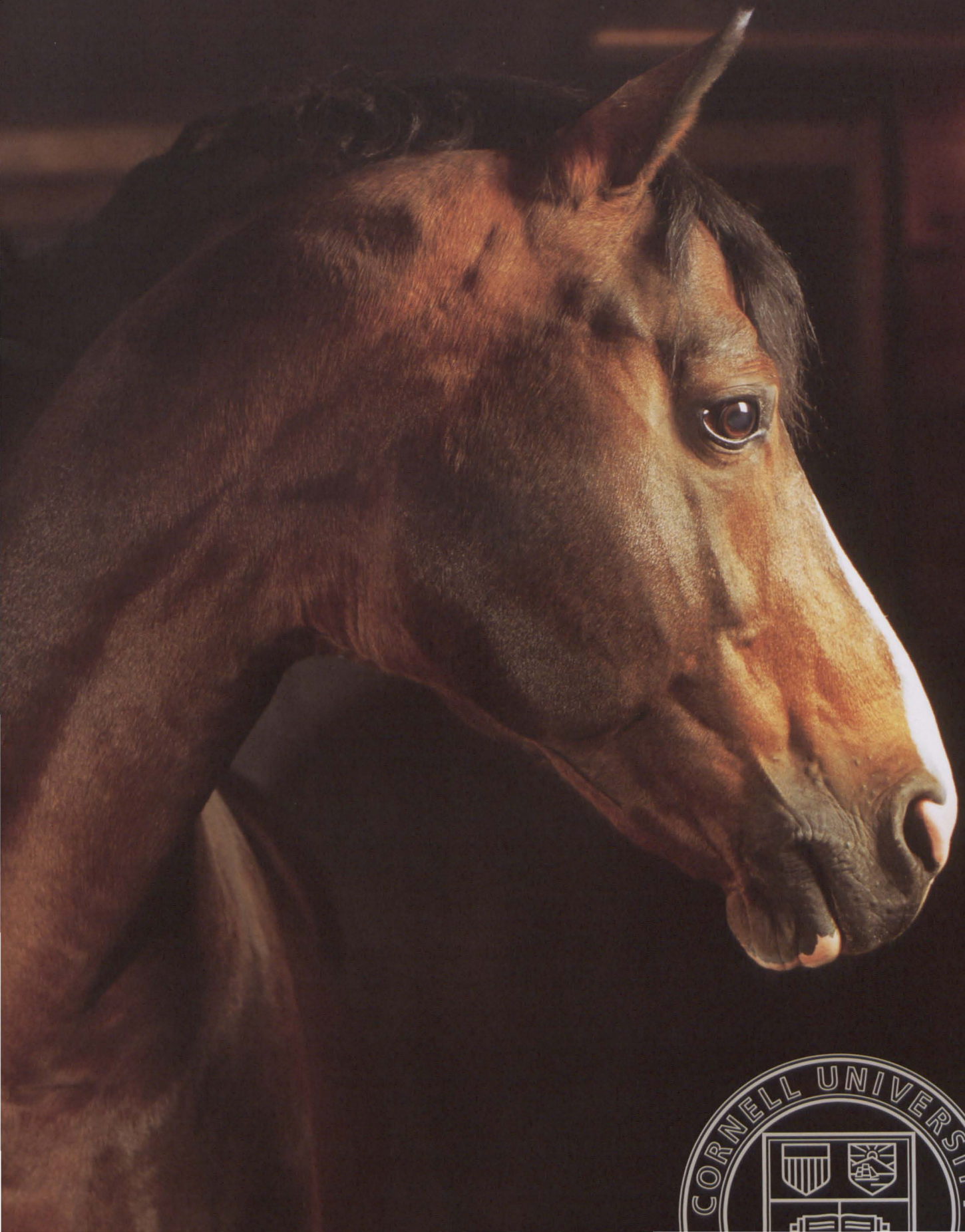


Cornell College of Veterinary Medicine Annual Report
2007–2008



In my first year as dean of Cornell's College of Veterinary Medicine, I have been inspired by the extraordinary legacy of our College and the tremendous impact that our faculty, staff, and students continue to have on our profession, on animal and human health, and on the welfare of our state. Our faculty treats life-threatening illnesses on a daily basis, searches for clues to preventative treatments and cures, and teaches and mentors the next generation of veterinarians and scientists. Our students serve the community in many creative ways, and one of Carolyn and my most enjoyable events has been to volunteer with students and alumni at the Ithaca Southside Community Clinic, where community members in need can find necessary veterinary care. And you, our alumni and friends, make this possible through your support and your engagement.

This year's annual report focuses on collaboration: researchers partnering with colleagues across campus, the nation, and the world; faculty mentoring students through the newly launched clinical fellowship program; and the link between those who support our work and the College. Please accept my sincere appreciation for all that you do and for all that you made possible in 2008. As you will see on the coming pages, together, we have accomplished much. As I begin my second year as the dean of this great College, in the shadow of those giants who have preceded us, I am excited about the progress we have made and the work we have yet to do.

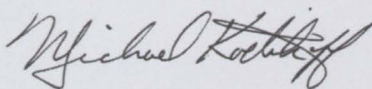
As many of you know, the College is in the middle of a strategic planning process – the first in nearly two decades. We have completed the first phase of the process, with the preliminary reports from four committees finished. We are well on our way to measurable goals and enabling strategies that will position the College to strengthen its leadership role in the global community.

For instance, we are exploring opportunities to help modernize veterinary care in the Middle East. A group of faculty has visited Qatar to assess its needs in animal health, research, and diagnostics, and I joined this group in June to personally assess the opportunities. The country's leadership has asked Cornell to submit a proposal to create a world class operation that will change the profession in this and surrounding nations. Our proposal includes five points and – if accepted – would ultimately position Cornell's Veterinary College as a full partner in delivering state-of-the-art veterinary care in Qatar. The benefits to Cornell and our students through a partnership such as this are many. From a financial standpoint, the collaboration will be supported with substantial funding from the Qatar Foundation. But beyond the finances, the relationship has the potential to foster diverse teaching and research collaborations that will span cultures and conditions and transcend traditional boundaries.

This is just one example of what the future may hold. In 2009, we will continue our focus on training and recruiting the next generation of faculty; we will engage in discussions about the size and scope of the College; we will reorganize the Cornell University Hospital for Animals to increase its efficiency and profitability; we will explore the opportunity to create a companion animal institute based on the strengths of our Baker Institute for Animal Health and the Feline Health Center; and we will continue to find innovative ways to lead this profession.

A number of alumni are engaged formally in imagining and shaping the College's future. I thank all of them and invite all of you to share your thoughts on the direction our profession will take and the role that Cornell should play as the picture unfolds.

Cordially,



Michael I. Kotlikoff, VMD, PhD
Austin O. Hooley Dean of Veterinary Medicine



Michael I. Kotlikoff, VMD, PhD
Austin O. Hooley Dean of Veterinary Medicine





Dear friends,

What a wonderful year it has been. The College's research program is stronger than ever, driven by more than \$30 million in sponsored funding in 2008. The professors are respected worldwide for their knowledge, talent, and leadership. The students are intelligent, curious, hard-working, and compassionate: skills that will advance them to the forefront of cutting edge discoveries and practice in our profession. The leadership team, guided by Dean Michael Kotlikoff, is thoughtful, engaged, and forward-thinking. A vital additional attribute that the College enjoys is the support and generosity of its alumni and friends. Thank you for your commitment to and engagement with the College. The Advisory Council truly appreciates your generosity, and we hope that your involvement is personally satisfying.

As you read through this report, you'll see that much of the College's success is due to a collaborative spirit. The faculty, staff, students, alumni, and friends seem to innately understand the benefits of working together to realize our common mission: to advance the health and well being of animals and humans.

That is at once an inspiring and staggering mission. And, yet, our purpose remains clear. As alumni and friends of Cornell's College of Veterinary Medicine, please continue to join us in supporting the great work of the College.

Sincerely,

Renee Bayha Gossett DVM '86
Chair, Advisory Council

Paul A. Gould
Associate Chair, Advisory Council



Innovation

Department updates

Department of Biomedical Sciences

The Department of Biomedical Sciences is perhaps one of the most diverse groups of faculty in the College of Veterinary Medicine. This is highlighted by a large group of basic research faculty and Diagnostic Anatomic Pathology clinical faculty. In addition, the Department is home to two residency training programs, one in Anatomic Pathology and the other in Laboratory Animal Medicine; the directors for the Center for Vertebrate Genomics, the Cornell Stem Cell Program and the Center for Reproductive Genomics are faculty members within our Department; the directors for federally supported graduate training programs in Environmental Toxicology and Reproductive Sciences and Genomics are also centered in the Department.

The Department is responsible for a large portion of the pre-clinical Veterinary Curriculum (Foundation Courses I, II, and III, the Animal Body, Cell Biology and Genetics, and Function and Dysfunction, respectively) in close collaboration with the Department of Molecular Medicine. Our teaching effort provides an excellent opportunity to assist veterinary students in developing a solid basic science foundation as they look forward to clinical training. In addition, the Department is responsible

for the undergraduate program of study in Animal Physiology as well as the graduate minor in Genomics. Lastly, the Department is home to DVM and graduate trainees from a large number of graduate fields across the University, including Molecular and Integrative Physiology, Genetics and Development, Comparative Biomedical Science, Pharmacology, Bioengineering and Biochemistry, and Molecular Cell Biology.

Our training of veterinary residents in Anatomic Pathology and Laboratory Animal Medicine is central to our mission in the clinical realm. The section of Anatomic Pathology within the Department currently provides training for nine veterinary residents over a three-year program with excellent links to the Animal Health Diagnostic Center and wildlife medicine associated with the Wildlife Conservation Society. The Laboratory Animal Residency Program was established under the direction of CARE (Center for Animal Resources and Education) veterinarians and is steadily growing with three residents. 2008 saw the establishment of a graduate student, resident, and postdoctoral trainee organization that has truly facilitated interactions among students and faculty. Moreover, this group has been instrumental in

overseeing this year's graduate program for the Biological and Biomedical Annual Symposium. This has been a wonderful opportunity to bring together these diverse groups of clinical and research trainees to broaden their experience here at the College of Veterinary Medicine.

This past year also saw 23 faculty members within the Department secure new or continuing funding by 61 extramural grants totaling approximately \$8.7 million in grant awards. These extramural research grants are funded by the National Institutes of Health, National Science Foundation, United States Department of Agriculture, Department of Defense, the March of Dimes, the American Heart Association, the Alpaca Association, IAMS Pet Food, and the Hereditary Disease Foundation. This past year was highlighted by the receipt of a \$1 million grant from the New York State Department of Health, Stem Cell Program. This grant was awarded to five members of the Department of Biomedical Sciences and the Baker Institute for Animal Health along with faculty in the departments of Biomedical Engineering, Clinical Sciences, and Molecular Biology and Genetics. Along with funding



NEWS BRIEFS

ACROSS THE COLLEGE

CORNELL AND STATE OFFICIALS BREAK GROUND ON \$80 MILLION ANIMAL HEALTH DIAGNOSTIC CENTER



Construction has officially begun for a new building to house the New York State Animal Health Diagnostic Center. The \$80 million Center will be built with a \$56 million grant from the State of New York.

This grant, supplemented by \$24 million from Cornell University and other sources, will be used to fund construction of the Center. The 125,000 gross square foot Center is expected to be

complete in 2010 and will accommodate the work of more than 200 people who are currently housed in 12 locations. Complete with laboratories at biosafety level 3 (which will enhance Cornell's ability to investigate infectious diseases), a state-of-the-art necropsy facility and multidisciplinary diagnostic laboratories, the new Center will replace the existing facilities, which were constructed in 1977, and expand Cornell's service, teaching, and research capacities.

CORNELL ANIMAL HOSPITAL NOW OFFERS 24-7 EMERGENCY NEUROLOGY SERVICES

In 2008, Cornell University Hospital for Animals expanded its neurology and neurosurgery services for the public to include

Mark Roberson
Chair and Professor
of Physiology

crucial research efforts in stem cell biology, this award provides resources for key equipment cores and training within the College and across the University. The first annual Stem Cell Symposium is scheduled for November 8, 2008.

In 2007-2008, the Center for Reproductive Genomics (CRG) was established within the Department of Biomedical Sciences. This has been a grassroots effort on the part of a group of faculty committed to building a strong future in reproductive biology based on a tremendous historical strength in basic and applied research in this area. The CRG is comprised of faculty from our Department and the Baker Institute and with faculty members within the Department of Urology and the Center for Reproductive Medicine and Infertility at the Weill Cornell Medical College. The CRG is home to an NICHD-funded graduate and postdoctoral training program. This effort forms the basis for a signature program in the reproductive sciences within the College and across the University with collaborative efforts focusing on comparative aspects of reproductive medicine, from companion animals to humans, from bench to bedside.

Basic research explores the potentialities of science and, in so doing, opens the door to new vaccines, new treatments, new technologies, even new industries.



referrals and emergency appointments around-the-clock, seven days a week. About a dozen small animal neurology appointments are handled weekly at the hospital, along with an active emergency caseload. Common illnesses treated are seizures, emergency spinal disease, Chiari-like malformations/syringomyelia and neuromuscular disease. Various diagnostic and treatment options, from surgical to non-invasive choices, are available for these maladies.



CORNELL UNIVERSITY ANNOUNCES COUNTRY'S FIRST VETERINARY CLINICAL FELLOWS PROGRAM

Introduced in 2008, Cornell's College of Veterinary Medicine's new two-year Clinical Fellows Program is the first in the country to address a growing shortage of academic veterinarians who conduct research on animal diseases and basic biology. Two of the first fellows, Sophy Jesty and Alexa Burton, are both current residents at Cornell's Hospital for Animals, while the third student, Kelly Hume, is completing her residency at the North Carolina State Veterinary Teaching Hospital. The program is a *(continued)*





The Cornell University Hospital for Animals is a leader in patient care, education, clinical investigation and scientific innovation. The Hospital is regarded as one of the finest veterinary teaching hospitals in North America. With three inpatient facilities, including the Companion Animal Hospital, the Equine Hospital, and the Farm Animal Hospital, Cornell University's Hospital for Animals serves nearly 16,000 dogs and cats; more than 2,300 horses; 1,000 farm animals; and just over 1,600 wild-life and exotic species annually. The Hospital's Ambulatory and Production Medicine Service staff and students make about 3,100 visits a year to over 400 farms in the Ithaca area, treating nearly 39,000 farm animals.

NEWS BRIEFS

new model for academic veterinary training, that the College hopes will address the critical shortage of clinicians and scholars who are needed to train the next generation of veterinarians and to continue to make advances in the treatment of disease.

REUNION 2008 AT THE CORNELL COLLEGE OF VETERINARY MEDICINE

In early June, more than 280 alumni and their guests returned to Cornell to celebrate reunions, marking 5-year through 65-year milestones. Alumni, family, and friends attended a variety of university-wide activities and specific College-related programs. A few highlights of the College of Veterinary Medicine reunion included Dean Michael I. Kotlikoff's State of the College Address,

tours of and presentations at the new Janet L. Swanson Wildlife Health Center, the Baker Institute, and Equine Park and an overview of construction and development plans for the new facility for the New York State Animal Health Diagnostic Center.

During the DVM welcome reception, veterinary alumni BBQ, and class receptions and dinners, alumni and friends had the opportunity to reconnect and share special memories. The Class of '58 saw the largest number of returning alumni (19) and also earned the Dean's Cup for class participation



Department of Clinical Sciences

We are in one of the strongest growth cycles this Department has ever experienced. Thanks to a strong commitment from College administration and exceptionally generous gifts, the Clinical Program, which consists of the Department of Clinical Sciences and the Cornell University Hospital for Animals (CUHA), over the last three years has established or expanded five clinical specialty sections to strengthen our curriculum and improve client service, is planning for a new imaging center, and we have acquired substantial NIH funding in several core disciplines.

Faculty and staff within the Department of Clinical Sciences are responsible for approximately 55% of the entire veterinary curriculum. This is accomplished in a variety of lectures, laboratories, and clinical rotations through the four years of veterinary school. The fundamental evolution from student to professional veterinarian is the signature mission of our Department and College. Providing the breadth of training in the clinical domain requires extensive resources such as multimedia technology, teaching herds of horses and dairy cows, and a fully staffed hospital. New sections within CUHA include dentistry, emergency and critical care, neurology, nutrition, and pain management. Several of these new areas have also developed residency training programs. Faculty

expansion in the sections of anesthesia and imaging has also occurred.

Our Wildlife Health Center, Shelter Medicine Program and an expanded imaging center – all critical for our clinical program – were recently made possible thanks to an exceptional gift from Janet Swanson. The breadth of this support will touch countless lives – human and animal. We are so grateful! (For more information on the gift, please see the article on page 22.)

Recently, NIH funding has been received by Drs. Julia Flaminio, Lisa Fortier, and Alan Nixon in the areas of equine immunology and osteoarthritis. Dr. Rory Todhunter has received NIH funding to investigate canine arthritis, and we have just received a grant from NIH to support and expand our DNA archive and our medical genetics program in dogs. This frequency and level of NIH funding is unprecedented and reflects the strengths across the Department, College, and institution devoted to biomedical research.

In an effort to foster better understanding and cooperation between academia, private veterinarians, and animal owners, Partners in Animal Health created several new online videos to help owners deal with chronic medical problems in their pets. The same videos are also used by veterinarians to promote client compliance

in their practices. In another online series, faculty with Breast Cancer and Environmental Risk Factors produced three educational videos that help young women avoid certain cosmetics and plastics that may increase breast cancer risk.

Despite this remarkable growth, the economic challenge of the last year and the projection for continuation of financial pressure has had an impact on our expansion. The growth in several programs has been stalled, and we have had to deal with increased cost of feed and supplies for our teaching herds. We are considering novel ways to manage the cost of operations and instruction without backing down on our need to remain the lead institution for veterinary education and service.



Rodney Page
Alexander de Lahunta
Chair of Clinical Sciences,
Professor of Medicine and
Director of Sprecher Institute
for Comparative Cancer
Research

in the Reunion Annual Fund (50%). Pictures from Reunion 2008 can be viewed at www.vet.cornell.edu/alumni under Announcements and Special Events.

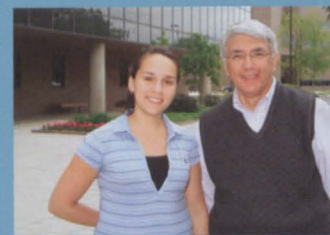
SUMMER PROGRAMS

The Leadership Program for Veterinary Students is a unique summer learning experience for those who want opportunities to broadly influence the veterinary profession through a science-based career. The ten-week program is an intensive, research-oriented learning experience that combines faculty-guided research with vocational



counseling, student-directed learning, and a variety of professional enrichment activities.

The opportunity to research and develop practical skills consistently attracts about 100 students to the College's summer programs. At the annual week-long Smith-Kilborne Program, hosted by the US Department of Agriculture's Animal and Plant Health Inspection Service and the College, veterinary students from universities across the country and Canada are acquainted with various foreign animal diseases that potentially threaten our do-



Department of Microbiology and Immunology

The Department of Microbiology and Immunology encompasses a very diverse faculty with expertise covering a broad range of subject areas. Our faculty provides expertise in the areas of bacteriology, microbiology, virology, immunology, toxicology and parasitology. In addition, we are home to the specialty areas of the Unit of Avian Medicine and the Unit of Aquatic Animal Medicine, and hold an NIH training grant in Virology.

The Department is responsible for Foundation Course IV, Agent, Host and Defense, in the pre-clinical veterinary curriculum, as well as a broad range of graduate courses. In addition, we provide the University with the only undergraduate courses in immunology and parasitology. Both areas are vital for pre-med students, and the courses are well received by a wide range of graduate and undergraduate students alike.

This past year, 14 faculty members within the Department secured new or continuing funding from 38 grants totaling over \$7.5 million in support of research projects. This includes 14 awards directly from NIH, five from the USDA, one from NSF, with the other 18 from a variety of other sponsors, including program project grants from NIH and the Bill and Melinda Gates Foundation. In addition, the Department received an NIH equipment grant, which,

combined with support from the College for renovations, allowed us to install a new three-room BSL2 Live Imaging Suite, complete with a Leica SP5 Confocal Microscope system.

The faculty of the Department experienced a prolific writing year with a total of 68 publications in peer-reviewed journals, five book chapters and 32 abstracts to their credit. In addition, they have been invited speakers at conferences and universities across the US and throughout the world. Dr. Rodney Dietert's interest in developmental immunotoxicology, with an emphasis on comparative risk of early life environmental exposure, has earned him the role of an invited expert and technical committee member on the Chemicals and Children's Health committee of the World Health Organization. He recently published an article on "Methodologies for Developmental Immunotoxicity Testing" in *Methods*. He has also been invited to speak at the NYU Medical School and the Japanese Society of Immunotoxicology in Kobe, Japan.

Dr. Paul Bowser and his Aquatic Animal Medicine Unit spent time in the media spotlight on several different occasions with their continuing work on a deadly fish virus – viral hemorrhagic septicemia virus – and other emerging viruses with an

impact on the Great Lakes region. In addition, Dr. Margaret Bynoe made headlines with her preliminary work on adenosine and the impact of caffeine as an adenosine blocker and its potential in the treatment of multiple sclerosis. Several other faculty received significant awards during the year. Dr. Cynthia Leifer earned the Professional Development Award from Cornell University, Dr. Bowser received the SUNY Chancellor's Award for Excellence in Faculty Service, and Dr. David Russell was elected a Fellow of the American Association for the Advancement of Science.



David Russell
Chair and Professor of
Molecular Microbiology

NEWS BRIEFS

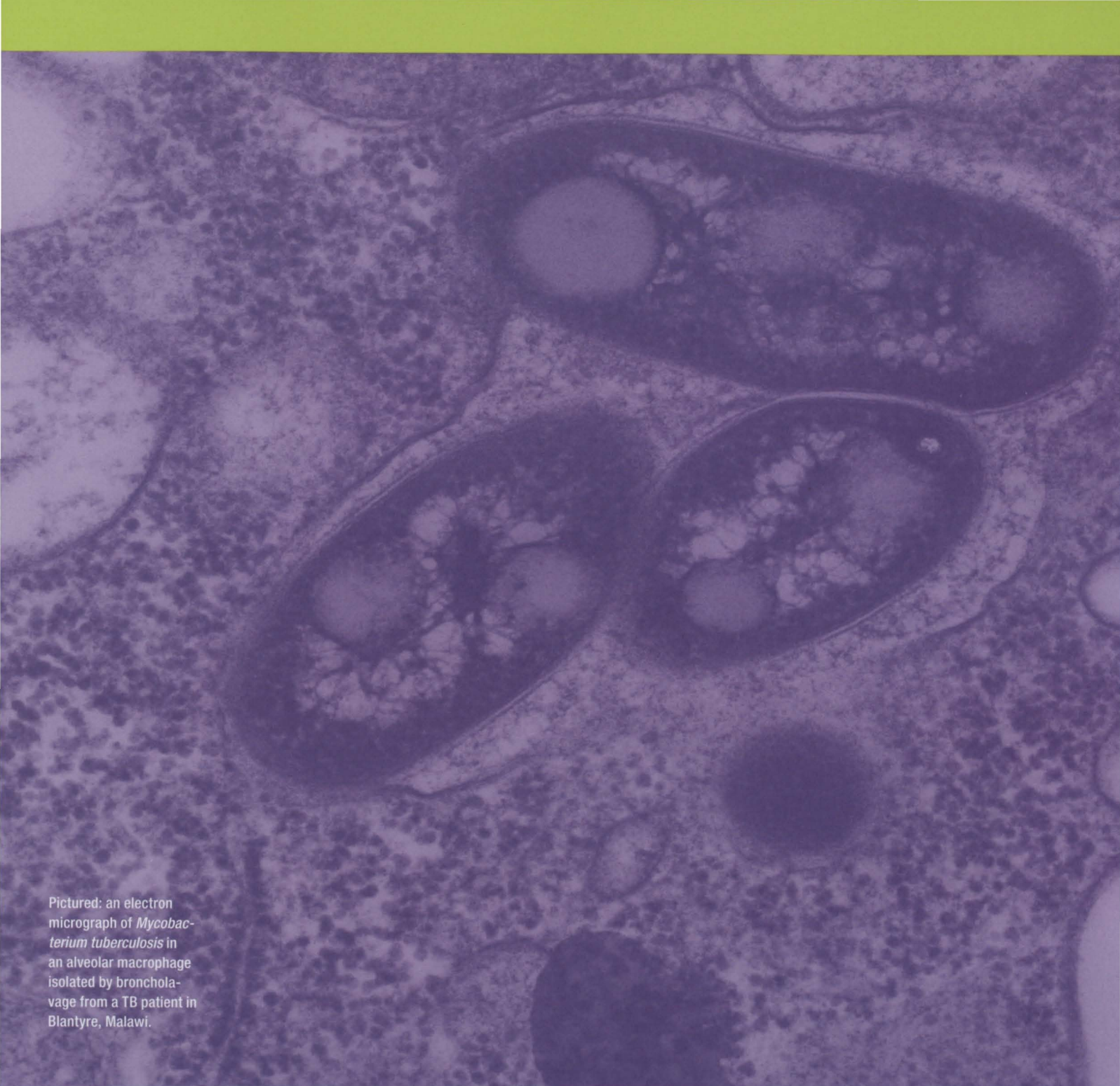
mestic animal population. At Cornell, students learn about risk analysis and emergency management. During the second half of the program, students travel to Plum Island to conduct hands-on research and diagnostic training on the most significant foreign animal diseases.

The Summer Dairy Institute is an advanced training program for prospective dairy veterinarians who want to contribute to the modern dairy industry. Selected participants convene in New York for an intensive 8-week course with experts who offer up-to-the-minute professional information on subjects such as reproduction, nutrition, dairy facilities, dairy record systems, biosecurity, public health and regulatory considerations, financial decision-making, and udder health.



table discussions, and additional enrichment activities, such as seminars, field trips, and symposia.

Finally, the Cornell Veterinary Investigator Program is a ten-week summer experience that allows participants from Cornell and other veterinary colleges to develop research skills, an appreciation for the value of biomedical research in veterinary medicine, and a desire to pursue a career that involves biomedical research. Components of the program include laboratory research, round-

A high-magnification electron micrograph showing several large, oval-shaped alveolar macrophages. Inside these cells, numerous small, dark, rod-shaped structures are visible, representing Mycobacterium tuberculosis bacteria. The background is a dense, granular texture of cellular components.

Pictured: an electron micrograph of *Mycobacterium tuberculosis* in an alveolar macrophage isolated by bronchoalveage from a TB patient in Blantyre, Malawi.

Student Milestones

CORNELL VET STUDENTS SEND COMPUTERS AND TEXTBOOKS TO COUNTERPARTS IN AFGHANISTAN

Noor Mohamed Ayubi, dean of the veterinary faculty at Kabul University who was visiting Cornell, took home both new ideas and a truckload of much-needed books and computers, thanks to Cornell veterinary students and the Cornell Computer Reuse Association, with an assist from Sen. Hillary Clinton. After meeting Ayubi, students in the College of Veterinary Medicine



donated textbooks and contacted Cornell's Computer Reuse Association for additional donations.

OPEN HOUSE

About 3000 people attended Cornell's College of Veterinary Medicine's 42nd annual open house in April. The student-organized and student-run event featured opportunities to play with baby farm animals; learn how to milk a cow; watch students perform an ultrasound on a dog's heart; dress up in surgical scrubs for a photo; visit the Teddy Bear ER, where wounded stuffed animals were surgically repaired; watch demonstrations of a high-performance equine treadmill used to study orthopedic and cardiovascular diseases of horses; and enjoy canine agility performances.



Dr. Nena Winand developed a DNA test to detect carrier status for hereditary equine regional dermal asthenia (HERDA) that will be of tremendous help to performance horse breeders. The test has not only enabled veterinarians to manage the disease effectively, but has allowed informed and select breeding of horses to reduce or eliminate the birth of affected foals that result from matings between carrier parents.

NEWS BRIEFS

WHITE COAT CEREMONY

The College of Veterinary Medicine and the College of Veterinary Medicine Alumni Association welcomed members of the Class of 2009 at the traditional White Coat Ceremony held in December. Professional mentors "coated" the Class of 2009 with the time-honored mantle of the medical profession: the white coat, which symbolizes professionalism and empathy in the practice of medicine. The College takes the celebration of this "rite of passage" one step further, by honoring the individuals who have



provided considerable support and special encouragement to our students along the way.

RESEARCH NOTES

CAFFEINE SHOWN TO PROTECT MICE FROM DEVELOPING MS-LIKE DISEASE

Research conducted by principal investigator Margaret Bynoe, assistant professor of microbiology and immunology, and Jeffrey Mills, a postdoctoral associate at the College, showed that high quantities of caffeine may do more than just keep people awake. The stimulant may one day offer researchers a way to prevent multiple sclerosis. Mice given caffeinated water – in doses equivalent to a person drinking six to eight cups of coffee a day –

Department of Molecular Medicine

The Department of Molecular Medicine was created in 1998 with the merging of the Department of Pharmacology and the cancer cell biologists of the Department of Pathology. Three major areas of research in the Department are signal transduction, cancer cell biology, and receptor and ion channel mechanisms. Faculty members in the Department participate in veterinary education primarily in the pre-clinical curriculum in Foundation Courses II and III, with areas of expertise in cell regulation, pharmacology, and neuroscience.

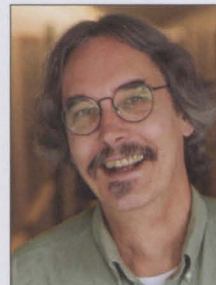
In 2008, we dedicated ourselves to planning for the future. We hired Natasza Kurpios as an assistant professor. She will start in August of 2009, after completing a postdoctoral position in the Department of Genetics at Harvard Medical School.

Her hire represents a new approach in recruitment by identifying emerging postdocs who hold great promise and are attractive as professional colleagues, but have not yet launched an official job search. As we often compete with medical schools for new faculty, competition for the best and brightest is a factor in recruiting. A Cornell University advance grant, to be used during her last year as a postdoc, provides a salary supplement and funds to purchase equipment that she will bring with her to Cornell.

Faculty already in place enjoyed a fruitful year. For instance, Assistant Professor Holger Sondermann, a structural biologist, has already established a variety of collaborations here and is participating in grants with faculty from several departments within the College. Most recently he joined Professor Rick Cerione on the prestigious list of Pew Scholars, recognition that offers lifelong professional networking and camaraderie.

Nena Winand is engaged in the College's first broadly used genetic test. She developed a DNA test to detect carrier status for a devastating equine skin disease known as HERDA. She has currently tested more than 5,000 horses and is working with the College's Animal Health Diagnostic Center to have future testing done here. Her work is a tremendous help to performance horse breeders who can now use a hair or blood sample to determine if their horse is normal, a carrier, or affected by HERDA.

We are looking forward to a successful conclusion to the search for a new Department chair, who we expect will begin additional faculty searches immediately.



Gregory Weiland
Chair and Associate Professor
of Pharmacology



to understand how caffeine blocks receptors that play a role in the autoimmune disease.

were protected from developing an MS-like disease called experimental autoimmune encephalomyelitis. The findings were presented in April at the Experimental Biology 2008 meeting. Researchers, however, cautioned against drinking large amounts of coffee to treat MS, as more studies are needed

COLLABORATIVE SURGERY AIMS TO ADVANCE BREEDING AND RECOVERY EFFORTS

Drs. Noha Abou-Madi and Paul Bowser performed surgery on a lake sturgeon as part of a collaborative effort between the Cornell Biological Field Station on Oneida Lake, the College of Veterinary Medicine, and researchers from Purdue University. During the surgery, tissue was removed that will





The Feline Health Center, part of Population Medicine and Diagnostic Sciences, is a veterinary medical specialty center devoted to improving the health and well-being of cats everywhere. The Center finds ways of preventing and curing diseases of cats by conducting and sponsoring breakthrough feline health studies, educates veterinarians and cat owners about feline health by providing timely medical information and by promoting public understanding and awareness of feline issues, and aids veterinarians when new or unknown feline diseases occur.

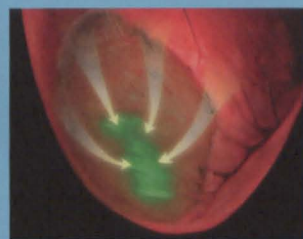
NEWS BRIEFS

be used to develop a molecular-based tool capable of identifying the sex of immature sturgeon. The test, being developed at Purdue University, will contribute to breeding and recovery efforts for these relatively rare fish. The lake sturgeon is one of New York's largest freshwater fish. Sturgeon in Oneida Lake are part of a restoration stocking program initiated by the New York Department of Environmental Conservation in 1995. The American Fisheries Society has listed the lake sturgeon as threatened in all the states where it occurs.

RESEARCH RESULTS PUBLISHED IN *NATURE*

One of the most dangerous and fatal consequences of heart attacks can be prevented with cell-transplant therapies, according

to scientists at Cornell University, the University of Bonn, and the University of Pittsburgh. The discovery, published in the Dec. 5 issue of *Nature*, indicated that cell-transplant therapies have shown profound implications for restoring damaged heart tissue when living embryonic heart cells are transplanted into cardiac tissue of mice that had suffered heart attacks. The paper's senior authors Michael Kotlikoff, the Austin O. Hooey Dean of the College, and Bernd Fleischmann at the University of Bonn, found that a protein, expressed by the transplanted embryonic heart cells, improved electrical connec-



Department of Population Medicine and Diagnostic Sciences

Through June of 2008, efforts in the Department of Population Medicine and Diagnostic Sciences focused on maintaining the momentum to advance and develop the Department. We continued to improve our competitiveness in securing external funding to support research, teaching, and service, aligned the Department's mission with that of the College, and improved collaboration and synergy to ensure that advances and discoveries are leveraged to the utmost.

More specifically, during the 2007-08 year, we continued the academic growth of the Department by completing three searches (hiring Dr. Paul Virkler, Dr. Jamie Ruiz, and Dr. Rodrigo Bicalho) and finished the year engaged in a search to fill a veterinary support services position. In addition, Dr. Michael Stanhope was promoted to full tenure. These and our current faculty gained access to two new pieces of equipment: a flow cytometer used for research and test development as well as an upgrade to a microscope that can do florescent and phase contrast studies using living cells.

This year also saw the union of the investigators in the Department's NIH-funded Zoonotic Research Unit (ZRU) into one open laboratory in the Veterinary Medical Center. Working in close proximity has enhanced opportunities for collaboration and increased synergy among our researchers.

The ZRU contract provided seed funding for five College faculty members (Dr. Craig Altier, Dr. Yung-Fu Chang, Dr. Michael Stanhope, Dr. Bettina Wagner, and Dr. Lorin Warnick) as well as Dr. Martin Wiedmann from the College of Agriculture and Life Sciences.

External funding for our Department's activities has steadily grown, increasing from 45 awards totaling \$3.5 million in July 2005 to 59 awards totaling \$4.8 million in July 2007. The results of much of this research are published in peer-reviewed journals. For example, in 2008, faculty members within the Department had more than 50 publications out or in press.

The Department is well positioned to contribute to the post-DVM teaching mission of the College and laid the groundwork this year for two new student opportunities. In August 2008, students were officially able to spend time in the diagnostic lab as part of the clinical rotation and a new residency program in Diagnostic Sciences was launched. These opportunities were designed to meet the growing need for veterinarians and train future diagnosticians.

Several of the Department's initiatives are long-standing with work continuing into the future. For example, Department faculty and staff are preparing for the opening of the new facility for the New York State Animal Health Diagnostic Center by ex-

amining opportunities to fully integrate all activities into the College's teaching, research, and service goals. Construction on this \$80 million facility began in May with an expected completion date in 2010.

Through the integration of the Department's scholarly work, state-of-the-art diagnostic services, and graduate education positions, our faculty and staff leveraged the fruits of our work as fully as possible. For example, results of testing in the Diagnostic Center were available for use in research and the results of this research provided improved opportunities for service.

Collaboration and synergy underscored our efforts in 2008. We look forward to continued progress in 2009.



Yrjo Grohn
Chair and Professor
of Epidemiology

tions to other heart cells. The researchers also proved that the improved connections helped activate the transplanted cells deep within the damaged section of the heart tissue, reversing the risk of developing ventricular arrhythmias after a heart attack, the number one cause of sudden death in the Western world.

COORDINATING THE PUSH FOR AN ANSWER TO THE PET FOOD CRISIS

The Vet College's Animal Health Diagnostic Center (AHDC) was the first lab to receive food and tissue samples that led to the explanation of the 2007 pet food crisis. In what started as routine toxicology testing, the AHDC eventually assumed a wider role as the central hub for coordinating national activity that ultimately identi-



fied the cause of the illness and deaths. Several teleconferences, hosted by the AHDC, brought together experts from the FDA, state food labs, and industry labs. During the teleconferences, participants discussed current findings and protocols and compared technical notes. The cause of the pet food crisis was traced to wheat gluten that was being imported from a Chinese manufacturer. The wheat gluten contained melamine and melamine-breakdown products that triggered sickness and death in an unknown number of animals.

Baker Institute for Animal Health

The Baker Institute for Animal Health is one of the oldest veterinary research centers in the world. The Institute's programs in infectious diseases, immunology, genetics, and reproductive biology are characterized by a very high level of scientific excellence and a continuing commitment to practical goals that have had transforming effects on animal health and on the veterinary profession. The development of the vaccines for canine distemper and canine parvovirus and the discovery of disease-causing genes for canine eye disease are examples of key Baker Institute achievements. In this vein, in 2008 Baker Institute collaborations spanned disciplines and continents, uniting experts in the goal of improving animal health.

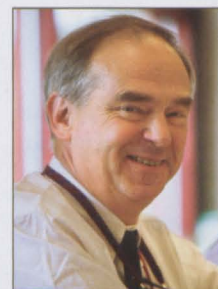
Dr. John Parker, who with Dr. Patty Pesavento of the University of California at Davis is studying the caliciviruses that cause fatal disease in cats, received the 2007 Pfizer Award for Research Excellence in Cornell's College of Veterinary Medicine. Dr. Anna Kukekova was awarded a major grant from the US National Institutes of Health for her exciting studies of the genetic basis of tame behavior in a unique population of domesticated foxes in Siberia. Kukekova travels to Novosibirsk each year to work with her Russian colleagues on this project. Dr. Alex Travis, who heads

an interdisciplinary Cornell project studying the effects of sustainable agriculture on wildlife populations in Zambia, was chosen to lead the Veterinary College's new program in Wildlife Conservation. Travis is a specialist in reproductive biology, and he has a strong interest in assisted reproduction technology as applied to endangered species. Dr. Judy Appleton was appointed Associate Dean for Academic Affairs in Cornell's College of Veterinary Medicine. Appleton continues to serve as the Caspary Professor of Immunology at the Institute, but she has added important new responsibilities to her portfolio. Dr. George Lust, who has worked with Dr. Rory Todhunter of the Department of Clinical Sciences for many years, has seen the fruits of his career-long interest in canine hip dysplasia ripen with the discovery of genes that influence this devastating condition in large breed dogs. And, Dr. Susana Mendez established an agreement between Cornell University and Spain's Complutense University of Madrid to create a global network of experts who study leishmaniasis, an incurable parasitic condition of humans and dogs.

In 2007 the Institute also added two scientists to its roster. Dr. Scott Coonrod joined the Institute faculty, moving to Ithaca from

Weill Cornell Medical College in New York City. Coonrod, a reproductive biologist who also has a strong research program in cancer biology, maintains effective collaborations with faculty at Weill Cornell Medical College. Finally, Dr. Douglas McGregor, former Baker Institute director and associate dean of research in the College of Veterinary Medicine, rejoined the Institute faculty. McGregor directs the Veterinary College's Leadership Program that introduces veterinary students from around the world to the many career possibilities in academic veterinary medicine and public service.

The Institute closed the 2008 fiscal year with preparations for the future: In 2010, a symposium and various celebrations will mark the Institute's 60th year. Stay tuned!



Doug Antczak
Chair and Dorothy Havemeyer
McConville Professor of
Equine Medicine

NEWS BRIEFS



OUR ROLE IN THE MYSTERIOUS DEATHS OF BATS

In an effort to protect and maintain the viability of bat populations, Dr. Elizabeth Buckles, assistant professor of biomedical sciences, has been collaborating with the New York State Department of Environmental Conservation as well as

researchers, veterinarians, and wildlife experts to identify what is causing hibernating bats in the Northeast to die en masse. Because the bats have been found with a white fungus on their noses, the condition has been dubbed "white-nose syndrome," but Buckles and her colleagues are still investigating whether the fungus is

causing the deaths or is just a symptom indicating the presence of some other disease. The "white-nose syndrome" is one of the only mass mortalities ever recorded in the bat population.

PROFITS, NOT POACHING, IS MESSAGE CORNELL SCIENTISTS ARE AIMING AT ZAMBIAN FARMERS

In Eastern Zambia, cattle have been decimated by disease, making goats of increasing importance to the livelihoods, food security, and health of the region's residents. Unfortunately, 65% to 70% of goats die before sale or consumption under the practices used in this very rural part of Africa. This loss of income and protein leads to unsustainable harvests of wildlife and fish resources. With support from the College's Expanding Horizons Program, Tamika Lewis



The Wildlife Conservation Society – Cornell University joint residencies provide all the advantages of a university-based medical residency and the large caseloads of a diverse, mixed-zoological practice involved with both captive and free-ranging animals from around the world.



DVM '09 and Dr. Alice Pell, professor of animal science and vice provost for international affairs, assisted COMACO (Community Markets for Conservation) during the summer of 2007 to launch a training program to improve goat production. The program reached farmers directly and also prepared COMACO's

extension officers to act as on-site trainers who are now ready to train future farmers. It offered advice and guidance for successful approaches to husbandry, nutrition, healthcare, and marketing. Lewis designed the program to accommodate immediate needs and long-term goals. Lewis received additional training from Dr.

Beth Buckles, Dr. Benjamin Lucio-Martinez, and Dr. Mary Smith before beginning her work in Zambia.

COMACO teaches rural villagers techniques for sustainable agriculture, helping them get more cash for crops and linking such practices to wildlife conservation. Started by the Wildlife Conservation Society, COMACO is currently being assisted by a \$1.2 million US Agency for International Development four-year grant that provides Cornell's scientists resources to test and fine-tune the COMACO model and to send Cornell students and researchers like Lewis and Pell to Zambia. Expanding Horizons offers Cornell veterinary students the opportunity to spend six to 10 weeks in a developing nation like Zambia engaged in veterinary research or hands-on veterinary experience.

Discovery

Research Highlights

Johne's Disease and Animal Models

Despite years of scientific investigation into the contagious, chronic, slow-growing, and sometimes-fatal infection caused by *Mycobacterium avium paratuberculosis* (MAP) in the small intestine of cattle and other ruminants, there is neither a definitive diagnostic test for Johne's (pronounced YO-knees) in dairy cattle nor is there an effective vaccine against the economically important disease.

Johne's is a contagious disease that affects cows' productivity. Therefore, owners of wisely managed herds would rather have a reputation for maintaining a Johne's disease-free stock. Culling animals with full-blown Johne's is one way to control the infection – at the herd level and in the general population in states and countries. But some cows infected with Johne's can hide the disease. They do not show clinical manifestations and their diagnostic tests can be negative for months or years.

This leaves herd owners facing a tough question: If I cull the most sick and infectious animals, should I also cull any animal that might be sick, even those that are still productive?

Linking Johne's and Crohn's Diseases

To make matters more interesting, some infectious-disease experts note provocative similarities between Johne's disease in ruminants and Crohn's disease in humans. The possible link heightens the need for a good mathematical model for the spread, control, and prevention of *mycobacterium*-based disease.

With major research support from the US Department of Agriculture and his own expertise in infectious disease, Dr. Yrjo Grohn, professor of epidemiology and chair of the Department of Population Medicine and Diagnostic Sciences, and his colleague Dr. Ynte Schukken, professor of herd health and epidemiology, are working on developing a mathematical model for Johne's disease. From the College of Agriculture and Life Sciences, Grohn recruited Loren W. Tauer, a professor of applied economics and management. And in Cornell's College of Engineering, Grohn found Chong Wang, a doctoral student in statistics, and Bruce Turnbull, professor of statistics.

Tauer specializes in risk analysis, efficiency and productivity, and decision-making in farm-business organizations. Turnbull's

statisticians design the so-called nonparametric performance measures to assess diagnostic indicators. Together, Grohn and his team are working with several long-term databases of Johne's disease in the cattle to better understand the diagnosis and spread of MAP and the cost of controlling it. The same approach might aid decision-making in other cattle conditions, such as mastitis, and even in a variety of human diseases.

A Higher Degree of Certainty

Toiling at the crossroads of epidemiology and economics, the mathematical modelers aim to determine, with a high degree of certainty, whether costly control measures are justified in a disease that doesn't even have a proof-certain, "gold standard" diagnostic test.

"A good mathematical model can handle 30 years' of data in an afternoon," said Grohn.

Considering that Johne's disease can strike dairy cattle in the prime of their productive life – and that the medical health of dairy farm workers and the fiscal health of multi-million-dollar businesses and an entire industry are at risk – that mathematical-modeling afternoon can come none too soon.

NEWS BRIEFS

GIFTS

TO UNDERSTAND THE ISSUES AROUND DECLAWING CATS

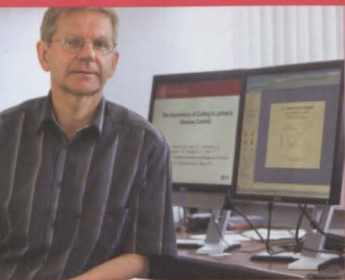
The estate of Rhoda A. Hogan of Durham, NH, has gifted \$100,000 to the Cornell University Feline Health Center to help educate cat owners and veterinarians about the issues surrounding declawing cats. Although a common procedure carried out in most veterinary clinics, feline declawing has remained a controversial and sensitive topic. With this gift, the Center will be able to offer veterinarians and cat owners a variety of educational materials in the form of online videos and client brochures that veterinarians can share with cat owners who are



contemplating having their cat declawed. The materials will be focused on helping cat owners understand the ethical and welfare consequences of surgical declawing and will provide cat owners with instructional videos on feline behavior training, aimed at reducing destructive scratching, one of the leading reasons cats are declawed. The materials will also provide veterinary training on proper pain management, when declawing has to be performed as a last resort.

GIFTS SUPPORT RESIDENCY WITH WILDLIFE CONSERVATION SOCIETY

Thanks to an anonymous \$1 million endowment gift, Cornell's vet students will continue to have the opportunity to participate in



Dr. Yrjo Grohn and his research team investigate Johne's Disease, a contagious and devastating condition that has lasting implications for a cow's productivity.



The dairy industry is the largest single segment of New York State's agricultural industry, according to the New York State Department of Agriculture and Markets.

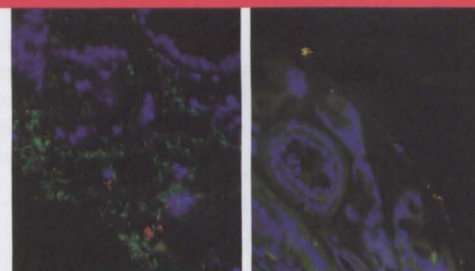
the joint residency program between Cornell and the Wildlife Conservation Society (WCS). Income from the endowment, when fully funded, will support the equivalent of one resident. When completed, the endowment should generate approximately \$50,000 annually and grow over time. This helps to secure Cornell's future commitment to the Cornell/WCS program, during which residents learn skills such as performing root canal surgery on a tiger, treating a shell wound on a sea turtle, vac-



inating a rare bird species to protect it from West Nile virus, or diagnosing pathogens in a variety of species and settings. The 2006 initiative established two residencies: wildlife medicine and wildlife pathology. Students divide their three-year terms between Cornell's Ithaca campus and WCS facilities in New York City to gain a comprehensive understanding of animal-health issues.

The John R. Kennedy Foundation and Paula Kennedy Harrigan also stepped forward this year in support of the Wildlife Conservation Society residencies. Their gift to the program supports the pathology residency, which fosters among veterinary students a greater understanding of the importance of wildlife conservation and its relevance to public health and zoonotic diseases. In addition, the Kennedys hosted an event in Vero Beach, FL, to raise

Pictured here: scientific images of strep cluster in normal colon (left) and *E. coli* on the surface of a colon (right).



Cornell University leverages the unique strengths of a major research university, a leading veterinary college, and scientific expertise from around the globe to benefit canine health and battle the most significant diseases faced by humans.

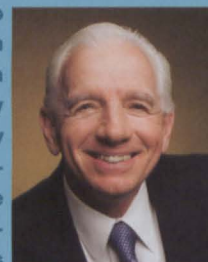
NEWS BRIEFS

awareness about the College and issues related to animal and public health. Paula Kennedy is a licensed veterinary technician in Pound Ridge, NY. Paula serves on the College's advisory council and the Wildlife Conservation Society's Wildlife Health Sciences Committee.

CHARITABLE REMAINDER TRUST WILL SUPPORT COLLEGE

Dr. Jerry Bilinski DVM '69 established a charitable remainder trust with a gift of real estate that will provide future support to the College, faculty, and students. Charitable remainder trusts are often an effective estate planning tool as they can be used to supplement existing retirement income, ensure that family members are provided for, and may reduce capital gains taxes. In addition,

charitable remainder trusts allow donors to support a favorite charity, while retaining an interest in the gift or transfer and receiving a charitable deduction for the assets ultimately passing to the charitable organization. Jerry and his wife, Darlene, have a history of supporting the College, and the Jerry and Darlene Bilinski Learning Laboratory marks this generosity. Jerry serves as a member of Cornell's Board of Trustees, University Council, and the advisory boards of the College of Agriculture and Life Sciences and the College of Veterinary Medicine.



An Uncultured Approach to Inflammatory Bowel Disease

Inflammatory bowel disease (IBD) is widely considered a consequence of uncontrolled intestinal inflammation. The disease is typically blamed on a combination of elusive environmental, bacterial, and immune responses in genetically susceptible individuals. Some estimates suggest that up to one million Americans have IBD (which is different than irritable bowel syndrome). Those suffering from the disease experience diarrhea and abdominal pain, as well as fever, fatigue, weight loss, dehydration, malnutrition, and abdominal cramping. Recent results, though, found in the laboratory of Dr. Kenneth Simpson, professor of small animal medicine, have shed new light on the role of bacteria in inflammatory bowel disease and have led to a promising option for treatment.

Using contemporary culture-independent methodologies, Simpson and his colleagues discovered in a group of boxers with a severe form of inflammatory bowel disease that the inner lining of their colon was selectively colonized by intramucosal *E. coli*. In addition, they found that treating these dogs with antibiotics leads to clinical remission that correlates with the eradication of the invasive *E. coli*.

After realizing that the *E. coli* strains isolated from the affected dogs resembled a group of *E. coli* that was associated with

Crohn's disease found in a study in France, Simpson collaborated with Ellen Scherl, associate professor of clinical medicine at Weill Cornell Medical College, to study bacteria in select areas of the digestive tract of people with Crohn's disease.

Using the same culture-independent techniques, they found that 16S rDNA libraries constructed from the lining of the lowest division of the small intestine in patients with Crohn's were selectively enriched in sequences for *Enterobacteriaceae*, matching *E. coli* and *Shigella* in the National Center for Biotechnology Information database and relatively depleted in a subset of *Clostridiales*. Histological and endoscopic disease activity correlated with the number of *E. coli* visualized in intestinal biopsies, but not bacterial colonization in general, suggesting these bacteria could be directly involved in the inflammatory process.

Culture-based characterization of *E. coli* strains from the inflamed intestines of people and dogs indicates they belong to an alleged new pathogroup, Adherent and Invasive *E. coli* (AIEC), originally isolated from the small intestines of patients in the French study mentioned above. Comparative analysis of AIEC strains reveals they are diverse in overall genotype and serotype, but harbor chromosomal and episomal elements similar to those in ex-

traintestinal pathogenic *E. coli* and pathogenic *Enterobacteriaceae*. These findings raise the possibility that AIEC strains share common pathoadaptive determinants of virulence that promote intestinal inflammation across species.

"Our findings provide insights into the role of bacteria in different forms of IBD," Simpson said. "This knowledge could help veterinarians and physicians to provide more effective and individualized treatment of patients with IBDs."

Ongoing studies are seeking to determine the genetic basis of susceptibility to this disease in boxers and the ability of these IBD-associated bacteria to cause disease.

RECOGNITION

DEAN RECOGNIZED FOR LEADERSHIP AND RESEARCH

Cornell University Dean of the College of Veterinary Medicine Michael Kotlikoff received the highest honor bestowed by UC Davis' College of Veterinary Medicine – the Alumni Achievement Award. Kotlikoff earned the award in recognition of his outstanding personal and professional contributions to cardiovascular research and leadership in academic veterinary medicine.

CORNELL VETERINARIANS RECEIVED PRESTIGIOUS AWARDS FROM NEW YORK STATE VETERINARY MEDICAL SOCIETY

Two veterinarians in Cornell's College of Veterinary Medicine, Donald F. Smith and Ronald Riis, were honored by the New York State

Veterinary Medical Society in September. Smith, who served as dean of the Cornell Veterinary College from 1997-2007, was named the New York State Veterinarian of the Year. He is credited with setting the course for Cornell's pioneering efforts

in biomedical research by establishing infectious disease, cancer biology and oncology, and mammalian genomics as emerging academic priorities his first year. Riis, an associate professor of ophthalmology, was recognized with this year's Outstanding Service to Veterinary Medicine award.



Artificial Microvascular Device Could Catch Metastasis in Midstream

"Metastasis is an inefficient process," said Dr. Tracy Stokol. "Maybe one in a million cells breaking off the tumor and entering the bloodstream will somehow stick to the endothelial (smooth, innermost) lining of pre-capillary blood vessels – and go on to start another tumor elsewhere in the body – but that's all it takes. Just one."

As a clinician, the assistant professor of population medicine and diagnostic sciences sees the penultimate result of metastasis each time she diagnoses cancer in someone's pet at the Cornell University Hospital for Animals. As a cancer researcher, Stokol would like to know exactly why a very few metastasis-bound cancer cells stop in blood vessels that are seemingly large enough to let them pass, especially when the vast majority of cancer cells go with the flow and are destroyed by the body's immune system.

"I'd like to see precisely where cancer cells stop and metastasis starts," Stokol said. "I need pictures."

That expectation presents at least two problems: Real-time *in vivo* imaging of rare events that occur on a micro scale is difficult, making some sort of engineered device ideal.

"Secondly, I'm not an engineer," noted Stokol. "I'm a biologist and a veterinarian."

She found her engineer in a chance meeting at a Cornell Ithaca-Weill conference.

Dr. Michael Shuler is the chairman of Cornell's recently established Department of Biomedical Engineering and a pioneer developer of micro-fluidic devices that mimic biological systems, such as "Animal on a Chip."

Shuler encouraged Stokol and her veterinary research colleagues to use the Cornell Nanoscale Science and Technology Facility (CNF). Pre-capillary blood vessels in humans and other animals range from 30 to 50 microns in diameter (whereas typical cancer cells are around 20 to 30 microns), and Cornell's nanotech engineers make silicon devices that size (and much, much smaller) for a variety of electronic and biomedical applications.

Their first proof-of-concept paper (by Stokol, Shuler, and James P. Camp in the journal, *Biomedical Microdevices*, 2008) was titled "Fabrication of a multiple-diameter branched network of microvascular channels with semi-circular cross-sections using xenon difluoride etching." Their achievement – making blood vessel-like channels with rounded cross-sections where endothelial cells can grow, rather than the rectangular shapes that etching usually produces in silicon – was a good first step toward understanding metastasis.

Even better will be a microvascular device with branching blood vessels of increasingly smaller diameters – with fully rounded

cross-sections in flexible, transparent polymer material – so that human endothelial cells can grow into a seamless lining that mimics the interior surface of real blood vessels. Transparency is important, so that cancer cells and other components with fluorescent tags can be imaged from the outside.

Working now with Dr. Mandy Esch, a research associate who has years of experience in nanoscale fabrication, Stokol is close to completing the first artificial microvascular (AMV) device. Micro-fluidic "plumbing" will move blood and cancer cells through branching channels of the device while Stokol watches, hoping to learn the when-where-why-and-how of metastasis in the bloodstream.

An additional collaboration with Nozomi Nishimura in another Cornell biomedical engineering lab (run by Christopher Schaffer) could produce the next-generation AMV with 100-nanometer channels that introduce a variety of growth factors into the endothelial-lined channels.

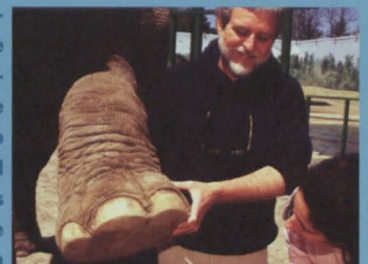
"I'm still not an engineer, but this collaboration is helping me start to think like one," said Stokol. And cancer research is starting to get clearer pictures of a key step in the "inefficient" but all-too-frequent process of metastasis.

NEWS BRIEFS

KOLLIAS SELECTED FOR MEMBERSHIP IN INTERNATIONAL CONSERVATION ORGANIZATIONS

Dr. George Kollias was invited to become a full member of the International Union for the Conservation of Nature. Specifically, he has been appointed to the Species Survival Commission Otter Specialist Group and the Otters in Captivity Task Force. The appointment recognizes his major and ongoing contributions to the conservation of otters. Kollias has been involved nationally and internationally in wildlife health and conservation for more than 30 years. As a member of the New York State River Otter Project, Kollias was instrumental in reintroducing the Nearctic river otter to its historic range in western NY. As a member of the international organization, Kollias will monitor the status of species,

identify threats to these species, and prioritize and promote the necessary conservation actions at all levels. In addition, he will provide scientific advice to conservation organizations and government agencies. Kollias was also named a fellow with the Wildlife Conservation Society. In this position, he will have more formal involvement with international conservation research and serve as an advisor on projects that support wildlife health and conservation. At Cornell, Kollias is the Jay Hyman Professor of Wildlife Medicine.



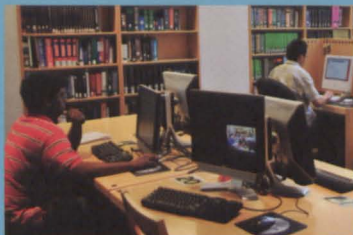
Tracy Stokol (right) and colleagues Michael Shuler and Mandy Esch at the Cornell Nanoscale Science and Technology Facility.



Pictured here: fluorescent image of endothelial cells grown within an artificial microvascular device. The cells are stained for the cytoskeletal marker, actin (green), and the junctional adhesion molecule, VE-cadherin (red).

COLLECTIONS GONE DIGITAL

Traditionally, libraries gather, organize, store, preserve, and provide access to information using proven systems that have evolved over decades and continue to evolve as new types of materials appear. One example of the application of this skill set



is our co-sponsorship with the Department of Clinical Sciences for the Partners in Animal Health Program. As part of this program, we are developing a CVM Media Repository for the management of the many digital assets owned and created

throughout the College. The program itself provides web-based educational materials for practicing veterinarians and pet owners and provides the basis for increased involvement in continuing education within the veterinary field. Veterinary Library staff oversee the creation of the infrastructure of the program and provided leadership in such issues as the naming of the program, logo creation, developing archive solutions for images, trademarking the program, web site design, and more. ■

Partnership

Giving

Driven by Compassion

Robert Frost, in *The Road Not Taken*, said:
Two roads diverged in a wood, and I –
I took the one less traveled by,
And that has made all the difference.

This sentiment is at the root of Janet L. Swanson's life choices. Married for 25 years, she is a stepmother to three sons, but chose not to bring others into the world. Instead, she has devoted her life to serving and advocating for animals.

"I've displayed that poem for years," said Janet. "But last year, I had an epiphany and realized with the help of Tessa that it described my life."

Tessa came to her door a stray kitten. She loved life and was an active ball of energy, despite stomach problems. Several months later, Tessa passed away, but not before showing Janet that the life choices she had made were purposeful and absolutely correct.

"My life is supposed to go as it has," said Janet, who with her husband, John, is the College of Veterinary Medicine's most generous donor. "I was supposed to be in that house, at that time. Otherwise, what would have happened to Tessa? She needed me, as have the other animals in my life, and I was there for her."

That compassion – combined with the understanding that not all animals in need will find her door – is behind Janet's dedication to the College. The Swansons' gifts have supported the Janet L. Swanson Wildlife Health Center, the Janet L. Swanson Shelter Medicine residency and clinical

directorship, and an expanded imaging center in the Cornell University Hospital for Animals.

"Caring about people and animals goes hand-in-hand," said Janet, who typically only takes in rescue or stray animals. "Some people don't recognize the importance of animals to children, to the elderly, to the sick, to those who live alone, or to the child who has difficulty relating to others or in their schoolwork, but will read to a dog. I would argue that those who don't care about animals don't really care about people."

At their core, the Swansons' gifts are the foundation for work that will improve animals' lives, enrich people's lives, and educate a new generation.

The Swansons' endowment of both the Wildlife Health Center and the associated program ensures their future with a secure source of operating funds that will allow the College to provide the best possible care for wildlife.

Janet and John's first gift to the College in 2005 endowed the first residency in Shelter Medicine at the College, which was initially funded by Maddie's Fund. The Swansons' most recent gift endows the clinical director's position for Shelter Medicine, which guarantees that this program will have the necessary leadership to sustain its position as the nation's leading shelter medicine program at a veterinary college. According to estimates from the American Society for the Prevention of Cruelty to Animals, between eight and 12 million animals are relinquished to shelters across the

US every year. Further, five to nine million of them will be euthanized because of lack of space or resources to care for them adequately. With the Swansons' gift, Maddie's Shelter Medicine Program at Cornell will continue to provide instruction and shelter experience for veterinarians and veterinary students. The program enables them to create and evaluate preventive medicine and treatment protocols and implement and monitor disease surveillance systems in animal shelters. With this knowledge, veterinarians can reduce suffering from disease, save lives, and promote a society where all healthy and treatable animals are guaranteed loving homes.



The mission of the Maddie's Shelter Medicine Program at Cornell, one of the initiatives that the Swansons' gifts support, is to provide instruction and shelter experience for veterinarians and veterinary students, enabling them to create and evaluate preventive medicine and treatment protocols, and implement and monitor disease surveillance systems in animal shelters. The ultimate goals of the program are to reduce suffering from disease, save lives, and promote a society where all healthy and treatable animals are guaranteed loving homes.

Responding to Change with a Bequest that Changes Everything

So much has changed in the veterinary medical profession in the years since Don Powell graduated with Cornell's DVM Class of 1969. A founding partner in what has grown to become one of the leading small-animal practices on the East Coast – Pender Veterinary Centre of Fairfax, VA – Powell has a well-developed strategic response to every change and challenge.

State-of-the-art diagnostic technologies and in-house laboratories help Powell and his practice's professional staff make informed decisions. They commence appropriate treatments within hours – and sometimes within minutes – not the excruciating two or more days that some diagnoses used to take. Strategic hiring – including many Cornell veterinary graduates – has built a professional staff with a full range of special interests, because that is what clients expect these days from a major clinic.

When clients asked for more than the bare minimum in veterinary care, Powell developed Eastern Exotic Veterinary Center for pets that aren't dogs or cats. He added the Emergency Veterinary Clinic of Fair Oaks for pets whose needs ignore 9-to-5 office hours. His Dulles Gateway Pet Retreat takes the "bored" out of boarding – and offers reassuring webcam views of pets that really relax while owners travel. Dulles Gateway Veterinary Centre was opened to supply wellness care for boarding dogs and cats and veterinary care for the immediate surrounding area in Chantilly.

Powell also established the Pender Pet Caring Foundation. The Veterinary Centre donates a memorial gift for each deceased pet friend. Many clients purchase an inscribed paver in the Memorial Park located next to Pender Veterinary Centre as a permanent

reminder of a special relationship. The gifts to the Foundation ultimately support veterinary education and research (including the work of Cornell's Feline Health Center and Baker Institute for Animal Health) as well as pet-adoption programs, training and placement of assisted-living and seeing-eye dogs, and help for animals in national emergencies, such as 9/11 and Hurricane Katrina.

The roster of Powell's strategic responses to changing times seems limitless.

"At Cornell," he said, "I got a first-rate education from great men like Howard Evans who became life-long friends. But I didn't learn about high-tech diagnostics and specialty practices – because they didn't exist 40 years ago. What I learned best from Cornell – and what I value most and use every day in all parts of my professional life – is deductive reasoning." He credits his ability to think through problems logically for enabling him to diagnose difficult medical cases and make reasoned business decisions in the face of change.

There is another kind of change that Powell and his wife, Rita – who were married before their days at Cornell – count themselves fortunate to be able to address: the rising cost of veterinary medical education.

Don Powell, who attended Cornell on a scholarship from his home state of Delaware, did not graduate with the career-crushing debt that confronts all too many of today's veterinary school graduates. He understands – from his ongoing interest in veterinary education – why periodic tuition increases are inevitable. Modern, complex veterinary medicine simply cannot and should not be taught the way it was

decades ago, he emphasizes, adding: "The knowledge base has increased so much."

The Powells wanted to find a way to help veterinary graduates begin careers to which they will devote their lives, without debt that can take near-lifetimes to pay off. The Powells have made a commitment to a major bequest that will help support education in small-animal medicine at Cornell. And they urge others who have excelled in the profession to do the same.

"We have been blessed to have the opportunities we had – to get a good education, to graduate without debt, and to be strengthened by our Christian faith," Powell said. "Now it's time to share the blessings and to do our part in providing opportunities for the next generation of veterinary medical doctors."

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of grey shading to yellow is on grey
backgrounds of hair to show off white
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backgrounds of hair to show off white
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backgrounds of hair to show off white
hair to maintain a soft texture

Don and Rita Powell are
providing opportunities for the
next generation of veterinary
medical doctors.



When clients asked for
more than the bare mini-
mum in veterinary care,
Dr. Powell developed
Eastern Exotic Veterinary
Center for pets that
aren't dogs or cats.

Partnership



Dr. Kelly Hume, a clinical fellow, is working on a variety of projects trying to elucidate the role of Hus1 (a checkpoint protein that is a member of the Atr pathway) in DNA damage responses, tumorigenesis, and therapeutic resistance. Pictured here, she is preparing PCR samples for genotyping analysis.

Dr. Kelly Hume, a clinical fellow, is working on a variety of projects trying to elucidate the role of Hus1 (a checkpoint protein that is a member of the Atr pathway) in DNA damage responses, tumorigenesis, and therapeutic resistance. Pictured here, she is preparing PCR samples for genotyping analysis.



Dr. Jean Holzworth joined the staff at Angell Memorial Animal Hospital and practiced feline internal medicine.

The Mother of Feline Medicine

Dr. Jean Holzworth DVM '50 changed the veterinary profession. At a time when women were expected to marry and have children, Dr. Holzworth, who earned a Ph.D. in Latin from Bryn Mawr College before enrolling in Cornell's College of Veterinary Medicine, chose to become the "mother of feline medicine," according to Dr. Fred Scott, interim director of Cornell's Feline Health Center. And, with her most recent gift to the Center at Cornell University's College of Veterinary Medicine, Holzworth's legacy will live on through the continued pursuit of groundbreaking investigation in clinical feline research.

Through a bequest, Holzworth gifted more than \$2.5 million to the Feline Health Center. Annual income from the endowed fund will support research destined to advance the health and well-being of cats as well as fund one of the College's clinical fellowships. The fellowship program is the first of its kind in the nation and encourages veterinarians to rekindle the excitement of discovery and academic medicine.

Thanks to Holzworth's bequest, Dr. Kelly Hume will complete the College's first feline fellowship. She will spend 80 percent of her time conducting research in her specialty – oncology – and 20 percent of her time in clinical medicine as she prepares for an academic career. (For more on the Clinical Fellowship program, see page 5.)

Holzworth's devotion to cats began as a child. She grew up on a farm, tracking the health of her farm cats in a journal. Over the years, many cats held a special place in her heart, but in 1943, when one of her favorite cats passed away from feline panleukopenia, and her veterinarian could not explain why he could not prevent or cure

the disease, she took matters into her own hands. Having already earned a doctorate in classical languages and despite the fact that she would be the only female in the classroom and laboratory, she enrolled at Cornell's College of Veterinary Medicine.

As a student, she earned the top academic grade in her class, and during trips to nearby farms she was known to vaccinate the farmer's cats after tending to the sick animals on the farm. As a professional, she was recognized as an expert *extraordinaire* on feline health. She was the first to report on a new, fatal disease of cats, feline infectious peritonitis, and one of the first to recognize another serious disease of cats, hyperthyroidism.

"Jean was an inspirational woman," said Janet Walker, co-executor of Holzworth's estate. "She was dedicated to her causes, to the betterment of others, and to institutions. She would put on her skirt and her attitude every morning and do what needed to be done."

In 1950, Holzworth trained as an intern at Angell Memorial Animal Hospital in Boston and joined the staff there in 1951 where she practiced feline internal medicine until her retirement in 1986. She conducted clinical feline research; trained many interns, mentoring both men and women; published dozens of original case reports; and authored the outstanding textbook *Diseases of the Cat*. She was recognized by various professional societies with awards such as "Veterinarian of the Year" by the American Animal Hospital Association, and "Outstanding Woman Veterinarian of the Year" by the Association of Women Veterinarians. The late Jim Richards dedicated a book he edited to her as "a lifelong devotee of cats and a veterinarian of immeasurable importance to feline medicine."

In addition to veterinary medicine, "Aunt Jean" as she was affectionately known by the interns and residents, loved the English language.

"She was frequently horrified and amused by mispronunciations, misspellings, and grammatical errors," Jim Walberg, a close professional colleague, said. "She was not shy about correcting her friends' and colleagues' mistakes. Many a friend received a copy of Strunk and White's *The Elements of Style* as a gift from Jean."

Holzworth died on January 13, 2007, at the age of 91. She was at home, with her favorite opera playing, and Zoë, a Lynx point Siamese and her favorite cat, by her side.





Dr. Kelly Hatten, a clinical fellow, is working on a variety of projects trying to establish the role of large or short-statured people and is a member of the Airway, Allergy, and Immunology research group. Richard Henry, DVM, is a member of the Airway, Allergy, and Immunology research group.

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Report of Giving

2007-2008

Philanthropy 2007-2008

More than 5,970 donors contributed generously to the advancement of research, education, and outreach at the College of Veterinary Medicine through gifts and new commitments totaling \$20,174,903, the most ever for the College in a single year. Cash gifts, representing new gifts and payments on previous pledges, totaled \$10,920,279. These gifts endowed scholarships, residencies, and faculty positions; advanced research; provided new equipment for the Cornell University Hospital for Animals; and helped fund new programs such as the Cornell Clinical Fellows. The College of Veterinary Medicine Annual Fund, the only source of unrestricted gift revenue at the discretion of the dean for strategic initiatives, raised \$642,646 from 1,064 donors and helped support faculty research such as Dr. Julia Flaminio's work on equine immunodeficiencies and vaccine responses and Dr. Nathan Sutter's search for gene variants that make dogs susceptible to cancer and other diseases.

Gifts for endowment totaling \$5,362,891 bring the market value of the College's endowed fund to a total of \$186.6 million as of June 30, 2008. Income from the endowment is a vital source of stable revenue for the College and together with other gift income represents 10% of the College budget.

FAR ABOVE ... The Campaign for Cornell

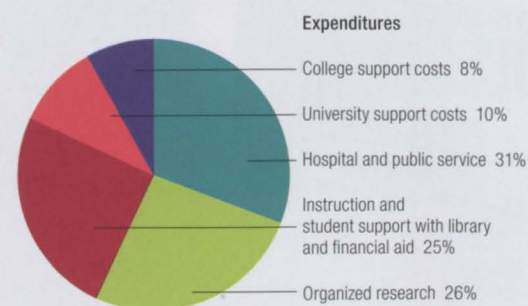
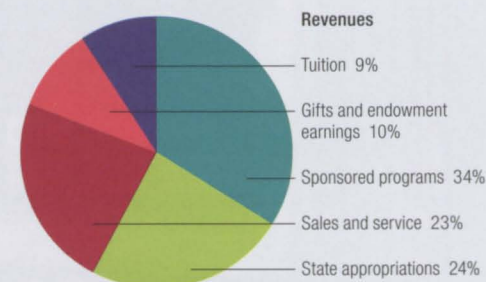
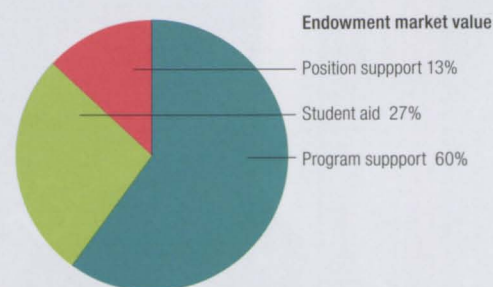
"Cornell has launched the most ambitious campaign in its history ... to realize the overarching goal that has guided Cornell since 1865: to serve the needs of the world, where the talents and courage of higher education can provide a solution to the problems and challenges of everyday life."

~ President David J. Skorton

For the College of Veterinary Medicine, solving the challenges facing veterinary health care at a time when the spread of disease on a global basis poses ever greater risks, means realizing the promise of science to radically change medical diagnosis, treatment, and preventative health care for animals and humans. Far Above ... The Campaign for Cornell, which continues through 2011, is providing the resources to enroll the most deserving students, recruit and support inspiring faculty, and provide the equipment and technology to propel the discovery and innovation that will advance animal and human health for the benefit of us all.

Campaign gifts to the College of Veterinary Medicine have totaled more than \$53.2 million. What matters most, however, is that these funds help our faculty and students realize their dreams of healthier animals and people, and there is more to be done. For more information on giving to the College of Veterinary Medicine, please visit www.vet.cornell.edu/gifts.

The Numbers



Cornell's College of Veterinary Medicine is grateful for the support of every donor. Thank you to the nearly 6,000 donors who helped advance the health and well-being of animals and humans in 2008.



Fiscal Year 2007–2008 Awards

Name	Sponsor	Title	Total Annual Award
Noha Abou-Madi	Dean's Fund for Clinical Excellence	Population Pharmacokinetics of Oral Itraconazole in Captive Humboldt Penguins (<i>Spheniscus humboldti</i>)	\$3,475
Robert Abramovitch	New York Community Trust	Genetics of Mycobacterium tuberculosis Adaptation to the Macrophage Phagosome	\$40,000
Gregory Acland	Optigen-Grants for Growth Morris Animal Foundation Foundation Fighting Blindness NIH	Genetic Test for Hereditary Cataract in Dogs	\$18,000
		Pooled Association Mapping for Canine Hereditary Disorders	\$77,679
		FFB-Pre-Clinical Medical Evaluation Center	\$256,962
		Models of Hereditary Retinal Degeneration	\$751,834
Dorothy Ainsworth	Harry M. Zweig Memorial Fund for Equine Research	Modeling Equine Pulmonary Disorders in Vitro: Epithelial-Derived Proteins and Inflammatory Airway Disease	\$55,697
Bruce Akey	USDA-APHIS NYS Agricultural and Markets	Classical Swine Fever	\$41,850
		New York State Cattle Health Assurance Program Herds	
		John's Surveillance & Testing	\$55,000
	USDA	USDA National Animal Health Laboratory Network - New York	\$300,000
	NYS Agricultural and Markets	Avian Diseases Program	\$315,000
	NYS Agricultural and Markets	Avian Influenza Surveillance Testing	\$341,198
Craig Altier	NIH-Northeast Biodefense Center NIH	International Duck Research Cooperative Agreement	\$355,024
		Rational Drug Design Targeting CsrA	\$75,983
	USDA-National Research Initiative	Food and Waterborne Diseases Integrated Research Network: The Role of Host Microbiota in Enteric Disease	\$193,880
		Mediators of Salmonella Infection and Carriage in Pigs	\$205,566
Douglas Antczak	Morris Animal Foundation - Univ of KY NIH NIH NIH	Linear Mapping and Microarray Development	\$9,000
		Split Immunological Tolerance to Trophoblast	\$256,011
		Short-Term Training of Students in the Health Professions	\$73,044
		Graduate Program in Comparative Medicine	\$435,624
Judith Appleton	University of Massachusetts Collaborative Research Program	Vaccination Against Infection with Parelaphostrongylus tenuis	\$6,390
		Production of Recombinant Nanobodies for Diagnostic and Research Applications	\$20,012
	NIH	Immunity to Parasitic Infection	\$325,210
Pooneh Bagher	American Heart Association-Northeast Affiliate	The Role of Mahogunin Proteins in Cardiac Development	\$1,750
Dennis Bailey	Feline Health Center	Evaluation of Serum Iohexol Clearance to Predict Carboplatin Clearance in Cats	\$12,339
Dennis Bailey/ Cheryl Balkman	EMD Lexigen Research Center	Evaluation of NHS-IL12-IL2 Fusion Protein in Tumor Bearing Dogs	\$13,000
Michele Bailey	Schering-Plough Animal Health	Cornell Center for Animal Resources and Education (CARE) Residency Program in Laboratory Animal Medicine	\$67,487
Sylvia Bedford-Guaus	Harry M. Zweig Memorial Fund for Equine Research	Characterization of Equine Phospholipase C Zeta (PLC) as it Related to Stallion Fertility	\$11,540
Gary Bennett	Conewango Products Corp.	Conewango Inflation Comparison	\$76,404
Klaus Beyenbach	National Science Foundation NIH	Malpighian Tubule Transport Physiology: Mechanism and Regulation	\$140,000
		Septate Junctional Proteins: Proteomic Identification and Role in Diuresis	\$183,509
		Wildlife Oral Rabies Vaccination Program	\$250,000
Laura Bigler	NYS Agricultural and Markets	Long Island Rabies Program	\$250,000
Karyn Bischoff	USDA-Federal Formula Funds	Lead Loss from Blood and Milk and the Level of Contamination of Muscle, Liver, Kidney, and Bone in Lead Exposed Cattle	\$10,000
Dwight Bowman	Novartis	Colonscopy as an Alternative to Necropsy for Whipworm Quantification In Situ	\$9,497
	Novartis	Use of Endoscopy as an Alternative to Necropsy for Quantification of Hookworm and Roundworm Burdens in Dobs	\$42,426
	USDA-National Research Initiative	Survival Kinetics of Cryptosporidium Oocysts in Swine Facility	
		Wastes of The Southern Piedmont and Coastal Plain Watersheds	\$141,874
Paul Bowser	USDA-Special Grants Program	Minor Use Animal Drug Program: Northeast Region	\$32,066
	USDA-Federal Formula Funds	Minor Use Animal Drug Program: Northeast Region	\$71,914
	NYS Department of Environmental Conservation	Fish Pathology Diagnostic Services	\$73,986
	New York Sea Grant Institute	Freshwater Adaptation and Early Invasion of Viral Hemorrhagic Septicemia Virus into the Great Lakes Basin	\$92,582
	USDA-Special Grants Program	Viral Hemorrhagic Septicemia in the Great Lakes Basin	\$153,081

Report of Giving

Name	Sponsor	Title	Total Annual Award
Elizabeth Buckles	USDA-Federal Formula Funds	Control of Emerging and Re-emerging Poultry Respiratory Diseases in the United States	\$25,000
	Collaborative Research Program	Identification of the Infectious Bronchitis Virus Receptor	\$24,643
James Casey	USDA-Federal Formula Funds	Prevalence, Spread and Health Impact of Salmon Swimbladder Sarcoma Virus Type-2 Infection in New York Salmon	\$20,000
Sharon Center	Collaborative Research Program	Fine Gene Mapping and Candidate Gene Sequencing: Small Breed Dogs with Portosystemic Vascular Anomalies (PSVA) and Microvascular Dysplasia (MVD)	\$24,952
	American Kennel Club Canine Health Foundation	Genotyping Small Breed Dogs with Portosystemic Vascular Anomalies and Microvascular Dysplasia	\$116,536
Richard Cerione	NIH	Characterization of Growth Factor-Coupled Signaling	\$300,731
	NIH	Roles of Cdc42 and its Signaling Partners in Cell Growth and Differentiation	\$323,225
	NIH	Macromolecular Diffraction Resource: MacCHESS	\$1,883,924
Yung-Fu Chang	Harry M. Zweig Memorial Fund for Equine Research	Vaccination Against Equine Leptospirosis	\$20,000
	USDA-Federal Formula Funds	Development of an Attenuated Vaccine Against Salmonellosis in Cattle	\$25,000
	Cornell Center for Advanced Technology	Protein Microarrays for Identification of New Potential Diagnostic Markers and Vaccine Candidate for Mycobacterium Avium Subsp.	\$45,500
	Fort Dodge Animal Health	Using Attenuated Salmonella Strains for Delivery of Protective Antigens of Mycobacterium avium subsp. paratuberculosis (MAP)	\$121,489
	Biotechnology Research and Development Corp.	Identification of L. borgpetersenii Serovar Hardjo Virulence Factors and Vaccine Development	\$125,000
	Biotechnology Research and Development Corp.	Paratuberculosis: Novel DNA Vaccine with Single Chain Bovine IL-12 Adjuvant	\$125,000
	NIH	Food and Waterborne Diseases Integrated Research Network: C. difficile: Genomics/Transcriptome Study	\$430,634
Catherine Chen	American Heart Association-Northeast Affiliate	The YIP1 Family of Integral Membrane Protein Function in Maintenance of Tubular Endoplasmic Reticulum Networks	\$21,000
Theodore Clark	USDA-Federal Formula Funds	Controlling White Spot Disease in Fish: Development of New Antigens and Methods for Vaccine Delivery	\$30,000
	USDA-Institute for Genomic Research	Genome Sequence of the Parasitic Ciliate, Ichthyophthirius multifiliis	\$30,838
	DOD-Tetragenetics	Tetrahymena Thermophila as a Novel Recombinant and Engineered Protein Expression System	\$119,973
	NIH	A Resource Center for Tetrahymena thermophila	\$220,225
Paula Cohen	March of Dimes Birth Defects Foundation	Elucidating the Functional Relationship Between NEK1 and FKBP6 in Mammalian Meiosis	\$77,076
Ruth Collins	NIH	Mechanisms of Rab Protein Activation and Function	\$252,557
Scott Coonrod	NIH	Contraceptive Potential of Oocyte-Restricted cPLA2g	\$75,399
	NIH	Role of Maternal PAD16 in Embryonic Development	\$278,222
	DOD-Army Med Research & Material Command	Epigenetic Analysis of Breast Cancer	\$676,318
Robin Davisson	American Heart Association	Oxidative Stress-Induced Neuro-cardiovascular Dysfunction in the Heart Failure	\$100,000
	NIH-University of Iowa	Genetic and Signaling Mechanisms of in the Central Regulation of Blood Pressure	\$124,815
	NIH	Oxidant Stress in the Brain and Hypertension	\$359,589
	NIH	Role of Redox-Mediated Activation of NF-Kappa B and AP-1 in Neurogenic Hypertension	\$454,882
Eric Denkers	NIH	Role of CCL2/MCP-1 in Mucosal Immunity to Toxoplasma	\$191,875
	NIH	Role of Neutrophils During Toxoplasmosis	\$362,832
	NIH	Signal Transduction During Toxoplasma Infection	\$370,651
Curtis Dewey	Collie Health Foundation	Pregabalin Therapy for Refractory Idiopathic Epilepsy in Dogs	\$8,860
Rodney Dietert	USDA-Federal Formula Funds	Genetic Bases for Resistance and Immunity to Avian Diseases	\$13,333
Edward Dubovi	USDA-APHIS	Analyze Serum Samples from Raccoons for Virus Neutralizing Antibodies to Canine Distemper	\$25,000
Normand Ducharme	Med-El World Wide Headquarters	A Novel Treatment of Laryngeal Hemiplegia in Horses: Preliminary Feasibility Study	\$96,998
	Harry M. Zweig Memorial Fund for Equine Research	Factors Affecting Airway Stability of Horses Exercise: A Combined Neuroanatomical, Clinical and Engineering Methodology	\$60,000
Cornelia Farnum	Enobia Pharma, Inc.	Targeting Compounds to the Growth Plate of Bones	\$34,287
	NIH	In vivo Imaging of Growth Plate Dynamics	\$226,098



Name	Sponsor	Title	Total Annual Award
Julia Flaminio	Dean's Fund for Clinical Excellence	The Role of Hyperimmune Plasma in the Neutralization of <i>Rhodococcus equi</i>	\$9,750
	NIH	A Novel Model for the Study of Primary Immunodeficiency: The Equine CVID	\$76,979
Julia Flaminio/ Ute Schwab	Harry M. Zweig Memorial Fund for Equine Research	The Phagocyte Response Against <i>R. equi</i> in Foals	\$62,191
Lisa Fortier	Harry M. Zweig Memorial Fund for Equine Research	Characteristics of Stem Cells Derived from Bone Marrow Aspirate, Adipose Tissue and Muscle	\$53,506
	Kensley Nash Corp.	Cartilage Repair Device	\$288,933
Joanne Fortune	USDA-Federal Formula Funds	Ovarian Influences on Embryonic Survival in Ruminants	\$25,000
Susan Fubini	Harry M. Zweig Memorial Fund for Equine Research	Indices of Intra-Abdominal Fibrinolysis in Colic Foals: Pathogenetic and Prognostic Markers	\$9,840
	American College of Veterinary Surgeons	Randomized Controlled Trial for One-Stage Laparoscopic Correction of LDA in Dairy Cattle: Benefit to Production	\$10,934
Robert Gilbert	USDA-Federal Formula Funds	Bovine Endometritis: Herd-Level Risk Factors and Utero-Ovarian Relationships	\$25,000
	USDA-National Research Initiative	Early Resumption of Postpartum Ovarian Cyclicity in Dairy Cows	\$127,240
	Pfizer Animal Health	The Natural History of Postpartum Uterine Disease in Dairy Cows: Causes and Consequences	\$184,591
Robert Gilmour	Merck and Co. Inc.	Merck-Merial Veterinary Scholars Research Program-Veterinary Investigator Program	\$15,000
	National Science Foundation-Weill	Spatiotemporal Control of Cardiac Electrical Dynamics	\$60,206
	NIH-Gene Network Sciences	Simulation Software for Cardiac Arrhythmia Risk Assessment	\$86,310
	NIH	Veterinary Student Training in Biomedical Research	\$132,362
	NIH	MEMS Sensors for Arrhythmia Detection and Intervention	\$497,130
Amy Glaser	NIH- Wadsworth Center	West Nile and Pox Viruses: Ecology, Pathogenesis, and Immunology	\$89,692
Robin Gleed	NIH-Transonic Systems	A Flow Monitor for Pediatric Hydrocephalic Shunts	\$6,250
Brenda Griffin	The Sweetbay Foundation	Support of the Maddie's Shelter Medicine Program at Cornell	\$131,759
Yrjo Grohn	USDA-Pennsylvania State University	Johne's Disease Integrated Program: Epidemiology & Biostatistics Core	\$30,978
	USDA-University of Minnesota	Johne's Disease Integrated Program: Epidemiology & Biostatistics Core	\$45,000
	USDA-National Research Initiative	Yield, Culling and Profitability Effects of Repeated Bacteria-Specific Bovine Clinical Mastitis Within and Between Lactations	\$104,433
Erla Heyns	NYS Education Department	Coordinated Collection Development Aid	\$5,093
Joanna Holloway	Hereditary Disease Foundation	Mechanisms of Mismatch Repair Protein Function in the Pathogenesis of Huntington's Disease	\$75,662
William Horne	National Science Foundation	Collaborative Research: Calcium Channel Beta Subunits in Early Development	\$89,999
George Kollias	Feline Health Center	Evaluation of Serum Cobalamin, Folate and Amino Acids in Captive Tigers (<i>Panthera tigris</i>)	\$15,676
Jodi Korich	USDA-Foreign Agriculture Service	Cornell University Avian Influenza Multimedia Project	\$501,091
Bruce Kornreich	Feline Health Center	Istaroxime in Cats: Safety, Pharmacokinetics, and Hemodynamic Effects	\$11,264
Michael Kotlikoff	NIH-University of Pennsylvania	Interferons Modulate Airway Smooth Muscle Growth	\$120,000
	NIH	RNA Aptamers to Green Fluorescent Protein for Cell Imaging	\$230,250
	NIH	In Vivo Ca ²⁺ and Voltage Imaging on the Urinary Bladder	\$312,719
	NIH	Transgenic Mice for Conditional Recombination, Fate-Mapping, and Ca ²⁺ Signaling	\$358,466
Anna Kukekova	NIH	Molecular Mechanisms of Social Behavior	\$326,238
Eric Ledbetter	Dean's Fund for Clinical Excellence	Experimental Reactivation of the Latent Canine Herpesvirus-1 Ocular Infection in Adult Dogs	\$9,800
	American Kennel Club Canine Health Foundation	Virological Survey of Dogs with Idiopathic Conjunctivitis	\$10,919
Alice Lee	Novartis	Development of Non-Terminal Methods for Determining Efficacy of Anthelmintics -- Postdoctoral Fellowship	\$76,715
Cynthia Leifer	NIH	Enhancing Immunotherapy through Toll Like Receptors	\$173,475
David Lin	NIH	Lift-Off Polymer Array Approach to Axon Guidance	\$370,461
Andrea Looney	Dean's Fund for Clinical Excellence	The Iontophoretic Lidocaine Patch (Hybresis) as an Adjunct Therapy for Chronic Laminitis in Horses	\$7,595

Report of Giving

Name	Sponsor	Title	Total Annual Award
Ikenna Madu	NIH	Characterizing Class 1 Fusion Proteins: Elucidation of Coronavirus fusion peptides	\$37,452
George Maylin	NYS Racing and Wagering Board	NYS Racing and Wagering Board Equine Drug Testing and Research Program	\$3,090,000
Margaret McEntee	Morris Animal Foundation	Phase II Study of Oral Docetaxel and Cyclosporine in Feline Epithelial Cancer	\$39,339
Linda Mizer	Alpaca Registry	An Atlas of Alpaca Anatomy	\$5,000
Hussni Mohammed	International Livestock Research Institute	Development of a Framework for Analysis of Food Safety in Developing Countries and Its Application	\$21,832
	USDA-National Research Initiative	Managing the Risk of Cryptosporidium and Salmonella spp. in Watersheds	\$153,711
N. Sydney Moise	Morris Animal Foundation	Altered Intercellular Communications, Arrhythmias, and Sudden Death of Boxer Dogs	\$24,516
Donna Muscarella	NIH	Arsenite Effects on CD40 Signaling and B-Cell Apoptosis	\$284,643
Alexander Nikitin	Marsha Rivkin Center for Ovarian Cancer Research	Role of miR-34 in Ovarian Cancer	\$30,000
	NIH-Case Western	Retinoic Acid, CRABP, and Cancer	\$87,267
	NIH	Modeling Ovarian Carcinoma by Defined Genetic Alterations	\$266,292
	NIH	Determinants of Metastatic Progression	\$287,424
	New York State Department of Health	NYSTEM Grant for Institutional Development of Stem Cell Research Capabilities	\$1,000,000
Alan Nixon	Harry M. Zweig Memorial Fund for Equine Research	Genomic Profiling of Osteochondritis Dissecans Using an Equine Whole Transcript Exon Array	\$56,059
	Grayson-Jockey Club	Differentiated Stem Cells for Cartilage Repair	\$72,994
	Genzyme Corporation	Chondrocyte-MACI Joint Repair Pilot Study	\$87,123
	Harry M. Zweig Memorial Fund for Equine Research	Pro-Inflammatory Cytokine Targets in Joint Disease as Check-Points for Gene Inhibition	\$87,275
	Histogenics	A Three Arm Horse Study to Evaluate the Use of VeriCart for Cartilage Regeneration in a Chondral Defect	\$385,212
Drew Noden	NIH	Development of Avian Extra-ocular Muscles and Nerves	\$452,396
Daryl Nydam	USDA-Federal Formula Funds	The Summer Dairy Institute: A Unique Program for Advanced Training of New Veterinarians Supporting the Dairy Industry	\$5,000
Nikolaus Osterrieder	Grayson-Jockey Club	The Neurologic EHV-1 Marker: Correlation or Causation?	\$49,734
	Novartis	Generation of Bovine Herpesvirus Type 1 BAC Clones	\$153,574
	NIH	Herpesvirus-Induced Telomerase Dysregulation and Tumor Formation	\$228,723
Robert Oswald	NIH	Structure, Function and Dynamics of a Glutamate Receptor	\$330,980
	NIH	Training in Molecular Physics of Biological Systems	\$476,231
Laura Palermo	Morris Animal Foundation	Effects of Virus-Receptor Interaction on Paramyxoviruses and Parvoviruses Infections	\$37,800
John Parker	U.S.-Israel Binational Science Foundation	The Vesicular Trafficking Machinery: A Crossroad of Virus Reproduction, Virally Induced Apoptosis and Cellular Defense in Reovirus Infection	\$3,450
	Winn Feline Foundation	Are Differences in Feline Calicivirus (FCV) Tissue Tropism and Virulence Determined by Changes in Virus Interactions with Cell Surface Glycans?	\$15,750
	Feline Health Center	Interactions between Feline Calicivirus and its Receptor - Feline Junctional Adhesion Molecule A	\$18,936
	Burroughs Wellcome	Reovirus-Induced Apoptosis: The Role of the Viral Outer Capsid Protein Mu1	\$130,000
	NIH	Reovirus Factories: Structure, Function, and Dynamics	\$293,932
Colin Parrish	National Biodefense Center	Bioengineering to Optimize Monoclonal Antibodies for Passive Immunotherapy	\$79,113
	NIH	Training in Molecular Virology and Pathogenesis	\$160,075
	NIH	Antigenic Structure of Adeno-Associated Virus Capsids and Antibody Escape Mutants	\$198,082
	NIH	Mechanisms of Parvovirus Infection and Host Range	\$367,501
Xu Peng	American Heart Association-Northeast Affiliate	Role & Mechanisms of Cdc42 in Vasculogenesis & Angiogenesis	\$66,000
Gillian Perkins	Harry M. Zweig Memorial Fund for Equine Research	Therapy and Prevention of Equine Herpesvirus-1 (EHV-1)-Induced Disease	\$60,205
	USA Equestrian, Inc.	Defining the Relationship of the Mucosa Associated Microflora to Gastric Ulceration in Horses	\$24,950



Name	Sponsor	Title	Total Annual Award
Peter Piermarini	NIH	An Epithelial Model for V-Type H ⁺ -ATPase-Driven Acid-Base Transport	\$105,110
Ned Place	USDA-Federal Formula Funds	Photoperiod Induced Deceleration of Female Reproductive Aging: Response to the Manipulation of Day Length Before and After Puberty	\$18,000
	NIH	Photoperiod, Melatonin, and Reproductive Aging	\$146,475
Georgiana Purdy	NIH	Identification of M. tuberculosis Lipid Kinases	\$52,048
Jeremy Rawlinson	Collaborative Research Program	Biomechanical Evaluation and Clinical Trials to Solve Cruciate Ligament Deficiency in the Canine Stifle	\$25,000
Mark Roberson	NIH	Two-Photon Excited Fluorescence Imaging of Placental Vasculature in Vivo	\$192,367
	NIH	Reproductive Sciences and Genomics Training Program	\$227,671
David Russell	NIH	Environmental Cues and Responses in Tuberculosis	\$298,583
	NIH	The Role of the Granuloma in M. tuberculosis Infection	\$373,864
	Gates Foundation-University of Pittsburgh	In vivo Imaging of Tuberculosis and its Response to Chemotherapy	\$885,275
Janet Scarlett	Morris Animal Foundation	Evaluation of the Effectiveness of Animal Shelter Enrichment Protocols for Dogs	\$25,518
Karel Schat	USDA-Federal Formula Funds	Genetic Bases for Resistance and Immunity to Avian Disease	\$26,668
	National Science Foundation	Community Dynamics of an Emergent Pathogen: Intrinsic Versus Extrinsic Mechanisms	\$100,000
	USDA-National Research Initiative	Immunomodulation by Marek's Disease Virus Glycoprotein C - Implications for Virulence	\$119,319
John Schimenti	NIH	Genetics of Recombination and Genomic Instability in Mice	\$299,625
	NIH	Genome Function in Mouse with Combination Mutagenesis	\$323,476
Ynte Schukken	USDA-Federal Formula Funds	Development of Detection Methods for Campylobacter in Milk and Educational Materials for Dairy Producers and Consumers	\$18,000
	Cornell Center for Advanced Technology	Genome Comparison of Transient Versus Chronic E. coli Strains	\$29,200
	Immucell Inc	Field Trial on NISIN Efficacy on Subclinical Mastitis	\$30,300
	Northern New York Agricultural Development Program	Treatment Success and Factors Associated with Treatment Success of Klebsiella and E. coli Mastitis in Dairy Cows in NNY	\$34,000
	USDA-ARS	Pilot Study of Factors Affecting Maintenance of Mycobacterium, Salmonella, E. coli and Listeria on Dairy Farms	\$34,105
	New York Farm Viability Institute, Inc.	Improving Control of Streptococcal Mastitis on New York Dairy Farms	\$65,666
	Delaval, Inc., Research & Development	Field Efficacy of a New Teat Disinfectant	\$70,036
	Pfizer	Towards Resolving High Infection Rates in the Dry Period	\$167,340
	New York State Ag and Markets	Monitoring Animal Health and Food Safety in Dairy Herds Using Bulk Milk	\$127,200
		The Role of Rab GTPases in Chlamydia-Infected Cells	\$377,615
Peter Scrivani	Dean's Fund for Clinical Excellence	Frequency of Tumor Invasion of Bone in Cats with Meningioma and Diagnostic Accuracy of Hyperostosis During MRI	\$4,050
Ajay Sharma	American College of Veterinary Radiology	Accuracy Comparison of Abdominal Ultrasonography and Radiography for Diagnosing Mechanical Ileus in Vomiting Dogs	\$5,000
	Dean's Fund for Clinical Excellence	Accuracy Comparison of Abdominal Ultrasound and Radiography for Diagnosing Mechanical Ileus in Vomiting Dogs	\$10,758
Geoffrey Sharp	NIH	Biophysical and Biochemical Pharmacology	\$149,419
Kenneth Simpson	Center for Vertebrate Genomics	Investigation of the Genetic Basis of Histiocytic Ulcerative Colitis in the Boxer Dog	\$15,000
	Pfizer	Proteomic Analysis of a Novel Group of Adherent & Invasive E. coli Associated with Chronic Mastitis & Intestinal Inflammation	\$30,870
	Morris Animal Foundation	Defining the Role of Mucosa-Associated Bacterial Flora in Inflammatory Bowel Disease	\$36,662
Suzanne Snedeker	USDA-Federal Formula Funds	Turf and Lawn Professional and Cancer: Improving Communication and Reducing Risk	\$39,000
	NYS Department of Health	Breast Cancer and Environmental Risk Factors in New York State	\$450,000
Holger Sondermann	NIH	Mechanism and Regulation of c-di-GMP Signaling in Bacterial Biofilm Formation	\$286,616
Michael Stanhope	USDA-National Research Initiative	Clonality, Genetic Diversity and Molecular Adaptation of Virulence Factors in Bovine Mastitis and Equine Streptococcal Pathogens	\$104,484
	NIH	Food and Waterborne Diseases Integrated Research Network: Molecular Evolution of Campylobacter Diversity	\$272,331

Report of Giving

Name	Sponsor	Title	Total Annual Award
Jai Sweet	USDA-Higher Education Grants Program	Enhancing Diversity: Multicultural Scholars Program at Cornell University	\$30,000
	USDA-Higher Education Grants Program	Enhancing Diversity: Multi-Cultural Scholars Program at Cornell University	\$30,000
Norine Tallini	NIH	Models of Airway Smooth Muscle Hyperplasia	\$14,762
Bud Tennant	NIH	The Hepatitis Animal Model Network	\$1,486,029
Linda Tikofsky	USDA-Northeast Organic Farming Association	Transitioning to Organic Dairy: A Comprehensive Risk Reduction Tool	\$5,580
	USDA-National Research Initiative	The Transitioning Dairy: Identifying and Addressing Challenges and Opportunities in Milk Quality and Safety	\$112,922
Rory Todhunter	Dean's Fund for Clinical Excellence	The S-measurement in the Diagnosis of Canine Hip Dysplasia	\$6,750
Alexander Travis	Morris Animal Foundation	Analyzing the Function of Feline Sperm Produced by Testis Xenografting	\$53,460
	NIH	Organization and Functions of Lipid Rafts in Spermatozoa	\$264,271
	SANREM CRSP Competitive Grants Program	Developing a Participatory Socio-Economic Model for Food Security, Improved Rural Livelihoods, Watershed Management, and Biodiversity Conservation in Southern Africa	\$352,778
Susan Wade	USDA-Federal Formula Funds	Diagnostic Methods for Coccidian Infections: Neospora and Toxoplasma	\$30,000
Bettina Wagner	USDA-University of Massachusetts	US Veterinary Immune Reagent Network	\$147,514
	NYS Office of Science, Tech & Acad Res	Development of Immunological Reagents in the dot-Chip System	\$208,950
	USDA-Federal Formula Funds	Immune Functions Mediating Immunity or Susceptibility to Chronic Salmonellosis in Dairy Cattle	\$20,000
Joseph Wakshlag	Winn Feline Foundation	Feline Squamous Cell Carcinoma: The Effects of 5-Lipoxygenase Inhibition and Prevalence of Upregulation	\$14,150
	Waltham Centre for Pet Nutrition	Defining the Antineoplastic Properties of Astaxanthin and Lycopene on Canine Osteosarcoma and Transitional Cell Carcinoma Cell Lines	\$15,000
Lorin Warnick	USDA-Federal Formula Funds	The Effect of Ceftiofur Treatment in Dairy Cattle on the Emergence of Ceftiofur-Resistant Salmonella	\$17,517
	NIH	Food and Waterborne Diseases Integrated Research Network: Sources and Transmission of Multidrug-Resistant Salmonella Strains that Cause Human Infection	\$427,409
Barbour Warren	USDA-Federal Formula Funds	Dog Walking and Obesity Prevention: A Methods Development Study	\$20,000
	USDA-Federal Formula Funds	Building Capacity to Address Obesity to Reduce Breast Cancer Risk in Rural Communities: An Environmental Approach	\$151,754
Robert Weiss	NIH-Boston University	A Novel DNA Re-replication Checkpoint	\$46,461
	NIH	Cooperative Roles for Atm and Hus1 in Genome Maintenance	\$70,158
	NIH	Genome Maintenance by the Mouse Hus1 Checkpoint Gene	\$268,611
Gary Whittaker	Winn Feline Foundation	Molecular Basis of Feline Coronavirus Pathogenesis and Development of FIP in Cats	\$15,000
	Harry M. Zweig Memorial Fund for Equine Research	Emergence and Establishment of Influenza Virus in Equines	\$36,378
	NIH	Endocytosis of Influenza Virus	\$377,422
	NIH-University of Rochester	NIAID Centers for Excellence for Influenza Research and Surveillance	\$432,451
Andrew Yen	NIH	Environmental and Molecular Toxicology	\$183,739
			\$42,859,276





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