Louisiana State University

School of Veterinary Medicine

Equine Health Studies Program

Dedicated to the Health, Well-Being and Performance of Horses through Veterinary Research, Education and Service

Fall 2004

EHSP Scientists Receive Enhancement Grant from Board of Regents

The Louisiana State University (LSU) School of Veterinary Medicine (SVM) Equine Health Studies Program (EHSP) recently received a $170,000 Enhancement Grant from the Louisiana Board of Regents that will be matched by $70,000 from the EHSP. The grant was written by a multidisciplinary team of scientists from the School of Veterinary Medicine (Rustin M. Moore, Ashley M. Stokes, Mandi J. Lopez), Biological and Agricultural Engineering (Todd Monroe), Kinesiology (Li Li) and Mechanical Engineering (Michael C. Murphy) with input and assistance from numerous other SVM faculty and graduate students. Grant funds will be used for equipment purchases to augment the EHSP's research capabilities, particularly those of the Laboratory for Equine and Comparative Orthopedic Research (LECOR) and the Biomechanical Testing Laboratory. The Enhancement Grant complements a Governor's Biotechnology Initiative grant awarded to EHSP scientists last year. Combined with existing resources, instrumentation purchased with grant funds will provide the necessary equipment for these and other scientists to conduct leading-edge, extensive, multidimensional veterinary and comparative orthopedic and biomedical research. The resources provided by this grant greatly accentuate the research capabilities of the EHSP and will have an immediate, positive impact on faculty recruitment and retention, and undergraduate, veterinary and graduate student recruitment, education and placement. Additionally, integration of the new equipment with existing resources contributes to the comprehensive, multidisciplinary equine and comparative orthopedic research program that is unique to the EHSP,

(Continued on page 16)

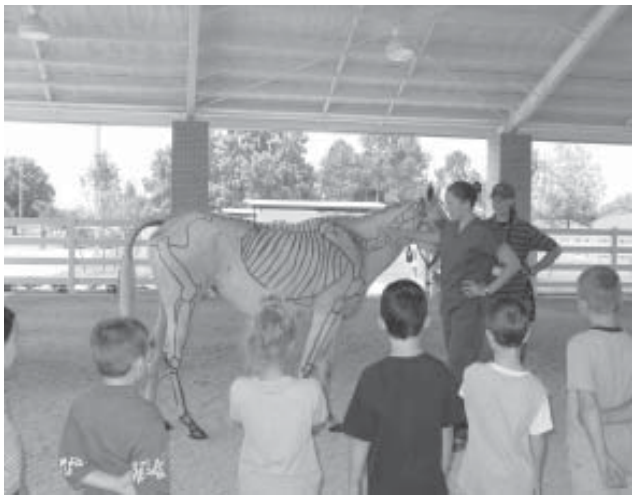
Equine Isolation Unit Fund Raising

The Equine Health Studies Program (EHSP) has made several recent improvements to its facilities. The new Equine Lameness and Performance Evaluation Unit opened in April of this year, and construction of the Equine Intensive Care Unit will be completed in September of this year. The next phase of the EHSP's facility enhancements is the construction of a new Equine Isolation Unit. The LSU Equine Clinic provides comprehensive, advanced veterinary care for approximately 3,000 ill and injured horses each year.

Currently, the Equine Clinic has limited isolation facilities to house or quarantine ill and injured horses that have infectious and potentially contagious disease such as strangles, diarrhea (main differentials being salmonellosis, *Clostridium difficile*, etc.) and acute neurologic diseases (main differentials are rabies, Herpesvirus myeloencephalitis, Eastern and Western encephalitis, and West Nile virus). Our current isolation facilities are insufficient to accommodate all horses that require hospital admission or those that develop problems (diarrhea) once hospitalized. Because of insufficient isolation facilities, we are sometimes forced to refuse admission of horses with diarrhea or other infectious, potentially contagious diseases, and/or to treat and maintain hospitalized horses in another "semi-isolation" area. "Construction of a new, expanded Equine Isolation Unit is vital for the LSU Equine Clinic to be able to serve the needs of the horse-owning public and private veterinarians who rely upon us for referral and treatment of critically ill horses with infectious and potentially contagious disease," said Dr. Rustin Moore, EHSP director.

(Continued on page 17)

Table of Contents



Student workers from the EHSP painted this horse and assisted Dr. Ashley Stokes as part of the LSU SVM's Pets & Vets program to show the children the anatomy of the horse.

Dr. Martin Vidal explains the horse treadmill to children participating in the LSU SVM's Pets & Vets summer program.

Mark Your Calendars

4th Annual Stallion Service Auction Bidding Begins
October 15, 2004
For more information call 225-578-9500 or visit www.equine.vetmed.lsu.edu.

Equine and Small Animal ICUs Dedication, Open House and Tours
October 22, 2004
Join us for the dedication of the new Equine ICU. Call 225-578-9870 to RSVP.

Veterinaire Extraordinaire Gala
November 6, 2004
Join us for the Fourth Annual LSU SVM Gala at the Audubon Aquarium of the Americas in New Orleans on Saturday, November 6. For more information call 225-578-9900.

United States Pony Club Meeting
January 14, 2005
The LSU-EHSP will host the U.S. Pony Club for a tour during their annual meeting, January 12-16, 2005, at the New Orleans Sheraton Hotel. For more information visit www.ponyclub.org.

LSU SVM Annual Open House
February 19, 2005
Come visit the School of Veterinary Medicine and see a variety of animals and exhibits. For more information call 225-578-9900.

Animals in Art Exhibit
March 19-April 17, 2005
Come to the LSU SVM Library and view this annual art exhibit featuring artists from around the world. For more information call 225-578-9900.

6th Annual Kentucky Derby Party
Saturday, May 7, 2005
This annual event will take place at the Country Club of Louisiana.

Equine Health Studies Program

LSU•SVM
E H S P

Dr. Rustin M. Moore *Director, Equine Health Studies Program*
Dr. Michael G. Groves *Dean, School of Veterinary Medicine*
Dr. Peter F. Haynes *Executive Associate Dean*
Ginger Guttner *Editor*

Published by the Equine Health Studies Program. Correspondence should be addressed to: Equine Health Studies Program, School of Veterinary Medicine, Louisiana State University, Baton Rouge, Louisiana 70803.

Telephone: (225) 578-9500 ***E-mail: equine@vetmed.lsu.edu***
Internet: www.equine.vetmed.lsu.edu

Director's Message

Greetings from the LSU Equine Health Studies Program! Several positive events have happened since our last issue of the EHSP Newsletter. EHSP scientists were awarded a $170,000 Enhancement Grant from the Louisiana Board of Regents to acquire state-of-the-art equipment for integrating biomechanics into equine and comparative orthopedic and biomedical research. This will augment our program substantially, making it second to none.

Our Fourth Annual Kentucky Derby Party was a big success with good attendance, great food and spirits, and a fun time for all. Proceeds from the event benefited the Equine Isolation Unit construction fund. Please plan on attending the party next year on the first Saturday of May.
The new Equine Lameness and Performance Evaluation unit opened in April and has greatly enhanced the LSU Equine Clinic and our ability to evaluate lameness and poor performance. This covered pavilion offers us an ideal environment with appropriate footing to thoroughly and safely evaluate lame horses.

Construction of the new, 4,000 square foot, centralized, climate-controlled Equine Intensive Care Unit is nearing completion and the unit is scheduled to open this month (September). We invite everyone to join us for the dedication and open house from 5 – 7 p.m. on Friday, October 22, for this state-of-the-art facility that will enable us to more efficiently and effectively deliver advanced veterinary care to the ever-increasing number of critically ill and injured horses admitted to the clinic. Naming opportunities are available for ICU stalls as well as the entire unit. Interested persons or companies are encouraged to contact us.

Our Fourth Annual Stallion Service Auction, a multiple-breed, internet-based auction of stallion seasons for the 2005 breeding season will begin October 15. Proceeds from this auction will benefit construction of the new Equine Isolation Unit. We are in need of acquiring funds for this vitally important facility, which will enable us to admit, quarantine and effectively treat all ill horses with infectious, contagious disease that need our service. We ask people that have an interest in helping with fundraising activities or those individuals or companies interested and capable of making a tax-deductible, charitable gift to contact us. Naming opportunities are available.

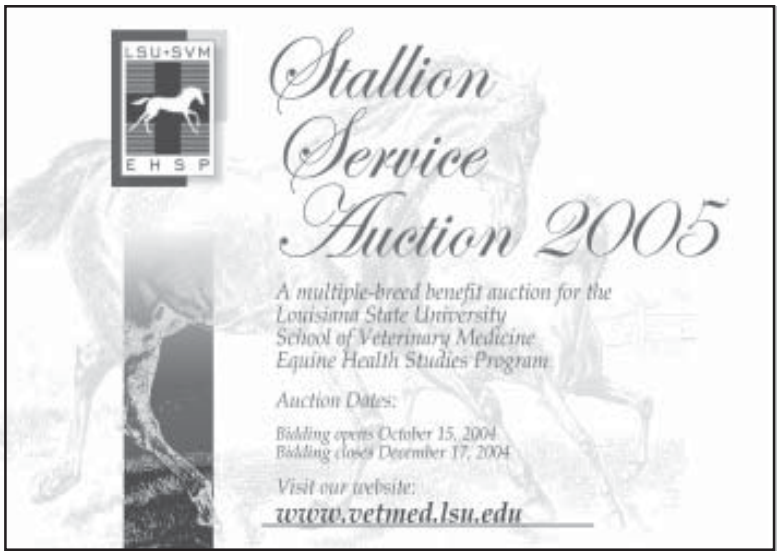
The EHSP's 2004 Research Report, the inaugural issue, was published recently. An electronic copy (PDF) of it can be downloaded (Adobe Acrobat) from our website (www.equine.vetmed.lsu.edu). Limited printed copies are available; persons interested in obtaining a printed copy can contact us via e-mail: equine@vetmed.lsu.edu.

We continue to make improvements or enhancements to the Equine Clinic barns and hospital so that we maintain a state-of-the-art facility that enables us to deliver comprehensive, advanced veterinary medical, surgical and reproductive care for ill and injured horses. Persons or groups interested in seeing the Equine Clinic and its many improvements or those individuals or organizations wishing to use our facility to convene business meetings are invited to contact us.

We have plans for enhancing the Equine Performance Evaluation Laboratory, which includes a high-speed treadmill, kinematic gait analysis system and force plate and equipment for performing dynamic endoscopy, with equipment for performing electrocardiography during exercise and immediate post-exercise echocardiography (ultrasound of the heart). This enables us to offer comprehensive performance evaluation of horses with poor performance/exercise intolerance as well as "fitness evaluation" of athletic horses.

Dr. Rustin M. Moore

As always, we are indebted to all of our friends and supporters for their generosity and assistance. We rely heavily upon this support in order to renovate, expand and improve our facilities, which enhances our overall program, and helps us to remain one of the elite equine biomedical programs in the United States.



Equine Lameness and Performance Evaluation Unit a Major Advance in Equine Health Industry

Faculty at the LSU School of Veterinary Medicine Equine Health Studies Program (EHSP) recognized the vital importance of athletic injuries involving the musculoskeletal system to the overall health and vitality of the Louisiana equine industry and submitted a grant for the Governor's Biotechnology Initiative grant program in the autumn of 2002. Receipt of capital outlay and recurring annual funds from the Governor's Biotechnology Initiative Program for enhancing basic and applied equine musculoskeletal research has already begun to have a dramatic impact on the EHSP, which should translate into major advances and improvements for the equine industry. These advancements should propel the EHSP into becoming one of the elite equine biomedical programs in the country.

Mrs. Jean Pfeiffer Burt of Hilton Head Island, South Carolina, has made a planned gift that will benefit the Equine Health Studies Program. Her estate will provide for a $600,000 gift to the LSU Foundation to establish the Jean P. Burt Fund. This fund will be used to support and benefit the programs and activities of the EHSP, including scholarships for veterinary students and faculty support. When the Jean P. Burt Fund is established, the equine lameness building will be named the Pfeiffer-Burt Equine Lameness and Performance Evaluation Unit. "Mrs. Burt's legacy gift will provide tremendous support to our equine program. LSU has made great strides to propel the EHSP to the status of an elite equine biomedical center. By making this estate gift, Mrs. Burt expresses a commitment to the future of LSU's equine program," said Dean Michael G. Groves.

New Equine Lameness and Performance Evaluation Unit.

Since the Burt estate gift has not yet been established, it was acquisition of capital outlay funds through the Governor's Biotechnology Initiative Grant that enabled the EHSP to move forward with construction of the new Equine Lameness and Performance Evaluation Unit, which was recently completed. The grand opening occurred on April 2. "This facility is vitally needed to facilitate efficient and effective evaluation of the many horses that are admitted to the Equine Clinic for evaluation of lameness and poor performance," said Dr. Rustin Moore, professor of equine surgery and EHSP director. Upon establishment of Mrs. Burt's estate gift, a farrier's room, examination and diagnostic room, and two holding stalls will be constructed at the north end of the 75' x 125' pavilion, and the facility will be named the Pfeifer-Burt Equine Lameness and Performance Evaluation Unit. "We are making steady progress toward expanding and renovating our clinical and research facilities, which is vital to the future of the research, education and service components of our program," said Dr. Moore. "The future of the LSU EHSP is very bright thanks to a combination of generous friends and supporters, like Mrs. Burt, and our team of dedicated faculty and staff," said Dr. Moore.

The pavilion provides an ideal environment and surface to evaluate lameness in horses, including two non-slippery concrete jogging paths and a 55' x 125' area of crushed packed limestone base, providing a safe and effective area for evaluating horses while lunging or being ridden. "We are sure that horse owners, trainers, breeders and enthusiasts are just as excited as we are that horses will no longer have to be evaluated among the trucks and trailers in the parking lot," said Dr. Daniel Burba, professor of equine surgery. "This unit complements our existing arsenal of diagnostic capabilities for evaluating horses with lameness and poor performance, including radiography,

Anesthetized horse positioned for a CT exam of the distal limbs.

(Continued on page 18)

Performance Evaluation of the Athletic Horse

Jeremy D. Hubert, BVSc, MRCVS, MS, Diplomate ACVS
Assistant Professor, Equine Surgery

Many trainers or owners of equine athletes are aware of their horses' inherent ability and are just as aware when they feel the horse is not performing up to their expectations or standard. However, it is often a diagnostic challenge for the veterinarian in the field to evaluate the horse proficiently and sufficiently enough to determine the reason or reasons why the horse is performing poorly. Methods and techniques for performance evaluation have been developed that permit comprehensive evaluation of these athletic horses. The advent and use of high-speed treadmills at major referral centers enable the clinicians at such institutions to observe the horse working at high speed; certain disorders that cause poor performance are only manifested at high speed or are a combination of problems that occur concurrently at high speeds or in fatiguing horses. It is possible for the trainer to review training techniques and efforts to quantify the response to training by having the horse's performance evaluated; this is common practice in the human athlete and is possible in the equine athlete.

In order to have your horse evaluated for poor performance the veterinarian will require a detailed history that includes a complete medical history, a description of the presenting complaint, diet, training regimes and the horse's complete performance record. This information may be pertinent to ultimately provide a reason for poor performance. Therefore, it is important to provide as accurate and complete information as possible to facilitate determination of the likely cause of the poor performance. Performance records are important to indicate the onset of poor performance to differentiate from the horse that has never performed well and is unable to compete at the level desired by the owner/trainer.

The initial examination will involve a thorough physical examination of all body systems to observe for any clinical signs of disease. It is easy to focus only on systems involved in exercise and ignore other major systems that could be exerting a profound impact on performance. This will often include blood sampling for a complete blood count as well as a serum chemistry analysis. These tests may also help the clinician rule out other major systems such as kidney, muscle and liver that could contribute to poor performance.

As mentioned before, certain problems are only observed at high speed, however, the veterinarian will want to perform several resting exams or evaluations at a slow gait (jog/trot) on a lead shank before examining the horse on the high-speed treadmill. This will rule out any overt lameness that could be potentiated or worsened by exercising on the treadmill that has a surface very different from that which the horse is familiar. Mild lameness is also often a cause of poor performance and is difficult to evaluate at high speed on the treadmill. Horses that illustrate a mild subtle lameness to the clinician may warrant a full lameness evaluation before continuing with high-speed performance evaluation, and certainly the lame horse is not indicated for a treadmill exam even if other abnormalities are suspected due to the risk of further injury. At this point, radiographs, ultrasound, nuclear scintigraphy (bone scan), magnetic resonance imaging (MRI), computed tomography (CAT scan), and/or digital radiography may be warranted.

After ruling out a lameness component, the horse will undergo a resting cardiac (heart) examination in order to observe any cardiac deficits. This will involve cardiac auscultation, an electrocardiogram (ECG) and an echocardiogram (ultrasound). Cardiac auscultation will reveal any murmurs (abnormal sounds that suggest abnormal flow in the heart associated with problems with the heart valves) or dysrhythmias (abnormal rate or rhythm of the heart beat). The heart rate and rhythm can be further evaluated by performing an ECG, and

(Continued on page 20)

Dynamic endoscopy of the upper respiratory tract during exercise on the high speed treadmill.

Equine Health Tips

For more information on several diseases or injuries of horses, please visit our website (www.equine.vetmed.lsu.edu) and click on Equine Health Tips tab and expand your knowledge.

New Equine Intensive Care Unit Opens at LSU Equine Clinic to Provide Emergency and Critical Care Service

Alsoiso C. D. Bueno, MV, MS,
Diplomate ACVS
Clinical Instructor
Equine Emergency Surgery

The emergency and critical care field has been rapidly evolving and becoming a more common practice in veterinary medicine. According to the Veterinary Emergency and Critical Care Society (VECCS), an Emergency & Critical Care Center is a facility specifically designated to be operated, staffed and equipped 24 hours a day to provide a broad range of veterinary emergency and critical care services.

The LSU Equine Clinic is open for emergency admittance, evaluation and treatment of critically ill and injured horses 24 hours a day, 365 days a year. On-duty veterinarians are available for consultation or for referral of horses. The Equine ICU is staffed by veterinary technicians or nurses that provide around-the-clock monitoring, administer treatments to hospitalized horses, and assist with the diagnostic work-up of horses admitted on an emergency basis. A team of board-certified veterinary specialists provide comprehensive, advanced veterinary medical, surgical and reproductive (obstetrical) care. Veterinary specialists in anesthesiology, clinical pathology, ophthalmology and radiology are on call to provide consultations, ancillary services or assist with horses admitted on an emergency basis.

Approximately 20-25% of horses admitted to the LSU Veterinary Teaching Hospital and Clinics require some level of emergency and critical care services. Critically ill horses are generally referred to this 24-hour facility by veterinarians in Louisiana and surrounding states. The level of care required is dependent upon the underlying disease and the extent of the accompanying abnormalities. Some of the emergency and critical care services include: around-the-clock monitoring; assisting with thermoregulation (body temperature control) by altering the environmental temperature in cases of environmentally induced hyperthermia, particularly in foals with *Rhodococcus equi* pneumonia or horses that are anhidrotic (unable to sweat); administering intravenous fluids for horses that are dehydrated or in shock or those that have electrolyte, acid-base or metabolic disturbances; administering medications as well as enteral and parenteral nutrition; administering intranasal oxygen to foals or adult horses with respiratory disease; drainage or evacuation of fluid that accumulates in the pleural (chest) cavity due to pleuro-pneumonia; and emergency surgical intervention and intensive postoperative medical care in horses with acute gastrointestinal tract disease (colic). With the diagnostic and therapeutic advances made in the last several years in equine medicine and surgery, many critically ill horses with life-threatening diseases can be successfully treated, and even returned to athletic performance.

Horse with colic being adminstered intravenous fluids.

Approximately 60-65% of horses that are admitted to LSU Veterinary Teaching Hospital requiring emergency and critical care services have acute gastrointestinal tract disease (colic) and approximately one-half of these colics necessitate exploratory surgery. The second most common presentation involves neonatal foals with life-threatening illnesses and it comprises approximately 10% of our emergency and critical care caseload. This is followed by traumatic injuries (lacerations, fractures, open joint injuries), respiratory distress, acute neurologic disease, obstetrical or other emergencies of the reproductive tract, and ophthalmologic emergencies such as melting corneal ulcers or ocular/periocular trauma.

Construction of the new Equine Intensive Care Unit (EICU) expands our ICU from a two-stall to a 4,000 square foot, 10-stall centralized, climate-controlled, state-of-the-art facility that contains 6 (12'x12') stalls for housing adult horses and 4

(Continued on page 7)

Horse demonstrating signs of abdominal pain due to colic.

Neonatal foal with nasogastric feeding tube and intravenous catheter.

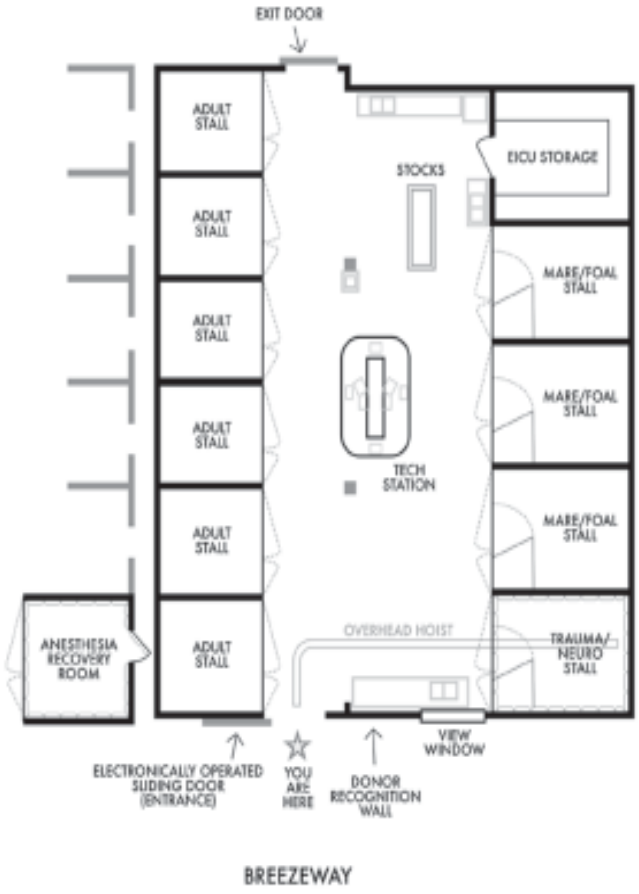
Intensive Care Unit ...

(Continued from page 6)

(12'x16') stalls specially designed for housing mares with sick foals. Additionally, one of the stalls is designed to accommodate horses with orthopedic/neurologic injuries/ illnesses; the walls and floor of this stall are heavily padded and it is equipped with an overhead mechanical hoist to assist horses that are unable to stand alone via sling support. The EICU also has an on-site clinical pathology laboratory for monitoring blood biochemical, blood gas and metabolic parameters. The facility is immediately adjacent to the equine surgery suites, diagnostic procedures rooms and the imaging (radiology, ultrasound and CAT scan) facilities. Additionally, television monitors in the EICU enables remote monitoring of horses in isolation and enteric precaution stalls by the on-duty ICU personnel.

"The new facility will enable us to more effectively and efficiently deliver comprehensive advanced veterinary care to the ever-increasing number of critically ill and injured horses admitted to the LSU Equine Clinic," said Dr. Rustin Moore, EHSP director. These critically ill and injured horses are referred to us from private equine veterinarians from the state and around the region. For more information on the LSU Equine Clinic, please visit our website www.equine.vetmed.lsu.edu or contact us via telephone 225-578-9500. Everyone is welcome to join us for the dedication ceremony and open house for our new EICU on Friday, October 22 between 5 – 7 p.m. Please RSVP by calling 225-578-9870.

Horse with a severe rear limb lameness being supported in part by a sling.



Architectural drawing of the floor plan for the new Equine ICU.

The Equine Health Studies Program 2004 Research Report is available as a PDF document on the EHSP website at www.equine.vetmed.lsu.edu. Persons interested in learning how EHSP scientists are promoting the health, well-being and performance of horses can view and download the inaugural issue of the report.

Summer Scholars Program Students Conduct Equine Research

Sixteen students in the LSU School of Veterinary Medicine and one veterinary student from Germany were selected to participate in the Summer Scholars Program, an introduction to biomedical research through research-driven activities. Of the seventeen students, four of them conducted equine research.

The 2004 Summer Scholars Program is funded by the Merck-Merial Veterinary Scholar Program and a grant from the National Institutes of Health (NIH). The Summer Scholars Program serves to further students' learning and experiences beyond the required classroom and clinical training. The program encourages innovative studies in human and animal diseases, and lends further understanding to veterinary careers in biomedical research.

Each year Merck-Merial selects veterinary schools to participate in its Animal Health Grants program, and LSU has received the funding for the fifth consecutive year. For the first time this year, students will receive grants from the NIH for summer study. There are only eight veterinary schools in the country with summer grant programs funded by both Merck-Merial and the NIH.

The grants provide $4,000 stipends to each student in addition to $775 for research supplies. Merck-Merial will also sponsor the students' participation at the Merck-Merial Symposium at Auburn University July 29 through August 1, where research will be presented by students from the 18 participating veterinary schools.

To participate in the Summer Scholars program, the students developed their own research proposals with the guidance of a faculty member, and a faculty committee selected the participants based on the proposals. All veterinary students had the opportunity to submit proposals.

The recipients of the ***Merck-Merial Summer Research Awards*** working in the area of equine research and their project titles are as follows:

Kimberly Halbert, a second-year student from Baton Rouge, La., "Equine myometrial smooth muscle cells in three-dimensional tissue assemblies: A model for the study of the pathogenesis of endotoxemia induced preterm fetal expulsion in the mare," faculty mentor Dr. Ame Walesby.

Carla Janning, a veterinary medical student from Hanover, Germany, "Antiviral Investigations against Equine Herpesvirus-1," faculty mentor Dr. Gus Kousoulas.

Tara Miska, a second-year student from Bridgeport, Conn., "Evaluation of the effects of monopolar radiofrequency energy and diode laser energy on equine distal intertarsal and tarsometarsal articular cartilage," faculty mentor Dr. Mandi Lopez.

Katrin Saile, a second-year student from Hamburg, Germany, "Mechanisms of specific and non-specific cyclooxygenase inhibitor drug-induced injury in equine right dorsal colon mucosal," faculty mentor Dr. Rebecca McConnico.

Fourth Annual Stallion Service Auction to Benefit Equine Health Studies Program

The LSU School of Veterinary Medicine announces its fourth annual Stallion Service Auction October 15 – December 17, 2004. The event is a multiple-breed internet-based benefit auction for the LSU School of Veterinary Medicine's Equine Health Studies Program (EHSP) to expand and renovate the Equine Clinic, specifically the Equine Isolation Unit.

The Equine Clinic provides advanced veterinary care and state-of-the-art services for equine patients. "Due to the expanding Louisiana horse industry, the Equine Clinic case load increases each year. To continue to provide efficient, quality care, it is necessary to expand the School's facilities," said Dr. Jill Johnson, auction organizer and webmaster.

Through an internet web site (**www.equine.vetmed.lsu.edu**), stallion owners donate a breeding session with their stud, either by live cover or by artificial insemination, to be bid on by mare owners locally, nationally and internationally for the upcoming 2005 breeding season. Auction bidding begins on the service at 50% of the standard stud fee so interested bidders have an opportunity for reduced-rate breeding to top quality stallions. Donors of breeding services also benefit from extensive marketing and advertising of their stallions and farms via the internet and equestrian publications.

Bidding begins October 15, 2004, but the site is open now for potential bidders and donors to view. Donations are welcomed and invited. Donations, including donated breeding services, are tax deductible for the fair market value regardless of the winning bid price.

The event, now in its fourth year, has raised funds for expanding the equine clinical facilities. This year's proceeds will go toward the construction of a new Equine Isolation Unit. The School needs $926,000 in order to build the Isolation Unit, which will be used to hospitalize critically ill horses with infectious and potentially contagious diseases, such as salmonellosis and strangles among others. This new state-of-the-art facility will replace the current two-stall isolation unit, and will enable the School to more effectively and safely treat horses with these conditions.

People in the News

Congratulations to **Dr. Daniel J. Burba** for selection by the School of Veterinary Medicine's Class of 2005 as their outstanding teacher and nominee for the Norden Distinguished Teacher Award. Dr. Burba should also be congratulated for his recent promotion to full Professor.

Congratulations to **Dr. Sharon Chirgwin** for her recent promotion from a postdoctoral research fellow to a Research Assistant Professor in the Department of Pathobiological Sciences. Dr. Chirgwin has brought to the EHSP a broad knowledge and expertise in molecular biologic techniques and will facilitate integration of this technology into equine biomedical research.

Congratulations to **Dr. Ashley M. Stokes** for her recent promotion from a postdoctoral research fellow to a Research Assistant Professor in the Department of Veterinary Clinical Sciences. Dr. Stokes' primary research interest is in the pathogenesis, prevention and treatment of laminitis in horses.

Congratulations to **Dr. Santos "Sammy" Ramirez** for successfully completing the American College of Veterinary Radiology (ACVR) certification examination. Dr. Ramirez completed an equine internal medicine residency at LSU in 1995 and became board certified by the American College of Veterinary Internal Medicine in 1996. He obtained his MS degree from LSU in 1997. He completed a residency in veterinary radiology at North Carolina State University in 2002. He returned to LSU as an Assistant Professor in August 2002.

Congratulations to **Dr. Glenn R. Pettifer** for promotion to Associate Professor with tenure. Dr. Pettifer is a board-certified veterinary anesthesiologist with clinical and research interests in anesthesia and analgesia, particularly as it relates to development and assessment of pain management strategies in horses and other species.

SVM Researchers Attend Equine Laminitis Research Panel and Meeting

EHSP scientists attending the Equine Laminitis Research Meeting and Panel in Louisville, Ky., on July 24-25.

More than 100 people including over 40 researchers and graduates students from around the world as well as representatives from industry, funding foundations and equine publications, gathered in Louisville, Ky., on July 24-25 to take part in the first Equine Laminitis Research Panel and Meeting. The event was sponsored by the American Association of Equine Practitioners Foundation, American Quarter Horse Association Research Foundation, Grayson-Jockey Club Research Foundation, Inc. and Morris Animal Foundation. The mission of the meeting was "to unravel the mysteries of laminitis to more fully understand the pathophysiology and risk factors involved in this disease in order to develop more effective prevention and treatment strategies," said Dr. Rustin Moore, organizer and moderator of the meeting. The goal of the meeting was "to share collective knowledge, current studies and future plans among multidisciplinary equine laminitis researchers and to help develop a strategic plan to most effectively and economically address important scientific issues regarding this elusive, frustrating and devastating disease," said Moore.

The morning session of the meeting consisted of a plenary lecture on the current status of laminitis research and a series of short presentations regarding new research findings from leading laminitis scientists. A question and answer session involving a Blue Ribbon Panel of experts held in the afternoon helped to summarize the current state of laminitis research, and a breakout workshop session that focused on 6 priority topics resulted in a list of conclusions and recommendations to help direct future research. Eleven researchers from LSU attended the meeting and included (pictured above from left to right) Dr. Rustin Moore, Dr. Ashley Stokes, Dr. Aloisio Bueno, Dr. Lee Ann Fugler, Erica Wallace, Dr. Brita Leise, Jenny Liford, Dr. Carlos Valadao and Dr. Susan Eades. Drs. Ralph Beadle and Wayne Waguespack also attended but are not pictured. Dr. Susan Eades served on the Blue Ribbon Panel, and she and Dr. Stokes gave oral presentations. Twenty-one research papers were presented, including 8 papers by LSU researchers (see scientific abstracts on pages 14-15), during the poster session.

Equine Agribusiness Council Tours LSU Equine Health Center

Julie Calzone
South Louisiana Equine
Agribusiness Council

The South Louisiana Equine Agribusiness Council (SLEAC) held its August meeting at the LSU School of Veterinary Medicine. Dr. Rustin Moore, director of the Equine Health Studies Program and SLEAC member, organized the meeting on behalf of the Council and LSU.

The South Louisiana Equine Agribusiness Council was created to grow the horse industry in Acadiana, with collaboration from the private, public and academic sectors, by achieving ways that will benefit the state's economy and create leadership and a model that will impact the entire state.

The Council has representatives from various performance horse and racing organizations such as the LSU Equine Health Sciences, LSU AgCenter, Farm Bureau and Acadiana and State economic developers. Evangeline Downs Racetrack & Casino and Louisiana Economic Development were instrumental in the development of the Council. A complete list of members can be found on the SLEAC website.

Dr. Moore led the tour of the LSU-SVM Equine Health Studies Program Complex and some of the group included: Oran Trahan, President of the Louisiana Horsemen's Benevolent & Protective Association; David A. Yount, Executive Director of Racing for Evangeline Downs Racetrack & Casino; Gerard Perron, Executive Director St. Landry Economic Industrial Development District; Frankie Betrand, President/CEO Opelousas-St. Landry Chamber of Commerce; and Reverend Dale Hensarling with The Equine Center Focus Group of the Opelousas-St. Landry Chamber of Commerce.

The group viewed the Equine Lameness and Performance Evaluation Unit, the current and future ICU, surgical suites, research labs, diagnostic and exam rooms. The staff presented a high-speed treadmill exam to show how essential it is in diagnosing respiratory and musculoskeletal problems in performance horses that arise during an exertional activity. A great deal of interest was shown when Dr. Moore gave an overview of the gait analysis and lameness diagnostic equipment that will soon be a part of that exam facility. Both racing and sport horse professionals were impressed by the potential for the facility.

"It is just incredible that the horse industry has a resource like this in Louisiana," said David A. Yount, executive director for racing at Evangeline Downs Racetrack & Casino and SLEAC president. "This facility is one of the reasons the industry can thrive in Louisiana. All of our members are impressed with the staff, the research and top-notch facilities. This is a state-of-the-art hospital and we are privileged to have this for the equine industry in the South."

When SLEAC was created during the summer of 2003, the members were merely looking for a way to unite area horsemen to assist in growing the horse industry in South Louisiana. The Council's newly created website, http://www.sleac.com, is sponsored by Louisiana Economic Development (LED)and offers a variety of resources for those dedicated to staying informed about the ever-growing industry.

"The LED recognizes the need to enhance and support the equine industry in South Louisiana," said Kelsey D. Short, Jr., Director of Agriculture, Forest & Food Technology Cluster Development for Louisiana Economic Development and founding member of SLEAC. "We hope the Council's efforts will set the stage for everyone in the horse industry to take part in advancing the industry as a whole. LED has been working closely in advancing this important cluster of our state's economy."

"A vital party of the advancement of the horse industry is the ability to provide high-quality veterinary medicine," said Yount. "It is important for horse owners and trainers to have access to the best in preventative and rehabilitative medicine. The LSU Equine Health Studies Program is creating a center of excellence for all of us."

In recent decades, the economic impact drawn from the horse industry

(Continued on page 11)

Members of SLEAC tour the LSU Equine Clinic, where Dr. Dan Burba demonstrates the nuclear scintigraphy (bone scan) facility.

Scholarships and Student Awards

Dr. Maura Gibson (LSU 04) received the $2,000 Arizona Medical & Surgical Centre Award. The recipient was selected by the equine faculty based upon proven clinical competency in equine medicine and surgery and for participation in the Student Chapter of the American Association of Equine Practitioners (see page 22).

Dr. Rebecca Bynum (LSU 04) received the $500 Louisiana Veterinary Medical Association Equine Clinical Proficiency Award. The recipient was chosen by the equine faculty for being judged as the most proficient student in equine medicine and surgery.

Dr. Jeff Dunlany (LSU 04) received the American College of Veterinary Surgeons Proficiency Award in Large Animal. The recipient was selected by the large animal faculty for demonstration of academic and clinical proficiency in large animal surgery.

From left to right, Jeff Dunlany (LSU 04), Rebecca Bynum (LSU 04), and Maura Gibson (LSU 04).

Lane Breaux (Year IV) and **Meghan Gilhooly** (Year IV) each received a $500 LSU-SVM Equine Health Studies Program (EHSP) Scholarship. The recipients were selected by the equine faculty based upon participation in the Student Chapter of the American Association of Equine Practitioners and demonstration of an interest in equine health through participation in activities and events involving the equine industry and the EHSP.

From left, Lane Breaux (Year IV), Dr. Rustin Moore, and Megan Gilhooly (Year IV) at the 2004 LSU SVM Awards & Honors Banquet.

Andrew Lewis (Year IV) received the $1,500 Louisiana Veterinary Medical Association Equine Committee/ American Association of Equine Practitioners Foundation Scholarship. The recipient was selected by the equine faculty for participation in the Student Chapter of the American Association of Equine Practitioners, demonstration of outstanding scholastic abilities and a commitment to the AAEP and the pursuit of equine practice.

Equine Agribusiness

(Continued from page 10)

has been overlooked. One of the primary goals of SLEAC is to ensure that the economic impact of the industry is fully developed. Current estimates are that it is in the $1.4 billion range.

SLEAC members hope to serve as a model for others in Louisiana by generating support from leaders in various sectors including equine health, performance training, pleasure riding, academic, economic development, agriculturally-related organizations and suppliers. By combining the efforts of numerous groups, the industry will only continue to prosper.

For more information on SLEAC, or to become a member, visit: www.sleac.com or contact Julie Calzone, 337-235-2924, ext. 3.

EHSP Congratulates Staff Award Winners

The EHSP would like to congratulate **Al Desselle** and **Mike Keowen** for receiving Staff Awards from the School of Veterinary Medicine. Al Desselle, assistant hospital director in the Veterinary Teaching Hospital and Clinics (VTH&C), received the *IAMS-VTH&C Award*, which is presented each year to an outstanding VTH&C staff member. Desselle was commended for his humility, hard word, and dedication. Michael Keowen, a research associate in the department of Comparative Biomedical Sciences, won the *Academic Support Award* for excellence in providing academic support to the school's faculty. Keowen was commended for his 15 years of service and his great interest in the quality and quantity of the equine research conducted at the School.

Kentucky Derby Party Benefits EHSP

Guests of the LSU School of Veterinary Medicine experienced the 130th "Run for the Roses" at the School's fifth annual Kentucky Derby Party at the Country Club of Louisiana on May 1.

While Smarty Jones won the Kentucky Derby, Dr. Jessica Babineaux, a first-year medical resident at the LSU Health Sciences Center's Physical Medicine & Rehabilitation Program in New Orleans, won the Ladies' Hat Competition. Dr. Dan Hendricks, Vice President of Development of the LSU Foundation, won the Gentlemen's Tie Competition. Dr. Babineaux's hat was black and covered with pink roses. Dr. Hendricks' tie was navy blue and was hand-decorated with Derby symbols and horseshoes.

Approximately 100 guests attended the party, including LSU System President and Mrs. William L. Jenkins; Rep. Mike Strain and Dr. Susan Strain of Covington, La.; Sydney Hines and Becky Rutledge of Pass Christian, Miss.; Judi Gerhardt and Victor Labat of Covington, La.; and former New Orleans Mayor Sidney Barthelemy and his wife Micki Barthelemy of New Orleans, La.

Guests placed "bets" on the race, and a prize drawing was held from those who chose the Win, Place and Show Horses. Hunter Ortis received a stuffed, "talking" race horse for choosing the winning horse. Judi Gerhardt received an Equine Health Studies Program polo shirt for choosing the horse that placed second, and Dr. Jim LaCour received an encyclopedia of horses and a DVD of the movie "Seabiscuit" for choosing the horse that came in third.

The afternoon's festivities also included a silent auction and traditional Derby cuisine of ham and biscuits, cheese grits, Kentucky Derby pie, and mint juleps. Each guest received a commemorative 2004 Kentucky Derby mint julep glass.

The event was planned by the Kentucky Derby Party planning committee: Dr. Rustin M. Moore, Dr. Rebecca Adcock, Catherine Koch, Dr. Ashley Stokes, Georgia Stokes, Leslie Talley, Nancy Nolan, Judi Gerhardt, Sydney Hines, Stacey Simmons, Dr. Dina Duplantis, Ginger Guttner, and Pat Edwards.

Proceeds from the party will benefit the Equine Isolation Unit in the LSU Veterinary Teaching Hospital & Clinics. This unit will facilitate treatment of horses with infectious and potentially contagious diseases.

From left, LSU System President William Jenkins, Mrs. Peggy Jenkins, Micki Barthelemy, and Sidney Barthelemy.

EHSP Thanks Kentucky Derby Party Auction Donors

The EHSP would like to thank those people and organizations that donated items for auction at the Kentucky Derby Party.

Acadian Frame & Art
All Things Old Antiques and Collectibles
Amazon Imports
The Antique Shop
Bayou Imports
Bienville Antiques & Custom Framing
Bill Straus Photography
Nancy Burba
Café Degas
Charvet's Garden Center
Christian Street Furniture
Cloud Chasers, Inc.
Cottonwood Books
Country Club of Louisiana
Johnny Donnels, author and photographer
Dr. Dina Duplantis
Earthly Concerns
Evangeline Downs Racetrack
Marie, Joseph, Jean and Helen Garrett
Susan and Dee Geoghegan
H&H Supplements
Sydney Hines
Dr. Jeremy Hubert, LSU SVM
Dr. Jill Johnson, LSU SVM
Michael Keowen, LSU SVM
Anita LeJeune, artist
Louisiana Horseman's Guide
Louisiana Nursery
Louisiana Wine Club
A Love for Horses
Maggio's Ristorante
Marcello's Wine Market
Marino's Florist
Midway Plantation
Dr. Rustin Moore, LSU SVM
Nancy Nolan
Pineapple Gallery
Red Bob Cat Designs, LLC
School of Veterinary Medicine
Southdown's Gym
The Stitch Niche
Student Chapter of the American Veterinary Medical Association (SCAVMA) Bookstore
Angela Veitch, artist

Orthopedic Research that Benefits Multiple Species

"I like investigating the basis for orthopedic disease for the earliest detection and treatment. I also like to design, build, and test orthopedic devices," said Dr. Mandi Lopez, assistant professor of veterinary surgery at the LSU School of Veterinary Medicine. Dr. Lopez is the director of the Laboratory for Equine and Comparative Orthopedic Research (LECOR), a newly formed focus area within the Equine Health Studies Program. Under the direction of Dr. Lopez, the laboratory has been designed and equipped for orthopedic investigations across species at all levels, genetic to whole system. "Specific orthopedic problems vary between species, but the basis for such things as bone healing, osteoarthritis and ligament or tendon problems are the same or similar," said Dr. Lopez.

Dr. Lopez's past and present research encompasses a wide range of orthopedic investigations. She has investigated the use of monopolar radiofrequency energy to treat a number of orthopedic problems including its use to shrink joint capsule in lax joints and tendons and as a treatment for developmental disorders. Currently, Dr. Lopez is investigating the use of monopolar radiofrequency energy to treat bone spavin, tarsal osteoarthritis, in horses. The current cure for bone spavin is fusion of the affected joints, which can take a prolonged period of time. There are a number of ways to facilitate the fusion process reported, but results are generally unpredictable. "The use of monopolar radiofrequency energy to effectively remove cartilage in the tarsus may prove to be a minimally invasive technique to promote joint fusion," said Dr. Lopez. This treatment can be applied to other species in addition to horses.

Another area of past and present investigations by Dr. Lopez includes the use of joint fluid markers for early detection and prognosis of joint disease. Dr. Lopez is hopeful that the markers will not only provide methods for early diagnosis, but will provide information about the relative efficacy of treatments to alter the course of the disease process. The markers may also provide a method to clearly identify the underlying cellular events of joint disease, allowing development of therapies to inhibit or prevent joint damage. "The earlier we detect joint problems and initiate therapy, the more successful we can be in altering the course of these diseases," said Dr. Lopez.

Detection and treatment of cranial cruciate ligament (CrCL) disease in the dog has also been an area of significant research by Dr. Lopez. As dogs age, the CrCL in the knee can weaken, stretch, and eventually rupture. Dr. Lopez has conducted investigations for detection of CrCL disease prior to rupture; ways to prevent damaged ligaments from rupturing, and graft reconstruction of ruptured ligaments. She plans to apply information from these studies to similar problems in other species including the horse.

In addition to research investigations surrounding joints and tissue structures in LECOR, another area of specific focus is the molecular and genetic mechanisms of some common degenerative conditions in the horse. Preliminary investigations are currently being conducted on navicular disease, osteoarthritis, and ligament and tendon disorders.

A state of the art mechanical testing system (MTS) has recently been added to the LECOR. Dr. Lopez has performed extensive biomechanical testing in previous investigations including novel methods to stabilize metacarpal and femoral fractures in the horse. She plans to use the new system to continue studies in fracture stabilization as well as to investigate tendon repair techniques and acceleration of tissue healing. "The MTS will tremendously enhance ongoing and planned orthopedic investigations," says Dr. Lopez.
Dr. Lopez is currently funded by the NIH-NIAMS for investigation of developmental joint disease and by the American College of Veterinary Surgeons both to explore the healing capacity of partially disrupted ligaments and for development of a novel surgical device. She is collaborating with investigators in several departments within the School of Veterinary Medicine, at Louisiana State University, and at the University of Wisconsin-Madison on a number of ongoing and proposed projects.

Dr. Mandi Lopez

Published Book Chapters

Eades SC, Waguespack W. Gastrointestinal and Digestive System. *Equine Manual*. Higgins and Wright, eds. Elsevier Publishing: London, U. K., 2004.

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Costa LRR, Eades SC, Goad ME, Paradis MR: Pulmonary surfactant dysfunction in neonatal foals: pathogenesis and clinical findings. *Compendium of Continuing Education for the Practicing Veterinarian* 26 (5) 380-389, 2004.

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(Continued on page 14)

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(Continued from page 13)

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Hubert JD, Seahorn TL, Klei TR, Hosgood G, Horohov DW, Moore RM: Clinical signs and hematologic, cytokine, and plasma nitric oxide alterations in response to Strongylus vulgaris infection in helminth-naïve ponies. Can J Vet Res 68 (3) 193-200, 2004.

Moore RM, Eades SC, Stokes AM: Evidence for vascular and enzymatic events in the pathophysiology of acute laminitis: Which pathway is responsible for initiation of this process in horses? Equine Vet J 36 (3) 204-209, 2004.

Sod GA, Martin GS: An in vitro biomechanical comparison of a prototype intramedullary pin-plate with a dynamic compression plate for equine metacarpophalangeal arthrodesis. Vet Surg 33 (1) 83-91, 2004.

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Ferrer MS, Paccamonti DL, Eilts BE, Lyle SK, Aljarrah A and Devireddi R. Improvement of sperm recovery rates after centrifugation of stallion semen. Proc Society for Theriogenology Annual Conference and SFT/ACT Symposium, Lexington, KY, 7 August 4-7, 2004.

Fugler L, Eades SC, Truax R, Oliver JL, Moore RM: Nitric oxide and endothelin-1 synthesis by cultured equine digital endothelial cells in response to endotoxin and cytokines. Proceedings Equine Laminitis Research Meeting and Panel, Louisville, KY, 114-115, July 24, 2004.

Gilhooly M, Eades SC, Stokes AM, Moore RM: Effects of topical nitroglycerine patches and nitroglycerine ointment on digital venous plasma nitric oxide concentrations and cigital blood flow in healthy conscious horses. Proceedings Equine Laminitis Research Meeting and Panel, Louisville, KY, 116, July 24, 2004.

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(Continued on page 15)

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Wallace E, Stokes AM, Paulsen D, Hosgood G, Eades SC, Moore RM: Immunohistochemical staining to determine and compare the presence and location of matrix metalloproteinases-2 and -9 in laminar tissue of clinically healthy and laminitis horses. Proceedings Equine Laminitis Research Meeting and Panel, Louisville, 137-138, KY, July 24, 2004.

Watson DM, Walesby HA, Barker SA, Short CR: In vitro distribution and elimination of 20% phenylbutazone solution administered orally to fasted horses. J Vet Intern Med 18 (3) A281, 459, 2004.

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Lyle SK: Care of the pregnant mare before, during and after delivery. Louisiana Horse 22 (3) 71-73, 2004.

Moore RM, Burba DJ: Advanced Diagnostics. AAEP Forum. The Horse, 36, June 2004.

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Chapman AM, Mitchell M, Eades SC: Detection of Salmonella in Thoroughbred racehorses at four Louisiana racetracks by polymerase chain reaction. $6,000. Equine Health Studies Program, July 2004.

Eades SC, Valadao CAA, Stokes AM, Moore RM: Vasomotor response of palmar digital vascular rings to polyamine and NMDA receptor agonists and antagonists in horses. $4,765. Equine Health Studies Program, July 2004.

Fugler LA, Moore RM, Eades SC, Stokes AM: Matrix metalloproteinase-2 and -9 activity in the systemic and digital circulation in horses with experimentally induced laminitis. $13,820. American Association of Equine Practitioners. February 2004.

Johnson JR, Foster TP, Henk WG, Paccamonti DL, Lyle SK, Moore RM, Nickerson C: Equine fetal laminar cell 3-dimensional tissue assemblies: Characterization of adhesion complexes and basement membranes. $12,000. Equine Health Studies Program, July 2004.

Leise BS, Moore RM, Eades SC, Johnson JR: Culture and characterization of equine fetal colonic and cecal intestinal cells using monolayer and three-dimensional techniques. $6,000. Equine Health Studies Program, July 2004.

McConnico RS, Chirgwin S, Hubert JD, Taylor HW, Eades SC, Klei TR: Pathophysiology of equine cyathostomin infection during larval immigration into the intestinal lumen. $10,000. LSU-SVM USDA 144 Formula Funds, July 2004.

Moore RM, Stokes AM, Lopez MJ, Monroe T, Li L, Murphy MC: Integration of biomechanics into equine and comparative biomedical and orthopedic research. $170,000. Louisiana Board of Regents Support Fund, Traditional Enhancement Program, May 2004.

Moore RM, Vidal MA, Johnson JR, Gimble JM, Lopez MJ, Truax RE: Tissue engineering: Growth of equine mesenchymal stromal cells and characterization of extracellular matrix in low-shear three-dimensional culture for use in tendon healing. $9,630.00. American College of Veterinary Surgeons, Surgeon-in-Training Grant, April 2004.

Orandle MS: Microvascular brain endothelial cell infection with EIAV neuroinvasion and persistence. $6,800. Equine Health Studies Program, July 2004.

Venugopal CS, Moore RM, Kousoulas KS, Chirgwin SR: Role of endothelin-B (ET_B) receptors in airway hyperreactivity in horses. $24,470. Equine Health Studies Program, July 2004.

Stokes AM, Moore RM, Eades SC, Paulsen DP: Evaluation of the effect of repeated digital intra-arterial administration of 15?m colored microspheres on digital hemodynamics and laminar microscopic integrity. $12,000. Equine Health Studies Program, July 2004.

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Walesby HA, Paccamonti EL, Lyle SL, Darien BJ, Moore RM, Hosgood G: The relationship between circulating concentrations of inflammatory

(Continued on page 16)

Grants and Contracts

(Continued from page 15)

mediators and uterine contractile activity in response to low-dose endotoxin in non-gravid mares. $11,856. Equine Health Studies Program, July 2004.

Meetings Attended/ Presentations

(* denotes presenting author)

Eades SC*, Stokes AM*, Moore RM: Role of endothelin in black walnut and carbohydrate overload induced laminitis. Proceedings Equine Laminitis Research Meeting and Panel, Louisville, KY, 34-40, July 24, 2004.

Bueno ACD*: Equine emergency gastrointestinal surgery and critical care & treatment of neonatal septic arthritis. São Paulo State University (UNESP-Jaboticabal), School of Veterinary Medicine, Veterinary Hospital, Jaboticabal, SP, Brazil. July 19, 2004.

Bueno ACD*: Equine emergency surgery and critical care & treatment of musculoskeletal infection. Minas Gerais Federal University (UFMG), School of Veterinary Medicine, Belo Horizonte, MG, Brazil. July 15, 2004.

Ferrer MS*. Improvement of sperm recovery rates after centrifugation of stallion semen. Student competition, Society for Theriogenology Annual Conference and SFT/ACT Symposium, 8/4 to 8/7, Lexington, KY.

Moore RM*: Effects and treatment of endotoxemia associated with intestinal strangulating obstruction. 13th Annual Scientific Meeting, European College of Veterinary Surgeons, Prague, Czech Republic, July 3, 2004.

Bolt DM, Burba DJ, Hubert JD, Moore RM*: Extracorporeal shockwave therapy: Science or black magic? 13th Annual Scientific Meeting, European College of Veterinary Surgeons, Prague, Czech Republic, July 3, 2004.

5th Merck-Merial Veterinary Scholars Symposium 2004 College of Veterinary Medicine Auburn University, Auburn, AL July 29-August 1, 2004

Saile K*, Paulsen DB, Kearney MT, Junejz P, McConnico RS: Mechanisms of specific and nonspecific cyclooxygenase inhibitor drug induced injury in equine right dorsal colon mucosa.

Janning C*, Rybachuk GV, Vladimir N. Chouljenko VN, Marzilli LG, Kousoulas KG. Antiviral Properties of Porphyrin-Based Compounds against Equine Herpes Virus 1.

Halbert KK*, Walesby HA, Truax RE, Johnson JR, Henk WG, Borkhsenious ON: Equine myometrial smooth muscle cells in 3-dimensional tissue assemblies: A model for the study of the pathogenesis of endotoxemia-induced preterm fetal expulsion in the mare.

Miska T*, Lopez MJ, Burba DJ, Foster T: Evaluation of the effects on monopolar radiofrequency energy and diode laser energy on equine distal intertarsal and tarsometatarsal articular cartilage.

Liford Attends Student National Research Conference

Jennifer Liford attended the West Coast Biological Sciences Undergraduate Research Conference in San Diego, CA on April 24, 2004 and presented the following poster: Liford J*, Foster T, Johnson J, Waguespack W: Characterization of MMP-2 and -9 expression and localization in primary equine adult laminar cells.

Student Participates in Howard Hughes Summer Undergraduate Research Forum

Reboul JP*, Walesby HA, Truax RE, Henk MC: Transfection of equine myometrial smooth muscle cells in culture. Summer Undergraduate Research Forum, Howard Hughes Medical Institute, Louisiana State University, Baton Rouge, LA. July 29, 2004.

Enhancement Grant...

(Continued from page 1)

SVM, LSU, the local area, the State and the south central region.

Funds provided by the grant will be used to purchase state-of-the-art equipment used for the integration of biomechanics into equine and comparative biomedical and orthopedic research. The equipment strongly complements existing state-of-the-art facilities and equipment for innovative equine biomedical research, including a high-speed treadmill and the new Equine Lameness and Performance Evaluation Unit. The grant proposal included the purchase of a biaxial hydraulic mechanical testing system (MTS), a biaxial Instron testing system, a kinematic gait analysis system, and a large capacity ground reaction force plate.

The biaxial MTS and Instron mechanical testing systems are imperative for thorough biomechanical testing and will be central to the biomechanics laboratory within the EHSP. Both are capable of axial and torsional testing over an extremely large range of specimen sizes and strengths. They are complementary in function in that the MTS will be used specifically to test the ultimate strength of biomedical specimens and devices, whereas the Instron will be used to evaluate the effect of repetitive forces on samples over time (fatigue testing). The use of both testing systems provides extensive biomechanical information. Objective assessment and quantification of gait force and motion is imperative for orthopedic studies, and integration of both a force plate and kinematic gait analysis system provide such information in a complementary fashion. A large-

(Continued on page 17)

Enhancement Grant...

(Continued from page 16)

capacity force plate, which measures ground reaction forces, moments and pressure centers, will provide a more sensitive and quantitative method to assess both normal and abnormal gaits in horses. The kinematic gait analysis system enables quantification of gait characteristics such as stride length and efficiency of movement and locomotion. Both systems can be used for in-depth gait research studies as well as clinically to aid in the diagnosis of lameness and to evaluate treatment efficacy.

Lameness is the most common cause of poor athletic performance and retirement in equine athletes. In fact, lameness is the leading cause of poor performance in all horses worldwide. Many causes of lameness are associated with athletic-or performance-related injuries including joint inflammation, osteoarthritis, bony fractures, and tendon, ligament and muscles strains or ruptures. It has been reported that musculoskeletal disease and injury account for the majority (88%) of Thoroughbred racehorse deaths or disability from exercise-related injury. Many of these injuries result from the culmination of insidious, chronic, biomechanically induced lesions, which can result in sudden catastrophic conditions. Ongoing and planned studies at LSU that will benefit from the new equipment involve laminitis, orthopedic pathologies involving joints, tendons, ligaments, bones and muscles, and evaluation of the efficacy of pain management regimens. A recent survey by the American Association of Equine Practitioners revealed that lameness, specifically caused by laminitis, and other orthopedic conditions are considered to be the most important equine health issues confronting veterinarians, and should therefore be the focus of research efforts and funding.

The U.S. equine industry produces goods and services valued at over $25 billion annually, and has been estimated to have approximately a $112 billion impact on the U.S. economy. Likewise, horses and equestrian activities are an important and substantial economic and recreational commodity in Louisiana and the surrounding region. The State's equine industry has an estimated total direct economic impact of over $1.4 billion annually. Acquisition of the aforementioned equipment will positively impact the Louisiana and U.S. equine industries by contributing to the overall understanding of athletic injuries and promoting the development of more effective, cost-efficient methods of treatment and prevention.

Augmentation of biomedical resources will have a positive impact on the EHSP, SVM and LSU, and will foster growth and expansion of the State's equine, agribusiness, biomedical and biotechnology industries. This equipment combined with existing resources positions EHSP scientists to remain competitive in acquiring and sustaining substantial, recurrent extramural funding. This grant, along with other recent successes and accomplishments, is helping to propel the EHSP toward the goal of becoming an elite equine biomedical program.

Isolation Unit . . .

(Continued from page 1)

The Equine Clinic is unique in that it serves as the comprehensive equine referral veterinary hospital in the state and region with the facilities, equipment and specialist veterinarians to treat critically ill and injured horses. Therefore, if our isolation facilities (which currentlu only consist of a 2-stall unit) are at maximum capacity, we have no facility in close proximity to refer people who have critically ill horses with infectious/ contagious disease in need of advanced veterinary care.

Although several infectious diseases afflicting horses can be contagious (transmitted from horse to horse or from horse to environment to horse), infection with *Salmonella* is one of the more common and serious problems, especially in stressed, ill or injured horses. As part of the Equine Clinic hospital's biosecurity program, a *Salmonella* surveillance program was instituted in 1996 whereby manure is collected from hospitalized horses upon admission and daily thereafter for up to 5 days. The feces are cultured for *Salmonella* spp., a type of bacteria that can cause severe diarrhea in horses. This program allows close monitoring of horses that are admitted and shedding *Salmonella* in their feces. This provides hospital biosecurity personnel with the necessary information to make appropriate decisions regarding management and operation of the hospital and barn.

It has been reported that between 10 and 20% of horses are inapparently infected with *Salmonella* spp. and shed the organism in their feces; however, the percentage of healthy horses in the general population that are actively shedding the bacteria is likely between 1 and 2%. Numerous factors such as illness, colic, withholding feed or altering diet, administration of antimicrobial agents, use of equipment or instruments and long-distant transport, have been shown to be associated with an increased prevalence of *Salmonella* shedding. Because most horses that are hospitalized, even on an outpatient basis, often have at least one of these risk factors (e.g., transport, etc.), these horses are more likely to shed *Salmonella* in their feces. It has been shown around 13-15% of horses with colic or a severe illness shed the organism.

The aforementioned surveillance program proved to be extremely helpful in March 2001 whereby we proactively closed our hospital for 3 weeks to "de-contaminate" because of an unacceptably high percentage of horses shedding *Salmonella* sp. in their feces. Fortunately, there was minimal morbidity and no mortality in hospitalized horses, rather there was just an unacceptably high percentage of horses shedding. Prior to the

(Continued on page 18)

Isolation Unit ...

(Continued from page 17)

closure, the prevalence of shedding among critically ill/injured (and thus highly likely to be shedding) horses admitted to the hospital was less than 10% (which is less than that reported at other hospitals, 13-15%), but the shedding gradually increased and then peaked at about 25%, which prompted our proactive closure and cleaning. After all hospitalized horses were discharged, all organic material was removed and extensive cleansing and disinfection procedures were employed. Afterward, over 200 environmental cultures were performed, none of which were positive for *Salmonella*. Upon reopening the clinic, we instituted strict measures for management and operation of the hospital regarding hygiene and housing of horses. The prevalence of shedding among the critically ill horses in the surveillance program has been approximately 6% since instituting these new procedures. Although this was a proactive closure, rather than one forced by high morbidity and mortality, this caused several problems: (1) loss of hospital revenue; (2) negative public relations; and (3) lack of appropriate environment for teaching students. Before our closure and since that time, other university veterinary teaching hospitals and private equine practices have had to close their facilities to contain deadly *Salmonella* outbreaks.

One reason for the constant pressure on any hospital is the large number of horses with salmonellosis (shedding *Salmonella* spp. in their feces) and other potentially contagious diseases that are either admitted or develop problems within the hospital. Currently, our isolation facilities are insufficient to accommodate the number of horses necessitating advanced medical and surgical care, but that also need to be kept isolated from other hospitalized horses that have non-contagious disease. Although we have known for a long time that we need expanded equine isolation facilities, it was the problem causing us to close our equine clinic (to avoid a potentially catastrophic outbreak of salmonellosis with high morbidity and mortality) that emphasized this need even more. Most equine veterinary hospitals have had to close for an extended period because of nosocomial salmonella outbreaks, which are costly in terms of morbidity and mortality of horses as well as the "clean-up" of the facilities.

In order to be better positioned to provide advanced veterinary care for all horses with infectious, contagious disease that need this service, the EHSP has designed a 10-stall, stand-alone, climate-controlled facility based upon its current and future needs for hospitalizing these horses. The design of the facility greatly minimizes or eliminates the chance of spread of contagious disease among horses housed in the unit. Additionally, because the facility is a stand-alone facility remote from the main hospital, the chance of spreading disease to horses housed in the main hospital is non-existent.

The estimated cost of the facility is approximately $926,000. Fundraising for this facility has begun, and proceeds from the 2005 Stallion Service Auction will go toward its construction. However, we need to identify and obtain funds in a timely manner so that we can begin construction on this much-needed facility. Individuals or companies interested in assisting with fundraising for this unit or to learn more about how your tax-deductible gift can help us, please contact Dr. Rustin Moore via telephone at 225-578-9500 or e-mail at equine@vetmed.lsu.edu. Naming opportunities exist for major gifts.

Lameness Unit ...

(Continued from page 4)

ultrasonography, computed tomography (CAT scan), nuclear scintigraphy (bone scan), endoscopy, and evaluation while exercising on a high-speed treadmill," said Burba.

Lameness and poor performance are two of the most common reasons horses are admitted to the Equine Clinic. Diseases or injuries of the musculoskeletal system are the major cause of wastage and poor performance in athletic horses. Lameness typically results from pain associated with the musculoskeletal system, including abnormalities with joints, bones, tendons, ligaments and muscle. The majority of cases of lameness are localized to areas within the distal limb; however, the sources, causes and locations of lameness are diverse. Lameness can be caused by numerous and diverse conditions, including but not limited to wear-and-tear, overuse, and trauma. The diagnostic approach to lameness in horses should involve consideration of the signalment (age, breed and sex), pertinent medical history, past and present use of the horse, physical examination, lameness evaluation and ancillary diagnostic procedures.

SIGNALMENT & HISTORY

The signalment (age, breed, gender) of the horse is important because certain causes of lameness are more likely to occur in certain breeds and ages of horses. The past medical history is important and may provide important diagnostic clues to the veterinarian. It is vitally important to provide accurate information to your veterinarian. The past and present use of the horse is important because certain uses of horses may make certain diagnoses more or less likely. This information may help in ruling in or out certain causes of lameness in your horse.

PHYSICAL EXAMINATION

Although dependent upon the history and degree of lameness, a complete physical examination and lameness evaluation are usually necessary to accurately localize the source and determine the cause of the lameness. In order for a veterinarian to get a complete picture of the patient, a thorough physical examination including visual observation of the patient's body and limbs for conformation, symmetry, swellings, stance and other

(Continued on page 19)

Lameness Unit ...

(Continued from page 18)

abnormalities is performed. Additionally, the patient's behavior and attitude along with temperature, respiratory rate, and heart rate and rhythm are evaluated in horses with lameness, especially those with acute onset severe lameness. Initially the horse is visually evaluated from a short distance from the front, rear and both sides to assess for asymmetry associated with swellings or muscle atrophy (indicative of a chronic problem). This is further facilitated by careful palpation of the limb(s) both with the horse bearing weight on the leg and with the leg held off the ground. The veterinarian will run his/her hands up and down the limbs palpating for fluctuant swellings (effusion in joints, tendon sheaths and/or bursa, subcutaneous swellings, etc.), firm swellings (such as bony exostoses, mineralized or fibrotic soft tissue, etc.), heat and pain on manipulation. Effusion in a joint or tendon sheath typically suggests an inflammatory response such as synovitis or tenosynovitis associated with trauma, infection, or other type of condition. Flexing and extending the joint, and comparing this with findings on the opposite limb, is used to assess range of motion. Subtle pain during manipulation of the joints or palpation of tendons, ligaments or bone may suggest involvement of those structures. Hoof testers are applied to different areas along the entire circumference of the foot to assess sensitivity to pressure. A positive response to hoof testers could suggest a subsolar abscess, bruising, laminitis (founder), a fracture of the third phalanx (coffin bone) or navicular bone, navicular disease or other abnormalities of soft tissue and bony structures within the hoof. During the examination, conformational faults, angular or flexural limb deformities or abnormalities of the horse's stance are noted.

LAMENESS EVALUATION

The horse is evaluated at a walk to assess the presence and magnitude of any gait abnormality or lameness. The more severely lame a horse the more noticeable will be the lameness at a walk. The horse is then evaluated at a trot (jog), which is typically the optimal gait for detection of lameness. The horse is observed from the front and back while they are moving to and from the examiner as well as from both sides. The amount of weight bearing, the length of stride, the flight and landing of the feet, and the carriage of the head and neck are evaluated. The following standardized grading scale has been developed and adopted by the American Association of Equine Practitioners for evaluating the degree of lameness in horses:

Grade 0: Lameness not perceptible under any circumstances.

Grade 1: Lameness is difficult to observe and is not consistently apparent, regardless of circumstances (e.g., weight carrying, circling, inclines, hard surface, etc.).

Grade 2: Lameness is difficult to observe at a walk or when trotting in a straight line but consistently apparent under certain circumstances (e.g., weight carrying, circling, inclines, hard surface, etc.).

Grade 3: Lameness is consistently observable at a trot under all circumstances.

Grade 4: Lameness is obvious at a walk.

Grade 5: Lameness produces minimal weight-bearing in motion and/or at rest or a complete inability to move.

Once the lameness has been graded based upon baseline walking and jogging, then the horse's limbs may be stressed by lunging the horse or jogging it in circles to both the left and right, flexing individual joints (usually for 60 seconds), re-applying hoof testers, or other perturbations to try to exacerbate the lameness in order to help localize the source of the pain (lameness).

PERINEURAL AND INTRA-ARTICULAR ANESTHESIA

In order to definitively determine the location of the pain, it is usually necessary to perform regional nerve blocks or joint blocks, which involve temporarily desensitizing (numbing) an area by injecting a local anesthetic to determine if the pain is originating from that region and causing the lameness. Nerve blocks are performed sequentially starting from the lower limb and proceeding upward on the limb. These involve injection of a local anesthetic agent adjacent to a peripheral nerves underlying the skin that block the heel, foot and pastern, fetlock region, and metarcarpal/metatarsal region (area of cannon bone). Joint blocks are usually performed after these peripheral nerve blocks are completed and the lameness persists or if there is evidence suggestive of joint disease based on the physical examination. Nerve blocks are performed after carefully cleaning the area with an antiseptic. On the other hand, joint blocks are usually performed after a small area of hair is clipped and effective cleansing with an antiseptic in order to prevent introduction of infection.

ADVANCED DIAGNOSTICS USEFUL FOR EVALUATING LAME HORSES

Lameness may be extremely subtle affecting only the horse's performance or "felt" by the rider. The more advanced diagnostic techniques are typically reserved for horses in which the more traditional methods of lameness evaluation, such as physical examination, lameness evaluation and nerve/joint blocks, are unable to locate the site of the lameness. Ancillary diagnostic techniques that may be used include videotaping the gaits of the horse and then replaying the video in slow motion; evaluation of the horse across a force plate to quantify the amount of weight bearing

(Continued on page 20)

Lameness Unit ...

(Continued from page 19)

or force placed on each limb, use of a kinematic gait analysis system; and diagnostic imaging techniques. By placing small reflective markers on key anatomic locations, 3-dimensional kinematic and kinetic data can be obtained with a camera system to assess locomotion. Acquisition and installation of a kinematic gait analysis system and force plate are planned at the LSU Equine Clinic in the near future.

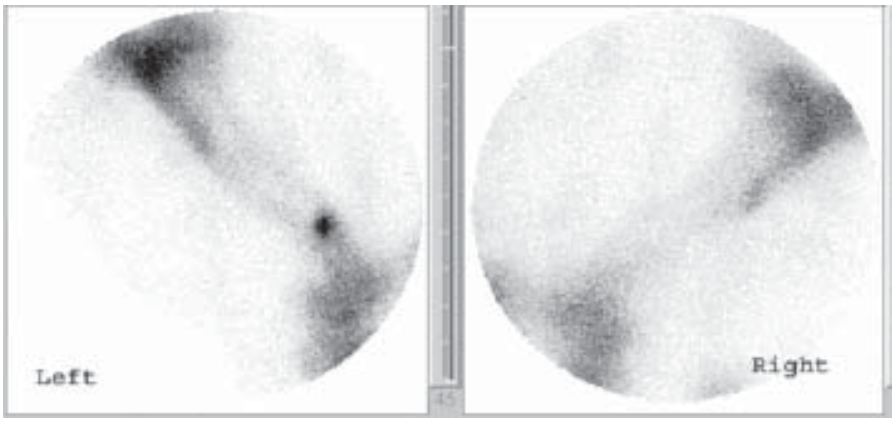
Nuclear scintigraphy, thermography and other diagnostic modalities are sometimes employed to try to determine the location of the lameness. Nuclear scintigraphy, also referred to as bone scan, can help identify subtle injuries of bone and soft tissue. The procedure involves the injection of a labeled radioactive substance into the jugular vein and then with the use of a gamma camera the uptake of the radioactive material into bone and soft tissue is imaged. An increased uptake is often referred to as a "hot spot." This imaging modality is most useful for horses with acute onset lameness. Nuclear scintigraphy is much more sensitive than radiography for assessing active areas of bony change, which are most often associated with stress fractures, infection or other types of bone injury.

Thermography is a technique involving creation of a visual image from heat the body emits from the skin surface as infrared radiation, which may be an indication of inflammation below the surface. The image is typically displayed in colors that correspond to different temperatures.

Once the location of the lameness has been determined, the region may be further evaluated using other diagnostic procedures, including synovial fluid analyses, radiography (x-rays), ultrasonography (sonograms), computed tomography (CAT scan or CT) or magnetic resonance imaging (MRI). Collection of a synovial fluid sample from a joint or tendon sheath can be useful in certain cases to assess the white blood cell count and protein concentration and other characteristics of the fluid, and in cases where joint infection is suspected, can be submitted for bacterial culture and antibiotic susceptibility testing. **Radiography** is most useful for assessing bony abnormalities including degenerative joint disease (arthritis), osteochondral chip fractures, osteochondrosis, condylar fractures, navicular bone abnormalities, osteomyelitis, and other abnormalities involving bone. **Ultrasonography** is typically most useful for assessing injuries or abnormalities of the soft tissue such as tendonitis and suspensory ligament desmitis; however, it can also be useful for assessing bone and joints in certain circumstances. **Computed tomography**, provides a three-dimensional assessment of structures and is most useful for assessing abnormalities of bone. Currently, the modality is not widely available for horses and its use is affected by the fact that horses must be placed under general anesthesia and that only the distal limbs can be evaluated. However, we recently installed a CT unit with accessibility for horses at LSU.

Magnetic resonance imaging provides a three-dimensional assessment of structures, especially soft tissues such as tendon, ligament, bursa, articular cartilage and joint capsule. Traditionally, MRI has required horses be placed under general anesthesia, which has limited its utility; however, newer equipment, technology and computer software has enabled this imaging modality to be used in standing, conscious (tranquilized) horses to assess the distal limb. We hope to acquire this diagnostic imaging modality at LSU in the near future.

It should be evident from the aforementioned information that evaluation of lameness in horses involves a comprehensive approach. With today's technologies the equine veterinarian is better able to diagnose lameness problems. An understanding of the complex nature of lameness in horses and the need for a logical and comprehensive diagnostic approach by an equine veterinarian will reduce frustration and yield satisfaction to horse owners. The traditional and more advanced diagnostic procedures for evaluating horses for lameness are available at the LSU Equine Clinic. For an appointment or inquires, call 225-578-9500 or for more information visit our website:
www.equine.vetmed.lsu.edu.



Bone scan images showing a "hot spot" (black circular area) in the distal diaphysis of the left humerus of a racehorse, compared with the right humerus. This area represents a focal area of increased uptake of radiopharmaceutical, which was shown to be a stress fracture on radiographs.

Performance ...

(Continued from page 5)

an echocardiographic examination will provide the veterinarian with information regarding the structure and function of the heart, including

(Continued on page 21)

Performance ...

(Continued from page 20)

Endoscopic image demonstrating left laryngeal hemiplegia (roarer) of a Thoroughbred racehorse.

how much the heart contracts and whether there is any abnormal flow associated with valvular problems. If any overt abnormalities are detected, then this may explain the cause of the poor performance and further examination may not be warranted.

The upper airway is first examined in its resting state. An endoscopic examination is performed and the nasal passages, pharynx, larynx and trachea are evaluated; the veterinarian may also opt to examine the inside of the guttural pouches with the endoscope depending upon the initial impression of the upper respiratory tract examination. The larynx and pharynx will be closely observed for shape and movement, and the airway will be occluded momentarily to observe functional abnormalities of the throat. The horse will also be stimulated to swallow by spraying water into the throat or gently touching the wall of the nasopharynx (throat) with the endoscope while observing the laryngeal function. Commonly diagnosed lesions observed with standing endoscopy include epiglottic entrapment, dorsal displacement of the soft palate, left laryngeal hemiplegia and pharyngeal lymphoid hyperplasia. Severe lesions may explain the cause of poor performance, however, it is not uncommon to observe mild aberrations during passive observation that requires further evaluation with a dynamic endoscopic examination during high-speed treadmill exercise and endoscopic observation to determine if this is truly the cause or poor performance. An example of this may be a low grade left laryngeal hemiplegia (weakness of the flapper, also known as a roarer). The larynx may be mildly asymmetric and appears to functional normally when swallowing or with nasal occlusion; however, when the horse is racing and the muscles that hold the larynx in the open position become fatigued, the arytenoid cartilage may become sucked into the airway, resulting in reduced air intake and poor performance.

Horses often need to be made familiar with the treadmill environment before the actual high-speed treadmill examination is performed. The sensation of the treadmill is unfamiliar, potentially frightening the horse, and requires trained personnel to introduce the horse to the equipment. The horse is walked across the surface several times and then the treadmill is started very slowly to allow the horse to become familiar to the sensation of the floor moving. Most horses adapt well and quickly, but personnel need to be constantly aware and able to react immediately to the horse's actions. Often, the familiarization can lead immediately to the examination; however, in some cases several sessions are required to familiarize the horse to become comfortable with running on the treadmill.

Once comfortable with the treadmill the horse is instrumented with special sensors strapped around the chest, similar to a person doing a "stress test." This involves a telemetric ECG to monitor and record the heart rate and rhythm while the horse is exercising; placing an intra-arterial catheter to access arterial blood while exercising to monitor blood gases while exercising to establish gas (oxygen) exchange and lung function and to measure electrolyte concentrations; placing a specialized catheter to measure body core temperatures to observe if the horse is able to dissipate heat normally; and placing an endoscope so that the larynx and pharynx can be observed while the horse is being exercised. Measuring blood levels of muscle enzymes before, shortly after and several hours after intense exercise on the treadmill can be used to determine whether the horse's poor performance is related to exertional rhabdomyolysis (tying up). Finally, another catheter may be placed into the heart to monitor pressure within the heart chambers to determine more closely mild cardiac abnormalities to determine if they are functional.

Once instrumented, the horse will undergo a standardized exercise test, which involves a warm-up period, an intense period of exercise for up to 2.5 km and then a cool down period. During this time, a series of samples are taken, values obtained and videoendoscopic images recorded. The immediate post-exercise period is an important aspect of the examination. A post-exercise cardiac ultrasonographic examination is performed; further blood sampling occurs during the cool down period and finally a transtracheal wash is performed post exercise. This last test involves sampling fluid from the lungs to analyze it microscopically. This may help identify pulmonary hemorrhagic problems (bleeders), inflammatory airway problems or allergic type pulmonary disease.

An appropriate performance evaluation involves a thorough examination of the exercising horse; the combination of tests will provide the clinician with a specific overview of the systems most important to the exercising equine athlete and commonly a diagnosis, treatment regimen and prognosis can be given to the trainer/owner ultimately resulting in improved performance. The test will take a full day to perform, and in some instances up to two days and will incur some expense, but for the higher quality athlete it can be considered an

(Continued on page 22)

Charitable Gifts

The EHSP would like to thank the following individuals for their recent contributions:

Dr. John R. Allender
Dr. Michael Beven
Dr. K. C. Ferrazzano
Dr. Larry Findley, Delta Equine Center
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Drs. Michael and Susan Strain
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Mr. & Mrs. J. R. Wheatley

The EHSP would like to thank the following individuals for their contributions as part of the 2004 Kentucky Derby Party:

Dr. Becky Adcock
Mr. & Mrs. Herschel Adcock
Dr. Skippy Berner
Dr. Suzanne Brough
Mr. & Mrs. Jim Brugh
Dr. Aloisio Bueno
Melanie & Russell Chapman
Bonnie Clark & guests
Garrett J. Claybourne
Mrs. Cindy Cochran
Dr. Jane Collins
Ms. Constance Cowart
Ms. Rani Darling
Dr. Dina D. Duplantis
Tara (Hingle) & Tommy Elkins
Dr. Peter F. Haynes
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Dr. Ashley Stokes
Lynn & Georgia Stokes
Drs. Michael & Susan Strain
Dr. & Mrs. Michael G. Groves
Mr. & Mrs. Rudy Thorgeson

Corporate Support

James Pellerin, area representative for Fort Dodge Animal Health, Inc. has provided vaccine for West Nile virus, Fluvac (EHV, tetanus, influenza, WEE, EEE), and intranasal strangles vaccine for the teaching and research horses in the LSU EHSP herd.

1989 Alum Establishes Equine Scholarship

Dr. D. Scott Taylor (LSU 89) of the Arizona Equine Medical and Surgical Centre in Gilbert, Ariz., has established a $2,000 scholarship for LSU veterinary students who have proven clinical competency in equine medicine and surgery and who are active in the Student Chapter of the American Association of Equine Practitioners.

Dr. Taylor, senior surgeon at the equine referral practice, along with his partners Drs. Gayle Leith and Ed Voss, discussed with their practice management advisor the tax benefits of creating a scholarship at their individual veterinary schools. The partners created scholarships at the veterinary schools of Kansas State University and the University of Wisconsin, as well as at LSU. In April, the Arizona Equine Medical and Surgical Centre Award was presented to fourth-year student, Maura Gibson, who was selected by the LSU equine faculty.

Dr. Taylor completed an internship in equine medicine and surgery at the University of Missouri-Columbia, and a residency in equine surgery and lameness at the University of California, Davis. He joined the Arizona Equine Medical and Surgical Centre in 1993 as senior surgeon, and became a partner in 1996. He became a Diplomate of the American College of Veterinary Surgeons in 1995. His main interests are in orthopedic and abdominal surgery.

Performance ...

(Continued from page 21)

important and relevant method of providing a complete overview of the athlete's health status.

Certain components of the performance evaluation can be performed in the normal horse to provide the trainer with an idea regarding the success of training techniques and perhaps give insight into modifications for specific horses. This can be thought of as a form of "fitness evaluation" or testing procedure.

Veterinarians and scientists at several institutions have conducted extensive research in order to establish normal guidelines for specific breeds and types of horses. These baseline values are used to compare to the individual horse to give the clinician an idea of causes of substandard performance. The LSU Equine Clinic has the facilities, equipment and personnel to conduct comprehensive performance evaluation in horses used for intense exercise, including racing and other competitive activities. For more information, call 225-578-9500.

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"Full Stride into the Future"

Did you know?

- Your tax-deductible charitable contribution to the Equine Health Studies Program will be used to support leading-edge equine scientific investigations, equipment needs, improved facilities and student scholarships in equine studies at the LSU School of Veterinary Medicine.

- We accept gifts of cash, stock or property, which may be made by cash, check or credit card.

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YES! I would like to contribute to the Equine Health Studies Program at the Louisiana State University School of Veterinary Medicine. Enclosed is my tax-deductible contribution of:

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Fall 2004

Local Artist Supports EHSP

Anita LeJeune, local artist from Lakeland, La.

Anita LeJeune, a local artist from Lakeland, Louisiana, has been supporting the School of Veterinary Medicine and the EHSP for several years by donating some of her artistic creations for fund raising auctions. To view the artist's equine and other works or to inquire about commissioned works, visit her website, www.anitalejeune.com, and help support the EHSP. The artist generously donates 20% of all sales to the EHSP. Anita, a native of Louisiana, holds a bachelors degree in fine arts from Louisiana State University. She has been painting professionally since 1986. Her love of animals seems compelling enough to appear on canvases quite regularly. Her works often focus on animals, landscapes and people of Louisiana doing what they do best, including crawfishing, farming, and sugar cane plantation scenes. Anita is a community artist for the Greater Baton Rouge Arts Council. She teaches her art form to students of all ages throughout schools in several parishes. Anita says, "I paint to discover, to share a moment, to follow a desire, and finally to fulfill a curiousity."

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