

# Zweig

Memorial Fund News Capsule

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



Alexis Wernick-Roberts

**Julia Flaminio, a native of Brazil, began riding at the age of six. She is active in endurance riding competitions held in the United States, France, Canada, Spain, and Brazil. Flaminio serves as an official judge at the mandatory stopping points for races of 100 miles a day. Without such rest a horse could die of exertion. A flat ride is usually completed in 10 to 12 hours; the world record is 7 hours, 45 minutes.**

## **Julia Flaminio Named First Harry M. Zweig Assistant Professor in Equine Health**

**A**lthough most of a horse's immune system develops during fetal life, foals are very susceptible to infection in their first five months. Assistant Professor of Medicine Julia Flaminio, DVM, MS, PhD, DACVIM, seeks to identify the mature and immature elements of the immune system of the foal, and hopefully the means to reduce their susceptibility to specific pathogens. She has been named the first Harry M. Zweig Assistant Professor in Equine Health.

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## Julia Flaminio

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**Dean Donald F. Smith and Rodney Page celebrate with Flaminio.**

“Julia is a wonderful human being,” says Associate Dean Robert Gilbert, BVSc, MMed Vet, MRCVS. “Her education, expertise, and understanding of equine medicine and the equine industry, as well as her research accomplishments and potential, contribute to her being the ideal candidate for the Harry M. Zweig Assistant Professorship.”

This award, given to a junior faculty member in recognition of outstanding commitment and dedication to equine research, was bestowed to Flaminio, 39, for a three-year term commencing in November 2005.

“The assistant professorship gives its recipient resources to be used at their discretion,” says Rodney Page, MS, DVM, the Alexander de Lahunta

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Julia Flaminio

Chair of Clinical Sciences. The award can be used for any professional activity—to support technical assistance, purchase scientific equipment or supplies, or attend scientific meetings or workshops.

“Dr. Flaminio added value to the Zweig Fund award by purchasing a flow cytometer—a piece of equipment used to tag and trace populations of cells that she uses on a daily basis in her research,” Page says. “This equipment has generously been made available to faculty within the department who are also performing similar research. So, she has leveraged Zweig funds to create an important departmental resource.”

Flaminio’s research begins with the fact that the degree of a foal’s susceptibility to infection in the neonatal period is partially dependent on the adequacy of transfer of maternally derived antibodies through the colostrum.

“The horse placenta does not allow transfer of antibodies during gestation; hence, the foal is born essentially devoid of antibodies,” Flaminio explains. “The maternally derived antibodies absorbed in the first few hours of life confer short-lived, limited protection against environmental pathogens for the initial one to two months of life. After this, the maternal antibodies reduce to very low levels, and the foal must depend on its own immune system to resist infections.”

But antibodies are only part of an immune response, and protection may also involve activation of competent and specific immune cells.

Flaminio’s research currently focuses on a particular pathogen that takes advantage of a foal’s immature immune system: *Rhodococcus equi*. This bacterium causes severe pneumonia, enteritis,

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**Julia Flaminio**

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and occasionally joint infection, resulting in significant economic losses in the horse industry. The bacterium is prevalent in soil, and in both virulent and avirulent forms. The virulent bacterium is capable of replicating inside immune cells, called macrophages.

“The fact that foals become resistant to *R. equi* infection after five months of life, and immunocompromised (e.g., AIDS) human patients are also susceptible to *R. equi*, strongly suggest that young foals present age-dependent limitations in the protective immune response for the clearance of infection,” Flaminio says.

Flaminio hypothesizes that adult horses have specialized immune cells (dendritic cells) that are responsible for the activation and stimulation of the effector cells (T cells) involved in the protection against infection, whereas in foals less than five months old, those cells are immature and cannot support the effector cells.

“We would like to investigate how *R. equi*-infected dendritic cells of the foal signal to their effector cells compared with how these cells do so in adult horses,” she says.

Conventional vaccines have been designed and tested, but they result in only marginal protection early in life. Flaminio’s lab seeks to identify foals’ dendritic immune cells that are not competent to fight *R. equi* infection. Recognizing these cells’ limiting factor in protection against *R. equi* infection may guide future studies for the prevention of disease, including the development of protective vaccines.

Flaminio came to Cornell as a PhD student to work with Professor Doug Antczak, VMD, PhD, on equine immunology. She joined the faculty in 2002. She had earned a DVM at the Universidade Estadual Paulista (UNESP) Botucatu in Sao Paulo State, Brazil, in 1989 and an MS at Kansas State University in 1997. ■

*For further information on Julia Flaminio visit [web.vet.cornell.edu/public/research/zweig/index.htm](http://web.vet.cornell.edu/public/research/zweig/index.htm)*

## Vince Soderholm—One Man Behind the Scenes

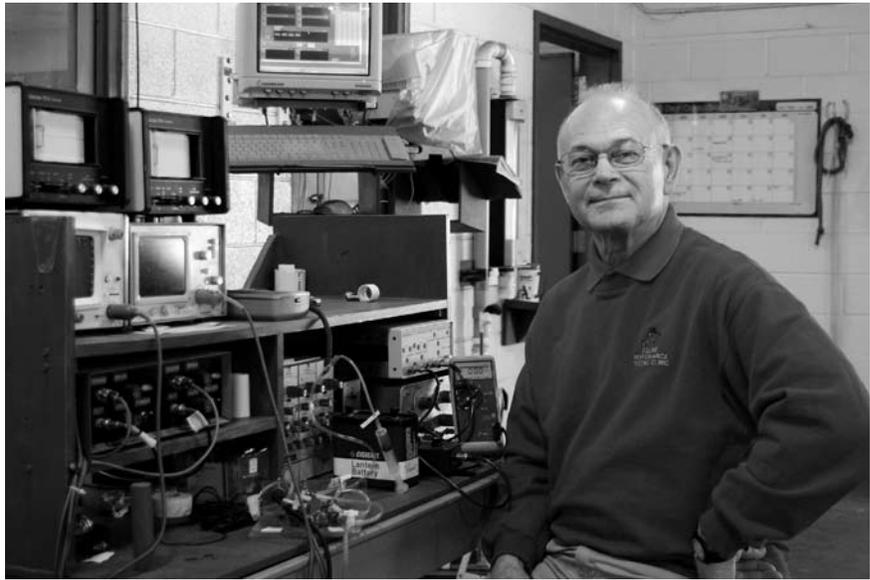
**R**esearch Support Specialist Leo Vincent “Vince” Soderholm joined Cornell’s Equine Research Program in 1973—eight years before the Zweig Memorial Fund was established. In the last 33 years, Soderholm has worked with nearly every faculty member who has received a Zweig Award.

In the early days he worked with Emeritus Professors Herbert F. Schryver, DVM ’54, PhD, of the Department of Clinical Sciences, John (Jack) Lowe, DVM ’59, of the Veterinary Diagnostic Center, and Harold Hintz, PhD ’64 (College of Agriculture and Life Sciences, Animal Science) of the Department of Animal Science. “They’re all retired now,” Soderholm says. “But in those days they studied equine nutrition and bone and joint disease. We did ground-breaking work with Dr. Hintz. And when those professors published research papers they would sometimes include me among the authors.”

Soderholm goes on to add that the whole research program did well, producing PhD students who went on to have prominent careers, among them Joe D. Pagan, MS ’82 (College of Agriculture and Life Sciences, Veterinary Nutrition), PhD ’85, president of the Kentucky Equine Research, Inc., a world-renowned equine nutrition and consultation company; Ellen Bierenfeld, MS ’81 (College of Agriculture and Life Sciences, Veterinary Nutrition), PhD ’84, head of the Department of Nutrition Wildlife Conservation Society with the Earth Institute at Columbia University; and Michael Ross, PhD ’81, professor of surgery at the University of Pennsylvania’s School of Veterinary Medicine at New Bolton Center.

“We had fine undergraduate students from animal science and graduate students in the college doing projects with us. There weren’t a lot of labs doing this kind of work in those days, and the Equine Research Program had a stellar reputation,” he recalls.

In 1990 the program was dissolved. Treadmill exercises for horses started at about that time and he was presented with an opportunity to maintain the college’s equine treadmill and assist with equine testing and research projects.



**Soderholm enjoys making sure all the equipment needed to serve clients in the Equine Performance Testing Clinic is in top working order.**

Alexis Wenski-Roberts

“Today, its chassis is the original but that’s about all,” he says. “I’ve replaced the motor and almost every other part.” A graduate of Rochester Institute of Technology, Soderholm has earned a reputation for keeping equipment working after it has reached the end of its natural life.

In addition to maintaining all of the mechanical and electronic equipment in the college’s Equine Performance Testing Clinic, he will design made-to-order devices—one was named an Air Flow Interrupter, created for a resident who needed a source of intermittent airflow for an experiment. The equine treadmill remains the main piece of equipment in the Performance Clinic. (Actually, it’s not used only for horses. Sled dogs have been examined on it, too.)

The treadmill can be used to monitor a horse’s gait, lungs, heart, and throat, and take arterial blood samples while the horse is running at full speed.

“I’ll tell you, after all these years, I’m still impressed to be standing right next to a horse when it’s running 30 miles per hour,” Soderholm says.

The treadmill’s revelations about a horse’s throat during heavy exercise led Norm G. Ducharme, DMV, MSc, Dipl. ACVS, and Richard P. Hackett, DVM, MS, Dipl. ACVS of the Department of Clinical Sciences, and J. Brett Woodie, DVM, MS, Dipl. ACVS of Rood & Riddle Equine

Hospital, Lexington, Kentucky, to create a device known as the Cornell Collar, which is an alternative to surgery for horses whose soft palate displaces and blocks their airway at high speed. Soderholm fabricated the prototype out of plastic and leather, a role in the development of the device of which he is most proud.

Soderholm enjoys his work, appreciates being, as he says, “the guy between the clients and the faculty doing what needs to be done so the faculty can come in and do the hard work of being doctors.”

The equine treadmill is used two-thirds of the time for research and the other one-third for diagnosing clients. Although he likes them all, the horse that brings the broadest smile to his face these days, Daisy, lives “the life of luxury” in a barn he built for her in back of his house. She’s a seven-year-old Thoroughbred mare who was donated to the program for research, and he acquired her after her part in the project was complete.

“Daisy is a great, very spirited horse,” Soderholm says. “She’s all business.” ■

## PROFILE

## Paul Kelley Joins the Harry M. Zweig Committee

**P**aul Kelley, an active member of the U.S. Trotting Association and Harness Breeders of New York, is the newest member of the Harry M. Zweig Memorial Fund for Equine Research Committee.

Kelley, who lives in Gansevoort, New York, with his wife, Joyce, and sons Mark, 14, and Sam, 12, was named to the committee in 2005 for a three-year term.

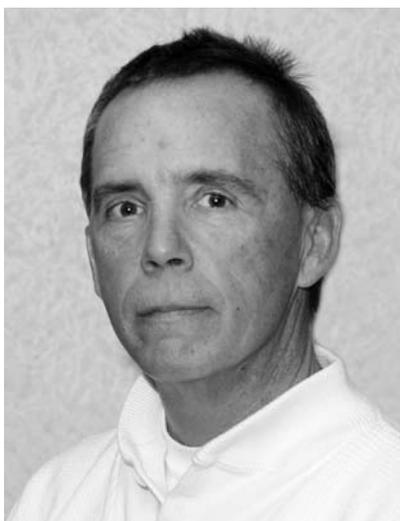
His stable, Kelley Racing Stable LLC, has been training and racing Standardbred horses since 1995, stabling either at Saratoga Harness or private training facilities in the Saratoga area. Kelley is a member of Standardbred Canada, Standardbred Owners Association of New York, and Standardbred Owners Association of New Jersey.

"A whole range of horse-related interests are represented on the Zweig Committee," Kelley says. "I was picked because I'm a hands-on horseman with insight into the barn rather than the clinic. So far I am impressed with how much research at the college is furthering equine health and race-related issues—many more competitive projects than I imagined. From approximately 15 proposals, we try to narrow it down to eight or so."

Cornell does a great job, he says. Norm G. Ducharme, DMV, MSc, Dipl ACVS, and Alan Nixon, BVSc, MS, Dipl ADVS, of the Department of Clinical Sciences, have worked on Kelley's horses, and Kelley notes that even when they couldn't help them, they give excellent advice. Paul Kelley is also happy about the creation of the Cornell Collar from Zweig-supported funds and has found it to be very successful 75 percent of the time.

Kelley notes that he thinks the collar is more successful with Standardbreds than Thoroughbreds. Standardbreds, he explains, wear two bits, one for driving and one for leverage called an overcheck bit. The overcheck bit makes the horse carry his head at an adjusted height, usually higher than Thoroughbreds, which tend to tuck their chins with the jockey riding at their withers. The higher positioning of the horse's head makes the collar work a little better.

"I have a horse that has been flipping his palate. Just yesterday, on a training trip,



Alexis Wenski-Roberts

**Kelley has developed his skills in practical horsemanship from a lifetime spent in the stables.**

we tried the collar on him and he didn't flip his palate. It's such a simple device, and that's part of the beauty of it," he says.

Kelley brings to the committee a lifelong association with racing, owning, and training Standardbred race horses. Born in Massachusetts, he grew up in Maine. The family lived on a 45-acre farm and raced Shetland ponies. After obtaining several Standardbred horses, the family began racing them at Foxboro Raceway in Foxboro, Massachusetts.

Kelley studied English at Colby College from 1974 to 1977 and then took a job in the Department of Athletics at Boston University. He left Boston to fulfill his dream of becoming a horse trainer.

Kelley worked for Warren Strout in Lewiston, Maine; then for driver and trainer Leo Bauer at Pompano Park, Pompano, Florida, and Roosevelt Raceway, Westbury, Long Island; and finally for Ted Wing, who raced at Roosevelt Raceway and at The Meadowlands, East Rutherford, New Jersey.

"I learned so much practical horsemanship from Leo and Ted, with whom I still have contact all the time," Kelley says. "Some of what I learned seems simple—how to hang a horse up (in other words, how to select and adjust the harness and other equipment)—but it's very important. Standardbred horses wear a lot more equipment than Thoroughbreds, so there are more intricacies—such as how you weight their shoes to the various bits, bridles, and

other equipment. I have 15 horses in the barn and not too many of them are dressed exactly alike."

Racing continues to be a family affair. Kelley's younger brother, David, is a partner in Kelley Racing Stable LLC. His sister, Nancy Saucier, maintains a small Standardbred breeding farm in Waterville, Maine. ■

To learn more about the Cornell Collar visit [web.vet.cornell.edu/public/research/zweig/Newsletter/index.html](http://web.vet.cornell.edu/public/research/zweig/Newsletter/index.html), News Capsule #35

### Harry M. Zweig Memorial Fund for Equine Research—2006 Research Awards

#### New

\$49,000 to Lisa Fortier for "Characteristics of Stem Cells Derived from Bone Marrow Aspirate, Adipose Tissue, and Muscle"

\$41,232 to Julia Flaminio for "How Does the Immune System of the Foal Fight Against *Rhodococcus equi* Infection?"

#### Continuation

\$63,675 to Alan Nixon for "Enhanced Joint Function through Targeted RNA Interference"

\$64,076 to Yung-Fu Chang for "Virulence Factors for Serovar Pomona and Vaccine Development"

\$24,999 to Sylvia Bedford-Guaus for "Media and Molecular Pathways Conducive to Stallion Sperm Capacitation and Motility Hyperactivation"

#### Renewal

\$38,133 to Doug Antczak for "Horse Genome Project: Functional Genomics through Equine Microarrays"

\$74,353 to Nikolaus Osterrieder for "Equine Herpesvirus Type 1 Virulence and Vaccine Efficacy"

\$41,495 to Bettina Wagner for "IgE and IgG(T) Antibodies in Allergy of the Horse"

**T**he 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 Harry M. Zweig Memorial Fund to promote equine research at the College of Veterinary Medicine, 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.



### **2006 Harry M. Zweig Memorial Fund Committee**

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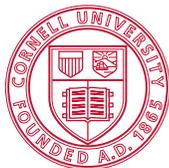
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