

Zweig

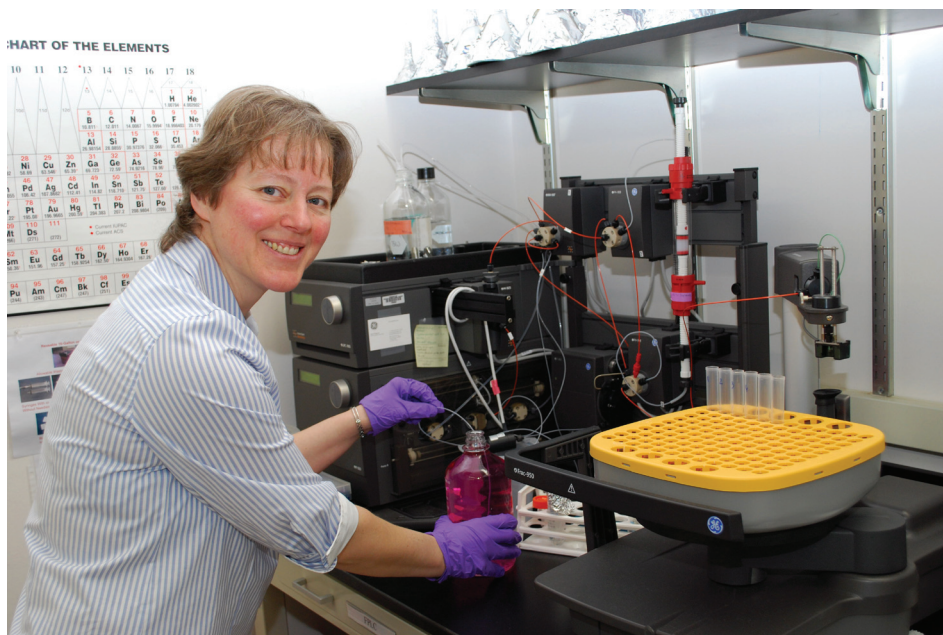
NEWS CAPSULE

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

Bettina Wagner Named Zweig Professor

Dr. Bettina Wagner, assistant professor of immunology at the College of Veterinary Medicine, has been named the Harry M. Zweig Assistant Professor in Equine Health. The three-year term endowed position recognizes a junior faculty member who shows promise and productivity in the field of equine research.

Dr. Wagner's research focuses on equine immunology. She studies the regulation of the immune system and the relationship between the innate and adaptive immune responses. The innate immune system is the horse's first line of defense against invading organisms while the adaptive immune system acts as a second line of defense as well as protecting the horse from re-infection from harmful pathogens. Funded with grants from the USDA and the Zweig Fund for Equine Research, Dr. Wagner's lab is credited with developing several reagents that are available to the global research community. Reagents are used in immunological procedures to detect, measure, or examine the innate immune response in health and disease. The new tools are used in the lab to study the immune response to Equine herpesvirus type 1 and the



Dr. Bettina Wagner recognized early in her career that obtaining funding to do immunological research on horses was not easy. "But neither," she says, "is anything worthwhile. The challenge can be inspiring."

mechanisms leading to immunity and protection from disease in foals.

"The new immune reagents have the potential to revolutionize the field of equine immunology," said Dr. Wagner, who began riding horses at age 12 and is pleased to have found an opportunity to combine two of her passions: horses and research.

"We were not able to look at many functions and cellular responses of the equine immune system because we did not have the tools to do so. The reagents facilitate scientific exploration in areas such as neonatal immunology, inflammatory and infectious diseases, vaccine development, and equine allergies."

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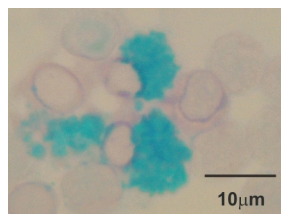
INSIDE

3

BEHIND THE SCENES WITH DR. LEELA NORONHA

4

CHAIRMAN SABINI ASSUMES ROLE WITH ZWEIG MEMORIAL FUND



PICTURED ABOVE LEFT: *The three bright blue cells are intestinal mast cells from a horse. ABOVE RIGHT:* *The powerful and highly sensitive Luminex is able to detect low levels of equine cytokines simultaneously in one sample.*

Equine research, according to Wagner, has often been limited by both funding and the availability of reagents. Her approach to immunological research in horses—by developing essential tools—allows her to support her own research and that of others in the equine research community as well.

“The new reagents and technologies we have developed enable us to detect the cellular immune response and will improve therapeutic and preventative treatments for horses,” said Dr. Wagner. “Through the basic and applied research that these reagents drive, equine health will be strengthened.”

Dr. Wagner is the director of the serology section at the New York State Animal Health Diagnostic Center at Cornell. She obtained her DVM degree and habilitation (PhD) in Hannover, Germany, and spent several years conducting research and teaching at the Institute of Genetics in Cologne and at the School of Veterinary Medicine in Hannover. In 2002, she came to Cornell University as a visiting scientist to work on projects in equine genetics at the Baker Institute for Animal Health. In 2004, she became a senior research associate at the Baker Institute, and in 2006, she was recruited as an assistant professor in the Department of Population Medicine and Diagnostic Sciences.

HARRY M. ZWEIG MEMORIAL FUND FOR EQUINE RESEARCH 2009 RESEARCH AWARDS

New

\$65,032 to **Dr. Dorothy Ainsworth** for “Deciphering the Mechanism of Equine Inflammatory Airway Disease *in vitro*”

\$30,000 to **Dr. Douglas Antczak** for “Expression Microarrays and Equine Placental Development”

\$68,104 to **Dr. Lisa Fortier** for “The Role of Telomerase and Small G-Proteins in Senescence of Articular Chondrocytes”

\$40,130 to **Drs. Gillian Perkins** and **Klaus Osterrider** for “Immunization Against Strangles Using a Vectored Equine Herpesvirus Vaccine”

\$55,904 to **Dr. Bettina Wagner** for “Analysis of the Innate Immune Response to EHV-1 Infection”

Renewal

\$34,852 to **Drs. Sylvia Bedford-Guaus** and **Mark Roberson** for “Further Characterization of the Specific Activity and Ultrastructural Localization of Phospholipase C Zeta in Fertile and Subfertile Stallions”

Continuation

\$39,056 to **Drs. Jeremy Rawlinson** and **Norm Ducharme** for “Factors Affecting Airway Stability at Exercise: A Combined Neuroanatomical, Clinical and Engineering Methodology”

\$62,516 to **Dr. Julia Flaminio** for “The Phagocyte Response Against *R. equi* in Foals”

\$9,840 to **Dr. Susan Fubini** for “Indices of Intra-Abdominal Fibrinolysis in Colic Foals: Pathogenic and Prognostic Markers”

\$46,430 to **Dr. Alan Nixon** for “Genomic Profiling of Osteochondritis Dissecans Using an Equine Whole Transcript Exon Array”

\$66,051 to **Dr. Alan Nixon** for “Pro-Inflammatory Cytokine Targets in Joint Disease as Check-Points for Gene Inhibition”

\$76,424 to **Dr. Gillian Perkins** for “Therapy and Prevention of Equine Herpesvirus-1 (EHV-1) Induced Disease”

Bridging Passions and Stages, Purposes and Phases: Behind the Scenes with Dr. Leela Noronha

Leela Noronha, DVM, grew up in rural West Virginia and spent a lot of time on her grandparents' farm, and her parents were in the human medical field. Veterinary medicine, it seems, was a natural bridge between the worlds she knew and loved.

But exactly what path in the wide-open field of veterinary medicine was not readily clear. As an undergraduate biochemistry major, Dr. Noronha had the opportunity to do research, and she worked for a period with Pfizer, as a technician conducting cancer research.

"Research has always been appealing," said Dr. Noronha. "I enjoy basic research because it answers questions on so many levels – from the genetic level to the systemic level. I struggled, though, with whether I should continue my research career or pursue my veterinary degree."

Ultimately, Dr. Noronha decided that to be the most effective veterinary researcher, she needed to first solidify her skills and gain a perspective for various animal health and welfare issues and challenges that face pet owners. She graduated from the Virginia-Maryland College of Veterinary Medicine in 2001 and spent four years in mixed animal private practice outside of Washington, DC.

"Being responsible for clinical cases complemented my formal veterinary education and expanded my understanding of medicine in ways that laboratory experience could not," said Dr. Noronha. "I am a better scientist today because of my enhanced appreciation of health and disease. Patient care also furthered



Dr. Leela Noronha at the Dorothy Havemeyer McConville Barn

my education in the 'bench-to-bedside' process of medical science. Clinical experience provided me with a critical knowledge base from which to pursue my ultimate career goal of being a biomedical scientist participating in translational research programs."

Ready to immerse herself in the challenge and discovery of research, Dr. Noronha came to Cornell in 2005 and enrolled in the graduate program in Immunology. Funded by a training grant for comparative medicine, the program is designed to bridge the valley that often forms between practical medicine and research. Through this program, she completed three rotations, all with equine experts at the College:

- With Dr. Doug Antczak, Dorothy Havemeyer McConville professor of equine medicine, she studied mechanisms of maternal-fetal tolerance, performing ectopic trophoblast transplant surgeries in horses.

- With Dr. Klaus Osterrieder, Cornell professor of virology, she studied immune evasion by Equine Herpes Virus-1, evaluating expression of major histocompatibility complex (MHC) molecules in virus-infected cells.
- With Dr. Bettina Wagner, assistant professor of immunology, she generated a panel of monoclonal antibodies, performing mouse immunization, hybridoma fusion, and clone evaluation, as well as flow cytometry and cell sorting.

Today, Dr. Noronha works with Dr. Antczak, combining her passion for horses with her desire to conduct research, and explains that she has a particular interest in equine immunology.

"Dr. Antczak's lab offers tremendous resources," said Dr. Noronha, explaining that Dr. Antczak has been an inspiring mentor. "The horse

(continued on page 4)

whose DNA was used to sequence the equine genome is here; Dr. Antczak maintains a unique herd of horses that has been specially bred to be homozygous at the major histocompatibility complex (MHC) region of their genome, which enables interesting immunology studies; Don Miller has developed an equine microarray, a very powerful tool to study gene expression; and I have access to reagents that help probe cell activity.”

Dr. Noronha is using these tools to study the immunological tolerance of a mother to her fetus. During pregnancy, the mother tolerates – and even nurtures – an organism comprised of her own and foreign genetic material. Dr. Antczak’s lab has raised this question: why does the mother not reject this foreign

tissue as bodies frequently do with organ transplants?

“With transplants, doctors wait for the perfect genetic match,” said Dr. Noronha, adding, “and, still rejection is an issue and the recipient must take immunosuppressant drugs forever. The goal of our research is to gain a detailed understanding of the immunological mechanisms of maternal-fetal tolerance. Such information can lead to applications in fields as diverse as infertility, contraception, transplantation, cancer, and auto-immune diseases.”

More specifically, Dr. Noronha’s research with Dr. Antczak will help researchers understand how to nurture some foreign materials (like organ transplants) and how to eliminate other foreign bodies (like cancer tumors).

Dr. Noronha’s work is funded with a National Research Service Award, granted by the National Institutes for Health. She is one of three women equine researchers at the College of Veterinary Medicine to hold such a prestigious award that is designed to bridge a researcher from mentorship to independence.

“Ultimately, I want to be an academic researcher at a vet school where I can do basic research in partnership with clinicians and the veterinary community,” said Dr. Noronha. “Basic research – my research – has the power to help humans and animals. While the application might not be readily apparent at the molecular or experimental level, it is at the root of delivering the life-saving drugs that clinicians need to serve their patients.”

Chairman Sabini Assumes Role with Zweig Memorial Fund



John Sabini

John Sabini was appointed Chair of the New York State Racing & Wagering Board by Governor David Paterson and confirmed by the New York State Senate on August 11, 2008. He concurrently serves as the vice chairman of the Harry M. Zweig Memorial Fund.

John served six years as a New York State Senator representing the 13th Senate District. His success as Senator was attributed to his legislative and community experience; strong advocacy for government reform, education, and transportation; and his persistent efforts to bring fair amounts of funding and government services to his district. During his Senate term, he received several high-profile appointments including his ranking membership on the Elections,

Transportation, Racing, and Gaming & Wagering Committees. He was appointed as Assistant Minority Leader for Intergovernmental Affairs in 2006.

John acted as the only New York State Representative on a national transportation leadership summit at the White House and was the only New York City legislator on the Governor’s special panel to determine the future of thoroughbred racing in NY, and operations of Belmont Park, Aqueduct Race Track, and Saratoga Racecourse.

Chair Sabini holds a degree from New York University’s College of Business and Public Administration (now known as the Stern School) and attended its Graduate School of Public Administration (now known as the Wagner School).

UPCOMING EVENTS

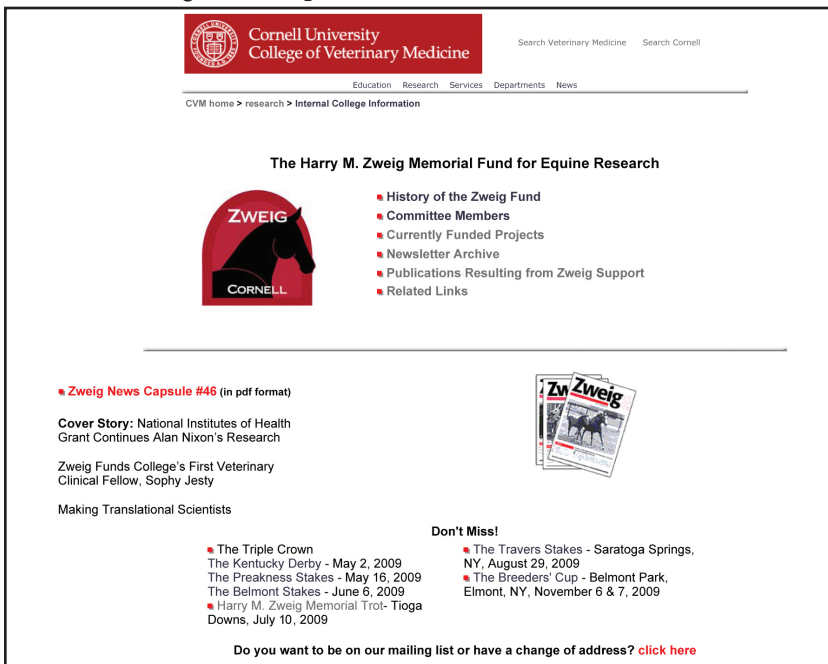
- JULY 10 Dr. Harry M. Zweig Memorial Trot at Tioga Downs
2384 West River Rd., Nichols, NY 13812
For further information, call 1-888-946-8464
- NOV. 19 30th Anniversary Celebration of Dr. Harry M. Zweig Memorial Fund at Cornell University's College of Veterinary Medicine

HAVE YOU VISITED OUR WEB SITE LATELY?

This site (www.vet.cornell.edu/public/research/zweig/index.htm) provides information on the projects and publications that have resulted from funding by the Zweig Memorial Fund. It also demonstrates the objectives of the Zweig Memorial Fund in promoting equine health with regard to the racing industry.

The Zweig News Capsule is published twice a year and can be downloaded in pdf format.

Please encourage other equine enthusiasts to visit this site.



The screenshot shows the Cornell University College of Veterinary Medicine website. The header includes the Cornell University logo and navigation links. The main content area is titled "The Harry M. Zweig Memorial Fund for Equine Research" and features a sidebar with links to the fund's history, committee members, currently funded projects, newsletter archive, and publications. The main content area includes a "Zweig News Capsule #46" download link, a cover story about Alan Nixon's research, and a "Don't Miss!" section listing upcoming horse racing events.

HELP US UNDERSTAND YOUR PREFERENCES

If you would prefer to receive an electronic copy of this newsletter via email, please send a note to lam78@cornell.edu with "subscribe Zweig newsletter" in the subject line. We will add the email address from which you send the message to a list and remove your name from the print copy mailing list. You can read the electronic newsletter online or download at your convenience.

QUESTIONS?

Contact Stephanie Specchio at 607-253-3369 or sas6@cornell.edu.

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 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.

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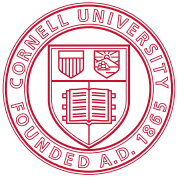
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PICTURED ABOVE: Credit Victory, winner of the Dr. Harry M. Zweig Memorial Trot 3 Year-Old Filly Trot (6th Race) at Tioga Downs on Saturday, August 9, 2008, is shown with Cornell supporters on the right. “I was very happy to see a large crowd from Cornell at the Dr. Harry M. Zweig Memorial Race this past year,” said Anna Zweig, noting that the race has been run in honor of her late husband for over 30 years. “Tioga Downs has done a wonderful job promoting the race over the past few years to help make it outstanding, with the attendance, purse, and competition increasing every year. My husband would be very pleased as the goal of this race was, and continues to be, making New York State recognized as a leader in harness racing.”