

# Zweig

From the Harry M. Zweig  
Memorial Fund for Equine  
Research at the Cornell University  
College of Veterinary Medicine



No. 73 June 2022

## Delco named Harry M. Zweig Assistant Research Professor in Equine Health

*By Melanie Greaver Cordova*

In recognition of her dedication to extending the healthy lifespan of horses and improving their quality of life, Michelle Delco '98, D.V.M. '02, Ph.D. '16, has been named the next Harry M. Zweig Assistant Research Professor in Equine Health. This is a three-year, endowed position for a junior faculty member at the College of Veterinary Medicine who shows great promise for advancing equine research.

"Dr. Delco is an accomplished and highly valued member of our college community," said Dr. Susan Fubini, senior associate dean for academic affairs and professor in large animal surgery. "Her research program is on a tremendous upward trajectory, and its focus on equine joint disease and osteoarthritis aligns well with the objectives of the Zweig Memorial Fund."

Delco is a board-certified large animal surgeon and assistant research professor in the Department of Clinical Sciences whose time spent in clinical practice treating equine athletes for sports

injuries has motivated her to discover new ways to treat and prevent osteoarthritis.

"We've domesticated this amazing species. Horses have worked alongside humans since the beginning of civilization," Delco said. "It's our job to keep them sound and healthy."

After receiving her bachelor's and D.V.M. degrees from Cornell, Delco completed internship training at Rood & Riddle Equine Hospital in Lexington, Kentucky, followed by residency training at the University of California at Davis. She then served in a faculty position at Kansas State University before working for a number of years in private practice in the Pacific Northwest.

"I did a lot of work on sport horses with complicated lameness issues," Delco said. "I got more and more frustrated diagnosing career-ending orthopedic injuries without effective treatment



Michelle Delco '98, D.V.M. '02, Ph.D. '16  
Photo: Lauren Cahoon Roberts/CVM



# Harry M. Zweig Memorial Fund for Equine Research Awards

options to offer clients and their horses.”

This spurred her return to Cornell in 2012, where she studied post-traumatic arthritis in the lab of Lisa Fortier, Ph.D. ‘98, the James Law Professor of Surgery. Noted Dr. Robert Weiss, associate dean for research and graduate education, “With superb training as a veterinary clinician scientist, Dr. Delco is extremely well-positioned to conduct rigorous, cutting-edge biomedical research and then translate those findings for the benefit of animal health.”

“I wanted to know what we were missing,” Delco says. “Why weren’t we making progress treating this disease?” She consequently did her Ph.D. research on the function of mitochondria, the energy generating powerhouses of cells, and their links to joint injury. Now a faculty member at Cornell with a lab of her own, Delco has developed an innovative niche in the area of mitochondrial biology within the fields of osteoarthritis and regenerative medicine. In particular, she is exploring new research questions that build on the concepts of mitochondrial dysfunction as a driver of osteoarthritis and enhancement of mitochondrial function as a new therapeutic strategy.

Delco’s goal is to prevent chronic joint pain and dysfunction in both horses and humans. “For decades, lifespan has been steadily increasing — largely thanks to scientific discoveries in human and veterinary medicine,” Delco said. She notes, however, that healthspan — the number of high-quality years lived — has not similarly increased. “We’re developing new approaches to stop joint degeneration after injury. Whereas arthritis in

human athletes can be career-ending and painful, for equine athletes, it can be life-threatening.”

Delco is also keen to bring this scholarly expertise to her role as a surgeon at the Cornell Equine Hospital, where she works on the orthopedic surgery service. She’s especially interested in minimally invasive surgery techniques like arthroscopy in standing horses. In both the hospital and her research lab, Delco collaborates with a team of skilled surgical residents, students, technicians and researchers.

“Beyond her many research accomplishments, Dr. Delco also is active in teaching and mentoring, and her

passion for helping to develop young scientists is an asset to all of us,” Fubini said.

“There’s such a richness that comes from a diverse group of people working together,” Delco said. “For example, my research group is a collection of talented and engaged people, all at different stages of their training, who are excited about science and progress. They inspire me. I feel lucky to work with such a great team.”

The Harry M. Zweig Memorial Fund for Equine Research honors the late Dr. Harry Zweig, a distinguished veterinarian known for his contributions to New York’s equine industry. In 1979, the New York State Legislature created the Zweig Fund to support and promote equine research at the Cornell University College of Veterinary Medicine. Read more about past Harry M. Zweig Assistant Professors online at [bit.ly/ZweigFund](http://bit.ly/ZweigFund) ●



## New

\$91,661 to Bettina Wagner for “Inflammatory Biomarkers for Prediction of Breakdown Injuries in Horses”

\$83,229 to Michelle Delco for “Synovial Fluid Extracellular Vesicles in Equine Joint Disease and Therapy”

\$67,973 to Heidi Reesink for “Equine Joint Sepsis and Synovial Fluid Mucins”

\$65,827 to Douglas Antczak for “Factors Affecting Durability in Standardbred Racehorses”

\$47,948 to Mariana Diel de Amorim for “Inflammatory Markers from Endometrial Swab /Cytobrush as a Screening Test for Equine Endometritis and Endometrial Fibrosis”

## Continued

\$99,297 to John Pigott for “Multi-modal Screening to Identify Thoroughbred Racehorses at Increased Risk for Catastrophic Injury of the Metacarpophalangeal Joint”

\$86,451 to Bettina Wagner for “Intranasal Biomarkers of EHV-1 Susceptibility and Protection”

\$79,352 to Julia Felipe for “Diagnostic Markers in Mares with Placentitis”

\$49,672 to Rory Todhunter for “Genomics of Autopsy-Negative Sudden Cardiac Death in Racing Thoroughbreds” ●

## 2022 Harry M. Zweig Memorial Trot



July 9 | Post time 12:10 p.m. | Vernon Downs Casino



# In search of the 'Iron Horse'

By U.S. Trotting News

Research out of the Antczak lab at the Baker Institute for Animal Health will focus on understanding the factors that may contribute to the durability and longevity of career harness racehorses, by studying their genes. A recent award through the Harry M. Zweig Memorial Fund for Equine Research at Cornell University has brought the collaboration between the Baker Institute and the United States Trotters Association (USTA) to life.

The goal of the project is to advance the understanding of the genetic factors that could contribute to Standardbred harness horses' career success. Those horses who go on to have successful racing careers of five, six, seven-years in duration, with limited injuries, are the sought-after 'Ironman' of the horse racing industry.

Studies such as this, revealing if genetics play a role in a horse's predisposition to avoiding catastrophic injury suffered in racing or training, could help reduce wastage in the horse racing industry, and allow horses and their owners to have longer, more successful careers. This is good for the horse, good for the owners and good for the industry as a whole.

A study with this unique focus has not previously



The Baker Institute  
Photo: Jason Koski/Cornell

been done. Life-threatening injuries suffered by horses while racing or training are tragic for the horse and their rider, owner or trainer. Previous investigations have implicated many factors that may contribute to these types of injuries, including physical fitness, training regimens, track surfaces, use of illegal drugs and genetics. With so many variables, and relatively few affected horses, it has been difficult to separate the genetic from the environmental factors.

Recently published work does support the premise that genes do play a role in racing career success and durability. In this study, an interdisciplinary team of investigators that include members of the Horse Genome community of geneticists who have worked together for years, along with other veterinary scientists and clinicians

will dig deeper.

In Dr. Doug Antczak's study, "Factors Affecting Durability in Standardbred Racehorses," the focus will remain on racehorses that have demonstrated durability and longevity in their careers, proposing that these horses are predisposed to their success due to their genetics coupled with excellent care and training. In this project, researchers will use genome-scale and epidemiological methods to identify genetic signatures correlated with longevity of racing career.

Using a Genome Wide Association Study (GWAS) and the 670k Equine Single Nucleotide Polymorphism (SNP) array, Antczak's lab will

compare three groups of horses, including: 100 aged Standardbreds with long racing careers and competitive race records; 100 aged Standardbreds with long racing careers but relatively weak earnings records; and 100 or more control Standardbreds selected from previous studies. They will test the hypothesis that the durable horses will show a GWAS peak on chromosome 7 that has been associated with racing starts in Thoroughbred horses. They may also be able to identify genetic regions that distinguish competitive from non-competitive horses with long racing careers. The lab will also obtain 20 x coverage whole genome sequence from 10 selected durable and 10 control Standardbreds for fine-scale comparison of regions identified in part one.

The USTA, an entity that governs Standardbred racing, will play an instrumental role in this study as well, providing access to data on samples from USTA studies on horses that are still racing

at the age of seven years old. The organization is also raising awareness of this important work happening, revealing a better understanding of the durability of the breed, and by helping to deploy a 'citizen science' approach to promoting the collection of more samples from appropriate candidates across the Standardbred racing industry.

Researchers will seek out additional genome samples from racehorses, and will be seeking geldings with the appropriate balance of starts and wins throughout their career, while also being of the appropriate age. Those who feel their horses may fit the model and are interested in being involved can contact the Baker Institute.

The study will begin this summer with the examination of samples from previous USTA studies, followed by the study of the new collections gathered via the call for samples. ●



Dr. Doug Antczak  
Photo: Rachel Philipson/CVM



Q&A series: Meet our new equine faculty

Dr. Eileen Hackett, professor in the Section of Large Animal Surgery

**Q** What has been your academic/career path leading to Cornell?

After completing veterinary training in my home state of Illinois and an internship at Rood and Riddle Equine Hospital in Lexington, Kentucky, I underwent surgical training at the University of Pennsylvania’s New Bolton Center. I spent just over 19 years as a surgeon and professor at Colorado State University before joining the Cornell faculty in the fall of 2021.

**Q** What drew you to CVM?

Cornell has a tradition of excellence and innovation, especially in the field of large animal surgery.

**Q** What is your area of expertise?

I am very passionate about soft tissue surgical innovation, especially in the area of upper airway and minimally invasive surgery.

**Q** What drew you into this area? Any specific experiences, mentors or influences that helped guide you?

Great mentorship in my early career gave me a deep appreciation and love for this specialty. Drs. Norm Ducharme and Susie Fubini have been highly influential and exemplify ingenuity, dedication and skill.

**Q** What past professional work are you most proud of and why?

There are so many fond memories that I have of meeting horses and their owners, working through problems and improving outcomes. I am happy that I get to make a difference in the health of horses and their owners.

**Q** What about your clinical work, research or teaching innovations are you most excited for or proud of and why?

I focus on research that is highly applicable and results in publications that I would like to read. There are still so many unanswered questions in our field

and it is important to be part of the conversation and contribute to the knowledge of our profession.

**Q** What impacts or applications do you hope to see your work have on the world, human/animal/planetary health?

A big of part my focus on soft tissue surgical innovation is making a difference in your very next case with quicker healing times, less pain associated with treatment and better outcomes.

**Q** What clinical/scientific questions are you looking to answer next or areas you plan to explore?

Our big push at the moment is to better understand equine pharyngeal function and surgical treatments, building on all of the tremendous work that has already been completed right here at Cornell.

**Q** What’s something most people don’t know about you?

I’m an ‘A’ Pony Clubber!

**Q** What’s the best part of being a clinician/scientist?

Really all the parts!

**Q** What’s the most challenging part?

We believe here at Cornell that the only limit is our imagination. It’s important to keep pushing the envelope and to always question why we do things.

**Q** What are the benefits of working at CVM? At Cornell?

Our community is our most precious resource to do the greatest good! ●



Dr. Eileen Hackett  
Photo provided

2022 Harry M. Zweig Memorial Fund Committee  
Cornell University College of Veterinary Medicine

**Scott Ahlschwede, D.V.M.**  
Rood & Riddle Equine Hospital  
Saratoga Springs, NY

**Gabriel Cook, D.V.M.**  
New England Equine Practice  
Patterson, NY

**Janet Durso, D.V.M.**  
Middletown, NY

**Ann Dwyer, D.V.M.**  
Genesee Valley Equine Clinic, LLC  
Sottsville, NY

**Louis Jacobs**  
Buffalo, NY

**Laura Javsic, V.M.D.**  
Rhinebeck Equine LLP  
Rhinebeck, NY

**Ronald Ochrym**  
New York State Gaming  
Commission  
Schenectady, NY

**Richard Schosberg**  
Muttontown, NY

**Lorin D. Warnick, D.V.M., Ph.D.**  
Austin O. Hooey Dean of  
Veterinary Medicine  
Cornell University College of  
Veterinary Medicine  
Ithaca, NY

**Patricia Wehle**  
Pittsford, NY

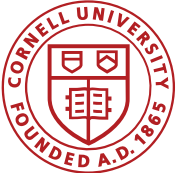
**Robert Williams**  
New York State Gaming  
Commission  
Schenectady, NY

**William Wilmot, D.V.M.**  
NYS Thoroughbred Breeding &  
Development Fund Corporation  
Saratoga Springs, NY

**Brian Zweig**  
Rensselaer, NY

*The Harry M. Zweig Memorial Fund  
Committee extends its gratitude to exiting  
committee members Dr. Robert Tugel and  
Ms. M. Kelly Young.*

*We are pleased to welcome back Mr.  
Ronald Ochrym as treasurer.*



## College of **Veterinary Medicine**

Zweig News Capsule  
S3-216 Schurman Hall  
Ithaca, NY 14853-6401

NON-PROFIT ORG.  
U.S. POSTAGE  
PAID  
CORNELL  
UNIVERSITY



The Harry M. Zweig Memorial Fund for Equine Research honors the late Dr. Harry M. Zweig, a distinguished veterinarian, and his numerous contributions to the state's equine industry. In 1979, by amendment to the pari-mutuel revenue laws, the New York State Legislature created the fund to promote equine research at the College of Veterinary Medicine at Cornell University. The Harry M. Zweig Committee is established for the purpose of administering the fund and is composed of individuals in specified state agencies and equine industry positions and others who represent equine breeders, owners, trainers and veterinarians.

**Visit us online**  
[bit.ly/ZweigFund](http://bit.ly/ZweigFund)

Our site provides information on the projects and publications resulting from the Zweig Memorial Fund, and demonstrates the objectives of the Fund in promoting equine health in the racing industry. The Zweig News Capsule is published twice a year, and can be downloaded at [bit.ly/ZweigNews](http://bit.ly/ZweigNews). Please encourage other equine enthusiasts to visit the site.

*Cornell University is an equal-opportunity, affirmative-action educator and employer.*