The College of Veterinary Medicine at Cornell University hosted the nineteenth annual Leadership Program for Veterinary Students this year. The program’s tradition of excellence has drawn thousands of applicants, but only 436 of the most promising students, representing 57 veterinary colleges, have been selected to participate. Although the life experiences, culture, and academic backgrounds of program scholars are diverse, all have distinguished themselves in a variety of professional and personal pursuits. They are highly motivated individuals who possess the ability to excel as research scientists and public health professionals.

Research is the foundation of the Leadership Program and the activity around which all other activities are structured. Program scholars pursue individual projects under the guidance of Cornell faculty members who are successful scientists and experienced mentors. Their investigations are conducted in state-of-the-art facilities within the unsurpassed intellectual environment of Cornell, an Ivy League university located in the scenic Finger Lakes region of New York State. Program scholars also participate in modules and workshops that are structured as student-directed learning exercises. Topics include emerging infectious diseases and biodefense, leadership and its attendant responsibilities, and modules that illustrate leadership and employment opportunities for veterinary graduates in the academy, government, and industry. Vocational counseling is featured prominently in the program. The aim is to empower students to make informed decisions about graduate education and their careers. A field trip to federal research facilities is an additional feature of the program.

Throughout its 19 years the Leadership Program has fulfilled its principal objective—to provide veterinary students with unique learning experiences that both clarify and strengthen their commitment to careers in science. One hundred and fourteen of these individuals have earned the PhD degree or are presently in training, while many others have been awarded other advanced degrees in science or veterinary public health. A legacy of the program has been the establishment of a network of alumni who have the motivation to assist one another and more junior colleagues. The desired outcomes of the initiative are strengthening of the infrastructure of veterinary science and contributions that broadly influence the biomedical sciences.

A Commitment to Excellence

David R. Fraser, BVSc, PhD
Co-Director

Douglas D. McGregor, MD, DPhil
Program Director

David R. Fraser, BVSc, PhD
Co-Director
Acknowledgements

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**National Institutes of Health**

**Albert C. Bostwick Foundation**

**Pfizer Inc**

**Boeringer-Ingelheim Co.**

**The Wellcome Trust**

The program organizers also thank all of the facilitators, counselors, and mentors who took part in the 2008 program. Thanks, too, to Ms. Melissa Restifo, the program coordinator, and to Ms. Ariana Blossom, Ms. Alexis Wenski-Roberts, and Mr. David Frank for their dedicated assistance.

Finally, the organizers congratulate the participating scholars—their academic achievements, coupled with their dedication to discovery and service, mark these individuals as future leaders of the veterinary profession.

References

From time to time, Leadership Program organizers and their associates have described elements of the program, strategies for their implementation, and outcomes of this initiative. Recent publications include:

- **Promoting Science-Based Careers through Student-Directed Learning.** McGregor, D.D. and Fraser, D.R. *Journal of Veterinary Medical Education* (33: 294, 2006).


- **Career Paths of Alumni of the Cornell Leadership Program for Veterinary Students.** Fraser, D.R., McGregor, D.D. and Gröhn, Y.T. *Veterinary Record* (accepted for publication, 2008).

Interested parties also are invited to visit the program website at www.vet.cornell.edu/OGE/Leadership.
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2008 Leadership Program Agenda

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June 7  Career Discussion
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2008 Leadership Program Scholars
The Leadership Program combines faculty-guided research with student-directed learning through participation in modules, workshops, and group discussions. The activities encourage responsible leadership; the development of critical thinking, communication, and teamwork skills; and an awareness of professional training opportunities that will enable program alumni to broadly impact the veterinary profession.

Research

Independent research is the foundation of the program. Each scholar is assigned a project and a faculty mentor to guide his or her investigations. The projects enable the students to gain practical experience by exploring problems of interest to them. Simultaneously, they hone the students’ communication skills through engagement in group modules and presentation of research findings in a public forum at the conclusion of the program.
Leadership

Leadership and its attendant responsibilities are central considerations in the Leadership Program. Critical thinking and decision-making are featured in a scenario-based module that explores veterinary public health, economic, political, and social issues. As the scenario unfolds, students and facilitators are assigned roles that oblige them to articulate, defend, and sometimes alter their views. At the conclusion of the module, the facilitators comment on the exercise and discuss leadership principles that have guided their careers.

This year, Dr. David Fraser moderated the discussion with assistance from Professor Malden Nesheim, Mr. Andrew Sage II, and Dr. Roy Pollock.
Leadership in Action

The film entitled, A Few Good Men, illustrates strengths and deficiencies of individuals cast in the role of leaders. A thoughtful discussion of the film was facilitated by Ms. Suzanne McGregor, and Professors Maurice (Pete) White, David Fraser, and Douglas McGregor.

Emerging Diseases

A workshop moderated by Professors Colin Parrish, John Parker, Alfonso Torres, and Drs. Philip Carter and Fred Murphy featured a discussion of diseases that are emerging or re-emerging in nature. From a prepared list, the program scholars selected four diseases on which to focus. They conducted library research on the diseases, then engaged their peers and the facilitators in lively and informative discussions. Later in the evening, the facilitators commented on related issues and the need for veterinary scientists who contemplate careers in infectious disease research and veterinary public health.
Biodefense

A similarly structured workshop addressed problems connected with the deliberate release of infectious agents that can have catastrophic consequences for animals and people. As in the Emerging Diseases Workshop, the scholars prepared for the exercise by conducting independent research on selected diseases and presented their findings in a public forum.

The panel of facilitators who took part in the Emerging Diseases Workshop were involved again in this meeting. During the evening session, the facilitators commented on their experiences and the preparation required for veterinarians to function as public health professionals.
**Drug Design**

Dr. Michelle Haven of Pfizer, Inc. moderated a competition between mock companies formed by the students. The competition enabled the students to display creativity and teamwork in resolving problems connected with the discovery, development, and marketing of therapeutic drugs. Dr. Kirk Adams assisted Dr. Haven in this exercise.

Later the same evening, the two facilitators answered questions regarding the range of employment opportunities for veterinarians at Pfizer and the advanced training required to be competitive for such positions.
Drs. Gerard Hickey, Margaret McCann, and Charlie Hsu conducted mock interviews for three positions in the pharmaceutical industry—and Merck Co. in particular. The students prepared for the interviews by reviewing the resumés of prospective applicants and submitting application letters for the positions.

On the day of the meeting, the facilitators commented on the letters and posed questions to the students that explored their qualifications and personal interests.
Career Explorations

Career planning is featured prominently in the Leadership Program. Four meetings were convened to consider opportunities for veterinary graduates to broadly influence the veterinary profession through careers in the academy, government, and industry.

Professor David Fraser and Drs. Sandra Barnard and Bruce Kornreich commented on the importance of a veterinary degree for individuals who aspire to careers in science. The three counselors emphasized the importance of selecting a superior environment for research training and a mentor who has a successful training record.

Professors Lisa Fortier and Sean McDonough commented on residency programs in the clinical sciences and pathology, respectively. The facilitators emphasized factors that one should consider in seeking a residency, the expectations of training organizers, and the satisfaction of a clinical or veterinary service career.
A companion meeting addressed issues relevant to graduate research training. Professors Richard Cerione, Ruth Collins, John Parker, and Douglas McGregor identified aspects of training that one should weigh in selecting an institution for graduate study, the subject of one’s thesis research, and an individual to guide one’s graduate work.

In a separate meeting, a case study illustrated “translational science.” The ensuing discussion led by Professor William Horne revealed how an individual trained to a high level of proficiency as both a clinical specialist and research scientist can extend the frontiers of knowledge through his or her capacity to define disease mechanisms at the cellular or molecular level.
Cornell’s Partnership with the National Institutes of Health

The National Institutes of Health and the Cornell University College of Veterinary Medicine have forged a partnership that offers program scholars an opportunity to learn about research conducted at the nation's premier biomedical research institution. This year’s participants gathered on the main campus of the NIH for a full day of scientific presentations and discussions. Speakers included distinguished scientists and administrators drawn from the agency’s intramural research program.
Agenda

Welcome and Introduction
Patricia M. Sokolove, PhD, deputy director, Office of Intramural Training and Education

“The Cornell/NIH Partnership”
Douglas D. McGregor, MD, DPhil, director, Leadership Program for Veterinary Students, College of Veterinary Medicine, Cornell University

“Cytokines and Other Risk Factors in Drug-Induced Liver Disease”
Lance R. Pohl, PharmaD, PhD, chief, Molecular and Cellular Toxicology Section, National Heart, Lung, and Blood Institute

Q&A with Dr. Pohl

“Opportunities for Applying Mouse Models in the Discovery of Proteomic Molecular Diagnostics for Human Disease”
R. Mark Simpson, DVM, PhD, Laboratory of Cancer Biology and Genetics, National Cancer Institute

Q&A with Dr. Simpson

“Neonatal Imitation in Rhesus Monkeys”
Stephen J. Suomi, PhD, chief, Laboratory of Comparative Ethology, National Institute of Child Health and Human Development

Q&A with Dr. Suomi

“Gene Therapy for Canine Leukocyte-Adhesion Deficiency”
Dennis D. Hickstein, MD, Experimental Transplantation and Immunology Center for Cancer Research, National Cancer Institute

Q&A with Dr. Hickstein

“Preclinical Development of Hematopoietic Stem-Cell Gene-Transfer Techniques for the Treatment of Human Blood Diseases”
John F. Tisdale, MD, Molecular and Clinical Hematology Branch, National Institute of Diabetes and Digestive and Kidney Diseases

Q&A with Dr. Tisdale
The USDA and Animal Agriculture

The United States Department of Agriculture is another valued partner in the Leadership Program. This year’s scholars visited the USDA’s Animal and Natural Resources Institute in Beltsville, Maryland. Institute scientists commented on their research and opportunities for advanced training at this prestigious institution.
Agenda

Introduction and Overview of the Beltville Agricultural Research Center
Dr. Morse B. Solomon, acting associate director, Animal and Natural Resources Institute

“Genetic Engineering in Livestock on a Large Scale: Transgenic Livestock”
Dr. Robert Wall, research physiologist, Biotechnology and Germplasm Laboratory

“Swine as a Model for Human Allergic and Infectious Disease Interactions”
Dr. Gloria Solano-Aguilar, microbiologist, Genomics and Immunology Laboratory

“Searching for Disease-Resistant Genes in Cattle”
Dr. Louis Gasbarre, research leader, Bovine Functional Genomics Laboratory
The Leadership Program scholars discussed their research in a series of presentations over two days at the conclusion of the program.

A book prize was awarded to Katharina Dinger for best overall research achievement as judged by the underlying hypothesis, investigative protocol, results, and presentation.

Additional prizes were awarded to Hannes Bergmann, Anne Dijkshoorn, and Sally Ann Iverson for exceptional achievements in integrative biology, cell biology, and molecular biology, respectively.

The Selection Committee for the 2008 Leadership Program salutes these individuals and congratulates the entire group for their commitment to research and for the excellence of their presentations.

**Program Prize**

Katharina Dinger

Kinetic Studies of Inhibition of WspR in *Pseudomonas aeruginosa*

**Cell Biology Prize**

Anne Dijkshoorn

Concentration-Dependent Effects of the α2δ Subunit on Ca,2.1 Ca2+ Channel Expression

**Integrative Biology Prize**

Hannes Bergmann

Identification of Dog MATER and Other Oocyte-Specific Proteins Essential for Early Development

**Molecular Biology Prize**

Sally Ann Iverson

Analysis of In Vivo–Activated Genes of *Salmonella typhimurium*
Rachel Acciacca | North Carolina State University, Virology

How Herpes Simplex Virus Type 1 Exits the Nucleus

The Cornell Leadership Program has introduced me to many exciting opportunities within the field of veterinary medicine and has highlighted the need for veterinarians in science and public health. My professional interests are in global public health and emerging zoonotic diseases. I applied to the Cornell Leadership Program to learn more about these fields. After graduating with the DVM degree in 2011, I will serve active duty in the U.S. Army Veterinary Corps. I am looking forward to serving my country at home and abroad, as an Army officer devoted to a career in veterinary public health.

My research at Cornell has focused on the envelopment of herpes simplex virus type I (HSV-1) nucleocapsids at the inner nuclear membrane. During herpesvirus infection, herpes simplex nucleocapsids assembled in the nucleoplasm acquire an initial envelope by budding through the inner nuclear membrane of infected cells. During this process, the HSV-1-encoded UL34 protein associates with the inner nuclear membrane to create specific envelopment sites. Using indirect antibody fluorescence assays, I investigated the role of HSV-1 UL13 protein kinase in determining UL34 protein localization at the inner nuclear membrane. It appears that this viral kinase may be required for even distribution of UL34 proteins around the nuclear rim of wild-type-virus-infected cells.

I want to thank Dr. Joel Baines and Liz Wills for their mentorship, and all of the members of the Baines lab for their valuable guidance. I also want to thank Dr. Douglas McGregor and Dr. David Fraser for my opportunity to participate in this program and for their wholehearted dedication to its success.
Hannes Bergmann | Leibniz Universität Hannover, Reproductive Biology

Identification of Dog MATER and Other Oocyte-Specific Proteins Essential for Early Development

I have always been interested in gaining in-depth understanding about questions that captivate me. Therefore, I was elated by the opportunity to pilot a research project over the summer at the Baker Institute. Even though I will always maintain clinical skills within my future career, I am enthusiastic about the possibility of contributing to the profession at a more fundamental level than would be possible solely as a clinician.

As a part of the research component of the Leadership Program, I aimed to make a contribution to the development of immunocontraceptives for dogs and cats. In the epigenetic and reproductive biology laboratory of Scott Coonrod, I explored the possibility of using the protein MATER as the target of a contraceptive vaccine. The autoimmune disease of premature ovarian failure in humans and related findings in mice strongly suggest that the MATER protein plays a crucial role as a highly specific autoantigen. In order to develop an autoantigenic vaccine that triggers an oocyte-specific cellular immune response, I investigated different dog tissues, using PCR to confirm the expression of MATER and other oocyte-specific proteins essential for early development in cats and dogs. I finally focused on ovarian tissue and oocytes, employing immunohistochemistry and immunofluorescence to determine the distribution of this protein within the ovary.

During this highly informative program, I gained a better understanding about research-related career options in veterinary medicine. In addition, by independently conducting a scientific project, I gained insight into basic research. I would like to thank Drs. Coonrod and Brian Cherrington for their guidance.

Jennifer Bernard | University of Tennessee, Virology

Cellular Entry of Feline Infectious Peritonitis Virus by the Fc Receptor-Dependent Pathway

I started veterinary school with the desire to pursue a career outside of private practice, particularly in zoo medicine or pathology. I applied to the Veterinary Leadership Program in order to explore such careers. I now have learned about many careers that seem both engaging and rewarding. After veterinary school, I plan to finish my MPH and obtain advanced training in anatomical pathology.

During the summer I worked with feline infectious peritonitis virus (FIPV) in the laboratory of Gary Whittaker. FIP is a deadly disease of cats for which no treatment is available. Previous studies show that if cats are producing antibodies to FIPV and are challenged with a virulent form of FIPV, they develop FIP more rapidly and with more severe clinical signs than cats that are not producing antibodies to the virus. It is thought that virus-antibody complexes are formed that bind to Fc receptors of macrophages, thus facilitating the entry of the virus by bypassing the conventional route of virus entry into cells.

The purpose of my project was to investigate the molecular mechanism involved in the entry of FIPV into macrophages through the Fc receptor endocytic pathway. We found that clathrin may be a necessary component of the alternative entry pathway. These findings may suggest that molecular targets can be identified for a new therapeutic strategy in the treatment of FIPV.

Thank you to Douglas McGregor and David Fraser for the opportunity to participate in the Leadership Program. My mentor Gary Whittaker and Andrew Regan deserve special thanks for an excellent lab experience.
Jennell Bigrigg | The Ohio State University, Cancer Biology

**PADI4 Expression in Mouse Models of Breast Cancer**

As a third-year veterinary student, I have a strong interest in research. I applied to the Leadership Program to gain a better understanding of non-traditional careers available to veterinarians. After graduation, I intend to continue my education in a PhD/residency program and eventually to pursue a career in either industry or the academy.

During the past summer, I had the privilege of working in Dr. Scott Coonrod’s lab, where I investigated expression patterns of PADI4 in mouse models of breast cancer. PADI4 is a member of a calcium-dependent enzyme family that citrullinates arginine residues on histone tails, creating major alterations in chromatin structure that can lead to changes in gene transcription, epigenetic regulation, and potentially cancer. Despite the links of PADI4 to reproduction and reproductive-associated cancers, little is known about the location of PADI4 expression in mouse reproductive tissues. Using western blot and immunohistochemical techniques in wild type and PADI4 knockout mice, I demonstrated the location of PADI4 expression and showed that PADI4 knockout mice could be a valuable model for investigating human female reproductive cancers.

The Leadership Program has been an unforgettable experience and has opened my eyes to many new opportunities. During my summer at Cornell, I met many amazing people, both researchers and students. It has been a pleasure to associate with individuals who have career goals and aspirations similar to mine. I would like to thank the Coonrod laboratory members for their support and guidance, especially Drs. Scott Coonrod and Brian Cherrington.

Anna Byron | University of Sydney, Hematology

**Platelet-Driven Thrombin Generation in a Canine Model of Scott Syndrome**

My passion has always been veterinary medicine, although I completed a medical science degree prior to studying veterinary science. The latter allowed me to develop specific research interests in neurophysiology and hematology. I was therefore fortunate to work with Dr. Marjory Brooks and Dr. James Catalfamo over the summer, pursuing my interest in the coagulation aspect of hematology.

My project focused on Scott syndrome, a bleeding disorder that has been identified in humans and dogs. Platelets of these patients are unable to promote normal coagulation, as the binding site for coagulant proteins such as factors VII, VIII, IX, and X is not exposed. This binding site, a lipid that normally makes up part of the platelet membrane, is phosphatidylserine. We have developed a system in which we can observe the effects on coagulation of different agonists—such as collagen, factor Xa, and tissue factor—in affected dogs when compared to a control. By measuring thrombin generation, we were able to identify significant deficiencies in coagulation in response to collagen and tissue-factor stimulus, as well as reduced microparticle (platelet fragment) activity in affected dogs. Interestingly, factor Xa was shown for the first time to be able to stimulate externalization of phosphatidylserine in normal dogs in the absence of any other agonist.

I would like to offer sincere thanks to my mentors, Dr. Brooks and Dr. Catalfamo, and my new best friend, Wiggles (one of the affected dogs). This has been an enlightening summer. The excellent guidance and company in the lab have made it a fantastic and motivational experience.
Lucie Chevallier | École Nationale d’Alfort, Genetics

Evaluation of a Candidate Gene for Canine Multifocal Chorioretinopathy

Genetics has always inspired my passion. During an internship in a French genetic laboratory I realized how powerful the dog model is for studying human genetic diseases. I wanted to capitalize on any opportunity to study canine genetics more deeply. I applied to the Leadership Program with the hope of having a wonderful experience in genetics, to learn about career paths, and to meet accomplished researchers. My expectations were fulfilled!

I worked this summer on an ocular disease of dogs: canine multifocal chorioretinopathy (CMC). The cause of this disease, which affects many breeds, is unknown. CMC affects dogs submitted to strenuous exercise. Males are at least three times more often affected than females, which suggests that if the disease has a genetic cause, the responsible gene may be located on the X chromosome. Indeed, an X-linked disease in humans that is similar to CMC is caused by mutations in the choroideremia gene located on the X chromosome. The objective of my research was to determine whether the choroideremia locus is implicated in CMC in dogs. We identified single nucleotide polymorphisms (SNPs) located in and around the choroideremia gene, and genotyped these SNPs in a population of normal and affected Borzoi dogs. Analysis of SNP haplotypes failed to reveal an association between choroideremia locus and the CMC. Thus, the choroideremia locus can be excluded as a candidate gene for canine multifocal chorioretinopathy in Borzois.

I would like to thank Greg Acland and Anna Kukekova for being such wonderful mentors. I also would like to thank Dr. Douglas McGregor and Professor David Fraser for their time and energy and for the great experiences they arranged for us during these 10 unforgettable weeks.

Anne Dijkshoorn | Universiteit Utrecht, Molecular Biology

Concentration-Dependent Effects of the α2δ Subunit on Ca_{\text{\textit{2.1}}} Ca^{2+} Channel Expression

Fascinated by science, I completed a one-year research project following my preclinical studies at the University of Utrecht. During that year I became increasingly aware of the many fields that excite me. During my first year of clinical rotations, I applied to the Cornell Veterinary Leadership Program to explore the possibilities for a future career. In this ever-changing and dynamic world, I am intrigued by the challenge of combining veterinary knowledge with science and other related fields.

My project focused on neuronal high-voltage-activated Ca_{\text{\textit{2.1}}} Ca^{2+} channels. Knowledge of these channels at the molecular level can lead to understanding and design of drugs directed to chronic and neuropathic pain. The primary technique of the study involved the use of a two-electrode voltage clamp. *Xenopus laevis* oocytes do not express Ca^{2+} channels naturally. When injected with mRNA encoding three Ca^{2+} channel subunits (α1; α2δ-1; β), the oocyte expresses functional Ca^{2+} channels on the cell surface. Since α2δ subunits are up-regulated in neuropathic pain, I studied the effects of increasing the concentration of α2δ on Ca^{2+} channel current expression and gating.

My experiments lead to three novel findings: expression of Ca_{\text{\textit{2.1}}} Ca^{2+} channels does not require the α2δ subunit; increasing the ratio of α2δ from 1:0:1 to 1:1:1 has only a modest effect on Ca^{2+} current expression; and, contrary to what has been hypothesized in the literature, α2δ ratios greater than 1:3:1 actually inhibit (rather than enhance) Ca^{2+} current expression.

I thank Bill Horne and Johanna Holm for their motivating and invaluable mentoring. I am also grateful to everyone who, by being amazingly dedicated and enthusiastic, made this program such an impressive experience.
Katharina Dinger | Freie Universität Berlin, Bacteriology

**Kinetic Studies of Inhibition of WspR in *Pseudomonas aeruginosa***

Being a curious person and looking for a career option that satisfied my questioning mind, I decided to study veterinary medicine. Five years later, I am still convinced that there is no other profession that provides such a broad knowledge about the plethora of interactions between different species and the environment.

In the course of my Leadership Program project at the Sondermann lab, I was able to explore one aspect of these interactions by studying biofilm formation, which is a frequent phenomenon in bacterial colonization. When attached to a surface, formerly free-floating microorganisms secrete an extracellular matrix, the biofilm. This heterogeneous substance creates optimal living conditions and attracts further bacterial colonization. Currently more than 80 percent of chronic infections are attributed to biofilm formation, and nearly 70 percent of cystic fibrosis patients die due to secondary infection with *Pseudomonas aeruginosa*, an efficient biofilm-former. Inhibition of biofilms offers the prospect of developing novel antibiotics. Although many factors for biofilm formation are still unknown, the enzyme WspR, an active diguanylate cyclase from *Pseudomonas aeruginosa*, was recently identified as a major component. I tested the effect of several inhibitors on WspR using kinetic studies, Congo Red assays, and crystallization experiments.

I would like to thank Dr. McGregor and Dr. Fraser for being more than facilitators and counselors—they are the heart of this leadership program! I also would like to thank the entire Sondermann lab for skillful and patient guidance, especially Nabanita De and Holger Sondermann for their support. Last but not least, Melissa Restifo and the rest of the Zeta Psi Group—it was wonderful to have you all around!

Johanna Dups | University of Queensland, Cancer Biology

**Tumor-Derived Microvesicles: Novel Method of Cancer Dissemination**

I was three years into my veterinary studies when I had my first lecture on public health. Suddenly a whole new realm of professional possibilities for the veterinary scientist became apparent. The Cornell Leadership Program has provided an excellent opportunity to explore this concept further.

This summer I had the privilege to work in Dr. Richard Cerione’s laboratory under the mentorship of Dr. Marc Antonyak. Recently it was shown that microvesicle formation in a glioma cell line was responsible for transfer of oncogenic material from cancerous to non-cancerous cells. This presented a whole new model for cancer dissemination. We saw that similar microvesicles could form with a cervical carcinoma cell line, HeLa. How they were regulated became the basis of my research project, and I focused on questions with clinical relevance. Do microvesicles from HeLa cells lines confer oncogenic activity on non-cancerous cell lines or increase malignancy in benign cancer-cell lines? What, if any, signaling mechanisms are important for microvesicle formation, and what specific proteins are contained within the microvesicles? I found that small GTPase, Rho, activity was critical for formation of microvesicles and that the pro-survival protein, tissue transglutaminase, is one of the proteins present in the microvesicle. These findings provide evidence for a novel way of cancer progression and also suggest possible points for clinical intervention.

Working in the Cerione laboratory was a once-in-a-lifetime introduction to scientific research at the highest level. Marc Antonyak and Richard Cerione were absolutely fantastic mentors, and I can’t thank them enough. I would also like to extend an enormous thank you to Douglas McGregor and David Fraser for an absolutely inspiring summer.
Elsa Garcia | Cornell University, Immunology

The Hepatoprotectant Role of Intestinally Derived CD4+ T Cells in IL-10 Knockout Mice

I am in the second year of my veterinary education. In the course of my veterinary training, I discovered appealing opportunities for careers in research and academia. I applied to the Veterinary Leadership Program to explore my interests in immunology, pathology, and a scientific career. The Leadership Program has provided me with an invaluable research experience that has influenced my career goals. The workshops, career discussions, and networking opportunities provided the guidance I needed to decide between a career in clinical practice, academia, or research. After graduation, I would like to pursue a pathology residency and perhaps a career in academia.

My studies during the summer investigated the immunological relationship between the intestine and the liver. In diseases such as inflammatory bowel disease, disease occurs in the liver as well as the intestine. For my project, we focused specifically on the hepatoprotective role of intestinal CD4+ T cells. Our results indicated that CD4+CD25+ regulatory T cells did not protect the liver during inflammation. However, other regulatory T cells may have a protective role. We also determined that intestinal CD4+ T cells in the liver produce the cytokines IL-4, IL-10, and IL-22.

I am sincerely thankful to Dr. Susan Bliss and Diana Douglas for their concern, patience, and help during the summer.

Prabhpreet Gurmit Singh | University of Sydney, Genomics

Candidate Genes for Body Size in Dogs

The Cornell Leadership Program was first brought to my attention when I was doing a one-year research degree in exotic bird nutrition between my fourth and final years of vet school. It seemed like a great opportunity to explore different fields of research while meeting a wide variety of people. I am hoping to use some of the skills that I have acquired and continue with some of the projects in which I have been involved during this program when I begin my employment as a veterinarian in the Agri-Food and Veterinary Authority of Singapore.

I spent the summer at Cornell with a fantastic group of researchers, under the supervision of Professor Nathan Sutter. Members of the Sutter lab select candidate genes for size in domestic dogs based on the actions of the proteins for which they code. These are sequenced using genomic DNA extracted from six giant- and six toy-breed dogs. The sequences are then compared, and single nucleotide polymorphisms, insertions-deletions, and microsatellite mutations are identified. If a marker is found that shows distinct differences between small and large dogs, the sequencing is repeated using a larger number of genomic DNA samples. I worked on two distinct genes during my time in the lab and discovered 15 markers, although none of them were significantly associated with body size.

The Leadership Program was absolutely brilliant. I really enjoyed working in a field that was completely different from my own. I would like to thank everyone at my lab, especially Nate Sutter and Jeremy Allen, as well as Dr. McGregor and Dr. Fraser for being so supportive and making this program an unforgettable experience.
Anna Heymer | Leibniz Universität Hannover, Virology

**Development of an FCV-5-Urbana Chimeric Virus**

This fall, I will start my fifth year at the Leibniz Universität in Hannover, Germany. During my studies, I became increasingly interested in scientific research, especially in infectious diseases. The Leadership Program was an excellent chance to broaden my knowledge in virology and in research in general, and to gain valuable career advice.

I worked in John Parker’s lab at the Baker Institute this summer, where I studied feline caliciviruses (FCVs). FCVs are common pathogens of cats in which they usually cause unapparent infections or oral- and mild upper-respiratory-tract-disease. Recently, however, new highly virulent strains have emerged that cause systemic disease with high mortality.

FCV is a nonenveloped virus with a single-stranded, positive sense RNA genome that contains three open-reading frames (ORF). ORF1 encodes viral nonstructural proteins, whereas ORFs 2 and 3 encode the major and minor structural proteins of the virus. It is not known which changes have occurred to make the new strains highly virulent. For this reason I worked on developing a chimeric virus containing the nonstructural genes of low-virulent FCV-Urbana and the structural genes of the high-virulent strain, FCV-5. The chimeric virus will be used in future experiments to determine if structural proteins from highly virulent isolates, expressed in the background of low-virulent isolates, alter virulence.

The Leadership Program showed me many career options that I will now consider, and it helped me develop both personally and professionally. Another invaluable experience was making international friends and useful contacts to veterinary scientists. I thank John Parker and Oz for their guidance.

Lisa Holz | Leibniz Universität Hannover, Epidemiology

**Selection of Resistance Factors in E. coli in Dairy Cattle Treated with Ceftiofur**

As I am starting my fourth year of vet school this fall, I wanted to learn more about the career paths that are open to veterinary graduates. This summer at Cornell gave me a great opportunity to strengthen my interest in research. Participation in the Leadership Program made me realize that my professional future lies in working with infectious diseases—either in academic research or in public health.

Reduced susceptibility (RS) to antibiotics in a variety of bacteria is an important and growing concern not only in veterinary medicine but also in public health. The goals of our study include comparison of RS induced by the use of different antibiotics (Ceftiofur vs. penicillin) by testing isolates of *E. coli* strains from fecal samples in dairy cattle with a view to determining whether cattle treated with Ceftiofur host more *E. coli* that are less susceptible to antibiotics than cattle treated with penicillin. For this purpose, a method of colony replication was established in our laboratory, using a hydrophobic grid membrane filter (HGMF)-technique. The filter system enabled us to examine a large number of *E. coli* isolates from a single fecal sample and to copy those isolates onto different antibiotic plates. Combined with special software, this technique allowed us to look at qualitative and quantitative changes in microbial susceptibility in our study population.

I would like to thank Dr. Lorin Warnick and his lab for their support and effort in teaching me, as well as Dr. Douglas McGregor and Dr. David Fraser, who gave me the chance to see the broad opportunities that are open to me.
Jennifer Irving | Royal Veterinary College, Parasitology

The Effect on Dendritic Cells of an Immunosuppression Factor Released by Hookworms

I decided to obtain a veterinary education because of my love of animals, but after doing an intercalated research year at a medical school, I realized that a degree in veterinary medicine could open many more opportunities than being a clinician. My interest in parasitology began when I completed a module in tropical parasitology at King’s College London. After I graduate I intend to enroll in a residency program in production-animal medicine as well as study for a master of public health degree. I shall then return to academia to pursue a PhD in parasitology. I hope that these qualifications will equip me for a career, relevant to both animal and human medicine, in either government agencies or academic institutions.

I spent my summer in the lab of Dr. Susana Mendez investigating a newly discovered protein, Ac-TMP2, produced by hookworms and thought to be immunosuppressive. My project involved exposing bone-marrow-derived dendritic cells to the Ac-TMP2 and using flow cytometry to assess changes in expression of cell-surface antigen-presenting molecules. I also used ELISA to measure changes in the production of IL-10 and IL-12. My data suggest that expression of MHC Class 1 and IL-12 increases after antigen exposure. I also optimized a simple protocol to extract dendritic cells from mouse intestine so that Dr. Mendez can repeat this work using intestinally derived dendritic cells.

I am very grateful to Dr. Mendez and to everyone in her lab. The Leadership Program has been extraordinary and has left me better informed about how to follow a career path that will allow me to contribute a great deal, not just to veterinary medicine, but also to the world.

Sally Ann Iverson | Cornell University, Bacteriology

Analysis of In Vivo–Activated Genes of Salmonella typhimurium

After finishing my first year of veterinary school, I decided to participate in the Leadership Program for the opportunity to undertake a research project, as well as to further explore the many career options available to veterinarians. My interest in infectious disease led me to spend the summer working with Salmonella under the mentorship of Dr. Craig Altier.

Salmonellae are prominent and extensively studied bacterial pathogens. Although much has been learned through in vitro models, little is known about how Salmonella spp. regulate their virulence within animals. A previous screen performed in the Altier lab identified 55 Salmonella genes that are activated in vivo using a pig model. I chose several of these genes with the aim of discovering if they have an important virulence phenotype. I created mutant strains of Salmonella with deletions of the genes of interest and performed assays for various phenotypes that may be important in an animal host, such as growth, motility, invasion, and nutrient acquisition. I found two genes that control the expression of invasion genes necessary for Salmonella to penetrate intestinal epithelium, a key step in infection of the host. These genes are potential novel regulatory mechanisms for Salmonella virulence in animals.

The Leadership Program has left me with wonderful ideas about the capabilities of veterinarians and some great prospects for new directions in my career. I would like to thank my research mentor, Dr. Altier, as well as the lab members for their patience and guidance, and Dr. Douglas McGregor and Dr. David Fraser for their dedication in making this program a success.
Sophie Kay | Royal Veterinary College, Reproductive Biology

**Characterization and Expression of Raft-Associated Proteins throughout the Epididymis**

I began university by studying science, with the intention of becoming a small-animal practitioner. However, after starting the veterinary medicine degree, I found that I missed the challenges and constant questioning of established knowledge—a feature of my previous training in science. Consequently, I applied to the Leadership Program to better explore future career opportunities.

The focus of my research project this summer was sperm maturation in the epididymis—essential to achieve potential fertilization. During the transit of sperm, biochemical characteristics of the sperm membrane change. Recent studies have shown that these alterations are brought about by the formation of membrane rafts, which are specialized regions enriched in lipids and proteins. The Travis lab has found that these rafts can act as targets for the addition of proteins secreted by the epididymis. These rafts also alter their localization within the membrane, in preparation for other functions once they enter the female tract. My project involved the localization of two raft-associated proteins (phospholipase B and apolipoprotein A) throughout the three main regions of the epididymis (caput, corpus, and cauda). The results showed significant variation in proteins present in membrane rafts throughout the epididymis and sperm plasma membranes. These data have potential implications as to causes of infertility and may be useful in efforts to create a male contraceptive pill.

The Leadership Program has been an incredibly influential experience for me. It has reinvigorated my ambitions and provided me with the tools necessary for a successful career. I would like to thank Alex Travis and Atsushi Asano for their fantastic and supportive mentoring—and Jacque Nelson for her help and encouragement.

Joshua Leach | Cambridge University, Epidemiology

**Effect of Mastitis on Conception in Dairy Cattle**

My career goal is to enter a profession that has an important role in spanning veterinary and human public health and that aims to reduce the economic and welfare burdens caused by the increasing threat posed by vector-borne infectious diseases.

I accepted a place in veterinary science at Cambridge because the university offers a strong scientific and applied academic grounding that would not have been covered in similar depth in other, more general, veterinary courses.

My research project in this summer’s Leadership Program aimed to determine the effect of mastitis on fertility in dairy cattle. This is a controversial and much-debated topic, with many previous studies contradicting one another and where no firm conclusions could be drawn because of lack of accurate primary data. The project posed many problems in model design and in the choice and implementation of relevant statistical tools. As with any epidemiological modeling, it is vital to avoid bias—and confounding when setting up the model and also when interpreting the results.

The results of this project have demonstrated a highly significant effect of mastitis in causing decreased conception rates at different time points around insemination. I have come to appreciate the power and importance of modeling in highlighting interactions that do not seem to be logical and in answering questions that appear to be easily answerable but prove to be intractable by other techniques.

The summer of 2008 has been an enlightening and enjoyable experience from which I have learned many valuable lessons. To Professors David Fraser and Douglas McGregor and to Dr. Yrjö Gröhn, my mentor in the truest sense of the word: I express my gratitude.
Ming Lui | Cornell University, Virology

**Characterization of Canine Parvovirus Cellular Entry and Uptake Mechanisms**

I entered veterinary school having gained research experience during my undergraduate years and with a strong interest in the emerging field of veterinary public health. It was with this dual interest that I applied as a first-year student to the Leadership Program, which promised to reveal new insights about the practical challenges and realities of pursuing a nontraditional veterinary career.

Colin Parrish’s lab actively engages in different facets of parvovirus research, but my project focused on viral uptake and cellular entry of canine parvovirus (CPV). It is known that CPV enters the cell first by binding to the transferrin receptor and subsequently through clathrin-mediated endocytosis. However, the details of this binding and uptake process in the plasma membrane are unknown. Amongst the pieces of information needed to clarify the process are the kinetics of virus transit, entry of the virus via clathrin-independent mechanisms, as well as other requirements of cellular entry. To further elucidate these details, a system to visualize the events using real-time fluorescence microscopy was used. A hamster ovarian cell-line, TRVB2, which does not endogenously express the transferrin receptor and thus is not able to be infected with CPV, was transfected with one of three different mutant transferrin receptors. One receptor was the wildtype control, and the other two differed in their cytoplasmic domains, changing their endocytotic pathways. After we ascertained that transfected TRVB2 cells were able to be infected with CPV, they were additionally transfected with clathrin-GFP and caveolin-GFP constructs, yielding six doubly transfected cell-lines that were then imaged, and the resultant time-lapse movies analyzed.

I am grateful to have been accepted into the marvelous Leadership Program and for the new friends I met through the program and the Parrish lab.

Katherine McKelvey | Cornell University, Molecular Biology

**Role of Stably Integrated Sox Transcription Factors in Stem-Cell Chondrogenesis**

I have always been interested in a nontraditional veterinary career and was naturally drawn to research. The Leadership Program is so valuable because of the variety of activities and information provided on post-graduate training such as residencies, public health/epidemiology, and pharmaceutical development. Hopefully, I can combine clinical medicine and research through completing a residency, followed by a PhD and postdoctoral training.

While in the program this summer I worked in Dr. Alan Nixon’s lab on equine chondrogenesis, focusing on the Sox family of transcription factors and their initiation of mesenchymal stem-cell (MSC) differentiation. Cartilage injury and degeneration is a significant problem, causing lameness and acceleration of osteoarthritis in both horses and humans. Autologous grafts of mesenchymal stem cells, harvested from sternal bone marrow and grown in culture, decrease healing time and provide a source of cartilage progenitors but alone do not provide significant long-term improvement. In fetal development, Sox transcription factors stimulate differentiation and development of cartilage, with the L-Sox5, Sox6, and Sox9 being the most critical. Cloning of these three genes and insertion into a plasmid expression vector, PXP3, shows in vitro expression of L-Sox5 and Sox-6 in transduced MSCs. Analysis of equine Sox9 showed an anomalous coding sequence when compared to the human/mouse sequence, and the majority of my project was to correct the sequence using modern cloning techniques.

This summer has been amazing and unforgettable because of the advice and knowledge presented by guest facilitators and Leadership Program students—and also because of the work that both Dr. Douglas McGregor and Dr. David Fraser have put into the program. I would like to thank both of them as well as Dr. Nixon, Mike Scimeca, Ashlee Watts, Yang Gu, and Jeremy Ackerman-Yost for their patience and support.
**Joanna Mleczko | Freie Universität Berlin, Embryology**

**Mechanisms Controlling Patterned Angiogenesis in the Developing Hindbrain**

When I enrolled in veterinary medicine in Berlin, I envisaged a career in farm-animal practice, since this is what I knew from childhood. However, as my studies proceeded, I discovered the great range of career opportunities available to me. Participation in the Leadership Program has provided insight into exciting alternative careers, such as in international public health or academic/corporate research.

My project investigated the control of angiogenesis—blood-vessel formation—during development of the hindbrain. The brain and spinal cord are the only epithelial structures that are penetrated by blood vessels; in the hindbrain this invasion occurs only at the boundary between segments (rhombomeres). Outside of the brain, a growth factor called vascular endothelial growth factor (VEGF) is a potent stimulator of endothelial cell proliferation, movement, and differentiation, but its role, if any, in brain angiogenesis is unknown. My research delivered VEGF-A, or an antagonist (endostatin) of its receptor, into the hindbrain of quail embryos, using porous microbeads. The survivors, analyzed using immunocytochemistry, showed no change in the locations or numbers of endothelial cells penetrating the hindbrain, making this the first VEGF-independent vascularization site identified in vertebrate embryos.

This has been a great summer. Professor Drew Noden and the members of his lab not only taught me the necessary microsurgical and immunocytochemical skills for accomplishing my project but gave me the freedom to formulate my own concepts; they helped me to develop professionally in many ways. On that account I want to thank them enthusiastically.

**Anna Moore | University of Bristol, Animal Behavior**

**A Retrospective Study of Inter-Dog Aggressive Behavior**

I started my veterinary degree with the intention of becoming a surgeon and entering general practice. During my studies I developed an interest in animal behavior and suspended my veterinary studies for a year to gain an intercalated BSc in the subject. This gave me the opportunity to undertake research and sparked my interest in not only acquiring but also furthering knowledge in this field.

During my time at Cornell I had the privilege of working with Dr. Katherine Houpt in the Animal Behavior Clinic. My research took the form of a retrospective study of dogs presented at the clinic for aggression to other dogs in their household. The aim was to identify risk factors such as age or size differences between the animals, the composition of the household (i.e. number of males compared to females), as well as possible breed factors. With this knowledge it would be possible to offer pre-purchase advice to those hoping to add a dog to a household as well as possible identification of reasons for conflict, thus aiding treatment. In addition to the research I also had the opportunity to discuss incoming cases and current literature in the area and expanded my knowledge in the area of psychopharmacology—all of which added to my learning experience and increased my passion for this field.

I would like to thank Drs. David Fraser and Douglas McGregor for providing me with the honor of enjoying such a wonderful summer. I would also like to thank Drs. Houpt and Julia Albright for the advice and opportunities they have provided me and for their willingness to answer all my questions.
Dallas New | Ontario Veterinary College, Molecular Biology

**Determining the Limit-Binding Domain of GAA1**

I began my study of veterinary medicine one year ago fully knowing that I would prefer a career outside of typical clinical practice. However, becoming knowledgeable about available opportunities in such fields proved to be difficult. I applied to the Veterinary Leadership Program with the intention of discovering the different paths I could pursue after completing my degree.

This summer allowed me to gain invaluable research experience in an exceptional laboratory facility. I was paired with Dr. Lisa Fortier, an incredible translational scientist and surgeon alike. It has been shown that chondrocytes lose their ability to respond to insulin-like growth factor-I (IGF-I) during aging and osteoarthritis, and this causes morphological changes in the cell through signaling molecules such as Cdc42, a small GTPase. Previous studies in Dr. Fortier’s laboratory have shown that Cdc42 interacts with a subunit of the transmembrane protein glycosylphosphatidylinositol-anchor transamidase complex, GAA1. The goal of my project was to test the hypothesis that Cdc42 interacts with a mutated truncation of GAA1. It is the ultimate goal of this research to be able to specifically define how IGF-I affects GAA1 in chondrocytes during osteoarthritis in the hope that a novel pharmaceutical approach may be elucidated in the future.

I would like to thank everyone who made this summer such a success. In particular, thank you to Kira Novakofski and Laila Begum, who helped me with my research every step along the way. Thank you also to Dr. David Fraser and Dr. Douglas McGregor for making this program available and for dedicating so much energy into making it happen. This summer will not soon be forgotten!

Annelies Nijdam | Universiteit Utrecht, Physiology

**Numerical Model of Blood-Flow Changes after Small-Scale Stroke**

When I started vet school in 2001, I was already contemplating a career in research. Participating in my faculty’s honors research program at Utrecht University in 2006 kindled my interest in multidisciplinary research and, as expected, the Leadership Program has proven to be the perfect next step in the development of my skills in the pursuit of a research career.

This summer I worked in Chris Schaffer’s lab on numerical modeling of rearrangements in cortical blood flow after small-scale strokes. Previous work within the lab using in vivo two-photon-laser-scanning microscopy in rodents resulted in large-scale maps of the network of arterioles on the brain surface, including topological connections, vessel diameters, lengths, and flow velocity. Moreover, changes in blood flow in neighboring vessels in response to occlusion of an individual arteriole were quantified. These well-mapped networks have been numerically modeled as resistor networks. During the course of the summer I have expanded this model to conduct numerical experiments that model vessel occlusion and subsequent blood-flow rearrangements. My numerical results are consistent with the in vivo occlusion data and thus enable a more thorough study of flow rearrangements after microvascular occlusion, as well as the extrapolation of the effects of multiple occlusions on flow. These latter experiments are not feasible in vivo, so well-validated numerical simulations are critical.

I am very happy to have had the opportunity to work in a highly motivating environment with excellent scholars. My thanks go to all the people with whom I have worked for the inspiration and guidance they provided. I am especially grateful to Douglas McGregor and David Fraser for creating such an exceptional program.
Ellen Petermeier | University of Minnesota, Bacteriology

The Evolutionary Genetics of *Streptococcus uberis*

As a child, I always imagined a career devoted to helping animals. After working in a veterinary hospital, I became concerned that a purely clinical career would never be one I truly desired. I needed discovery, challenge, and intrigue. I started my education at the University of Minnesota’s College of Veterinary Medicine, aware of the myriad of possibilities that the profession could offer, but unable to obtain the experiences that could help narrow my options. In the Leadership Program, I was able to acquaint myself with various veterinary disciplines, which provided me with the insight and opportunity to develop my interests in a variety of veterinary fields.

This summer I investigated the evolutionary genetics of *Streptococcus uberis*. A clinically important bacterium, *S. uberis* is one of the major causative agents of bovine mastitis. *S. uberis* was previously thought to be an environmental pathogen, however, it appears now that it may be host adapted. Knowledge of the evolutionary genetics of *S. uberis* would allow us to better understand how to deal with this bacterium. The main objective of this study was to develop a phylogenetic tree of *S. uberis*. To accomplish this, I sequenced 14 housekeeping genes of 152 strains of *S. uberis*. The data were analyzed using eBURST and clonal frame analysis. The clonal groups were analyzed to find correlations with host adaptability and geographic origin.

I would like to thank Douglas McGregor, David Fraser, and Melissa Restifo for providing this opportunity; my mentor, Michael Stanhope, and Paulina D. Pavinski Bitar for directing me in my research; and all others who helped make this program unforgettable.

Jessica Privett | University of Sydney, Virology

Development of a Novel Live-Attenuated Viral Vaccine for Bovine Herpesvirus Type 1

After four years of my veterinary degree studies that focused primarily on the roles of veterinarians in private practice, the Veterinary Leadership Program offered a chance to broaden my views on the opportunities and need for vets in other areas. During my veterinary studies in Sydney, I developed an interest in infectious disease, especially in relation to biosecurity and public health. The Leadership Program enabled me to investigate how I could pursue these interests as a career and to learn how vets can impact the profession in a significant way.

As part of my experience at Cornell, I worked in the Osterrieder lab developing a novel live-attenuated viral vaccine for bovine herpesvirus type 1 (BHV-1). BHV-1 is a significant cause of respiratory and reproductive disease in cattle and results in great economic losses to the bovine industry. Two gene coding regions, circ and gG, have been identified to be potentially involved in the immunosuppressive effects of BHV-1. My role was to create mutant viruses that could then be assessed as vaccine candidates. This involved mutation of the viral genome, screening for correct clones, transfection into mammalian cells, and extraction of live virus. This project allowed me to learn many new techniques in molecular biology, including PCR, restricted fragment length polymorphism, DNA preparation, and tissue culture.

When I complete my veterinary degree, I plan to undertake a master of public health and/or master of business administration to prepare me for a career in a government or industry role.

I sincerely thank the Osterrieder lab, especially Benedikt Kaufer, and all my fellow Leadership Program participants for a great summer.
Kimberley Schiller | University of Edinburgh, Renal Physiology

**Localization and Heterologous Expression of a Mosquito Ion-Exchanger**

Since beginning my veterinary studies I have wanted to pursue a career that would incorporate research. I discovered that I enjoy research prior to beginning my studies—during my internship in the United Nations laboratory outside of Vienna. Research is both intellectually challenging and exciting. This is why the Leadership Program has been one of the most rewarding and enriching experiences I have had; it has opened broad horizons of different career paths for me to pursue.

This summer I worked in Klaus Beyenbach’s laboratory, where I studied Malpighian tubules of the yellow fever mosquito (*Aedes aegypti*). Insect Malpighian tubules are invaluable physiological models for determining mechanisms and regulation of epithelial transport. Both provide important insight into renal and epithelial physiology and also to diseases affecting animal and human health.

My research project involved localizing the expression of a putative anion exchanger (AE) in Malpighian tubules and determining if the AE protein can be expressed by frog (*Xenopus laevis*) oocytes, a common expression system used to characterize the function of AE-like proteins. First, I used in situ hybridization on mosquito Malpighian tubules and gut tissue to localize where expression of the AE mRNA occurs. Second, I injected mRNA encoding the AE protein (with a fluorescent tag) into frog oocytes to determine the optimal amount of mRNA and timeframe for heterologous expression of the mosquito AE.

I would like to thank Dr. Peter Piermarini for his invaluable guidance. Also, I am grateful to Professor Beyenbach for giving me the opportunity to work with his team. The Leadership Program has been a particularly exciting experience.

James Swann | Cambridge University, Microbiology

**Manipulation of Secretary Pathways in *Tetrahymena thermophila***

During my studies at the University of Cambridge, I developed a keen interest in the future of the veterinary profession and in career options that might be open to me upon graduation. I applied to the Leadership Program in the hope of gaining a greater understanding of these subjects. In addition to achieving my goal, I have learned a great deal more than I expected about the qualities of leadership, the myriad challenges facing current veterinarians, and the scientific process in general. I am currently considering studying for a higher degree when I complete my veterinary training in 2010.

My laboratory project concerned the ciliate *Tetrahymena thermophila*, a unicellular eukaryote that represents a highly efficient system for the production of vaccine proteins encoded by genes from other species. One candidate for production within this system is the protein Pfs48/45 produced by *Plasmodium falciparum*, the causative agent of cerebral malaria. As Pfs48/45 is only displayed on the surface of parasite stages in the mosquito vector (*Anopheles sp.*), it has potential for use as a component of transmission-blocking vaccines. If the mammalian host is immunized against such a molecule, this can then be recognized and targeted within the vector. I tested the hypothesis that different yields of protein might be obtained by targeting Pfs48/45 to different protein-sorting pathways. I used a variety of molecular and genetic techniques to produce several different versions of the gene encoding Pfs48/45, each containing targeting sequences. I also investigated whether antigenic vaccine preparations could be prepared directly from similarly transformed cells.

I am extremely grateful to all those who have made this summer so enjoyable.
Heidi Vesterinen  | Helsinki University, Epidemiology

**Dynamics of Antibiotic Resistance in Livestock**

When I started vet school I wanted to know how organisms function and develop. It soon became evident that too much is still unknown, and so I decided to pursue a career in research. Applying to the Leadership Program was the first major step toward realizing that goal.

The topic of my research project was the emergence of antimicrobial resistance in livestock. Very little mathematical modeling has been done on this. I developed a mathematical model to address the question: “What happens inside an animal when an infection is treated with an antimicrobial agent?” The model has three components. It estimates the antibiotic concentrations in different body compartments, the effect of antibiotic on bacteria, and the growth of bacteria. I used as the case study, marbofloxacin treatment of calves with *E. coli* infections. The results suggest that for this drug, a single high dose is the best way to minimize the emergence of resistance. A sensitivity analysis of my model indicated that the emergence of mutations was influenced by the pharmacodynamic parameters of the susceptible strain, the absorption rate of the drug, and the mutation rate of the bacteria.

The Leadership Program has been an invaluable experience. I would like to thank the whole modeling group for showing me how to plan a study and how to think like a researcher. I am especially grateful to Yrjö Gröhn for inviting me into his research group and to Cristina Lanzas for being such a superb modeling teacher. I would also like to thank David Fraser, Douglas McGregor, and all the other facilitators for their valuable thoughts and great career tips.

Melissa Restifo  
**Program Coordinator**

I could never have predicted how much I would enjoy the experience of serving as coordinator of the Leadership Program. Observing the academic and social interactions of such bright, ambitious individuals was enjoyable and rewarding and opened my eyes to the plethora of opportunities afforded to those in the veterinary profession. The personal and professional discoveries that were made over the course of only 10 weeks truly demonstrates the magnificent things that can happen when great minds come together. Perhaps the greatest honor, however, was witnessing the forging of what I am sure will be long-lasting relationships between members of a diverse group, myself included. I wish each student the best of luck in future endeavors, and I have no doubt that their leadership skills and drive to succeed will help take them to great heights in years to come.
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Margaret McCann
Facilitator
Associate Director, Worldwide Regulatory Affairs, Merck Co.

Sean McDonough
Counselor
Associate Professor, Pathology
Cornell University
Counselors
for the 2008 Leadership Program

Douglas McGregor
Counselor
Director, Leadership and Training Initiatives
Cornell University

Suzanne McGregor
Facilitator
Eastern Regional Counsel, Immigration, Department of Homeland Security

Frederick Murphy
Facilitator
Professor, Pathology
University of Texas Medical Center

Malden Nesheim
Facilitator
Professor Emeritus, Nutritional Sciences
Cornell University

John Parker
Facilitator
Assistant Professor, Virology
Baker Institute for Animal Health
Cornell University

Colin Parrish
Facilitator
Professor, Virology
Baker Institute for Animal Health
Cornell University

Roy Pollock
Facilitator
President
Fort Hill Company

Andrew Sage II
Facilitator
President
Sage Capital Corp.

Alfonso Torres
Facilitator
Associate Dean, Veterinary Public Policy
Cornell University

Maurice (“Pete”) White
Facilitator
Professor, Population Medicine
Cornell University
Participants in the 2008 Leadership Program were housed in the Zeta Psi fraternity house on the Cornell campus. They had exclusive use of the building for the 10-week period that the program was in session. Several events were scheduled there, typically in the evening in conjunction with a catered meal. The living arrangements enabled the scholars to socialize and relax in a convenient and pleasant campus environment.
Apart from their intensive schedule, program scholars found time for many personal pleasures. They capitalized on local Ithaca amenities and also visited Boston, Niagara Falls, New York City, and Washington, DC.
The Leadership Program scholars hosted a dinner for their mentors, module facilitators, counselors, and other guests at Willard Straight Hall on the Cornell University campus.
The program organizers maintain contact with Leadership Program graduates in order to strengthen the professional network forged at Cornell and to uphold the program’s tradition of excellence for the benefit of future fellows. Listed below are the positions currently occupied by program graduates who have completed their veterinary education and are pursuing careers in science or public health.

1990

John Angelos  Assistant Professor, Food Animal Medicine, University of California, Davis
William Carr  Instructor, Massachusetts General Hospital/ Partners AIDS Research Center, Harvard University, Boston, Massachusetts
Laura Gumprecht  Associate Director, Safety Assessment, Merck Research Laboratory, West Point, Pennsylvania
Elizabeth Lyon Hannah  Research Faculty, Boise State University, Boise, Idaho
Richard Haworth  Senior Pathologist, GlaxoSmithKline, Middlesex, United Kingdom
Melissa Mazan  Associate Professor and Director, Sports Medicine, Tufts University, North Grafton, Massachusetts
Rebecca Papendick  Associate Pathologist, Zoological Society of San Diego, California
Susan Schaefer  Clinical Assistant Professor, Surgery, University of Wisconsin, Madison
A. W. (Dan) Tucker  Senior Lecturer, Veterinary Public Health, University of Cambridge, United Kingdom
Thomas Vahlenkamp  Assistant to the President, Friedrich-Loeffler-Institut, Greifswald, Germany

1991

Prema Arasu  Associate Vice Provost, International Academics, North Carolina State University, Raleigh, North Carolina
David Bainbridge  Clinical Veterinary Anatomist, University of Cambridge, United Kingdom
Linda Berent  Clinical Assistant Professor, University of Missouri, Columbia, Missouri
Ian Davis  Associate Professor, Genomics and Pathobiology, Ohio State University, Columbus, Ohio
Dianne Hellwig  Associate Professor, Agriculture and Natural Resources, Berea College, Kentucky
Judy Hickman-Davis  Assistant Professor, Department of Veterinary Preventive Medicine, Ohio State University, Columbus, Ohio
Alan Radford  Senior Lecturer, Small-Animal Studies, University of Liverpool, United Kingdom
Jean Reichle  Head, Animal Surgical and Emergency Center, West Los Angeles, California
1992

**Tomasz Betkowski**  Medical Representative, Eli Lilly Co., Poland

**Stephen Davies**  Assistant Professor, Parasitology, Uniformed Services University, Bethesda, Maryland

**Mathew Gerard**  Assistant Professor, Surgery, North Carolina State University, Raleigh, North Carolina

**Christine Hawke**  Lecturer, Small-Animal Clinical Practice, University of Sydney, Australia

**Jacqueline Phillips**  Senior Lecturer, Physiology, Murdoch University, Perth, Australia

**Cristina Rodriguez-Sanchez**  Senior Research Associate, Universidad Nacional Autónoma de México, Mexico City, Mexico

**Louise Southwood**  Assistant Professor, Emergency and Critical Care, University of Pennsylvania, Philadelphia, Pennsylvania

**Reinhard Straubinger**  Professor and Head, Department of Bacteriology and Mycology, Ludwig-Maximilians-Universität München, Munich, Germany

1993

**Virginia Fajt**  Clinical Assistant Professor, Texas A&M University, College Station, Texas

**Christopher Laing**  Director, Science and Technology, University City Science Center, Philadelphia, Pennsylvania

**Emma O’Neill**  Lecturer, Small-Animal Medicine, University College, Dublin, Ireland

**Joanne Rainger**  Registrar, Anesthesia, University of Sydney, Australia

**Ashley Reynolds**  Associate Research Scholar, Virology, Princeton University, Princeton, New Jersey

**Susanna Ryan**  Communications Specialist, MediTech Media, London, United Kingdom

**Veiko Saluste**  Executive, Interchemi, Tallin, Estonia

**Melinda Stewart**  Pathologist, EMAI Diagnostic Services, Menangle, Australia

**Lynn Wachtman**  Clinical Veterinarian, New England Primate Center, Southborough, Massachusetts

1994

**Melissa Beall**  Research Scientist, IDEXX Inc., Westbrook, Minnesota

**Larissa Bowman**  Director, Mountain Veterinary Pathology, Ashville, North Carolina

**Leslie Gabor**  Laboratory Leader, EMAI Diagnostic Services, Menangle, Australia

**Maria Lara-Tejero**  Research Associate, Department of Microbiology, Yale University, New Haven, Connecticut

**Christopher Mariani**  Associate Professor, Neurology, University of Florida, Gainesville, Florida

**Sonia Mumford**  Veterinary Medical Officer, Fish Health Center, Olympia, Washington

**Jeffrey Phillips**  Assistant Professor, Oncology, University of Tennessee, Knoxville, Tennessee

**Julie Pomerantz**  Associate Research Scientist, Wildlife Trust, Palisades, New York

**Stacy Pritt**  Director Regulatory Operations, Covance Research Products, Inc., Denver, Pennsylvania

**Mary Thompson**  Academic Clinician, University of Queensland, Australia

**Oliver Turner**  Pathologist, Novartis Inc., East Hanover, New Jersey
1995

Elizabeth Adkins  Clinical Instructor, Comparative Ophthalmology, University of Wisconsin, Madison, Wisconsin
Gertraut Altreuther  Project Manager, Parasitology, Bayer Animal Health, Leverkusen, Germany
Philippa Beard  Lecturer, Virology, University of Edinburgh, Scotland, United Kingdom
Kate Creevy  Assistant Professor, Infectious Diseases, University of Georgia, Athens, GA
Rachael Gray  Lecturer, Veterinary Anatomy, University of Sydney, Australia
Wendy Harrison  Research Scientist, GlaxoSmithKline, Medicines Research Center, Stevenage, United Kingdom
Kelly Lorschy  Technical Service Specialist, Pfizer, Australia
Andrew Moorhead  Diagnostic Laboratory Scientist, University of Georgia, Athens, Georgia
Tony Mutsaers  Adjunct Assistant Professor, Ontario Veterinary College, Guelph, Ontario

1996

Michelle Dries-Kellaway  Research Project Manager, University of Wollongong, New South Wales, Australia
Margaret Fleischli  Research Specialist, School of Medicine and Public Health, University of Wisconsin, Madison, Wisconsin
Patricia Gearhart  Adjunct Assistant Professor, Ophthalmology, Michigan State University, East Lansing, Michigan
Tamara Gull  Assistant Professor, Pathobiology, Oklahoma State University, Stillwater, Oklahoma
Antonia Jameson-Jordan  Instructor, Biomedical Sciences, Cornell University, Ithaca, New York
Allison Stewart  Associate Professor, Large Animal Medicine, Auburn University, Montgomery, Alabama
Edwin van Duijnhoven  Research Scientist, NOTOX, Hertogenbosch, Netherlands
Constantin Von der Heyden  Practice Director, Pegasys Strategy and Development, Pretoria, Republic of South Africa

1997

Dennis Bailey  Lecturer, Oncology, Cornell University, Ithaca, New York
Peter Bracken  Technical Service Manager, Fort Dodge Co., Australia
Jonathan Happold  Senior Veterinary Officer, Biosecurity, Australia
Esther Kornalijnslijper  Lecturer, Infectious Diseases, Universiteit Utrecht, Netherlands
Tanya LeRoith  Assistant Professor, Pathology, Virginia-Maryland College of Veterinary Medicine, Blacksburg, Virginia
Lucy Neave  Lecturer, Creative Writing, Australian National University, Canberra, Australia
Patricia Pesavento  Associate Professor, Pathology, University of California, Davis, California
Paul Plummer  Assistant Professor, Microbiology, Iowa State University, Ames, Iowa
Deborah Prattley  Lecturer, Veterinary Public Health, Massey University, New Zealand
Jonathan Werner  Principal Pathobiologist, Amgen Co., Thousand Oaks, California
Esther Wissink  Research Manager, Virology, Universiteit Utrecht, Netherlands
Max Bastian  Senior Postdoctoral Fellow, Institut für Klinische Mikrobiologie, Immunologie und Hygiene, University of Ulm, Germany

Erin Crotty [Phipps]  Health Promotion Specialist, New Mexico Department of Health, Albuquerque, New Mexico

Stephen Fleischer  Team Leader, Center for Veterinary Medicine, Federal Drug Administration, Frederick, Maryland

Karsten Hüffer  Assistant Professor, Virology, University of Alaska, Fairbanks, Alaska

Mary Klinck  Resident, Behavioral Medicine, University of Pennsylvania, Philadelphia, Pennsylvania

Zoe Lenard  Senior Lecturer, Diagnostic Imaging, Murdoch University, Perth, Australia

Karen Liljeblom  Research Microbiologist, U.S. Department of Agriculture, Athens, GA

Larissa Minicucci  Director, DVM/MPH Program, University of Minnesota, Minneapolis, Minnesota

Amanda Murphie [de Mestre]  Lecturer, Veterinary Basic Sciences, Royal Veterinary College, London, United Kingdom

Anne-Marije Sparnaaij  Senior Policy Officer, Ministry of Agriculture, Netherlands

Elmer Ahrens  Resident Animal Medicine, Kleintierklinik, Rhenus, Switzerland

Erica Behling-Kelly  Resident, Clinical Pathology, University of Wisconsin, Madison, Wisconsin

Christine Broster  Veterinary Clinical Research Scientist, University of Bristol, United Kingdom

Robert Dickens  Training Specialist, U.S. Department of Agriculture, Raleigh, North Carolina

Peter Florian  Laboratory Head, Thrombosis, Sanofi-Aventis, Frankfurt, Germany

Francette Geraghty [Dusan]  World Health Organization Epidemiologist, Vientiane, Lao People’s Democratic Republic

Carl Holmgren  Staff Scientist, Neural Sciences, Karolinska Institutet, Stockholm, Sweden

Emily Meseck  Principal Pathologist, Wyeth Research Laboratories, Collegeville, Pennsylvania

Rachel Mo-Peters  Instructor, Pathology, Cornell University, Ithaca, New York

Mary Nabity  Clinical Assistant Professor, Texas A&M University, College Station, Texas

Kimberly Newkirk  Assistant Professor, Anatomical Pathology, University of Tennessee, Knoxville, Tennessee

Christopher Premanandan  Assistant Professor, Veterinary Biosciences, Ohio State University, Columbus, Ohio

Rachel Tarlinton  Lecturer, Preclinical Veterinary Medicine, University of Nottingham, United Kingdom

Holger Volk  Lecturer, Neurology, Royal Veterinary College, United Kingdom

Beatrice Bohme  Resident, Small-Animal Surgery, Faculty of Veterinary Medicine, University of Liege, Liege, Belgium

Steven Daley  Postdoctoral Fellow, Immunology, Australian National University, Canberra, Australia

Katharine Evans  Deputy Veterinary Surgeon, Babraham Institute, University of Cambridge, United Kingdom

Toby Floyd  MPH Candidate, Royal Veterinary College, London, United Kingdom

Rachel Geisel  (Allavena) Pathologist, Pfizer Inc., Sandwich, United Kingdom

Samuel Hamilton  Veterinary Officer, Department of Agriculture, Fisheries, and Forestry, Australia

Birgit Hingerl [Viertboeck]  Scientific Assistant, Immunology, University of Munich, Germany

Natali Krekeler  PhD candidate, Theriogenology, University of Melbourne, Australia

Jamie Lovaglio  Resident, Laboratory Animal Medicine, University of Illinois, Chicago, Illinois

Richard Luce  Resident Advisor, U.S. Centers for Disease Control and Prevention, Field Epidemiology and Laboratory Training Program, Addis Ababa, Ethiopia

Silke Meerman  DrMedVet Candidate, Leibniz Universität, Hannover, Germany

Fiona Norris Sansom  Postdoctoral Fellow, Microbiology, University of Melbourne, Australia

Knut Stieger  Research Assistant, Laboratory of Ophthalmology, University of Giessen, Germany

Joost Uilenreef  Faculty Service Specialist, Anesthesiology, Universiteit Utrecht, Netherlands

Kevin Woolard  PhD candidate, National Cancer Institute, NIH, Bethesda, Maryland
2001

**Julie Chevrette**  Clinical Veterinarian, Charles River Laboratory, Montreal, Quebec, Canada  
**Meagan Green**  Intern, Equine Medicine, Rood and Riddle Hospital, Lexington, Kentucky  
**Katherine Hughes**  Resident, Pathology, University of Cambridge, United Kingdom  
**Karin Holzer**  PhD candidate, Virology, Cornell University, Ithaca, New York  
**Stephanie Janeczko**  Resident, Shelter-Animal Medicine, Cornell University, Ithaca, New York  
**Charles Johnson**  PhD candidate, Pathology, Iowa State University, Ames, Iowa  
**Robert Klopfleisch**  Postdoctoral Fellow, Freie Universität, Berlin, Germany  
**David Loch**  Postdoctoral Fellow, Comparative Medicine, Johns Hopkins University, Baltimore, Maryland  
**Maeva May**  Resident, Large-Animal Medicine, University of Pennsylvania, New Bolton Center, Pennsylvania  
**Timothy Myshral**  Assistant Director, Veterinary Services, Cleveland Clinic, Cleveland, Ohio  
**Kis Robertson**  EIS Trainee, U.S. Centers for Disease Control and Prevention, Atlanta, Georgia  
**Simon Starkey**  Resident, Avian and Exotic Medicine, Cornell University, Ithaca, New York  
**Jason Stayt**  Resident, Clinical Pathology, Murdoch University, Perth, Australia  
**Amy Warren-Yates**  Assistant Professor, Pathology, University of Calgary, Canada  
**Rachel Winsor (Ballantyne)**  Technical Manager, Merial Animal Health Ltd., Harlow, United Kingdom  
**Robin Yates**  Assistant Professor, Comparative Biology, University of Calgary, Canada  
**Bevin Zimmerman**  PhD candidate, Pathobiology, Ohio State University, Columbus, Ohio

2002

**Janet Beagley**  Intern, Large-Animal Medicine, University of Georgia, Athens, Georgia  
**Karin Darpel**  PhD candidate, Parasitology, Pirbright Laboratory, Institute for Animal Health, Surrey, United Kingdom  
**Karyn Havas**  PhD candidate, Epidemiology, Colorado State University, Fort Collins, Colorado  
**Patrick Kenny**  Lecturer, Neurology, Royal Veterinary College, London, United Kingdom  
**Steven Laing**  PhD Candidate, Pharmacology, University of Glasgow, Scotland, United Kingdom  
**Susannah Lillis**  Resident, Diagnostic Imaging, University of Pennsylvania, Philadelphia, Pennsylvania  
**Anne Lo**  PhD candidate, Virology, University of Cambridge, United Kingdom  
**Michael Mienaltowski**  PhD candidate, Cell Biology, University of Kentucky, Lexington, Kentucky  
**Andrew Miller**  Diagnostic Pathologist, New England Primate Center, Southborough, Massachusetts  
**Simon Priestnall**  Resident, Pathology, Royal Veterinary College, London, United Kingdom  
**Kelly Still**  U.S. Army Veterinarian, Enterprise, Alabama  
**Barbara Taennler**  Marketing Manager, Veterinaria, Zurich, Switzerland  
**Ryan Taggert**  Intern, Small-Animal Medicine and Surgery, Mississippi State University, Starkville, Mississippi  
**Anke Werner**  PhD candidate, Medical School, University of Hannover, Germany
Rosie Allister  PhD candidate, Public Health Services, University of Edinburgh, Scotland, United Kingdom
Mieke Baan  Resident, Small-Animal Medicine, Ohio State University, Columbus, Ohio
John Baker  DPhil candidate, University of Oxford, United Kingdom
Sandra Barnard  Resident, Oncology, Cornell University, Ithaca, New York
Belinda Black  Intern, Small-Animal Medicine, Murdoch University, Perth, Australia
Patrick Carney  Resident, Small-Animal Medicine, Oregon State University, Corvallis, Oregon
Amy Cordner  Resident, Small-Animal Medicine and Surgery, University of Minneapolis, Minnesota
David Gardner  Resident, Pathology, Colorado State University, Fort Collins, Colorado
Erica Gruber  Intern, Small-Animal Medicine and Surgery, Colorado State University, Fort Collins, Colorado
Carol Haak  Resident, Critical Care, University of Missouri, Columbia, Missouri
Lindsay Hamilton  PhD candidate, Neurophysiology, University of Cambridge, United Kingdom
Jutta Klewitz  DrMedVet candidate, Leibniz Universität, Hannover, Germany
Michael Krah  Postdoctoral Fellow, Stem-Cell Biology, Georg-August-Universität, Göttingen, Germany
Heather Martin  Resident, Laboratory-Animal Medicine, Massachusetts Institute of Technology, Boston, Massachusetts
Siobhan Mor  PhD candidate, Parasitology, Tufts University, North Grafton, Massachusetts
Kate Paterson  PhD candidate, Garvan Institute of Medical Research, University of New South Wales, Sydney, Australia
Myank Seth  Resident, Small-Animal Medicine, University of Pennsylvania, Philadelphia, Pennsylvania
Karla Stucker  PhD candidate, Cornell University, Ithaca, New York
Lyn Wancket  Resident, Pathology, The Ohio State University, Columbus, Ohio
Christiane Wrann  PhD candidate, Medical School, University of Hannover, Germany

Anton Asare  Public Health Veterinarian, U.S. Department of Agriculture, Amarillo, Texas
Carolin Block  Medical Management Trainee, Roche Pharma AG, Grenzach-Wyhlen, Germany
Mathew Breed  Resident, Ambulatory Medicine, Cornell University, Ithaca, New York
Andrew Broadbent  PhD candidate, Dermatology, Imperial College, London, United Kingdom
Angelique Della Volpe  DrMedVet candidate, University of Leipzig, Germany
Karla Dreckmann  Postdoctoral Fellow, Immunology, Medical School, Hannover, Germany
Annika Krengel  DrMedVet candidate, Institute for Zoo and Wildlife Research, Berlin, Germany
Duncan Russell  Resident, Pathology, Cornell University, Ithaca, New York
Baukje Schotanus  PhD candidate, Cell Biology, Universiteit Utrecht, Netherlands
Katherine Scollan  Resident, Cardiology, Oregon State University, Corvallis, Oregon
Ivana Sekis  DrMedVet candidate, Oncology, University of Vienna, Austria
Katy Townsend  MS candidate, Ohio State University, Columbus, Ohio
Claire Underwood  Fellow in Cardiology, University of Pennsylvania, New Bolton Center, Kennett Square, Pennsylvania
2005

Melanie Ammersbach  PhD candidate, Clinical Pathology, Ontario Veterinary College, Guelph, Ontario, Canada  
Hannah Bender  PhD candidate, Oncology, Australian National University, Canberra, Australia  
Hille Fieten  PhD candidate, Genetics, University of Utrecht, Netherlands  
Kanika McAlpine (Singleton)  U.S. Army Veterinarian, Monmouth, New Jersey  
Marije Opsteegh  PhD candidate, Parasitology, Dutch National Institute for Public Health, Netherlands  
Patricia Oura  Intern, Small-Animal Medicine, North Carolina State University, Raleigh, North Carolina  
Bo Raphael  Invasive Species Scientist, Bureau of Rural Sciences, Australia  
Johanna Rigas  Resident, Clinical Pathology, Oregon State University, Corvallis, Oregon  
Ruth Schmitte  DrVetMed candidate, Neuroanatomy, Medical School, University of Hannover, Germany  
Kai-Blu Shiu  Resident, Oncology, University of Wisconsin, Madison, Wisconsin  
Timothy Stell  Intern, Small-Animal Medicine and Surgery, Darien Animal Hospital, Darien, Connecticut  
Catherine Trickett  PhD candidate, Animal Behavior, Bristol University, Bristol, United Kingdom  
Nina Weishaupt  PhD candidate, Neuroscience, University of Calgary, Canada  
Collin Wolff  Intern, Surgery, Dallas Veterinary Surgical Center, Dallas, Texas

2006

Janny de Grauw  PhD candidate, Pathology, Universiteit Utrecht, Netherlands  
Amanda DeMaster  Intern, Small-Animal Clinical Sciences, Texas A&M University, College Station, Texas  
Louise FitzGerald  Resident, Pathology, Murdoch University, Perth, Australia  
Annika Haagsman  Intern, Surgery, Universiteit Utrecht, Netherlands  
Eva-Maria Laabs  PhD candidate, Parasitology, Leibnitz Universität, Hannover, Germany  
Jane Leadbeater  Intern, Equine Surgery, Scone Veterinary Hospital, Scone, New South Wales, Australia  
Gelja Maiwald  PhD candidate, Biotechnology, University of Hannover, Germany  
Richard Meeson  Resident, Small-Animal Surgery, Royal Veterinary College, London, United Kingdom  
Joseph Neary  Intern, Livestock Medicine and Surgery, Colorado State University, Fort Collins, Colorado  
John Parker  Resident, Neurology, Cambridge University, United Kingdom  
Timothy Reed  Resident, Pathology, Purdue University, West Lafayette, Indiana  
Swaantje Roth  PhD candidate, Vaccinology, Freie Universität, Berlin, Germany

2007

Rosemary Brungs  Medical Student, University of Sydney, Australia  
Elva Cha  PhD candidate, Epidemiology, Cornell University, Ithaca, New York  
Ludwig Groebele  PhD candidate, Biomedicine, University of Sydney, Australia  
Laura Grogan  Intern, Animal Referral Hospital, Strathfield, New South Wales, Australia  
Shen Yang  PhD candidate, Molecular and Cellular Biology, University of Maryland, College Park, Maryland
Cornell-based alumni
What Did They Say?

“If you are about to enter the Leadership Program, don’t go with any other expectation than to enjoy it. But be prepared for it to change your life.”

—Alan Radford, 1991

“My time at Cornell is one I will always cherish and has been a key factor in many of my career decisions.”

—Oliver Turner, 1994

“Vet grad programs all over the world are becoming filled with Leadership Program alums.”

—Tony Mutsaers, 1995

“What a fantastic experience it was.”

—Sophia Tzannes, 1997

“I have such happy memories of the Leadership Program.”

—Christine Broster, 1999

“I still think of the wonderful time I had at Cornell and the great friends I met.”

—Susannah Lillis, 2002
“I still love to look back to that great summer and the valuable experiences I gained.”
—Eva-Maria Laabs, 2006

“I remember that wonderful summer in the Leadership Program.”
—Mieke Baan, 2003

“The Leadership Program propelled me along the career path I am now pursuing.”
—Steven Daley, 2000

“I am passionate about the Leadership Program as it gave me a valuable insight into research.”
—Kate Hughes, 2001

“I miss Ithaca, Cornell, and especially the Leadership Program.”
—Maria Volkmann, 2007
Richard Luce

Upon entering veterinary school at North Carolina State University, I intended to pursue a career in large-animal clinical practice. During my first year, at the suggestion of my microbiology professor Dr. Philip Carter, I applied to the Cornell Leadership Program. Little did I suspect that this seemingly minor decision about how to spend my upcoming summer would have such a profound impact on my career choice. During my 10 weeks in Ithaca I worked with Drs. Judith Appleton and Dorothy Ainsworth, studying the effect of exercise on cellular immune function in horses. My research, combined with other program activities, demonstrated the multitude of ways that veterinarians could use their training. Most importantly, I developed the desire and confidence to explore the “path least traveled” and seek opportunities where I could creatively use my veterinary education.

An increasing number of public health problems confronting humans are closely associated with infectious diseases of animals. While most clearly demonstrated with avian influenza, other diseases—including Rift Valley Fever, brucellosis, and rabies—continue to present public health challenges in various parts of the world. These developments have created unprecedented demand for veterinarians in non-traditional careers such as public health practice. The Leadership Program is a vital link between veterinary students and these burgeoning opportunities.

After completing my veterinary degree, I began an internship in large-animal medicine and surgery at Texas A&M University, where I developed a desire to explore the epidemiology of the diseases and conditions I encountered in clinical work. Thanks to a scholarship from Rotary International, I enrolled in an MPhil program jointly coordinated by the University of Cambridge School of Veterinary Medicine and the Animal Health Trust. My research focused on the epidemiology of cellular immune response to equine herpesvirus-1 in a population of Thoroughbred horses. Seeking further training in epidemiology, I accepted a position with the U.S. Centers for Disease Control and Prevention’s Epidemic Intelligence Service. Assigned to the Wyoming Department of Health, I assisted the state to develop epidemiologic capacity to address public health issues while I gained expertise in the field of public health. During this time, I had the opportunity to serve as a member of the CDC public health response teams, deployed to address the aftermath of Hurricane Katrina in Louisiana. Later, I assisted the Nigerian Ministry of Health to implement prevention and control measures on the discovery of avian influenza in the nation’s poultry flocks. After two years, I was accepted by the CDC’s preventive medicine fellowship program and served as an epidemiologist working on dengue fever in San Juan, Puerto Rico.

Shortly, I will begin a new position with the CDC in Ethiopia. As a resident advisor to the Ministry of Health, I will be instituting a field epidemiology and laboratory training program aimed at assisting the nation to develop self-sustaining epidemiologic expertise and public health infrastructure. Although I often encounter surprise that a veterinarian would be working outside the confines of veterinary practice, there is no doubt that veterinary training is becoming increasingly valuable in addressing pressing global public health issues. Appropriately trained veterinarians can have a critically important role in the search for solutions to these problems.
For more information about the Leadership Program, contact:

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Leadership Program for Veterinary Students
James A. Baker Institute for Animal Health
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Photos by Alexis Wenski-Roberts unless otherwise noted.