

Morris Animal Foundation  
2006 - 2007 Llama/Alpaca Studies

300 Series = First Award Proposals  
400 Series = Fellowship Training Proposals

Multi-year llama/alpaca studies funded for another year:

D05LA-301 Curtin University, "Discovery of Microsatellites in Alpacas", Kylie Munyard, BSc, Ph.D., 2 Years, Second Year: \$44,021.00

As alpacas become more popular, undesirable genetic traits such as deafness and susceptibility to disease have also become more prevalent. Currently, there is little known about alpaca health issues. One particularly useful tool for studying genetic traits and diseases is a comprehensive genome map. Another MAF-funded study has nearly completed a radiation hybrid map of the alpaca genome that includes about 600 DNA markers. To increase the accuracy of the map, investigators in this study hope to discover an additional 100 to 200 markers. They also plan to develop a highly sensitive identity/parentage test for distinguishing between two animals. The addition of these markers and the development of an identity test will help develop genetic tests for disease that can be used to improve alpaca health. This grant will support a young scientist's work in genetics.

New llama/alpaca studies:

D06LA-011 The University of Georgia, "Prevalence of Anthelmintic Resistant Gastrointestinal Nematodes in Camelids", Lisa Williamson, DVM, 2 Year(s), First Year: \$44,495.00, Second Year: \$21,800.00, Total: \$66,295.00

Gastrointestinal parasites are a leading cause of disease in all grazing livestock, including camelids. Llamas and alpacas imported into new habitats, such as North America, are exposed to a new array of these parasites, making worm-related deaths an increasing problem. These parasites are difficult to manage because they are often resistant to dewormer medications, but no one knows the current magnitude of the problem in camelids. This study will determine the prevalence of resistant worm populations in camelids. Also, because these parasites often cause anemia, the researchers will determine whether the FAMACHA eye color chart, which predicts degree of anemia in livestock, will be useful in camelids as well.

D06LA-014 University of Minnesota, "Pilot Study: Application of Bovine Genomic Tools to Genome Mapping in Llama/Alpaca", Kent M. Reed, Ph.D., 1 Year(s), First Year: \$7,628.00, Total: \$7,628.00

Despite their increasing popularity, little is known about the genetic traits and diseases of llamas and alpacas. Comparing genetic markers in similar species has been tremendously helpful in developing genetic maps. Because llamas/alpacas are similar to cattle, researchers will evaluate 135 genetic markers developed for genetic mapping of the bovine genome to determine whether they apply to llamas and alpacas. This could significantly advance the understanding of the genomes of camelids.

D06LA-302 Oregon State University, "Development of a Quantitative Method of Assessing Insulin Sensitivity in Camelids", Anna Firshman, BVSc, Ph.D., 2 Year(s), First Year: \$12,342.00, Second Year: \$5,165.00, Total: \$17,507.00

Hospitalized camelids (llamas/alpacas) often develop a condition known as fatty liver which, regardless of the severity of the initial problem, often causes their death. Their susceptibility to this condition may in part be due to their unique way of handling blood sugar. Previous studies have shown that these animals have reduced glucose tolerance and a sensitivity to insulin compared to other species. This study will evaluate insulin secretion and sensitivity in these animals using a special technique called hyperglycemic (HG) and hyperinsulinemic euglycemic (HE) clamping, which is considered the gold standard for measuring insulin secretion and sensitivity in other species. They hope to gain greater understanding of camelid physiology and to develop effective treatment strategies.

#### New approved/unfunded llama/alpaca studies

D06LA-004 Brigham Young University, "Generation of a Camelid Genomic Linkage Map Using a Llama BAC Library", David L. Kooyman, Ph.D., 3 Year(s), First Year: \$34,204.00, Second Year: \$25,402.00, Third Year: \$37,282.00, Total: \$96,888.00

South American camelids, especially llamas and alpacas, are increasingly in popularity in the United States, but little is known about their genetic makeup. In most livestock and companion animal species, scientists use a variety of tools, including BAC libraries and linkage maps, to help them with genetic work. These tools help to isolate and identify genes linked to specific traits and diseases. Until recently, these tools were unavailable for camelids. Researchers in this study already have built a BAC library and will use it to identify genomic sequences and to then build a linkage map that can be used for further genetics research of these species. This linkage map will add to a radiation hybrid map that is being developed through another MAF grant, providing an invaluable tool for future work.