



Morris Animal
FOUNDATION

EQUINE REPORT 2016

Equine health-specific research funding lags behind many other species. For 57 years, Morris Animal Foundation has worked to change this dynamic. Our funding supports innovative research ideas, investigating and finding solutions for new and existing health problems in horses. We are proud to be one of the few organizations that can support small- and large-scale, multi-institutional studies on major and complex equine health issues, including foal pneumonia, cancers and orthopedic disease. Our efforts have led to the discovery of new and improved methods and techniques to diagnose and treat these diseases and other health challenges in horses. In the last year, Morris Animal Foundation helped researchers around the world:

uncover genetic drivers of cancers

Skin and tissue tumors are the most common cancers of horses. Our researchers identified a genetic mutation associated with increased risk of ocular limbus squamous cell carcinoma in Haflinger horses, a breed with a high incidence of this eye tissue cancer. Other researchers have pinpointed genetic regions associated with equine sarcoid tumors, a common skin cancer. Finding genetic markers is critical for identifying at-risk horses, and enabling development of new cancer prevention and treatment methods.

tackle antibiotic-resistant foal pneumonia

Rhodococcus equi is a widespread soil bacterium and common cause of pneumonia in foals. The incidence of antibiotic-resistant foal pneumonia is on the rise, with some farms reporting a 40 percent increase. Our researchers identified a new gene not previously reported in other bacterial species. The gene was present in *R. equi* antibiotic-resistant strains but not in strains responsive to treatment. This discovery is a first step toward finding solutions to reduce treatment failures in foals with this frequently fatal pneumonia.

improve stem cell therapies

Veterinarians use stem cell therapies to treat tendon and ligament injuries in horses, but little is known about how stem cells work or which types work best. Our researchers designed a tracking system to understand stem cell lifespan and dispersal, known healing factors. Another research team designed an artificial tissue-engineering device that mimics tendon injury and rehabilitation to determine optimal stem cell type for treatment. Both inventions will help optimize stem cell strategies for orthopedic injuries.

OUR INVESTMENT IN HORSES

Morris Animal Foundation supports equine health experts around the world. In 2016, our funding is helping researchers:

- identify genes associated with **recurrent uveitis**, a common eye condition
- improve diagnosis and treatment of **insect bite hypersensitivity**, one of the most common allergic skin diseases
- find a new treatment strategy for antibiotic-resistant **foal pneumonia**
- understand how gait differences and genetic risk factors contribute to **osteochondrosis**, a developmental orthopedic disease in young horses
- search for candidate genes associated with **equine metabolic syndrome**, a hormonal disorder
- combat **glanders**, a contagious, life-threatening bacterial disease affecting multiple organs, including upper respiratory tract, lungs and skin
- improve regenerative therapies for **musculoskeletal injuries**
- create a lung tissue bank to study equine respiratory ailments, including **recurrent airway obstruction** and **inflammatory airway disease**
- discover new strategies for persistent **equine herpesvirus** infections that cause respiratory disease, fetal loss and neurological disorders
- unravel genetic mechanisms associated with **bilateral corneal stromal loss**, an eye disorder that causes vision loss in Friesian horses
- address the maximum weight a horse can carry, a potential **welfare concern**
- understand immune response to bacterial infections associated with many diseases including **gastrointestinal disease** and **foal sepsis**
- evaluate a new surgical technique to repair **upper respiratory tract obstruction**
- develop a vaccine for **penile cancer**, a common but difficult-to-treat disease

BY THE NUMBERS

FUNDING

SINCE 1960:

\$17.7 million invested

437 equine studies funded

57 institutions supported

HEALTH

44 CURRENTLY FUNDED STUDIES IN:

- 2** cancer
- 4** endocrine/metabolic
- 1** gastroenterology
- 1** general health
- 6** genetics
- 5** immunology
- 8** infectious disease
- 11** musculoskeletal
- 1** neurology
- 1** nutrition
- 1** physiology
- 3** respiratory

ABOUT MORRIS ANIMAL FOUNDATION:

Morris Animal Foundation is a nonprofit organization that invests in science to advance animal health. The foundation is a global leader in funding scientific studies for companion animals, horses and wildlife. Learn more at morriscaninialfoundation.org.

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