AHS Research Grant Awards

Find out how your AHS membership dollars are working to improve your own breeding success.

Did you know that the American Hanoverian Society makes an annual contribution to equine research through the AHS Breeding Technology Research Grant Award program? Since its inception in 1998, this program has made a financial contribution to five different studies devoted to horse health. In this article, we'll explain how this program works, and what questions scientists are answering with our support.

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Every year, the Breeding Technology Committee solicits proposals from veterinary schools and other equine health researchers for a $1000.00 contribution to a research project. The proposed research must be for the health and welfare of horses, and in most cases, the selected studies are in the field of equine reproduction. The Breeding Technology Committee reviews the proposals received, and makes a recommendation to the board regarding the proposed recipient.

How Does it Benefit You?

Simple. More research means healthier horses and higher levels of breeding success. Higher levels of breeding success means there is a better chance you will make that ideal cross and perhaps produce the next world champion. In addition, the costs associated with producing a foal are lowered and profits are increased. As a breeder, you can make a living! As a rider, you'll find more quality riding horses available at a reasonable price.

Here is a summary of the studies The American Hanoverian Society has supported through the Breeding Technology Research Grant program over the past six years:

1998: Defining Stallion Behavior

- ***Who received the grant?*** World renowned behavior specialist Sue McDonnell of the University of Pennsylvania.
- ***The Question:*** Dr. McDonnell's research has focused on equine reproduction, especially stallion behavior and physiology.
- ***The Answers:*** Dr. McDonnell's work is ongoing, and has resulted in the publication of her book, *Understanding Horse Behavior,* and her new 2002 book, *The Equine Ethogram: A Practical Field Guide to Horse Behavior.* This book will be a defining work on horse behavior for years to come. By observing horses in their natural environment, she is able to help determine which management practices are likely to be most successful for breeding and raising healthy, contented horses in captivity.
- ***How Will it Help?*** Dr. McDonnell discovered that in natural situations stallions mount several times without erections before actual copulation, that stallions and mares at liberty interact almost continually, and that stallions kept in bachelor herds have lower testosterone, libido and semen quality than stallions kept with groups of mares. These discoveries might directly help you manage your stallion if he's inefficient in the breeding shed.

1999: Equine Viral Arteritis

- ***Who received the grant?*** Dr. Peter Timoney and Dr. William McColum of the University of Kentucky.
- ***The Question:*** What is the danger of Equine Viral Arteritis (EVA), and how can we manage it?
- ***The Answers:*** Dr. Timoney and Dr. McColum are world authorities on EVA, a viral disease that, among other things, can cause abortion in mares. Their studies have shown that the equine arteritis virus is easily tested for and produces long-lived immunity after exposure, either naturally or by vaccination. Most important for our breeding programs, they have demonstrated that stallions can become carriers, shedding the virus in their semen. Semen from carrier stallions can be tested for presence of the virus.
- ***How Will it Help?*** With this information available, we can now test the EVA carrier status of a stallion to determine whether your mare would be at risk for contracting this virus through the stallion's semen. If the best stallion for your mare is an EVA carrier, you can vaccinate your mare and have confidence that she will be protected from the disease. ▸




SUSAN SEXTON PHOTOS

2000: Predicting Ovulation

- ***Who received the grant?*** Dr. Elaine Carnevale, a member of the reproductive specialists team at Colorado State University.
- ***The Question:*** Can computer-assisted technology be used to more accurately determine the precise time of ovulation? Dr. Carnevale used computer-assisted analysis of ultrasound images to characterize changes in the ovary during the time between the 14 hours preceding and the 24 hours following ovulation. Her goal was to characterize specific, measurable changes in the ovary during this time period in the hopes that these image attributes might eventually be used to accurately predict the precise time of ovulation.
- ***The Answers:*** Dr. Carnevale discovered that there are specific measurable changes observed both in the pre-ovulatory follicle during the hours preceding ovulation and in the ovulation sites immediately following ovulation. As soon as the technology can be developed to allow your own vet to easily transfer data for computer analysis, this research can be directly applied to your own breeding program.
- ***How Will it Help?*** Timing of insemination is critical for successful breeding, particularly when using frozen semen where insemination within six hours of ovulation is the goal. Any tool that helps pinpoint the precise time of ovulation without requiring multiple ultrasound examinations can reduce the labor required for successfully timed breedings, and increase the chance your mare will become pregnant.

2001: Improving Frozen Semen

- ***Who received the grant?*** Dr. Wynne Di Grassie of Oklahoma State University.
- ***The Question:*** Can the fertility of frozen semen be improved by adding back seminal plasma, a component of the semen that is removed during the freezing process? If you have ever used frozen semen in your own breeding program, you know that conception rates fall far below those with fresh, transported semen – even when all goes well. Part of this may be due to the removal of the seminal plasma, a step in semen preparation that's required during the freezing process. Dr. Di Grassie examined the possibility that adding back seminal plasma at the time of insemination might improve longevity, motility and other features of the sperm cells that could enhance fertility.
- ***The Answers:*** Unfortunately, the results were disappointing. There was a slight tendency for improved plasma membrane integrity using plasma from a highly fertile stallion, but the data was inconsistent.
- ***How Will it Help?*** Anything that improves the fertility of frozen semen will benefit breeders using this technology. Further work may improve these results, but we need to know what doesn't work in order to focus on what does.

2002-2003: Answers About OCD

- ***Who received the grant?*** Three German institutions have joined together to work on this project, including the Clinic for Horses at Berlin Free University, The Institute for Animal Breeding and Animal Genetics at Georg August University, and the Institute for Animal Nutrition at the University of Hannover.
- ***The Question:*** What is the heritability of osteochondrosis (OCD), and how do environmental factors such as nutrition and foal-raising practices affect the frequency and development of this developmental orthopedic problem?
- ***The Answers:*** In 2002, the incidence of OCD was recorded from radiographs taken of more than 600 foals at more than 80 Hanoverian breeding farms in Germany. In this ongoing study, these radiographs, and radiographs from foals of subsequent years will be compiled and pooled with information on feeding practices, foal management and exercise programs in order to help determine risk factors for OCD. As this project unfolds, researchers hope to learn more about specifics of heritability of this disease.
- ***How Will it Help?*** OCD is a very common developmental orthopedic disease seen in horses, and is fairly prevalent in our breed. If you have ever had a foal diagnosed with OCD, you are well aware that expensive surgery may be required, and long-term soundness can be in question. The goal of this study is to reduce the incidence of this disease. By determining factors that influence heritability, as well as management factors associated with its incidence, these researchers may help reduce the chance you will ever face OCD in a product of your own breeding program.

The American Hanoverian Society's contribution to equine research is very much appreciated by equine scientists because research money for horses is very limited. Scientists also like the opportunity to let us know about all their fascinating work and new discoveries. As end users of this knowledge, our breeding programs and our horses are the ultimate beneficiaries. ■

Contributed by Barb Crabbe, DVM and Anne Schmidt.

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Former AHS board member Anne Schmidt has headed the Breeding Technology Committee for a number of years. Since 1987 she has operated Classic Sires, an equine semen importation service.