

FOUNDATION FOR BIOMEDICAL RESEARCH

– HORSE FACTS –

ANIMAL RESEARCH SAVES ANIMALS, TOO

– RECENT ADVANCES IN EQUINE MEDICINE –

“OUT STANDING” IN THEIR FIELD

Stem-cell Therapy for Horse and Human Athletes

Tendon injuries have been the bane of equine and human athletes for ages. Now, a cutting-edge stem-cell treatment has proven effective in racehorses. In one study, with 160 Thoroughbreds, the number of horses that recovered from potentially career-ending tendon damage was fully doubled by the stem cell therapy. Dr. Roger Smith of the UK's Royal Veterinary College infused stem cells into more than 160 horses with damaged digital flexor tendons. The stem cells repopulated the tendon with flexible new tissue, preventing the formation of scar tissue. This therapy, first developed in the lab with rats and rabbits, may eventually be used to treat humans and other animals suffering from tendon problems.

Respiratory Disorder Slows Down Racehorses

Biomedical research involving horses revealed the link between a respiratory disorder and impaired racing performance. Exercise-induced pulmonary hemorrhage, or EIPH, is a condition in which blood leaks from the pulmonary artery into the bronchi and trachea, making it difficult for a sprinting horse to breathe. Dr. Kenneth Hinchcliff of Ohio State University examined more than 700 Australian Thoroughbreds after they raced, and established a direct connection between the degree of EIPH present and the horse's finishing position. Horses with the lowest grade of EIPH were three times more likely to win earnings than those with higher levels of the disorder.

Eminent Veterinary Scientist Combats Strangles

Strangles is one of the most common and devastating equine diseases. Dr. John Timoney of the University of Kentucky is the leading researcher of the cause of strangles, the bacterium *Streptococcus equi*. His examination of the structure of the pathogen has led to exciting progress in the quest to refine existing strangles vaccines, which are of dubious efficacy. He has identified several proteins on or secreted by the bacterium that improved vaccines and treatments may be able to target.

Nasopharyngeal Anatomy Study Advances Equine Vaccine Research

Dr. Pawan Kumar of India's CCS Haryana Agriculture University conducted research at the University of Kentucky on the anatomy of the horse's nasal cavity. His investigations revealed the presence of microvillus, or M-cells, on the horse tonsil. M-cells—previously not known to exist in the horse—contain tiny protrusions that can bind to vaccine proteins. Consequently, this discovery may enable scientists and veterinarians to formulate more effective vaccines that can be delivered to horses through the nose.

Animal Research Led to the First Intranasal Equine Flu Vaccine

The first intranasal equine flu vaccine was extensively tested on horses. To determine the effectiveness of the vaccine, scientists and veterinarians administered it to more than 1,000 horses, some of which were subsequently exposed to the extremely virulent strains of flu the vaccine was designed to protect against. Each horse, along with unvaccinated control group horses, was subsequently examined for signs of infection. The results of this testing was sufficient to convince the USDA to approve Flu Avert for general equine use.

American Quarter Horse Association Funds Equine Research

In 1960, members of the American Quarter Horse Association (AQHA) realized that diseases might ravage their industry unless they increased the amount of research conducted by veterinary scientists. Consequently, the AQHA formed a Research Committee to disburse grants to scientists conducting worthy studies. Its first grant, to study equine parasites, led to today's anti-parasite medications. Later research funded by the AQHA resulted in breakthroughs including finding the cause of hyperkalemic periodic paralysis, developing a diagnosis for equine infectious anemia, validating the use of DNA markers for parentage verification, and advances in controlling and treating laminitis. During the last four-and-a-half decades, the AQHA has contributed more than \$5 million in grants to critical research projects.

Equine Infectious Anemia and the Coggins Test

Equine Infectious Anemia (EIA) is a serious equine infectious disease, closely related to HIV, which is spread primarily by horse flies. Veterinarians have been able to control the incidence of EIA through the common use of a test developed by Dr. Leroy Coggins in 1970, following research on EIA-infected pony spleens. Dr. Coggins conducted much of the preliminary research for the test in mice and the Coggins Test, as it is now known, was adapted from a similar test used to detect antibodies for African Swine Fever in pigs.