STILLWATER, Okla.—Dr. Lara Maxwell, Assistant Professor of Physiological Sciences at the Oklahoma State University Center for Veterinary Health Sciences, is conducting research to determine the efficacy of an antiviral drug to fight Equine Herpes Virus type I (EHV-1). Funded by a Grayson Jockey Club grant, this study on the protection of horses from the devastating neurological effects of viral disease is of national interest.

“This study is important for the horse industry,” explains Maxwell. “As the horse is a performance animal, neurological dysfunction can not only be debilitating, but also career-ending. Grayson Jockey Club is particularly interested in EHV-1 because the virus has struck racing barns with alarming regularity in recent years, resulting in quarantines, race cancellations, and even the death of horses.”

EHV-1 starts with symptoms similar to a cold—a fever and runny nose. As it progresses, the virus moves out of the nasal area and into the blood. After the second temperature spike, the virus may cause abortion in pregnant mares. Alternatively, the virus can produce neurological signs in adult horses of either sex, starting with a loss of coordination and progressing to an inability to stand.

Dr. Maxwell’s study involves three groups of infected horses: no drug treatment (control group), drug started at the onset of fever, and drug started before infection. These three groups were designed to mimic the beginning of an outbreak of EHV-1 in a barn, when some horses are already infected with the virus while others have not yet been exposed. The study seeks to determine whether drug treatment of both the infected and uninfected horses will help to prevent severe neurological disease.

“Researchers have had great difficulty in testing whether vaccines and drugs can protect horses from neurological disease due to EHV-1, because we haven’t been able to reliably duplicate the signs of disease. Therefore, we’ve employed a new model recently developed by Dr. George Allen, a collaborator of ours at the University of Kentucky,” she reports. “From our studies so far, it appears that this new model will be more useful than previous models, allowing us to better help the horse industry to control this dangerous virus.”

The live animal studies have been completed, and Dr. Maxwell is encouraged by the preliminary results. She is now working on the laboratory analysis to corroborate the findings from the clinical portion of the study. But Dr. Maxwell isn't going it alone. She has a team of collaborators from Oklahoma State University and Kentucky.

"We have the manpower, the resources and the expertise necessary to do research of this caliber right here in Stillwater," says Maxwell. "Even though we are one of the smallest veterinary colleges with one of the lowest state appropriations, we have been able to successfully compete against world-renowned researchers for funding. As a result, we expect to advance equine health from our unique combination of a new disease model, superb faculty, and excellent facilities."

She has assembled an unusual multidisciplinary team, with Veterinary Center basic sciences faculty Drs. Richard Eberle, a herpes virus virologist; Jerry Ritchey, herpes virus pathology expert; Grant Rezabek, equine pathology expert; and Dianne McFarlane, an expert on comparative aging.

The equine medicine faculty is also contributing their clinical acumen to the project, including Drs. Lyndi Gilliam, Todd Holbrook, and Charles MacAllister from the Boren Veterinary Medical Teaching Hospital and Dr. Brad Bentz from Hagyard's Equine Medical Institute in Kentucky.

The live animal portion of the research was conducted at the OSU Veterinary Center's Equine Research Park in Stillwater, which is equipped with a specialized biosafety level two facility necessary for this type of equine infectious disease research.

While it is too soon in the process to tell for sure, perhaps their study will show that drug therapy decreases viral shedding and the clinical signs of EHV-1 disease, especially the potentially lethal neurological form of the disease. Maxwell hopes to present preliminary results later this year at a national meeting.