a "pump" to move substrate drugs from the brain back into the bloodstream across the blood-brain barrier.

Back in the blood, the drugs are further metabolized and removed from the system.

The blood-brain barrier is important to the normal function of the brain. Through a series of tissues and substances like p-glycoprotein, certain substances are allowed to pass in and sometimes out of the brain while others are naturally excluded. This protects the brain from "foreign" substances including many drugs and hormones and neurotransmitters produced throughout the body. It also helps the brain maintain a stable environment.

Dogs with a mutation of the MDR1 gene produce a non-functional form of P-glycoprotein. When veterinarians administer a common drug named Ivermectin or others that rely on the same transport system, toxic levels of the drugs build up in the brain with no way to get ack out into the bloodstream. The results can be fatal.

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The end of an academic year brings about a sense of pride and completion. It is a time to pause and reflect on the accomplishments of the past year.

During our recent Annual Conference we honored two graduates of the WSU College of Veterinary Medicine for their lifelong achievements and dedication to the profession, Dr. Jack Reynolds ('75) and Dr. Dean Smith ('49). Similarly, we see great promise in the graduates of today who walk from our halls for the last time, no longer as students, but as DVMs. Many tell us they leave with the knowledge that they've been part of something truly special.

The work here continues to make headlines. Our Washington Animal Disease Diagnostic Laboratory has been selected from among the top labs in the country to conduct bovine spongiform encephalopathy (BSE) high throughput testing. At the same time, WADDL continues to ramp up its efforts to play a critical role in the surveillance testing for Avian Influenza. Yet it may be the work going on behind the scenes in the college that shows the greatest additional promise.

Dr. Katrina Mealey has developed a test for collies to determine whether they possess a mutant gene that affects the transport of agents through the intestinal wall or into the brain from the blood. A simple DNA diagnostic tool can now predetermine if a dog is specifically at risk for adverse reactions to common pharmaceuticals. Her work continues to generate exciting possibilities in the areas of cancer research and Alzheimer's disease.

Drs. Russ Tucker, Pat Gavin, and Bob Schnieder organized an international equine MRI conference that generated plenty of excitement in the horse arena. The use of MRI on horses is a relatively new area that reveals problems never before seen without exploratory surgery.

Dr. William Davis has been selected by the USDA to lead an immunology team to use his gene splicing research to develop a paratuberculosis microorganism to combat Johne's disease.

Each of these people is a CVM faculty member who plays a face-to-face role in the instruction of our students and new graduates.

The critical challenge ahead will be for us to find new ways to keep and support these world-class scientists and educators.

I look forward to your help and suggestions on how we can continue to make Washington State University's College of Veterinary Medicine to be the most desirable place in the world to further the research, teaching, and service of veterinary medicine in the world.

Class reunions at this year's Annual Conference



WSU College of Veterinary Medicine Class of 1957.



WSU College of Veterinary Medicine Class of 1994.

Do grizzlies hold secrets about human heart disease?

For years, scientists have known that bears and humans share a similar anatomy. Surprisingly, when grizzly bears hibernate, their heart muscle takes on very similar characteristics to certain forms of human heart disease. Yet in the spring, the animal's heart quickly recovers to normal activity. The problem has always been convincing a dangerous creature to cooperate in a meaningful study.

Meet Mica and Luna, a pair of year-old grizzlies taking part in groundbreaking research by Dr. Lynne Nelson, a board certified veterinary cardiologist with Washington State University's College of Veterinary Medicine. Before the pair could even open their eyes, Dr. Nelson and her staff took over as surrogate mothers, raising the cubs by hand. For eight weeks, their hungry cries could be heard in Dr. Nelson's office, and even in her home where they required around the clock feeding. "It was a lot like being a new mom," said Dr. Nelson. "The cubs needed to be fed every two hours, but the results are worth it."

The cubs are very friendly, even to the point of being docile. More importantly, they are willing patients when it comes to noninvasive ultrasound tests or being weighed. In fact, the animals often make a game out of having their blood pressure taken.

Already, the early discoveries have been remarkable. When Dr.



Courtesy Spokesman-Review

Nelson and her team woke up the slumbering bears from their winter sleep, the cubs were eager, albeit a bit sluggish. Using a portable ultrasound machine, Dr. Nelson discovered the bear's blood had turned to a thick gelatin-like consistency, with the heart performing at just a few beats per minute. "That was truly exciting," said Dr. Nelson, who believes this research could have direct impact on humans who suffer from a similar condition.

The American Heart Association reports that one in five people have some form of cardiovascular disease, a statistic that appears similar for animals. Through this multi-year study, Dr. Nelson hopes to learn more of what might help other animals, as well as humans, recover from heart disease.

The study involving Mica and Luna will eventually add to additional studies into the developing muscle and skeletal systems of these animals. But along the way, these bear cubs have found a special place in Dr. Nelson's heart, as well as her research journals. It's easy to see they have developed a special bond. "It is a privileged feeling to be friends with Mica and Luna," Dr. Nelson said. "I don't think there is any animal that is as fun-loving and enjoys life as much as a bear cub."

Gene Mutation Key to Collie Illness (continued from page 1)

It's not just collies that are affected either. Percentages of Shetland sheepdogs, Australian shepherds, Old English sheepdogs, and especially collies seem to be susceptible, even with very low doses. There is even a subset of the human population with similar drug sensitivities that may also involve an absent or incomplete form of p-glycoprotein.

"The reaction can be fatal if not treated," Dr. Mealey said. "It can be an even bigger problem because susceptible dogs can be exposed to high concentrations of drug inadvertently by ingesting Ivermectin that carries through the feces of sheep, cattle, or horses who have been treated."

Ivermectin is an antibiotic produced from a fungus first isolated from a Japanese soil sample. Veterinarians use it commonly to eliminate certain parasites in a wide variety of animals. The threshold is so low for dogs susceptible to the drug that a toxic effect can begin at dosages as low as 1/200th of the toxic dose for normal dogs. Some side effects of Ivermectin toxicity include dilated pupils, drooling, an uncoordinated gait, and vomiting, all of which can progress to respiratory paralysis, coma, and death.

Ivermectin is not the only drug that can affect susceptible dogs. Others substrates for P-glycoprotein include loperamide,

digoxin, ondansetron, many chemotherapeutic drugs including vincristine, vinblastine, and doxorubicin, and others.

Human Cancer Research to Follow

Perhaps the most exciting development from Dr. Mealey's work may be the direct impact on treatment of brain cancer in humans.

"The biggest challenge to attacking these deadly human diseases is trying to get cancer fighting drugs past the blood-brain barrier," explained Dr. Mealey. Adding, "By knowing how these drugs can easily gain access to the brain in collies carrying this mutant gene, we may unlock the key to fighting a host of diseases that affect the brain in people. That's truly exciting."

Screening test available

With the discovery of the mutant MDR1 gene, Dr. Mealey has developed a simple DNA testing to screen for dogs with the mutation. With this tool, pet owners and veterinarians can discover susceptible dogs and breeders can use the information to avoid the mutation in susceptible breeds.

"The test relies on just a little gum tissue from a tooth brush that the owners can just send in to the laboratory," Dr. Mealey said.

A simple test that can save Kenny's life, and the lives of many other animals just like him.

For more information, contact Dr. Mealey at 509-335-2988
Or www.vetmed.wsu.edu/depts-VCPL

Update...

By reading about this dramatic discovery online, people that are otherwise not affiliated with WSU have begun sending donations to support Dr. Mealey's research.

"I'm surprised and very pleased," said Dr. Mealey. "The generosity of the public tells me two things. First, they love their animals and will do anything to protect them and to improve the quality of their life. Second, they recognize the value of research like this and how their gifts can help. I'm truly grateful."



GROUNDBREAKING EVENT: WSU CVM HOSTS WORLD IMAGING EXPERTS

International gathering reveals new insight into horse problems

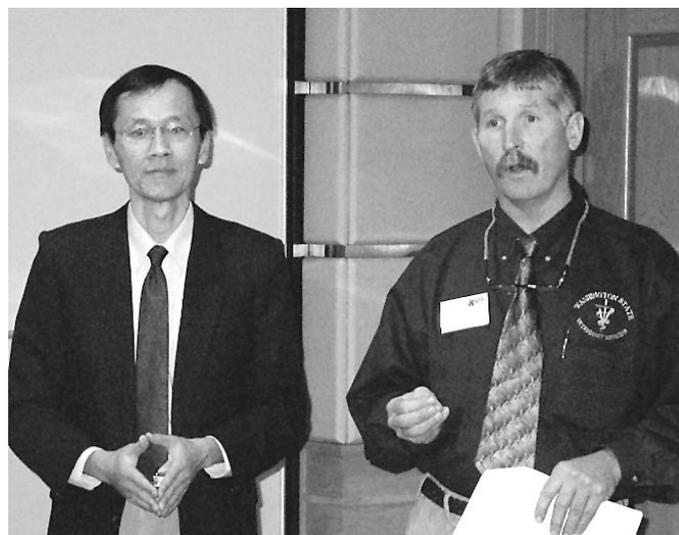
Medical imaging and horse experts from around the world gathered in Coeur d'Alene, Idaho, in January, for a first-of-its-kind pairing of magnetic resonance imaging technology to equine practice.

Thanks to recent MRI advancements, veterinarians are getting an unsurpassed look at lower leg injuries in equine athletes and companions.

"It's groundbreaking in the sense that we brought some of the top radiologists and equine surgeons together to see problems in horses with MRI that in the past were difficult, if not impossible, to discover without exploratory surgery," said Dr. Russ Tucker, chief of medical imaging at the WSU College of Veterinary Medicine.



Courtesy Moscow-Pullman Daily News



The program was led by Dr. Charles Ho, a radiologist with a special interest in musculoskeletal MRI and one of the most prestigious medical imaging specialists in the nation. Dr. Ho has consulted with WSU's faculty over their unmatched veterinary imaging capabilities before. His credentials include working for the National Football League's Denver Broncos.

The MRI, common in human medicine, uses magnetic energy instead of x-ray radiation to produce a series of images of both the bone structure and soft tissues. WSU's veterinary college pioneered the use of the MRI in horses.

WSU researcher is lead immunologist for Johne's disease push

Dr. William Davis of WSU's College of Veterinary Medicine has been selected to join a team working to battle Johne's Disease, also known as paratuberculosis, a major emerging problem in the dairy industry. The research is being funded through a \$4.4 million grant from the USDA.

Dr. Davis has been named the lead immunologist for the Johne's Disease Integrated Program, administered through the University of Minnesota. The group will study the immune response to this pathogen and lead the development of a vaccine.

Dr. Davis is the director of the WSU Monoclonal Antibody and Flow Cytometry Facility based in the WSU Department of Veterinary Microbiology and Pathology. His focus is the study of the immune response to infectious agents and the development of vaccines. Specifically, he will analyze the T-cell response to different components of the paratuberculosis microorganism.

Johne's disease is a contagious, chronic, and usually fatal infection caused by an agent related to those that cause Hansen's disease and tuberculosis. The disease is distributed worldwide. A national study of U.S. dairies found that approximately 22 percent of farms are affected.

Dr. Davis has an extraordinary tenure in immunology. He is a full professor who has been on the faculty since 1968. His expertise is the cellular immunology of animals and he has published almost 300 papers on a broad range of topics in this field.

The Washington Animal Disease Diagnostic Laboratory was approved in January to begin testing for Johne's disease.



Awards/Achievements/Accolades

David Bielski and his wife **Sandi Bielski**, owners of Petland Cemetery in Aberdeen, Washington, have established a memorial scholarship in the name of David's father-in-law, **Dr. J.R. Fuller ('50)**. They will donate \$1 per private cremation that is performed by his company. The Bielskis expect to contribute close to \$5,000 annually and will offer three to four scholarships each worth between \$1,000 and \$1,200.



Dr. W. Sue Ritter, professor and researcher in the WSU College of Veterinary Medicine's Programs in Neuroscience and its Center for Reproductive Biology, was selected as the WWAMI (Washington, Wyoming, Alaska, Montana, and Idaho) Science and Medicine guest lecturer at the University of Washington's Medical School. Each year, the school selects one outstanding scientist for this distinction.

Dr. Jack Reynolds ('75) was awarded the 2004 WSU College of Veterinary Medicine's Distinguished Veterinary Alumnus Award for Excellence in Teaching and Research. Dr. Reynolds is the Senior Vice President of Global Research and Development, and head of Worldwide Drug Safety and Evaluation at Pfizer. He is credited with helping revolutionize the technology and approach to preclinical drug safety testing. Among the drugs he's helped lead to market quickly are Zolof, Celebrex, and Relpax.



Dr. Dean Smith ('49) has been awarded the 2004 Distinguished Veterinary Alumnus Award for Excellence in Practice. Dr. Smith is the former Washington State Veterinarian and was the director of the Oregon State University Diagnostic Laboratory. He also spent a year with his family in Egypt as a Fulbright lecturer at the University of Cairo.

Described by friends and coworkers as a "brilliant diagnostician," his greatest achievement may be as an "exemplary model for young professionals" that encourages others to become veterinarians by following in his footsteps.

Dr. Rodney Page and **Dr. Urs Giger** have been awarded the WSU veterinary college's prestigious McCoy award for 2004. Dr. Page's dedication to cancer research spans 22 years, starting with his residency in oncology and internship in small animal medicine and surgery from 1982-84 at Colorado State University. He is currently a Cornell professor of medicine and director of the Sprecher Institute for Comparative Cancer Research, which studies cancer in both humans and animals. Dr. Giger heads up a strong research program in hereditary blood and metabolic diseases as a Charlotte Newton Sheppard Professor of Medicine and chief of the section of medical genetics at the University of Pennsylvania.



Dr. David Rector, Washington State University assistant professor, is among 20 recipients of the Arnold and Mabel Beckman Foundation's 2004 Young Investigator Awards. The grant is a three-year award totaling \$240,000 given to some of the nation's most promising young faculty members who are in the first three years of a tenure track appointment. Rector's work seeks to understand and define a unique, natural ability among harbor seals. The mammals can sense extremely small changes in hydrodynamic forces in the water caused by passing fish or vessels. As a result, they process that information in their brains and track prey or other objects at great distance without any other sensory clues such as sight, smell, or sound. Rector and his colleagues hope to eventually produce scientific instrumentation that mimics the seal's unique ability.





During one of our recent Golden Graduate 50th Anniversary celebrations, I was struck by the speech given by Dr. John Gorham (WSU '46). At age 84, he continues to play a key role here at WSU's College of Veterinary Medicine in the Department of Veterinary Microbiology and Pathology. He was invited to speak to this group of former students, as one who first taught them their profession half a century ago. Delightfully, he used phrases like "you youngsters today," and spoke to them as any proud teacher would to successful students.

It's this connection that makes WSU's College of Veterinary Medicine truly a special place. The continuing interaction between professors and students lasts long after graduation.

There are a number of specific funds you can contribute to in the names of faculty members that help further the education of WSU veterinary students. Check the list to see if there's a former educator that you remember, or perhaps an area of study you'd like to support:

- **Dr. R. Keith Farrell**
Given to a veterinary student who has worked in veterinary cryogenics
- **Dr. Orville Frost**
Given to a fourth-year student showing the greatest proficiency in theriogenology

- **Dr. John Gorham Comparative Medicine Fund**
Recognizes academic achievement in clinical laboratory animal medicine or comparative medicine who has performed research in these fields
- **Dr. Phillip Gollnick**
Given to a student studying exercise science
- **Dr. Gordon H. Keown Fund**
Recognizes outstanding performance and dedication by a staff member of the equine division in providing exemplary care to patients—for continuing education and professional development
- **Dr. Paul Klavano Pharmacology Award**
Given to a student with a strong interest in pharmacology
- **Dr. Jon McCurdy Fund**
Recognizes exceptional proficiency in anatomy courses in the professional veterinary medical core curriculum
- **Dr. John McCoy Memorial Fund**
Given to an outstanding worker in the field of clinical veterinary medicine. The individual receiving the award gives a lecture or a series of lectures at the WSU College of Veterinary Medicine.
- **Dr. Richard L. Ott Endowment For Graduate Research In Small Animal Medicine**
Given to a veterinary graduate student actively engaged in small animal research
- **Dr. Ghery Pettit/Dr. Jack Robinette Surgery Fund**
Awarded to a resident in small animal surgery
- **Dr. Arturs Vitums Veterinary Anatomy Fund**
Recognizes academic achievement in veterinary, microscopic, or developmental anatomy
- **Dr. Richard Wescott Fund**
Given to a second- or third-year student interested in parasitology

America's Horse television features WSU veterinary college

Lights, Camera, Cue the Horse

The bright television lights of the Outdoor Life Network's popular show *America's Horse* were turned onto the equine specialists of WSU's College of Veterinary Medicine in April.

Host Dr. Kenton Morgan had heard about WSU's wonderful tools for diagnosing equine problems, but exclaimed, "I never realized you had such a high degree of expertise here, especially when it comes to the diagnosis of equine problems."

For two days, the show's crew filmed a close-up look at everything from the inside of a horse's trachea while it ran on a high speed treadmill to watching veterinarians use advanced medical imaging to "see" inside a horse's injured leg using magnetic energy. The crew had planned to shoot two segments for the program, but left Pullman with much more. "We probably have enough for seven or even eight segments," said show producer Van Williams.

Beginning in the fall, you can expect to see WSU's CVM profiled at least once a month during a segment on the show called "Your Horse's Health."

"We're proud to have the chance to show off some of this school's best assets and brightest people to a national audience," said Warwick Bayly, dean of the College of Veterinary Medicine.



WSU to upgrade horse trailer

A new equine horse trailer at the WSU Veterinary Teaching Hospital means horses can be delivered to the hospital year round. The old trailer will be replaced with a new six-horse trailer that features a mare/foal stall. WSU driver Rick Fredrickson makes the trek at least twice a month to Western Washington to pick up horses at Emerald Downs racetrack and Donida Farms in Auburn, and Homestretch Farms in Edgewood, and transports them to and from the veterinary teaching hospital in Pullman. "I really think the service will grow because it is such a convenient thing for people on the west side of the state," says Frederickson. "I'll be coming all year round...rain, snow, or shine."

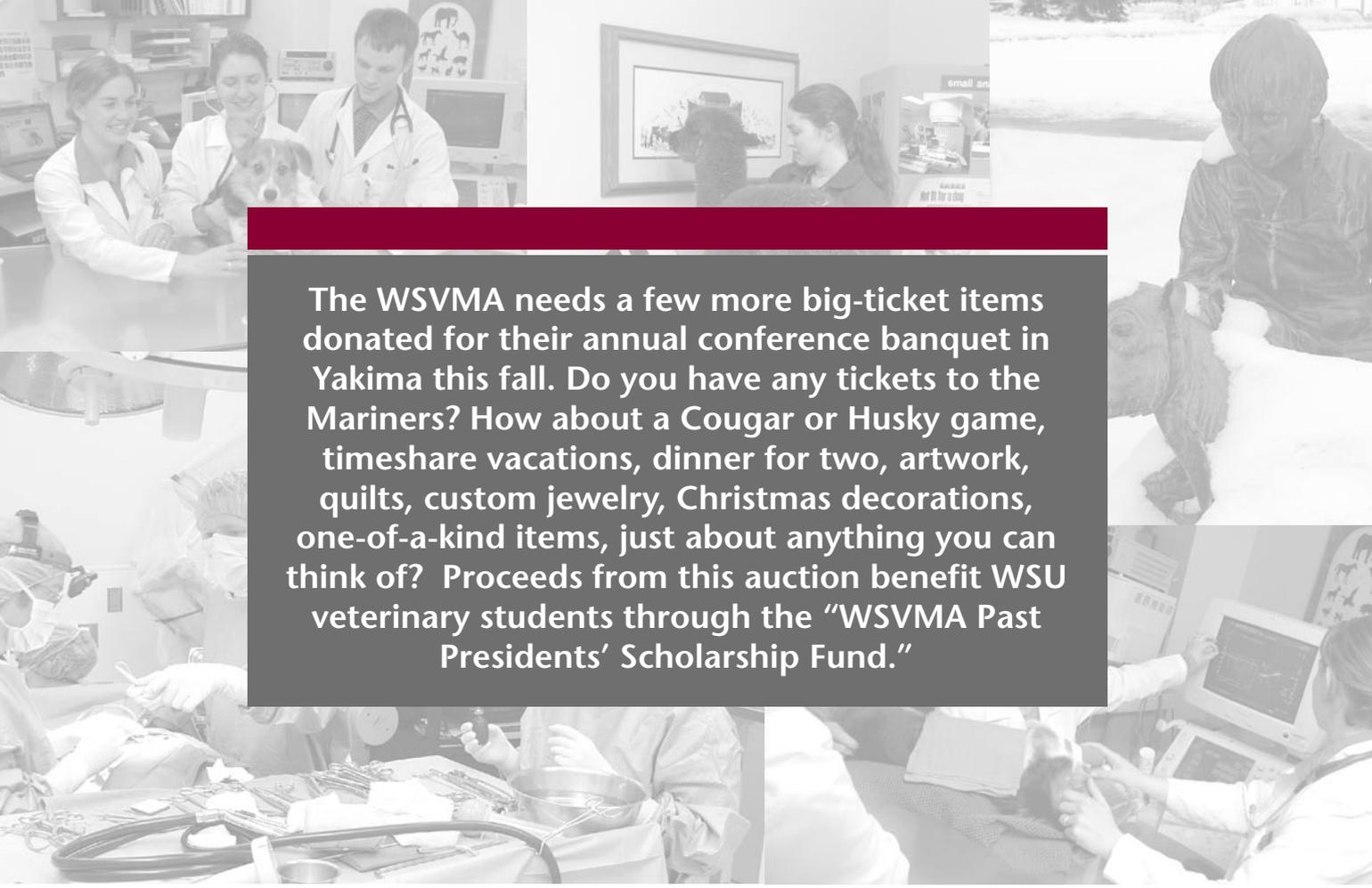
For more information, contact Lynette Kinzer at the Large Animal Appointment Desk at 509-335-0718.



Important Dates to Remember

2004

Aug. 20	White Coat Ceremony—Pullman
Aug. 21-22	Seattle Pet Expo
Aug. 23	Classes Start
Sept. 10	Dean's Reception—Seattle
Sept. 11	WSU vs. Colorado—Seattle
Sept. 12	Day at the Races—Emerald Downs—Auburn
Sept. 18	WSU vs. Idaho—Pullman
Sept. 24	Equine Health Advisory Board Meeting—Pullman
Sept. 25	2004 Horse Conference and Expo—Pullman
Oct. 1-3	WSVMA Convention—Yakima
Oct. 8-9	CVM Class Reunions, Pullman, Washington Classes: 1964, 1966, 1974, & 1984
Oct. 9	WSU vs. Oregon—CVM Pre-game Event—Pullman
Oct. 14	CVM Student Research Symposium—Pullman
Oct. 16	WSU vs. Stanford—Homecoming—Pullman



The WSVMA needs a few more big-ticket items donated for their annual conference banquet in Yakima this fall. Do you have any tickets to the Mariners? How about a Cougar or Husky game, timeshare vacations, dinner for two, artwork, quilts, custom jewelry, Christmas decorations, one-of-a-kind items, just about anything you can think of? Proceeds from this auction benefit WSU veterinary students through the "WSVMA Past Presidents' Scholarship Fund."

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