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CEH HORSEREPORT

A publication of the Center for Equine Health, UC Davis School of Veterinary Medicine

School of Veterinary Medicine

Infectious Disease and Equine Public Health

Several years ago, a meeting was held at the Center for Equine Health to discuss the future direction of equine infectious disease research. In attendance were faculty researchers with expertise in a number of scientific disciplines from the UC Davis School of Veterinary Medicine. The intention of the group was to identify both traditional and innovative investigative strategies that could significantly enhance the global effort to control the spread of infectious diseases in the horse and other animal species.

In spite of the fact that in 1968 the U.S. Surgeon General declared that the war on infectious disease had been won, the UC Davis group knew otherwise. They knew that of the worldwide human deaths each year, fully one-third were caused by infectious disease. They knew that more people are suffering from tuberculosis today than ever before. They knew also that the traditional weapons of vaccination and antibiotic therapy were becoming less effective in preventing infection, and that the spread of so-called "third world diseases" among the modern industrialized countries was now a fact of life. This initial meeting defined and delineated the problem. It also provided a stimulus for insightful discussion and set in motion a process of planning that took several months to complete. At the conclusion of this process, the Center for Equine Health had a research strategy for achieving significant new knowledge about the spread of disease among horses and other species, including humans. Groups were organized to investigate specific diseases such as Equine Protozoal Myeloencephalitis (EPM) or West Nile Fever. Others were charged with broader mandates, such as studying genetic variations within a virus strain that determine its ability to cause disease in the horse. The plan also included an innovative group of scientists whose mandate was to study pathogenic mechanisms common to all infectious diseases, rather than to study any specific disease itself.

One of the first organized scientific teams was charged with the investigation of EPM to determine when, where, and how horses become infected with the protozoal agents (*Sarcocystis neurona* and *Neospora hughesi*) that cause the disease. A five-year research plan was outlined, and the work progressed through the support of the Wayne and Gladys Valley Foundation. Better diagnostic tests also were pursued, resulting in the development of an immunoflourescent antibody test (IFAT) to more accurately identify exposure of the horse to EPM-causing agents. The development of this test has given veterinarians a tool that can rule out the disease as a cause of neurological deficits in horses. Recently, this group was able to identify and experimentally

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UCDAVIS School of Veterinary Medicine

DIRECTOR'S MESSAGE

Equine Public Health: For the Good of All

Dr. Gregory L. Ferraro

Public health officials are often quoted as saying, "Nobody cares about public health until there is an epidemic of a serious infectious disease." People generally are concerned about their own health and that of their families but seldom think about the importance of maintaining the health of the broader community. Yet, in today's world of rapid international travel, involving the movement of large numbers of humans, animals, and foodstuffs, the global spread of disease is an ever-increasing reality.

This phenomenon is of no less concern to equine health. Horses today are second only to humans in worldwide travel. Consequently, the chance for exposure to infectious agents abroad and the possibility for introducing disease into the home environment upon return are causes for concern. There are currently 17 diseases listed with the World Health Organization that are considered to be potential threats to global equine health. Under these circumstances, an outbreak of infectious disease that could impair the free movement of horses, or stop them entirely, is not only possible but probable. The results of such an epidemic could be devastating, considering that today's industry is entirely dependent on the free movement of horses for competition.

Faced with these facts, each of us within the equine industry has a solemn responsibility to become involved at some level with the maintenance of equine public health. The individual horse owner, trainer, rider, or veterinarian must pay attention to reported disease conditions, abide strictly with regulations designed for their control, and report outbreaks of disease whenever they occur. Equine industry officials must become involved in the regulatory processes for disease management and control and must support programs needed to define and deter the spread of disease. Medical scientists with expertise in both infectious disease and equine health must work diligently to identify pathogenic agents that pose a potential threat and identify methods for their control and eradication.

Each of us within the equine industry has a solemn responsibility to become involved at some level with the maintenance of equine public health.

The Center for Equine Health and its cooperating researchers have been focused on this issue for several years. We have worked to develop techniques for identifying serious pathogenic agents, to determine the extent of their virulence, and to design strategies and methods for their control or prevention. We have achieved a better understanding of how, why, and where disease-causing agents (viruses, bacteria, protozoa) develop their potential health threat to horses. As you will see in the pages to follow, we have made significant progress toward understanding the delicate balance between host, pathogen, and environment, which determines the rate and virility of infection within a local community and throughout the world.

To a large extent, these discoveries and the disease control methods that they produced have been made

possible by the visionary leadership and financial support of several philanthropic organizations to whom the horse is of particular interest. You have read and will continue to read about the West Nile Virus epidemic in the United States. Studies pertaining to this virus have been ongoing at the Center for Equine Health since its initial outbreak in Queens, New York, thanks to the support of the Stans Foundation. Our work with the long-standing problem of Equine Protozoal Myeloencephalitis (EPM) has been supported by the Wayne and Gladys Valley Foundation. Our School of Veterinary Medicine has an internationally recognized Equine Viral Disease Laboratory, due to the foresight and generosity of Bernard and Gloria Salick. This laboratory has undertaken a major equine viral disease research initiative made possible by the generosity of the Harriet E. Pfleger Foundation.

One of the most unique of the infectious disease research initiatives established by the Center for Equine Health has been the development of the Bernice Barbour Communicable Disease Laboratory. Supported by a New Jersey-based foundation of the same name, this research program is designed to study the very basic mechanisms within the host, agent, and environment that allow for the infection and transmission of pathogenic agents in humans and other animals, using diseases of the horse as experimental models. In this issue of the *Horse Report* we will present some of the remarkable discoveries this group has made due to the innovative vision not only of its scientists but of the Bernice Barbour Trustees as well.

So please, read with care and concern the information we are presenting here. Whether this is your first foray into the subject of equine public health or not, we hope you will conclude that everyone who cares for and enjoys the pleasure of horses *must* become involved with this issue. The Center for Equine Health, as well as every other institution or agency concerned with disease management, needs your concern, input, and support if we are to be successful in protecting the worldwide health of horses. ❄

Infectious Disease — Continued from page 1

reproduce an antigen that is secreted by EPM-causing parasites. This discovery may ultimately lead to a test to positively identify the presence of the parasite in sick animals. The work of these investigators has now taken on even more importance since *Sarcocystis neurona* was recently linked to increasing death rates among sea otters along the California coast.

Equine viral disease is another area of focus for Center for Equine Health scientists. Due to the initial support of horse enthusiasts Bernard and Gloria Salick, the Equine Viral Disease Laboratory was created through the Center for Equine Health and charged with the investigation of global viral diseases. This group has identified the genetic variation and virulence determinants for most strains of Equine Arteritis Virus in the world. They have developed a network of international collaborating scientists and have conducted in-depth studies of viral diseases such as African Horse Sickness and West Nile Virus in southern Africa, where both diseases are prevalent. Thanks in large part to the Stans Foundation, researchers in the Equine Viral Disease Laboratory have been able to study and track the progress of West Nile Fever across the United States. They are now conducting a prospective study on the emergence of the virus in California and are well positioned to contribute significantly to its control. This group has now partnered with the Harriet E. Pfleger Foundation on a long-term viral disease initiative designed to advance the identification and control of viral diseases that could negatively affect the international health, transport, and commerce of horses. One of the first projects of this initiative is the

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development of a vaccine to prevent African Horse Sickness, a serious and fatal disease of horses that appears to be on the verge of spreading globally. Another project involves the identification and study of respiratory viruses that are constantly present in the stables of athletically competitive horses to find out which of them are important to the dynamics of respiratory disease outbreaks.

Perhaps the most unusual of the infectious disease study groups is one that came about through the visionary leadership of the Bernice Barbour Foundation. The trustees of this animal philanthropic foundation came forward and requested that the Center for Equine Health develop a truly new and innovative approach to the study of communicable diseases in animals. While they were supportive of our efforts in the field of equine infectious diseases, they were interested in finding a way to utilize the CEH's recognized expertise to serve a broader interest in understanding the disease process in all animals. What resulted was the creation of the Bernice Barbour Communicable Disease Laboratory (BBCDL). It was designed to create an intellectual research umbrella to study the basic mechanisms of environmental pathogen transport, infection, and host immune response common to all disease-producing agents, regardless of species affected. Their concept was that if we could understand the primary way in which microbes go about their business, then we could develop disease-prevention strategies effective in all animals. In the BBCDL, diseases of the horse are used as a model to study factors common to the infectious processes of all diseases. While the concept behind the BBCDL was truly innovative and bold, it was not without risk, but the gamble has already paid off with some startlingly new insights. These will be described in more detail in the story on page 6.

What these last several years of work at the Center for Equine Health has demonstrated is that strategic long-term planning, combined with dedicated researchers and committed philanthropic support, can result in remarkable scientific achievement. The ultimate benefit of this innovative approach to veterinary research is the dramatic improvement to the health and welfare of animals. Its concept and implementation is, truly, the scientific wave of the future. ❄

HELPFUL TIPS

West Nile Virus Information Update

West Nile Virus (WNV) has made its appearance in California this year. As of June 29, 2004, the virus has been found in birds and mosquitoes in six Southern California counties. To date, the following cases of West Nile Fever have been reported:

8 confirmed human cases and 1 confirmed equine case in San Bernardino County
2 confirmed human cases in Los Angeles County
1 confirmed human case and 3 confirmed equine cases in Riverside County

Horse owners should prepare for what is to be an escalating problem by ensuring that all horses are properly vaccinated and that all standing water is removed or treated for mosquito larvae. The Centers for Disease Control and Prevention have predicted that California will be the epicenter for WNV in 2004.

All dead birds, especially crows, jays, and raptors, should be reported to the Dead Bird Hotline. Call the toll-free number **877-WNV-BIRD (877-968-2473)** or send an e-mail to: **arbovirus@dhs.ca.gov**.

WNV typically increases in incidence through the summer months to peak infection rates in August and September. The fact that the disease has not been diagnosed in your area yet does not mean that you will not be affected. Infected birds are capable of spreading WNV northerly throughout their Pacific migratory flyway at any time and should be expected to do so by late summer or fall. Horses exhibiting neurological signs of disease, whether vaccinated or not, should be examined by a veterinarian.

Vaccine Recommendations

There are currently two fully approved West Nile vaccines available for horses. Each requires an initial series of at least two vaccinations, followed by periodic "booster" injections. The Center for Equine Health recommends that horse owners keep their horses properly vaccinated at all times against this disease. We suggest that you consult with your personal veterinarian regarding which vaccine is most appropriate for your particular horses and how often you should administer booster vaccinations. For more information on West Nile Virus, visit the following Web sites:

http:///www.westnile.ca.gov
http://www.cdfa.ca.gov/ahfss/ah/pdfs/WNV%20fact%20sheet%20fc5.pdf

Current Research

The UC Davis Center for Equine Health, the Center for Vector-Borne Disease, and the Wildlife Health Center have been conducting a prospective study on the epidemiology of West Nile Virus in cooperation with the Sacramento-Yolo Mosquito Control District. The research project began in May 2003 and will continue for the next two to three years. The study is designed to define and describe the naturally occurring spread of the West Nile Virus through susceptible wildlife and domestic animal and bird populations. Mosquitoes and selected bird and animal populations are being monitored for exposure to the virus and incidence of clinical disease. This research is being supported by the Stans Foundation.

The Bernice Barbour Communicable Disease Laboratory

The Bernice Barbour Communicable Disease Laboratory was established four years ago with the purpose of taking a new approach to the conduct of infectious disease research. The laboratory created a "research umbrella" under which medical scientists with differing skills and expertise were brought together as a team. This team has embarked on long-term, multi-tasking studies of how and why pathogenic microorganisms are able to survive, infect, and cause disease among the animal species of the world. The laboratory was designed to focus on the basic mechanisms by which all infectious diseases are produced, rather than on individual diseases exclusively. Although the research would be conducted using pathogens that are common in horses, the studies would be directed toward demonstrating infectious processes that are characteristic of all animal diseases and thereby have broad relevance.

The scientific plan was to conduct research along three specific investigative tracks. (1) Studies of the life of infectious microbes outside the sick animal (environment). An attempt would be made to determine which factors allow an infectious agent (protozoa, bacteria, virus, etc.) to survive in the environment, reproduce, and present itself in sufficient numbers at a specific place and time to cause disease. (2) Studies of the means utilized by microorganisms to invade the host and cause disease (pathogen). Why, for example, are certain agents able to get past the body's protective barriers and cause damage when other, more abundant microbes cannot? (3) Studies of the complex system of immunological and inflammatory processes that the animal body (host) utilizes to protect itself against invading microbial enemies. The ultimate purpose of this investigative track would be to determine how the body's own physiological processes could be utilized to protect and defend itself from invasion and disease.

The Bernice Barbour Communicable Disease Laboratory has made considerable progress toward reaching these goals over the last four years, beginning with their environmental research. Waterborne transmission of infectious agents remains an area of public health that is inadequately addressed both in the United States and internationally. The virulence of waterborne infectious microorganisms depends on effective transport to susceptible hosts. Our research group hypothesized that the probability of waterborne transport of microbial pathogens is governed by factors that load a watershed with adequate numbers of infective pathogens, processes that attenuate or remove the pathogen load, and the efficiency of the hydrodynamic transport system into which it is deposited. To investigate that theory, the researchers studied naturally occurring phenomena to develop laboratory models to demonstrate the attenuation and inactivation after environmental contamination of groundwater with different strains of the protozoal parasite *Crytosporidium parvum.* They found that the likelihood of the waterborne transmission of this disease-producing organism depends on its ability to avoid irreversible binding to soil and/or stream sediments. This and other continuing studies, together, represent one of the most comprehensive evaluations of the fundamental processes that could eventually lead to preventing waterborne zoonotic diseases.

The Bernice Barbour Foundation was established by the late Bernice Wall Barbour of New Jersey, who devoted her life to making the lives of animals happier and healthier.

The study of infectious organisms has been directed to understanding the characteristics within families of microbes that determine their ability to cause disease. Researchers are also attempting to identify critical aspects of natural transmission and genetic evolution that result in the development of virulent characteristics in strains of previously innocuous microorganisms. One sophisticated model that is currently being used in this research is the manipulation and modification of infectious cDNA clones of virulent and nonvirulent strains of Equine Arteritis Virus. If we can determine in the laboratory those basic phenotypic viral parameters that affect infectivity, then this knowledge could be applied toward the development of improved diagnostic testing, vaccines, and potential new therapies.

The goal of the host research initiative is to identify host (horse) genes and their disease response activities that are critical to both disease resistance and susceptibility. These studies are aimed at developing improved diagnosis, treatment, and prevention of disease and have taken a two-pronged approach. One is pathogen-host gene investigations. These have been advanced by the advent of sophisticated real-time polymerase chain reaction and microarray (gene chip) technologies for the horse. The other equally promising area is the development of highly relevant equine cell culture systems that can be used to evaluate the response of the horse's first-line defense cells for invading pathogens. This "horse in a Petri dish" provides a reliable and reproducible assay system for the study of significant disease processes and avoids the use of live horses. The humane aspects of this development are more than obvious.

While the foregoing description of this research program may seem esoteric or enigmatic at first reading, one must realize that the acquisition of basic scientific knowledge is an absolute prerequisite to the development of new and improved methods for the management of disease in all species of animals. The cure and prevention of disease within your horse requires prior study and laboratory analysis of multiple medical hypotheses. The Bernice Barbour Communicable Disease Laboratory is devoted to discovering new knowledge regarding the basic principles that govern all aspects of infection and disease, because it is this knowledge that will provide the basis upon which all future therapeutic advancements will be made. As one cannot travel to space without the knowledge of the laws of physics, one cannot cure without the why, where and how of microbial pathogenics. ❄

Meet Liam

Liam with his mother Laura.

Born on March 21, 2004, Liam is the first-ever draft horse to be bred and conceived at the Center for Equine Health. His mother Laura, a purebred Belgian mare, was bred to the CEH's now-famous Belgian sire Spanky as part of our ongoing research project on Chronic Progressive Lymphedema in draft horses. Liam was named in honor of the firstborn son of one of the research scientists on the project, Dr. Hilde De Cock, a Belgian national herself.

Liam will be monitored throughout the initial two years of his life to determine when the first stages of the disease occur in these horses. It is suspected that early subclinical manifestations of this degenerative condition may occur early in life and long before any of the classically described skin lesions are evident.

Liam has become quite a popular figure at the CEH and is seen frequently in the company of the Center's director.

CEH Congratulates Winners of California Thoroughbred Foundation Scholarships

California Thoroughbred Foundation scholarships have been awarded to fourth-year veterinary students Jennifer Donofrio and Ryan Carpenter.

Jennifer received her undergraduate degree in biology at UC Riverside and a Master's degree in veterinary science at the University of Kentucky. She is interested in a variety of aspects in veterinary medicine, among which are lameness, reproduction, anesthesia, foals, and sport-horses. It may be difficult for her to choose her field of specialty in the not-too-distant future.

Ryan earned his undergraduate degree in animal science at Cal Poly. Perhaps his particular interest in veterinary orthopedics is a reflection of his personal enjoyment of snowboarding, as he will be pursuing an internship in that field followed by a residency in surgery. Congratulations to these two outstanding students!

Jennifer Donofrio and Ryan Carpenter with Times Diamond Lil and her foal.

CEH Horses for Sale on the Internet

Progeny of Playboy Sailor (L) and Zippin Bonanza Flash (R).

The Center for Equine Health has horses for sale on their Web site. Choose from many quality AQHA, APHA, APhC, and TB yearlings and weanlings (coming soon). Sires include **Masterful Advocate** (TB), winner of $723,650 in 26 starts; **San Par**, own son of Peppy San and winner of over $16,000 in major cutting horse events; **Zippin Bonana Flash**, sire of many pleasure horses; and **Playboy Sailor**, who has competed and won in reining and now has sired his first foal crop. Our mares include own daughters of **The Investor**, **Zippos Mr. Good Bar**, **Leaguers Sandman**, **Ima Freckles Two**, and **Nu Cash**. Don't miss out! Call us at (530)752-6433 or, better yet, view the horses at:

http://www.vetmed.ucdavis.edu/ceh/Horses4Sale/horse4sale

Fatal Protozoal Parasite Found in Both Horses and Sea Otters

Equine protozoal myeloencephalitis (EPM) is a neurological disease that occurs when protozoal parasites infect and invade a horse's central nervous system. Infection with this parasite results in characteristic lesions in the brain and spinal cord and causes incoordination and muscle atrophy. The two protozoal parasites have been identified as *Sarcocystis neurona* and, less commonly, *Neospora hughesi*. Opossums are considered the definitive host for *Sarcocystis neurona*, shedding the infective sporocysts (egg-like stage of development) in their feces. Horses become infected by ingesting food or water that has been contaminated with opossum feces containing the infective sporocysts. The definitive host for *Neospora hughesi* has not been identified.

In approximately 2 to 4% of cases, the sporocysts ingested by a horse migrate from the intestinal tract into the bloodstream and cross the blood/brain barrier, causing disease. There, they attack the horse's central nervous system. The onset of the disease may be slow or sudden, and the signs vary depending on the type of damage to the central nervous system. If left undiagnosed and untreated, EPM can cause devastating and lasting neurological deficits.

In April 2004, an unusually high number of dead or stranded sea otters from the Morro Bay area were found to be infected with the same parasite that causes EPM in horses, *Sarcocystis neurona*. Such deaths have been reported previously, but the number of otter deaths during this particular time period greatly exceeded that in previous years, and localized clustering of *Sarcocystis neurona* infections has not been documented before. Many otters stranded alive had clinical signs suggesting brain damage. To date, affected otters have tested negative for several pathogenic viruses, including West Nile virus. The harmful algal bloom toxin, domoic acid, may have contributed to the deaths of a few sea otters, as well as a second protozoal parasite, *Toxoplasma gondii*. Sea otter mortality returned to more normal levels by May 2004.

Investigations into the sea otter deaths are being conducted. Scientists believe that the *Toxoplasma* parasite, found in cat feces, ends up in the ocean through freshwater runoff. The parasite may then be concentrated by ocean filter feeders such as shellfish, which are then eaten by the otters. Something similar may be happening with *Sarcocystis neurona*, but researchers do not yet know if it is concentrated in filter feeders. Investigations also are continuing into the epidemiology of EPM in horses. In horses, researchers have described the incidence of EPM, the geographic distribution of the disease, risk factors associated with infection, vulnerability of fetuses in the womb, and the age at which horses are more likely to be exposed to the parasite under field conditions.

The case of *Sarcocystis neurona* appearing in two quite different species underscores the importance of understanding the basic mechanisms by which all disease spreads. While not officially part of the Bernice Barbour Communicable Disease Laboratory (BBCDL), the research group investigating the occurrence of *Sarcocystis neurona* in horses (equine protozoal myeloencephalitis) exemplifies the founding principles of the BBCDL. Their knowledge of the mechanisms by which EPM occurs in horses, the relationship of the disease to the environment, and the diagnostic testing methods they have developed can all be applied to the disease caused by the same parasite in sea otters. ❄

Equine Viral Arteritis: A Continuing Threat

Equine viral arteritis (EVA) is a contagious disease of horses that causes fever, ocular and respiratory signs, swelling of the limbs, and abortion. Although the disease is not fatal, it tends to occur as an outbreak, affecting multiple horses. It is usually attributable to the movement of horses on racetracks or stud farms. Venereal transmission occurs through the contaminated semen of carrier stallions.

EVA occurs throughout the world, but the disease is of increasing concern to the U.S. horse industry. It is caused by the equine arteritis virus (EAV), which is shed in the semen of persistently infected "EAV carrier" stallions. It is transmitted to mares during natural or artificial breeding. The virus is then spread by aerosol (through breathing and sneezing) from acutely infected mares to susceptible horses, young and old, to precipitate an outbreak of EVA. Such an outbreak is characterized by any combination of effects: abortion of pregnant mares, severe pneumonia in foals, and a systemic infection in adult horses that may be accompanied by fever, hives, nasal and ocular discharge, and swelling of the lower body parts. However, *the vast majority of horses with EAV infections do not show signs of the disease*, and carrier stallions are otherwise healthy. Only stallions can become persistently infected carriers of EAV.

The occurrence of EAV infection varies markedly between horse breeds in the United States. Infection is most common in Standardbred horses and Warmbloods, whereas it is unusual in Thoroughbreds and rare in many other breeds. Although EAV infection is relatively common in Standardbred horses, there are few reports of any recent outbreaks of EVA in this breed. Because of several high-profile outbreaks of EVA in racing Thoroughbreds in the last 25 years, the incidence of EAV infection has been minimized through proactive vaccination of colts prior to puberty to prevent them from becoming carriers. The situation with Warmbloods is problematic, as discussed below.

Because the carrier stallion clearly is the natural reservoir of equine arteritis virus, control of these animals is critical to the control of EVA.

The United States is the only country with a substantial horse industry that does not have a national program to regulate the importation of stallions and semen with regard to EVA. Warmblood breeds constitute a very substantial proportion of the stallions imported into the U.S. The majority of these stallions come from Europe, where EAV infection is stringently regulated, so that carrier stallions are identified and precluded from movement within the Union. Coincidentally, about 20% of European Warmblood stallions imported into the U.S. are seropositive to EAV—that is, they have a significant increase in antiviral antibodies in their blood, demonstrating prior exposure to the virus—and a substantial proportion of these presumably are carriers of the virus. In the absence of any national EVA certification program in the U.S., owners can unwittingly import Warmblood stallions that are shedding EAV and thus pose a significant threat to horses in this country.

Breeders who intend to import stallions into the U.S. should be aware of this, especially if they are importing Warmblood stallions from Europe. The occurrence of EAV infection is highest among selected populations of horses in portions of continental Europe, whereas it is uncommon in England, Australia, New Zealand, and South Africa. Producers should confirm that any stallions they intend to import are screened for antibodies to EAV in a reputable laboratory prior to importation. Carrier stallions typically have high levels of neutralizing antibodies in their serum. Unfortunately, results from serological tests for EVA frequently differ among different testing laboratories. Therefore, we recommend that testing be done in interna-

tional reference laboratories such as at Weybridge, England; the Gluck Equine Center at the University of Kentucky; and the National Veterinary Services Laboratory in Ames, Iowa. These are all international reference laboratories, and their results should be comparable. Semen from stallions also can be evaluated for the presence of EAV by virus isolation and polymerase chain reaction (PCR assay), and these assays also should be conducted at international reference laboratories.

Because the carrier stallion clearly is the natural reservoir of EAV, control of these animals is critical to the control of EVA. Specifically, the carrier state can be prevented by prepubertal vaccination of colts, but once infected, there is no treatment for the carrier state other than castration. Thus, carrier stallions should be evaluated regularly to determine whether or not they still are shedding virus, and they must only be bred to mares who are immune either through vaccination or prior natural exposure. In addition, immune mares that are bred to shedding stallions should be isolated for 2 to 3 weeks after breeding before they are mixed with other mares, especially pregnant mares. EVA is readily managed through an integrated strategy that includes screening of all horses prior to importation, vaccination of prepubertal colts, and the strict breeding segregation of any carrier stallions.

Outbreaks of EVA remain uncommon, but the consequences of individual outbreaks can be devastating through losses associated with abortion, foal pneumonia, and persistent infection of unvaccinated colts. And, because other countries regulate the movement of animals based on their prior exposure to EAV, the movement of seropositive animals from the United States may be problematic, even for competition. Owners of breeding stallions and importers of equine semen should thoroughly monitor for the presence of EAV in order to avoid precipitating an outbreak of EVA. ❄

Dollars for Davis Benefit Ride

Saturday, July 24, 2004 - 10:30 am
East Bay Mud Trails
Upper San Leandro Reservoir, Moraga

The Moraga Horsemen's Association invites you to ride the beautiful Moraga hills on Saturday, July 24. Profits from the donations raised will benefit the UC Davis Center for Equine Health.

You may elect to compete in the optional Trail Trials competition. Approximately six miles of moderate to steep terrain on mostly fire trails will be available to both competitors participating in the Trail Trials event as well as to those wishing only to ride for pleasure.

Minimum donation is $25.00; optional Trail Trials entry fees are $18.00 for adults and $13.00 for juniors. Under age 18 must be accompanied by an adult rider throughout the ride. Lunch will be available by pre-order for $5.00 (BBQ tri-tip sandwich with fixin's). For more information, contact Linda Ostman at 925/376-9472.

Required Equipment:
Helmets are recommended for all riders. Trail Trial competitors must have a saddle, bridle (any type), and halter with lead rope or halter/bridle. Hoof pick must be carried on the ride, and a canteen is highly recommended.

Ride Information:
Gate to open at 7:30 am. Registration starts at 8:00 am. Staggered starts begin at 9:00 am. Water available at ride site and on the trail for horses.

Directions:
From Highway 24, take Orinda exit. Follow signs to Moraga. You will be on Moraga Way. Go approximately 4 miles to signal by Jack-in-the-Box and turn right on Canyon Road. Go over bridge and look for driveway on left at mailbox for 423 Canyon Road, about 1/8 mile after bridge. Please close the gate. If needed, overflow parking available at Valle Vista staging area, next driveway up Canyon Road.

Weather Conditions:
Please note that if the weather is extremely hot with high fire danger, the parks could be closed. If so, we will have to cancel this event. If questionable, call 925/376-9472.

Equine Emergency and Disaster Response Symposium Generates E-Mail Forum

At the request of participants in the Equine Emergency and Disaster Response Symposium on April 24, the UC Davis Veterinary Emergency Response Team has set up an e-mail forum for people to ask questions of each other and bring rescue groups together to communicate. The aim of this forum is to promote preparedness among people and their communities.

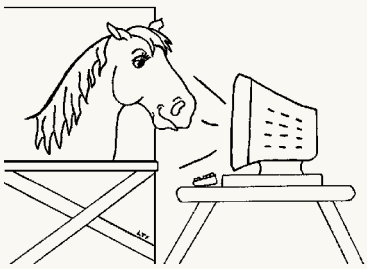
The e-mail address for this forum is:

vert@vmth.ucdavis.edu

For further information, visit the VERT Web site at:

http://www.vmth.ucdavis.edu/home/VERT/

WHOAH, CEH IS ON LINE!



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