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To prepare tomorrow's scientists and public health professionals
The mission of the annual Cornell Leadership Program for Veterinary Students is to provide participants with learning experiences that clarify and reinforce their commitment to careers in science. The Program is distinguished by a tradition of excellence that spans 25 years. During this time, 589 alumni have participated. These individuals came from 67 veterinary colleges from all parts of the world and many, as we had hoped, have become scientific leaders within the veterinary profession. We are happy to report that the program hosted 24 outstanding scholars this year. Some of these individuals have already committed to a career that will involve research. It is too early to know where their careers will take them; however, we expect great things from them.

Research is the major focus of the Leadership Program. Program scholars pursue individual research projects under the mentorship of Cornell faculty members who are all highly successful scientists and experienced mentors. The University's world-class research facilities and unsurpassed intellectual environment support the scholars' research investigations. In addition to laboratory-based research projects, program scholars participate in modules and workshops that are designed to highlight...

John S. L. Parker, BVMS, Ph.D., Program Director
employment and leadership opportunities for veterinary graduates in academia, government, and industry.

Biomedical research focuses on the mechanisms underlying disease and uses this information to devise new therapies and means of prevention. It is critical for the long-term success of the veterinary profession that veterinarians engage in biomedical research and yet there is currently a shortage of veterinarians entering such careers. Veterinary students often have a detailed understanding of what a career in clinical medicine will entail, but are much less informed about careers in biomedical research, public health, or in the pharmaceutical industry. Most students enter veterinary school with a clinical practice career in mind. Our goal is to show the most talented of our veterinary students the attractions of biomedical research and to provide them with practical guidance on how to succeed and prosper as veterinary research scientists.

One of the pleasures of organizing this program is hearing about the career achievements of our alumni. Their experiences provide valuable insight into problems facing veterinarians in research careers. Issues such as student debt and shrinking budgets for research are important factors that influence career choices. The Leadership Program seeks to provide guidance on how best to cope with these challenges.

David R. Fraser, BVSc, PH.D., Co-Director

To prepare tomorrow's scientists and public health professionals
Acknowledgements

The Leadership Program for Veterinary Students is made possible through awards from federal agencies, corporations, foundations, and other private sector sponsors. For their generous support this year, the program organizers thank:

- **Albert C. Bostwick Foundation**
- **Boehringer-Ingelheim Co.**
- **Cornell Feline Health Center**
- **Deutscher Akademischer Austauschdienst**
- **Wellcome Trust**
- **Zoetis Inc.**
- **National Institute for Health**

The program organizers also thank the facilitators, counselors, and mentors who took part in the 2014 program. Thank you to Ms. Miranda Medrano, the Program Coordinator, Ms. Jennifer Best, Ms. Bonnie Coffin, Ms. Alexis Wenski-Roberts, and Mr. David Frank for their 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.

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


Interested parties also are invited to visit the program website at [http://www.vet.cornell.edu/BBS/Leadership](http://www.vet.cornell.edu/BBS/Leadership)
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<td>Biological &amp; Chemical Safety Training</td>
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<td>Fri, June 13</td>
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<td>Lucy Watson</td>
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Activities

The Leadership Program combines faculty-guided research with student-directed learning through participation in modules, workshops, and group discussions. The activities encourage responsible leadership, critical thinking, and the development of teamwork skills. The program also highlights graduate training opportunities calculated to promote the professional development of program alumni as independent scientists and public health professionals.

Research

Each Leadership Program scholar is assigned a project and a faculty mentor to guide his or her research. The projects enable the students to gain practical experience by exploring problems of interest to them. Simultaneously, students hone their communication skills through engagement in group discussions and by presenting their 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 public health, economic, political, and social issues. Students and facilitators are assigned roles that oblige them to articulate, defend, or modify their views as the scenario unfolds. At the conclusion of the module, the facilitators comment on the exercise and discuss leadership principles they have adopted in their own careers. This year, Professor David Fraser moderated the discussion with assistance from Professor Klaus Osterrieder, Professor Douglas McGregor, Dr. Mirja Wilkens, and Professor Elizabeth Simpson.
Leadership in Action

The film entitled, "A Few Good Men" illustrates strengths and deficiencies of individuals cast in the role of leaders. The students discussed leadership characteristics illustrated by the film. Professors David Fraser, Douglas McGregor, and Dr. Parker offered points to consider as well as feedback for the students to ponder.
Infectious Diseases

A workshop moderated by Professors Terence Dermody, Philip Carter, and John Parker featured discussions of antibiotic resistance and diseases which are emerging or re-emerging in nature or which pose a bioterrorist threat to people or the Nation’s agricultural assets. Program scholars selected the diseases on which they wanted to focus on. Then they conducted library research on the topics, and employed Socratic methods to engage their peers and facilitators in lively and informative discussions. Later in the day, the facilitators commented on related issues and the need for veterinary scientists who contemplate careers in infectious disease research or veterinary public health.

To prepare tomorrow’s scientists and public health professionals
Dr. Michelle Haven, a senior executive of Zoetis Inc., designed and moderated a competition between mock companies formed by the students. The competition encouraged creativity and the development of teamwork skills through activities connected with the discovery, development and marketing of veterinary pharmaceuticals. Drs. Sallie Cosgrove and David Medina assisted Dr. Haven in this module. Later in the evening, the three facilitators answered questions regarding the range of employment opportunities for veterinarians at Zoetis Inc. and the advanced training required to be competitive for such positions.
Drs. Gerard Hickey, Emily Hickey, and Peggy McCann conducted mock interviews for three positions in the pharmaceutical industry. The students prepared for the interviews by reviewing the resumes of prospective applicants and by 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 personal interests and qualifications for employment.

To prepare tomorrow's scientists and public health professionals
Hypothesis Development

Veterinary students have a strong desire to work on problems of importance to human and animal disease. To encourage students to actively think about how hypothesis-driven research might benefit animals, the students prepared 'blue-sky' hypothesis-driven research proposals focused on the problem of multidrug-resistant tuberculosis. Facilitators, Drs. David Russell and Brian VanderVen, provided an overview of the problem and then evaluated the students proposals and made suggestions during a formal presentation of the student’s ideas to their peers.
Career Explorations

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

Professors Fraser and McGregor reviewed career options available to veterinary graduates who aspire to careers in science. The two counselors emphasized the importance of selecting a superior environment for graduate research training and a mentor who has a successful training record.

A companion meeting addressed issues related to graduate research training. Professors Robert Weiss 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 studies.

In a separate meeting, a case study illustrated "translational science." The ensuing discussion led by Professor Kenneth Simpson 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 cell or molecular level.
NIH Visit

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
Dr. Richard Wyatt, M.D., Executive Director, Office of Intramural Research

The development of a novel mouse model of prostate cancer for testing mechanisms of androgen independent growth
Dr. Philip Martin, D.V.M., Ph.D., Investigative Pathologist, Center for Advanced Preclinical Research, Frederick National Laboratories for Cancer Research

Multi-sensory anatomical and functional MRI of the marmoset brain
Dr. Alfonso Silva, Ph.D., Senior Investigator, Head, Cerebral Microcirculation Unit, Lab of Functional and Molecular Imaging, NDS

The roles of p53 in mesenchymal stem cells and osteosarcoma
Dr. Jing Huang, Ph.D., Investigator, Head, Cancer and Stem Cell Epigenetics Section, Lab of Cancer Biology and Genetics, NCI

Where can you go? A broader view of veterinary career opportunities
Dr. Franziska Grieder, D.V.M., Ph.D. Associate Director, Division of Comparative Medicine, NIH

The common marmoset as model for tuberculosis infection and TB chemotherapy
Laura Via, Ph.D. Staff Scientist and Clinical Project Officer, Lab of Clinical Infectious Diseases, Tuberculosis Research Section, NIAID

Diversity of papillomaviruses and their replication mechanisms
Allison McBride, Ph.D., & Koenrad van Doorlaer, Ph.D. Chief and Senior Postdoctoral Fellow, DNA Tumor Virus Section, NIAID

Research training opportunities for veterinarians at NIH
Dr. Charles Halsey, D.V.M., Ph.D. Staff Scientist, Lab of Cancer Biology and Genetics, NIH

Mechanisms of acquired resistance to toceranib phosphate (Palladia®) in canine cutaneous mast cell tumor
Dr. Charles Halsey, D.V.M., Ph.D. Staff Scientist, Lab of Cancer Biology and Genetics, NIH

Cell and tissue dynamics in development and cancer
Dr. Kenneth Yamada, M.D., Ph.D. Senior Investigator, Lab of Cell and Developmental Biology, NIDCR

To prepare tomorrow's scientists and public health professionals
Leadership Program scholars had the privilege this year of visiting the combined facilities of the Walter Reed Army Institute of Research (WRAIR) and the Naval Medical Research Center (NMRC). The visit was organized and coordinated by Dr. (LTC) Ken Despain, Director, Veterinary Services Division. Senior members of the combined center staff described the remarkable progress being made at the facility in addressing still unresolved problems of infectious diseases, which are of special concern to the uniformed services. The scientific program was accompanied by tours of the superb research facilities at WRAIR/NMRC.

Agenda

Welcome and overview
- COL Stephen E. Braverman, Commanding Officer, WRAIR
- CAPT John Sanders, Commanding Officer, NMRC

Undersea medicine research at NMRC and discussion/tour of dive chambers
- Dr. Aaron Hall, Undersea Medicine
- Lt Ryan Sheppard, Undersea Medicine

Leishmania overview/discussion
- Dr. Richard Sciotti, Experimental Therapeutics

Malaria- “The next antimalarial drug”
- LTC Lisa Read, Experimental Therapeutics

Blast Injury overview and discussion/blast tube demonstration
- Dr. Joseph Long, Chief of Blast Induced Neurotrauma

Discussion/questions/tour of insectary
- MAJ Silas Davidson & Ms. Megan Dowler, Entomology
To prepare tomorrow's scientists and public health professionals
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 Lucy Watson for the best overall research achievement as judged by her underlying hypothesis, investigative protocol, results, and presentation. Additional prizes were awarded to Alicia Braxton, Alexandra Jaarsma, and Stephanie Shapiro, for exceptional achievements in integrative biology, cell biology, and molecular biology, respectively. Callum Bennie was awarded a prize for the highest-ranking presentation by a scholar from the United Kingdom or Australia. The Selection Committee for the 2014 Leadership Program salutes these individuals and congratulates the entire group for their commitment to research and the excellence of their presentations.

**Integrative Biology Prize**

**Alicia Braxton**

Characterizing the DNA damage response in testicular germ cell tumors after treatment with cisplatin by immunohistochemistry

**Cell Biology Prize**

**Alexandra Jaarsma**

The characterization of equine and canine mammary cancer stem cells

**UK and Australia Prize**

**Callum Bennie**

Investigating the role of allelic variations of feline junctional adhesion molecule A (fJAM-A) in susceptibility and resistance to feline calicivirus (FCV) infection

**Molecular Biology Prize**

**Stephanie Shapiro**

Inhibition of uterine Cox2 during decidualization normalizes VEGF164 and Wnt4 expression and improves fetal growth in a mouse model of preeclampsia
**Callum Bennie, University of Sydney, Virology**  
Investigating the role of allelic variations of feline junctional adhesion molecule A (fJAM-A) in susceptibility and resistance to feline calicivirus (FCV) infection.

Early in my veterinary degree I developed an interest in utilizing my training for a more altruistic, “bigger picture” end than is afforded veterinarians who are working solely in clinical practice. I applied to the Leadership Program in order to learn more of the opportunities that exist to advance veterinary medicine in the realms of academia and industry. The program has provided targeted career counseling that has empowered me to make informed choices about research training post graduation.

FCV is a ubiquitous cause of “cat flu” causing significant morbidity and even mortality among cat populations. A long-term study of shelter cats in the UK noted a resistant subset of the cat population to FCV. Based on this observation, the Parker lab hypothesized that natural allelic variation within the fJAM-A receptor gene (the receptor to which FCV binds) may explain this resistance. I sequenced the fJAM-A gene from feline blood samples from multiple breeds of cat and further tested variants of the fJAM-A ectodomain in vitro to investigate their capacity to support FCV binding and infection.

I would like to sincerely thank all members of the Parker lab, particularly Dr. Zhengchun Lu and Ms. Meleana Hinchman, for their exceptional instruction, unwavering support and the loads of fun throughout the summer. A special mention must go to Drs. Parker, Fraser, and McGregor for directing such a worthwhile and inspiring program. Finally, my thanks go to the Cornell Feline Health Centre for funding my participation in the program.

**Harriet Bradford, Royal Veterinary College, Neurology**  
A novel approach to peripheral nerve regeneration in mice.

Like many in this program, I have from an early age, wanted to become a veterinarian. Almost through naivety, I ended up in a six year course with a research focus. Now as I enter the clinical years of my education, I find myself missing hands-on research. Fortunately, the Leadership Program has offered me the chance to further develop my research skills, as well as consider career options other than the usual career path followed by veterinary graduates.

My project focused on peripheral nerves in rodents. I employed a novel technique using tetrahydrofuran to prepare optically clear mouse spinal cords, after retrograde labelling sciatic nerves. The procedure enabled imaging of the whole relevant area of the spine in three dimensions, thereby reducing a systematic error experienced when cryosectioning spinal cords. The technique provided consistent results from trial to trial. As others have reported, I observed that younger mice have more sciatic motor neuron cell bodies than older mice. Further, I used Interleukin-4 receptor knockout mice (promoting a relative M1 macrophage phenotype) and a wild type control, to compare the effect of different macrophage phenotypes on nerve regeneration.
Alicia Braxton, North Carolina State University, Biomedical Sciences
Characterizing the DNA damage response in testicular germ cell tumors after treatment with cisplatin by immunohistochemistry.

My passion for research within veterinary medicine was fostered throughout my undergraduate career when I realized options existed outside of clinical medicine. My time spent in a lab on the veterinary college's campus expanded my understanding of academia and research; this interest inspired me to attend the Cornell Leadership Program. The program has further influenced me to pursue a career outside of practice and to continue on to a PhD program.

Human testicular germ cell tumors (TGCTs) are extremely chemosensitive. In contrast, somatic cell tumors tend to be resistant to chemotherapy. The aim of my project was to characterize the mechanisms conferring chemosensitivity to TGCTs in order to apply that knowledge towards the improvement of treatment options for more resistant somatic tumors. Mice bearing TGCTs were treated with cisplatin, a chemotherapeutic agent, and euthanized acutely post treatment; immunohistochemistry was employed to characterize the DNA damage response pathway activation. I found a bimodal wave of damage occurred. Each wave of damage was followed by a secondary wave of apoptosis, with a subsequent rebound of cell proliferation.

I would like to thank Dr. Weiss for this opportunity and his mentorship, as well as his entire lab, especially Tim Pierpont who spent endless hours teaching me techniques, answering the plethora of questions I had, and making my lab experience what it was. In addition, I am extremely grateful to Drs. Parker, McGregor, and Fraser for selecting me for the Cornell Leadership Program. Lastly, I'd like to thank Zoetis and the NIH for funding support.

Sebastian Bunte, Tierärztliche Hochschule, Hannover, Biomedical Sciences
The impact of glucagon-like peptide 1 (GLP-1) on islet morphology after bariatric surgery.

The Cornell Leadership program was an excellent opportunity to get a deep insight in research, learn about the various career opportunities and establish valuable contacts.

Bariatric surgery is currently the most effective treatment for obesity and often results in resolution of type 2 diabetes. However, the mechanisms responsible for this effect remain undefined. We hypothesized that GLP-1 played an integral role in diabetes resolution after a special bariatric surgery called ileal interposition (IT). The IT is a transposition of the ileum into the proximal jejunum, which leads to an increasing exposure of the ileum to ingested nutrients. This seems to be a stimulus for L-cells to produce GLP-1.

To test our hypothesis we started a study including four different pre-diabetic rat groups: A sham operated group; an IT group; a sham plus GLP-1 antagonist group; and an IT plus GLP-1 antagonist group. Using immunohistochemistry I assessed the lowest beta-cell mass in the IT group. The IT plus GLP-1 antagonist group had greater beta cell mass than the IT group, but less beta cell mass than the sham plus GLP-1 antagonist group, which indicates that GLP-1 has a positive impact on beta cells, but can’t be the only metabolic benefit of IT. These findings raise new questions.

I would like to thank Dr. Cummings for her outstanding, motivating mentorship and all members of the Cummings lab for making my research work so enjoyable. In addition I would like to thank Drs. McGregor, Parker, and Fraser for organizing this amazing program. Last I would like to thank the Bostwick Foundation and DAAD for the financial support and wish my fellow students all the best for the future.
Amy DiDomenico, North Carolina State University, Microbiology
Effect of rifaximin, 5-aminosalicylic acid, and cholestryamine on growth and virulence of adherent and invasive E. coli

The study of gastrointestinal disease has recently shifted its focus from understanding a single pathogen, to understanding the complex interactions taking place within our commensal microflora and the implications when that delicate balance of microbes is upset. This dysbiosis is characterized by a decrease in gram-positive and an increase in gram-negative bacteria, particularly enterobacteriaceae. My work this summer focused on three drugs currently used to treat inflammatory bowel disease (Rifaximin, 5-aminosalicylic acid, and Cholestryamine) and asked whether they have an effect on the growth or virulence of E. coli. This work has highlighted several potential ways, other than bactericidal mechanisms, in which these drugs affect E. coli, which are implicated as the cause of many gastrointestinal diseases.

I am a rising third-year veterinary student at N.C. State University. I applied to the Cornell Summer Leadership Program in order to delve deeper into my passion for research and to determine if research could be for me a fulfilling career. I have learned much from this program, but in addition to the plethora of new laboratory techniques I learned, I am particularly grateful for the opportunities this program afforded me to learn about the diverse range of positions available to a DVM whether in the public or private sector. I am interested in pursuing a career as a clinical pathologist where I hope to integrate research and clinical practice.

I would like to thank the members of the Simpson lab, especially Belgin Dogan and Shiying Zhang, for all their support this summer.

Emma Ehrlich, Cornell University, Immunology
Investigating the role of substrate stiffness in macrophage function and foam cell formation.

I grew up at my parents’ dairy veterinary practice in upstate New York, but did not think of going to vet school myself until I learned about researchers who combine a DVM with a PhD - then, I was easily persuaded of the great value that a broad, multi-species education can provide for those interested both in exploring fundamental biological mechanisms and in trying to bend the resulting new knowledge towards new tools and techniques that improve human and animal well-being. As an ideal step down this path, this summer in the Leadership program has provided an unmatchable combination of an addicting research experience and new friendships with future colleagues from across the world.

Dr. Leifer’s lab studies innate immunology with a focus on mechanosensing in macrophages and similar cell types. I worked with a highly reductionist in vitro model of atherosclerosis in which macrophages are cultured on substrates of varying elasticities and various consequences are assayed, including uptake of lipid from the culture medium, lipid metabolism and trafficking, cytoskeletal changes, migration, and chemokine production. This model has the potential to shed light on the role mechanosensing plays in a variety of cellular processes associated with both the etiopathogenesis and the resolution of atherosclerosis, as well as any of the numerous other important diseases that have a significant innate immune component.

I sincerely thank Cornell, the Leifer lab, the directors and all facilitators of the program, and my fellow participants for all that they have given to this program. I thank the NIH and Zoetis for funding my participation.
Laura Eling, Tierärztliche Hochschule, Hanover, Neuroscience
Optimizing speed and energy of sub-surface optical ablation for the treatment of partial epilepsy.

Throughout my studies of veterinary medicine I have developed a deep interest in research, especially in understanding neuronal activity and neuropathology. The Leadership Program has provided insights into various aspects of careers in research and the opportunity to gain valuable experiences.

I was assigned one of Dr. Schaffer’s projects that involves an innovative treatment for partial epilepsy. Dr. Schaffer’s lab has developed a technique using femtosecond laser pulses to disconnect the neuronal tissue surrounding an epileptic focus, which aims to prevent the propagation of epileptic seizures while largely preserving the cells and connectivity responsible for normal neuronal activity. My role in this project was to optimize the laser parameters to increase the efficiency of the tissue ablation. I conducted my experiments on mice which included performing craniotomies, in vivo imaging of blood flow, laser ablation and histology.

I established appropriate laser energies for producing sub-surface cortical cuts at different cut speeds which completely disconnected the tissue without causing excessive trauma. My work will be critical for future translation of this to a surgical technique for the treatment of partial epilepsy given that this technique requires significantly faster tissue cutting than has been done in the past.

I would like to thank Dr. Chris Schaffer, Shiva Chettiar and Lena Liu who have been excellent mentors and every member in the Schaffer-Nishimura lab for their support. Thanks goes to Drs. Fraser, McGregor and Parker for their dedication and to Prof. Dr. Bankstahl and Prof. Berny who made it possible to be a part of the Leadership Program 2014. Funding was provided by the DAAD and the Bostwick Foundation.

Mona Griffin, Cornell University, Molecular Biology
Effects of sodium butyrate on the 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP) mouse model of Parkinson's disease.

The Cornell Leadership Program gave me the chance to learn more about the possibilities for a career in research and it helped me to develop skills that extend well beyond the lab. This program has also given me the opportunity to conduct research in aging and neurodegeneration, an area that has interested me for years.

I had the privilege of researching in the Libert Lab this summer, working with a mouse model of Parkinson’s disease (PD). PD is a neurodegenerative disorder characterized by loss of dopaminergic neurons in the substantia nigra. Symptoms include tremors and locomotive deficits. My research explored whether sodium butyrate, a histone deacetylase (HDAC) inhibitor, rescues the effects of MPTP-induced PD in mice. I assessed these effects using various behavior tests and immunohistochemical analysis.

I would like to thank Drs Parker, Fraser, and McGregor, who have given us tremendous insight into the field of veterinary science and research, as well as many opportunities to develop teamwork and communication skills. I would also like to thank the members of the Libert lab, especially Adam Francisco and my mentor Sergiy Libert, for their encouragement and instruction. Finally, I am grateful for the funding support from the NIH.
Emily Hobson, Texas A&M University, Epidemiology
Modeling antimicrobial resistance of E. coli in the bovine large intestine and feedlot pen.

I have had a long-standing desire to work in food animal medicine and to impact the agricultural education of students and consumers. My growing interest in public health and academia led me to apply to the Leadership Program in order to work in the field of epidemiology.

This summer I developed two deterministic mathematical models that examined the role of non-animate habitats in contributing to antimicrobial resistance of commensal E. coli in the bovine large intestine. Modeling E. coli dynamics contributes to our ability to identify knowledge gaps and mitigate future spread of resistant bacteria through the food supply. The first objective of my study was to adapt a 4-compartment model of antimicrobial resistant and sensitive E. coli to fit data from field experiments with beef steers and cull dairy cattle. The 4-compartment model represented E. coli dynamics in the bovine large intestine, water troughs, feed bunks, and the pen floor. The second objective was to expand the model to include a compartment representing cattle hide, and to evaluate which model better fit the field data.

The Leadership Program provided me with opportunities to learn about research-based careers available to veterinary scientists through PhD training. I greatly appreciate the invaluable time that Drs. Fraser, McGregor, and Parker put into implementing this program. I would like to express my gratitude to Dr. Gröhn for his thought-provoking mentorship, and to Dr. Volkova for her support of my project. I would also like to thank the National Institutes of Health for funding my research, and my fellow students for making this summer an unforgettable experience.

Alexandra Jaarsma, Utrecht University, Cancer biology
The characterization of equine and canine mammary cancer stem cells.

Before starting my veterinary training, I always thought that I ultimately would work as a clinician. However, through experiences like the Cornell Veterinary Leadership program, I have gained an increased interest in the field of cancer research, inspiring me to pursue a career as not only a clinician, but also as a researcher.

One aspect of cancer that I find particularly intriguing is the naturally occurring variability in mammary cancer prevalence across species: humans, dogs and cats are very susceptible to developing mammary tumors whereas horses, cows and pigs are not. The van de Walle lab compares these species at the cellular level, seeking to identify what makes the breast susceptible to cancer development. I was excited to contribute to this research by characterizing canine and equine mammary stem cells (MaSC), which are believed to play an essential role in the initiation of metastasis and resistance to treatments. This project was especially remarkable because it involved the characterization of MaSC isolated from an equine adenocarcinoma, a rare occurrence which to date has only been reported in 62 mares. I was able to demonstrate both the stem cell properties and tumorigenicity of canine and equine cancer MaSC using different techniques including flow cytometry and semi-quantitative PCR. These characterized cells can now be used for future comparative studies on their role in breast cancer.

I want to thank the members of the van de Walle lab for their tremendous support and their enthusiasm. I also want to thank Zoetis and Drs. Parker, McGregor, and Fraser, for their support during this program.
Rachael Labitt, Cornell University, Chemical Engineering
Optimization of Middle Eastern Respiratory Syndrome coronavirus single virion fusion assays.

Participating in the Leadership Program has solidified my desire to pursue a career involving research, either as a veterinary scientist or as a laboratory animal clinician, and my interest in infectious diseases.

Middle Eastern Respiratory Syndrome (MERS) is an emerging zoonotic disease with a mortality rate of nearly forty percent. The virus is thought to originate in bats, but be transmitted to people via contact with camels. The Daniel lab uses total internal reflection fluorescence (TIRF) microscopy on supported lipid bilayers to visualize viral binding and fusion on the level of an individual virion. The goal of my project was to optimize this assay for the characterization of viral tropism in different species.

We successfully produced mobile lipid bilayers containing the human DPP4 protein, the receptor for the MERS virus. However, the labeling and activation procedure for the MERS pseudovirus has not yet been determined. To better understand how the system works, we turned to an established assay, the fusion of feline enteric coronavirus with its receptor, fAPN. We have produced extremely mobile lipid bilayers containing fAPN, and have observed isolated fusion events. We hope to extend this optimization experience to the MERS pseudovirus system to better understand how this virus is able to binding and fusion kinetics across species.

I would like to thank Dr. Susan Daniel and the entire Daniel lab for their help and hospitality, as well as Dr. Gary Whittaker and the members of his lab for their support and collaboration. I would also like to acknowledge the NIH and Zoetis Inc. for funding my summer program.

Chelsea Landon, North Carolina State University, Molecular Biology
Microvesicle-Mediated Communication in Blastocysts.

Prior to beginning veterinary school at North Carolina State University in 2013, I completed a PhD in Pathology and Toxicology at Duke University. My interest in research led me to the Cornell Veterinary Leadership Program, where I was able to work in Richard Cerione’s laboratory with a fantastic and motivating group of researchers. Being actively involved in such an environment has reaffirmed my passion for basic and clinical research and provided the motivation to pursue a research-focused career.

An important form of cell communication involves microvesicles (MVs). The latter are membrane-enclosed packets of information (0.1-2 microns) produced by cells that transfer cargo, including signaling proteins and RNA transcripts, to recipient cells. Although MVs have most often been linked to oncogenesis, it is increasingly clear that they also are produced by normal cells. For example, the Cerione laboratory has recently shown that MVs from embryonic stem cells cause trophoblasts, the invasive blastocyst cells during implantation, to migrate. My work this summer has shown that trophoblasts similarly produce MVs, providing a foundation for determining the role these MVs have on potential recipient cells, i.e. trophoblasts, uterine epithelial cells, and endothelial cells, and the importance that this holds for placental development.

I would like to thank Dr. Cerione for providing me with the opportunity to work in his laboratory, and his staff for all the help and guidance, especially Laura Desrochers. The program has given me a new perspective on future career opportunities in research, so I am indebted to the facilitators and, more specifically, Drs. Parker, Fraser, and McGregor for this amazing opportunity. I would also like to acknowledge the NIH for funding support this summer.
Fabian Lean (Zhi Xiang).  The University of Queensland, Pathology
Thrombotic potential of canine hemangiosarcoma and the role of tissue factor.

I am a fourth year of veterinary student and aspire to pursue a career in re-
search and veterinary pathology. Besides the research experience in the Leadership
Program, I acquired better understanding of various non-traditional veterinary
careers in private practice.

Canine hemangiosarcoma (HSA) is a malignant vascular endothelial neoplasm.
This cancer frequently causes disseminated intravascular coagulopathy (DIC), which
contributes to the morbidity and mortality of canine patients. It is hypothesized
that aberrant expression of tissue factor in canine HSA promotes pro-coagulant
activity and ultimately DIC.

The experiments I conducted in Professor Stokol’s lab were the characterization
of tissue factor expression and thrombin generation of different canine HSA cell
lines. The antigenic expression of tissue factor on HSA cell lines was studied using
flow cytometry whereas the functionality of tissue factor expressed on cancer cells was investigated using the fluoro-
genic Thrombin Generation Assay (TGA), in normal and Factor VII deficient plasma.

The findings demonstrated tissue factor expression on the surface of the HSA cells and exhibited heterogeneity
within the cell population. Pro-coagulant activity of HSA is largely dependent on TF-Factor VII. Lastly a mouse
passaged HSA cell line expressed a higher level of tissue factor and presented stronger pro-coagulant activity than
primary cancer cell lines.

I would like to extend my gratitude to Professor Stokol for her mentorship and opportunity to conduct research
in her laboratory. Besides that I would also like to thank the lab members especially Lauren Witter for providing me
with patience guidance during this summer program. Lastly I am very grateful for the financial support from Zoetis
Inc.

Emily Milodowski,  University of Bristol, Immunology
Temporal changes in immunological parameters of Culicoides hypersensitivity in Icelandic
horses.

As a final year veterinary student I have become increasingly interested in the
pathogenesis of many poorly understood diseases and feel that clinical practice
might not be for me. The Cornell Leadership Program provided the opportunity
to engage in basic scientific research, and has highlighted how I could maximise my
potential through rigorous scientific training. The experience has been invaluable.

My project focussed on the pathogenesis of Culicoides hypersensitivity in Iceland-
hic horses. This allergic skin disease is driven by aberrant responses to innocuous
antigens of Culicoides midges. It is a significant health problem for Icelandic horses.
My project focused on the use of Luminex technology to assess temporal changes
in serological biomarkers of allergy-affected horses. Identifying differences between
allergic and non-allergic individuals will aid in understanding the disease and it has
the potential of developing diagnostic aids. My results assured accord with these
reported by others, which suggest that no single biomarker provides a definitive diagnostic indicator of the disease.
Instead, our findings suggest that there is significant temporal and individual variation in immunological parameters of
hypersensitivity to the casual antigens.

I would like to thank Dr. Bettina Wagner and Mrs Heather Freer for their patience and support; it has been a
fantastic experience to work with such inspiring veterinary scientists. I also want to thank the Wellcome Trust for
funding my scholarship at Cornell.

To prepare tomorrow’s scientists and public health professionals
**Dimo Naujokat**, Tierärztliche Hochschule, Hannover, Neuroscience

Influence of protocadherin-19 on neuronal growth with regard to development of epilepsy.

The Leadership Program helped to reinforce my career goals, while exposing me to aspects of the veterinary profession I had never considered before. The workshops motivated me to consider new career possibilities, and gave me the confidence to face any challenges that I might encounter in my career. I am also grateful for the opportunity to meet and network with other veterinary students and distinguished faculty.

My project involved studying the effects of protocadherin-19 on neuronal growth. During development, billions of neurons must form connections with their appropriate targets in order to form a functional nervous system. Defects in this process of axon guidance have been hypothesized to lead to epilepsy and autism. Mutations in protocadherin-19 are thought to be the causative event underlying one form of epilepsy. To study how protocadherin-19 affects neuronal function, I cultured primary neurons in the presence of recombinant protocadherin-19 protein. I hope that my studies will help lay the foundation for understanding how mutations in this gene can lead to epilepsy.

I look back at this program as some of the best weeks of my life. I am thankful for the extraordinary support and inspiring research guidance provided by Prof. David Lin and Adam Bisogni, as also for the cooperative laboratory performance with Yixin Zang.

I would also like to thank Drs. Parker, Fraser and McGregor for the unique experiences I had this summer. Finally, I am grateful for funding from Boehringer Ingelheim and the DAAD.

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**Isabel Ralle**, Tierärztliche Hochschule Hannover, Molecular Biology

Constructing a clone of Tetrahymena thermophila for visualization of mitochondrial extrusion.

I applied to the Cornell Leadership Program hoping to explore alternative veterinary career paths, including opportunities to pursue research in the academy and industry. I also wanted to gain first hands-on experience in a laboratory-based setting. I focused the latter in the Clark laboratory, which focuses on host-pathogen interactions, using a ciliated protozoan, Tetrahymena thermophila, as a model organism. Evidence suggests that Tetrahymena jettison their mitochondria as intact organelles as a cellular reaction to stress. Stress can be induced by heat shock or by antibody cross-linking of surface proteins called immobilisation antigens (i-antigens).

Mitochondrial extrusion, which has been observed in widely diverged taxa, seems to be deeply rooted in evolution and may have broad significance for cellular physiology. But, the mechanism responsible for the release of mitochondria is still unknown and active mitochondrial release from live cells has not been documented.

As part of my project, I constructed a new Tetrahymena strain that expresses both GFP-tagged mitochondria and an exogenous, inducible membrane-bound i-antigen derived from Ichthyophthirius multifiliis. Antibodies against the i-antigen induce a stress response that triggers cellular immobilization and mitochondrial ejection. This inducible reaction will simplify current imaging modalities and maximize chances for visualising the active release of mitochondria.

I would like to thank Drs. Ted Clark and Donna Cassidy-Hanley for their supportive mentorship as well as Daniel Kolbin and Jennifer Pinello for creating such a friendly and helpful work environment. I also want to thank Boehringer Ingelheim and DAAD for their financial support.
Stephanie Shapiro. Cornell University, Reproductive Physiology
Inhibition of uterine Cox2 during decidualization normalizes VEGF164 and Wnt4 expression and improves fetal growth in a mouse model of preeclampsia.

For the last four summers I have undertaken research, a pastime I consider part agonizingly frustrating and part exceptionally rewarding. I assumed I would continue doing research throughout veterinary school; however, I did not give much thought as to where that could lead me. The Leadership Program has offered wonderful insight into a vast array of research-based veterinary careers.

This summer, I had the privilege of working in Dr. Robin Davison's lab with Dr. Jenny Sones as my direct mentor. The lab uses a mouse model of preeclampsia that spontaneously develops the cardinal signs of the disease: maternal hypertension and proteinuria along with poor fetoplacental outcomes. My contribution involved evaluating both the cellular and the physiological consequences of using a selective NSAID, celecoxib, to mitigate the effects of preeclampsia and improve fetal growth. Our data demonstrate aberrant expression of several molecular mediators involved in the adaptation of the uterine environment to facilitate formation of the placenta. Several mediators were normalized by celecoxib treatment. Furthermore, our in vivo studies revealed that celecoxib can improve pup weight, placenta weight, and litter size, as well as diminish resorption percentage during gestation.

I am confident that I will continue as a researcher throughout my career, be it in academia, the pharmaceutical industry or elsewhere.

I thank Dr. Davison for allowing me to work in her lab and encouraging me to pursue my own curiosity, and Dr. Sones, for her constant guidance and support along the way. I am also grateful for funding support from the NIH and Zoetis Inc.

Clare Sherman. Cornell University, Biomedical Engineering
In vivo multiphoton laser scanning fluorescence microscopy of cardiac microvessels.

I applied to the Leadership Program because it provided a unique opportunity to gain insight into various science-based graduate training and veterinary career opportunities. The program's modules and workshops highlighted the importance of veterinarian scientists in academia, government, and in industry. The research immersion experience allowed me to dedicate more time and focus to a project in a way that was not possible during my first year in the veterinary curriculum.

My project this summer focused on developing a surgical technique and endoscopic probe to access and stabilize the beating mouse heart in order to image small vessels using multiphoton microscopy. Coronary artery occlusions can lead to micro-infarcts that expand over time, causing contractile inhibition in the surrounding myocardium. High-resolution imaging of small vessels has been difficult to achieve due to the motion artifacts caused by the heartbeat. By incorporating a small-diameter gradient index (GRIN) lens into a suction probe, the heart can be stabilized and small coronary capillaries can be imaged in a relatively noninvasive endoscopic procedure.

I am grateful for the support and mentorship of Professor Nishimura as well as Jason Jones, Saif Azam, and the rest of the Schaffer-Nishimura group. I would like to express my gratitude to Drs. Parker, Frasier, and McGregor for organizing and enabling this program, and to the National Institutes of Health for financial support.

To prepare tomorrow's scientists and public health professionals
Amy Smith,  University of Bristol. Biomedical Engineering
In vivo imaging in mouse models of metastatic tumor development.

My previous research experience introduced me to cell culture and imaging and I wanted to build on this using the cutting edge technologies developed by Cornell's Biomedical Engineering department.

I have been working on the preliminary stages of a project that will eventually compare the behaviour and distribution of glioma cells and colorectal adenocarcinoma in mice after injection via different routes. Glioma cells have been shown to metastasise, but very little is known about their fate and behaviour out of the CNS environment. My work has focused on imaging colorectal adenocarcinoma tumor development in the abdominal cavity after intraperitoneal injection using in vivo bioluminescence and fluorescence imaging. Necropsy revealed that numerous widespread tumors develop on the peritoneum associated with all abdominal organs. This has led us to work towards modifying abdominal window surgery to better expose the great mesentery for examination with two photon microscopy. We have identified the development of small tumors in the mesentery from three days post injection, whose vascular development we can track using intravenous fluorescent agent and daily imaging.

I have had the opportunity to speak to and work alongside some truly inspirational and enthusiastic people on this program, students and mentors alike. I would like to thank the members of the Schaffer-Nishimura and Shen laboratories for their assistance and inspiration. Many thanks also to graduate students Nikolai Rakhlin and Jiahn Choi for their invaluable help, to Zoetis for funding my place on this program and to the selection committee for enabling me to have this unforgettable experience.

Susanne Spoerel,  Tierärztliche Hochschule Hannover, Immunology
CD8+ T-cell response in neonatal mice infected with murine cytomegalovirus.

This summer proved to be an invaluable experience. I truly enjoyed my stay at Cornell University being surrounded by international participants, whom I have spent an amazing time with. In addition, I was able to work in very well equipped laboratories, which also introduced me in biomedical engineering. The modules have been very diverse and gave a great insight into scenarios in careers in academia as well as in industry. All in all, this summer program has fostered my decision to start a science-based career after my graduation next year.

Human cytomegalovirus (HCMV) infection is the most common congenital viral infection worldwide and can result in a lifetime of disability. The host factors that contribute to the protective and pathologic immune response in infants remains undefined. This summer I focused on identifying sites of infection in the brain by imaging brain sections with the confocal microscope. At the peak of infection, we detected CMV in the hippocampus, cerebellum and choroid plexus. At later time points, we found CD8+ T cells, the major immune cell type recruited into response, clustering around sites of infection. The targeting of the choroid plexus by CMV might be an explanation for pathological findings related to ventriculomegaly.

I am very grateful for working with Dr. Rudd, his laboratory members and the Schaffer and Nishimura laboratory. Special thanks to Wisler Charles who has been a wonderful and encouraging supervisor.

I would also like to thank the Bostwick Foundation and the DAAD for granting my scholarship for this summer.
**Marit van den Berg, Utrecht University, Biomedical Engineering**

*The role of substrate stiffness in macrophage activation.*

I applied to the Leadership Program hoping to gain insight into the career opportunities available to veterinary graduates. The program has provided me with more research training and helped me to narrow my career interest focus. Overall, it has given me an unforgettable experience.

My research project focused on the role of obesity-associated inflammation in creating a breast-cancer permissive microenvironment. Obese adipose tissue has greater interstitial stiffness, a characteristic that promotes cancer cell survival and invasion, and contains more macrophages versus lean adipose tissue. I evaluated the role of substrate stiffness in macrophage activation. Macrophages exist in two broad subtypes; the M1 macrophage (classical or pro-inflammatory), and the M2 macrophage (alternative or repair and remodeling). Prior studies suggest that enhanced tissue stiffness promotes the M2 phenotype. Therefore, we hypothesized that increased interstitial stiffness in obese adipose tissue reduces the pro-inflammatory response of macrophages and that the resultant differences in macrophage-secreted factors further promote interstitial stiffening and promote a pro-tumorigenic microenvironment. I used polyacrylamide hydrogels mimicking the interstitial stiffness of lean and obese adipose tissue to activate macrophages and analyze markers of the M1 and M2 phenotype. I found that mechanosignaling plays an important role in macrophage activation, but future studies are needed to identify specific molecular mechanisms.

I would like to thank Drs. Claudia Fischbach and Nora Springer for their guidance and support throughout this summer. Many thanks go to Drs. Parker, Fraser and McGregor for creating such an inspiring program. I am grateful for the funding from Zoetis Inc. that allowed my participation in this program.

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**Vanessa Wallace, Virginia-Maryland Regional College of Veterinary Medicine, Does Canine Oxidized Low Density Lipoprotein Activate Isolated Neutrophils?**

Species of low-density lipoproteins (LDLs) are associated with a prothrombotic state in dogs unrelated to atherosclerosis. Neutrophil extracellular trap (NET) release by activated neutrophils has also been associated with prothrombotic states in a number of animal species. My project sought to determine if canine LDLs are capable of activating and therefore, potentially inducing NETosis in vitro, with a particular emphasis on optimizing fluorescent assays required to examine this event.

I isolated neutrophils from whole, uncoagulated blood on double-density Histopaque gradients. The isolated neutrophils were seeded onto coverslips and exposed to one of three treatments, including a positive control utilizing phorbol myristate acetate (PMA), a vehicle control, and a sample of lipoproteins. I then evaluated the treated neutrophils for activation, extracellular DNA and histone release, and release of reactive oxygen species using immunofluorescence assays and an ROS kit.

My data suggested that LDL is capable of activating neutrophils, though further investigation is required to determine if NETosis is occurring. Because of the novelty of the discovery of the relationship between the innate immune system and coagulation, this project focused on assay development and optimization.

Many thanks to Dr. Erica Behling-Kelly, who served as a mentor throughout the project. To the NIH, without whose support my research would not have been possible. And to Drs. Parker, McGregor, and Fraser, who welcomed me into this program and who have encouraged me throughout the summer.
Lucy Watson, Royal Veterinary College, Developmental Biology
Characterizing the expression pattern and function of a novel asymmetrically expressed gene in embryonic organogenesis.

I applied to the Leadership program to gain further research experience and learn more about the professional opportunities available to veterinary graduates. The program has been an invaluable experience, allowing me to explore career paths available outside of clinical practice and to understand how I might combine clinical work with research in the future.

This summer I worked in the Kurpios lab, a developmental biology laboratory that utilizes gut morphogenesis as a model to explore the molecular and cellular events that lead to left-right (L-R) asymmetry during organogenesis. The dorsal mesentery (DM) controls embryonic gut tube rotation and subsequent looping morphogenesis. This tissue demonstrates cellular asymmetry due to differential gene expression across the L-R axis. Recent microarray analysis of the chicken embryo DM identified a number of asymmetrical right-sided genes, including the uncharacterized Loc422694 (homologue of human C4orf32).

The aim of my project was to characterize Loc422694 expression and elucidate its role in organogenesis. Using whole-mount and section in situ hybridization in chicken and mouse embryos, I explored the expression pattern of Loc422694 at different developmental stages. Furthermore I utilized immunofluorescence to localize Loc422694 protein. Preliminary results suggest that Loc422694 has an asymmetric, right-sided expression pattern in multiple organs including DM and heart.

I would like to thank Professor Kurpios for the opportunity to work in her lab and Frances Chen for supervising my research. Thanks also to all members of the laboratory for their generous support and assistance throughout. I would like to express my gratitude to the Wellcome Trust for funding.

Jonathan Wilson, Cambridge University, Virology
Investigating the tissue distribution of canine transferrin receptor type-1, in relation to canine parvovirus pathogenesis.

Over the course of the first four years of my veterinary education, I have been increasingly fuelled by a desire to use my degree to influence the veterinary field, and society as a whole, in a wider context. This has driven me to investigate non-traditional veterinary careers, which is an aspect of the Leadership Programme I found particularly attractive.

My research project involved using immunofluorescence to quantify the expression of canine transferrin receptor-1 (Tfr-R1) in a variety of canine tissues. Tfr-R1 is the host receptor used by canine parvovirus for cell entry and it is thought the distribution of this receptor may relate to the pathogenesis of the virus. The project involved using immunofluorescence staining of canine tissue sections for Tfr-R1. This approach was combined with cell culture techniques, including transfection and cloning, along with flow-cytometry and Western blotting to quantify the level of expression in different tissues. The results of these various techniques were compared using computer software to match levels of fluorescence in tissue sections to a level of receptor expression in cell culture.

I thank my supervisor, Professor Colin Parrish, and the rest of the Parrish Lab for their guidance and support over the course of the summer. Additionally, I would like to acknowledge the Baker Institute community at large for making it an extremely enjoyable place to work. I recognise the work of the Programme organisers in putting together such a great summer experience. Finally, I am very grateful to the Wellcome Trust for their financial support.
Facilitators

Dr. Philip Carter,  
Professor Emeritus, Microbiology  
North Carolina State University

Dr. Sally Cosgrove,  
Associate Director, Veterinary  
Medicine R&D, Zoetis Inc.

Dr. Terry Dermody,  
Professor, Virology, Vanderbilt  
School of Medicine.

Dr. David Fraser,  
Professor Emeritus, Animal Science  
University of Sydney.

Dr. Michelle Haven,  
Senior Vice President, Corporate  
Development, Alliances and  
Solutions, Zoetis Inc.

Dr. Emily Hickey,  
Corporate Vice-President, In vivo  
Discovery Research Services,  
Charles River Laboratories

Dr. Gerard Hickey,  
Senior Director, Global Regulatory  
Affairs, Alkermes Pharmaceuticals

Dr. Peggy McCann,  
Director, Global Regulatory Affairs  
Merck & Co

Dr. Douglas McGregor,  
Professor Emeritus, Immunology  
Cornell University

Dr. David Medina,  
Group Director, Business Develop- 
ment, North America,  
Zoetis Inc.

Dr. Robert Ossiboff,  
Associate Pathologist, Bronx Zoo,  
Wildlife Conservation Society

Dr. Klaus Osterrieder,  
Director, Institut für Virologie  
Freie Universität Berlin

www.vet.cornell.edu/oge/leadership
Dr. John Parker,
Associate Professor, Baker Institute for Animal Health, Cornell University

Dr. David Russell,
Professor, Microbiology & Immunology, Cornell University

Dr. Kenny Simpson,
Professor, Clinical Sciences, Cornell University

Dr. Elizabeth Simpson,
Professor Emeritus, Transplantation Biology, Imperial College, London

Dr. Nora Springer,
Post-Doctoral Graduate Fellow, Biomedical Engineering, Cornell University

Dr. Brian VanderVen,
Assistant Professor, Microbiology & Immunology, Cornell University

Dr. Robert Weiss,
Associate Professor, Biomedical Sciences, Cornell University

Dr. Mirja Wilkens,
Research Associate, Institute of Physiology, TiHo, Hannover

To prepare tomorrow's scientists and public health professionals
Participants in the Leadership Program were housed in the Zeta Psi fraternity house on the Cornell campus. They had exclusive use of the building for the ten-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.
A part from their intensive schedule, Program Scholars found time for many personal pleasures. They capitalized on local Ithaca amenities and visited natural sites of beauty and cultural centers within striking distance of Ithaca. A feature of this year’s program was the scholars’ participation in the Annual Dragonboat race held on Cayuga Lake.
Program Dinner

The Leadership Program scholars hosted a dinner for their mentors, module facilitators, counselors, and other guests at the Statler Hotel on the Cornell University campus.
Program Alumni

Contact with leadership program graduates is maintained in order to strengthen the professional network forged at Cornell and to uphold the program's tradition of excellence for the benefit of future scholars. Alumni are encouraged to make informed decisions about the advanced training needed to realize their professional goals. The accompanying table lists degrees awarded to program graduates and degrees they are expected to receive after completing the academic programs in which they are presently registered. Not included in the list are degrees alumni received before they began their veterinary studies.

Academic Qualifications of DVM alumni of the Leadership Program (1990-2012)

<table>
<thead>
<tr>
<th>Degree</th>
<th>No.</th>
<th>% North America Alumni (N = 275)</th>
<th>No.</th>
<th>% Other Countries Alumni (N = 266)</th>
<th>% Total Alumni (N = 541)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhD</td>
<td>51</td>
<td>18.5%</td>
<td>125</td>
<td>47%</td>
<td>32.5%</td>
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<tr>
<td>Dr. Med.</td>
<td>NA</td>
<td>NA</td>
<td>21</td>
<td>35.6%</td>
<td>NA</td>
</tr>
<tr>
<td>Vet.</td>
<td></td>
<td>NA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPH</td>
<td>12</td>
<td>4.4%</td>
<td>6</td>
<td>2.3%</td>
<td>3.3%</td>
</tr>
<tr>
<td>MS</td>
<td>8</td>
<td>2.9%</td>
<td>14</td>
<td>5.3%</td>
<td>4.1%</td>
</tr>
</tbody>
</table>

* Percentage of German and Austrian alumni.

The following table indicates that a substantial number of program alumni obtained residency training in the course of their graduate studies. One hundred and seven of these individuals were graduates of veterinary schools in North America while fifty-seven were alumni of schools located elsewhere in the world. It is tempting to speculate that the difference between the two groups reflects greater opportunities for residency training in North America although other, less obvious reasons may contribute to the observed difference.

Residency Training of DVM Alumni of the Leadership Program (1990-2012)

<table>
<thead>
<tr>
<th>No.</th>
<th>% North American Alumni (N=264)</th>
<th>No.</th>
<th>% Other Alumni (N=249)</th>
<th>% Total Alumni (N=513)</th>
</tr>
</thead>
<tbody>
<tr>
<td>107</td>
<td>38.9%</td>
<td>57</td>
<td>21.4%</td>
<td>30.3%</td>
</tr>
</tbody>
</table>
Where Are They Now?

Listed below are the positions currently occupied by program alumni whom have completed their veterinary education and are pursuing careers in science or public health. In our 25th year, it is extremely gratifying to see the large number of alumni who have pursued the careers we advocated.

1990

John Angelos, Associate Professor, Comparative Pathology, University of California at Davis, CA
William Carr, Instructor, Ragon Institute, MGH, Harvard University, Cambridge, MA
Laura Gumprecht, Associate Director, Safety Assessment, Merck Research Laboratory, Philadelphia, PA
Elizabeth Lyon-Hannah, Associate Professor, Boise State University, Boise, ID
Richard Haworth, Senior Pathologist, GlaxoSmithKline, Middlesex, UK
Melissa Mazan, Associate Professor and Director, Sports Medicine, Tufts University, North Grafton, MA
Rebecca Papendick, Diagnostic Pathologist/Senior Scientist, Zoological Society of San Diego, San Diego, CA
Susan Schaefer, Clinical Associate Professor, Surgery, University of Wisconsin, Madison, WI
A. W. (Dan) Tucker, Senior Lecturer, Veterinary Public Health, University of Cambridge, UK

1991

Prema Arasu, CEO/Vice Provost, Kansas State University, Olathe, KS
David Bainbridge, Clinical Veterinary Anatomist, University of Cambridge, UK
Linda Berent, Associate Dean, Academic Affairs, College of Veterinary Medicine, University of Missouri, Columbia, MO
Ian Davis, Associate Professor, Veterinary Biosciences, The Ohio State University, Columbus, OH

1992

Judy Hickman-Davis, Director, Laboratory Animal Training Program/Associate Professor, Department of Veterinary Preventive Medicine, The Ohio State University, Columbus, OH
Alan Radford, Senior Lecturer, Small Animal Studies, University of Liverpool, UK

1992

Tomasz Betkowski, Business Manager, Quintiles, Warszawa, Poland
Stephen Davies, Associate Professor, Parasitology, Uniformed Services University, Bethesda, MD
Mathew Gerard, Associate Professor, Anatomy/Surgery, North Carolina State University, Raleigh, NC
Jacqueline Phillips, Professor, Molecular Neuroscience, Macquarie University, Sydney, AU
Cristina Rodriguez-Sanchez, Senior Research Associate, Universidad Nacional Autónoma de México, Mexico
Louise Southwood, Associate Professor, Large Animal Emergency and Critical Care, University of Pennsylvania, New Bolton Center, Philadelphia, PA
Reinhard Straubinger, Professor and Section Head, Bacteriology and Mycology, Ludwig Maximilian University, Munich, Germany

1993

Virginia Fajt, Associate Professor, Pharmacology, Texas A&M University, College Station, TX
Christopher Laing, Vice President, Science and Technology, University City Science Center, Philadelphia, PA
Emma Massey O'Neill, Lecturer, Small Animal Medicine, University College, Dublin, Ireland
Joanne Rainger, Anesthesiologist, University of Queensland, Brisbane, AU
Susannah Ryan, Head, Science Communication, Waltham Center for Pet Nutrition, London, UK
Veiko Saluste, Chief Executive Officer, Interchemie Worken, Adelaar AS, Estonia
Melinda Stewart-Gabor, Pathologist, Elizabeth MacArthur Research Laboratory, Sydney, AU

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Lynn Wachtman, Clinical Veterinarian and Instructor, New England Primate Center, Harvard Medical School, Southborough, MA

1994

Melissa Beall, Medical Affairs Manager, IDEXX Inc., Portland, ME
Larissa Bowman, Director, Mountain Veterinary Pathology, Asheville, NC
Leslie Gabor, Manager, Pre-Clinical Safety, Novartis Animal Health, Sydney, AU
Maria Lara-Tejero, Senior Research Associate, Department of Microbiology, Yale University, School of Medicine, New Haven, CT
Christopher Mariani, Associate Professor, Neurology, North Carolina State University, Raleigh, NC
Sonia Mumford, Veterinary Medical Officer, Olympia Fish Health Center, U.S. Fish & Wildlife Service, Olympia, WA
Jeffrey Phillips, Clinical Oncologist, College of Veterinary Medicine, University of Tennessee, Knoxville, TN
Julie Pomerantz, Associate Research Scientist, Wildlife Trust, Palisades, NY
Stacy Pritt, Director, IACUC, University of Texas, South Western Medical Center, Dallas, TX
Mary Thompson, Lecturer Small Animal Medicine, University of Queensland, AU
Oliver Turner, Senior Pathologist, Novartis Institute for Biomedical Research, East Hanover, NJ

1995

Gertraud Altreuther, Project Manager, Parasitology, Bayer Animal Health, Leverkusen, Germany
Philippa Beard, Career Track Fellow, Virology, University of Edinburgh, UK
Kate Crevey, Associate Professor, Small Animal Medicine, University of Georgia, Athens, GA
Rachael Gray, Senior Lecturer, Veterinary Anatomy, University of Sydney, AU
Wendy Harrison, Research Scientist, GlaxoSmithKline, Medicines Research Center, Stevenage, UK
Kellie Lorsch Marketing Manager, AVBA, Sydney, AU
Andrew Moorhead, Assistant Research Scientist, Infectious Diseases, University of Georgia, Athens, GA
Tony Mutsaers, Professor, Clinical Studies, Ontario Veterinary College, Guelph, Ontario, CA

1996

Mark Doherty, Portfolio Manager, Merial, Sydney, AU
Tamara Gull, Assistant Professor, Pathobiology, Oklahoma State, Stillwater, OK
Antonia Jameson-Jordan, Lecturer, Biomedical Sciences, Cornell University, Ithaca, NY
Ralph Senften-Rupp, Head, Information Technology, Provet AG, Berne, Switzerland
John Stein, Resident, Diagnostic Imaging and Radiology, University of Wisconsin, Madison, WI
Allison Stewart, Associate Professor, Equine Internal Medicine, Auburn U., AL
Edwin van Duijnoven, Research Scientist, NOTOX, the Netherlands
Constantin Von der Heyden, Commercial Director, Pegasys Capital, CapeTown, South Africa

1997

Peter Bracken, Head, Regulatory Affairs, Animal Health, Boehringer Ingelheim, Sydney, AU
Jonathan Happold, Senior Veterinary Officer, Australia-Indonesia Partnership, Jakarta, Indonesia
Tanya LeRoith, Associate Professor, Pathology, Virginia Tech, Blacksburg, VA
Lucy Neave, Lecturer, Creative Writing, Australian National University, Canberra, AU
Patricia Pesavento, Associate Professor, Pathology, University of California, Davis, CA
Paul Plummer, Assistant Professor, Microbiology, Iowa State University, Ames, IA
Jonathan Werner, Principal Pathologist, Amgen, Inc., Thousand Oaks, CA
Rachel Walker, PhD candidate, Pathology, University of Sydney, AU
Rebecca Wilcox, Animal Welfare Officer, RMIT University, Melbourne, AU
Esther Wissink-Antonis, Research Manager/Economics, Virology, University of Utrecht, The Netherlands

1998

Max Bastian, Senior Scientist, Paul Ehrlich Institute, Langen, Germany
Steven Fleisher, Director of Therapeutic Drugs for Non-Food Animals, FDA, Bethesda, MD
Karsten Hüffer, Associate Professor, Microbiology, Institute of Arctic Biology, University of Alaska, Fairbanks, AK
Mary Klinck, PhD candidate, Pharmacology, University of Montreal, Montreal, CA
Karen Liljebjelke, Assistant Professor, Microbiology, University of Calgary, Alberta, CA
Larissa Minicucci, Director, D.V.M./M.P.H. Program, University of Minnesota, Minneapolis, MN
Amanda de Mestre, Senior Lecturer, Reproductive Immunology, Royal Veterinary College, London, UK
Erin Phipps-Cotty, Public Health Specialist, New Mexico Dept. of Health, Santa Fe, NM
Anne-Marije Sparnaay, Specialist Inspector Food & Consumer Products Safety Authority, Amsterdam, The Netherlands

1999

Erica Behling-Kelly, Assistant Professor, Clinical Pathology, Cornell University, Ithaca, NY
Nadine Bowden-Ramos, Postdoctoral Fellow, Cardiology, NIH, Washington DC
Christine Broster, Veterinary Clinical Training Advisor, The Brooke, UK
Robert Dickens, Training Specialist, U.S. Department of Agriculture, Raleigh, NC
Joshua Fine, Senior Scientific Advisor, Turnell Services Inc., Washington D.C.
Peter Florian, Director of Pharmacology R&D, Sanofi, Frankfurt, Germany
Franciette Geraghty-Dusan, Ausvet Plan Policy Officer, Animal Health, Canberra, AU
Carl Holmgren, Research Scientist, Université de la Méditerranée, Marseille, France

Emily Meseck, Associate Director Pathology, Corance Laboratories, Madison, WI
Rachel Peters, Senior Scientist, Takeda Pharmaceuticals, Cambridge, MA
Mary Nabby, Clinical Assistant Professor, Pathobiology, Texas A&M University, College Station, TX
Kimberly Newkirk, Associate Professor, Anatomical Pathology, University of Tennessee, Knoxville, TN
Christopher Premanandan, Assistant Professor, Veterinary Biosciences, The Ohio State University, Columbus, OH
Rachael Tarlinton, Lecturer, Cellular Microbiology, University of Nottingham, UK
Holger Volk, Professor, Veterinary Neurology and Neurosurgery, Queen Mother Hospital for Animals, RVC, London, UK

2000

Stephen Daley, Postdoctoral Fellow, Immunology, Australian National University, Canberra, AU
Katharine Evans, PhD Candidate, Epidemiology, University of Nottingham, Nottingham, UK
Toby Floyd, Epidemiologist, Veterinary Laboratories Agency, Addleston, UK
Rachel Geisel-Allavena, Senior Lecturer, Pathology, University of Queensland, Brisbane, AU
Samuel Hamilton, Director, Animal Disease Preparedness Services, DAFF, Canberra, AU
Birgit Hingerl-Viertlboeck, Postdoctoral Fellow, Immunology, Institute of Animal Physiology, Ludwig Maxamillian University, Munich, Germany
Natali Krekeler, Lecturer, Veterinary Reproduction, University of Melbourne, Melbourne, AU
Jamie Lovaglio, Clinical Veterinarian, Pacific Northwest National Laboratory, Richland, WA
Richard Luce, Epidemiologist, US Centers for Disease Control and Prevention, Atlanta, GA
Fiona Norris-Sansom, Postdoctoral Fellow, Microbiology, University of Melbourne, AU
Knut Stieger, Research Leader, Faculty of Medicine, Ophthalmology, Justus – Liebig University, Giessen, Germany
Joost Uilenreef, ECVAA Residency Supervisor, University of Utrecht, The Netherlands
Kevin Woolard, Assistant Professor, Pathology, University of California, Davis, CA

2001

Julie Chevrette, Clinical Veterinarian, Charles River Laboratories, Wilmington, MA
Karin Hölzer, ORISE Fellow, US Food and Drug Administration, College Park, MD
Katherine Hughes, Lecturer, Veterinary Pathology, University of Cambridge, UK
Stephanie Janeczko, Senior Director, Veterinary Outreach, ASPCA, New York, NY
Charles Johnson, Postdoctoral Fellow, Comparative Pathology, University of Minnesota, Minneapolis, MN
Robert Klopfleisch, Assistant Professor, Pathology, Freie Universität, Berlin, Germany
David Loch, Patent Practitioner, Fisher, Adams & Kelly, Brisbane, AU
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Timothy Myshral, Assistant Director, Veterinary Services, Cleveland Clinic, Cleveland, OH
Judith Phillips, Postdoctoral Associate, Neurovirology, University of Pennsylvania, Philadelphia, PA
Kis Robertson, Senior Epidemiologist, USDA-FSIS, Washington D.C.
Simon Starkey, Education Veterinarian, Pet Smart Inc., Phoenix, AZ

2002

Jason Stayt, Clinical Pathologist, Axiom Veterinary Laboratories, Newton Abbot, UK
Amy Warren-Yates, PhD Candidate, Neurobiology, Associate Professor, Pathology, University of Calgary, Calgary, Alberta, CA
Rachel Windsor Balantyne, Scientific Support Manager, royal Canin Co., United Arab Emirates
Robin Yates, Associate Professor, Comparative Biology, University of Calgary, Calgary, Alberta, CA
Bevin Zimmerman, Scientific Director, Janssen Pharmaceutical Co., Springhouse, PA

Christine Bayley Trezise, Veterinary Pathologist, Gribbles Pathology, Melbourne, AU
Karin Darpe, Postdoctoral Scientist, Virology, Pirbright, UK
Karyn Havas, Deputy Director, Integrated Bioterrorism Defense, Armed Forces Health Service Center, Silver Spring, MD
Patrick Kenny, Lecturer, Neurology and Neurosurgery, Royal Veterinary College, London, UK
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Kelly Still-Brooks, Brigade Veterinary Surgeon, US Army, Fort Bragg, NC

Barbara Tännler Werhli, Marketing and Technical Manager, Zoetis Inc., Zürich, Switzerland

2003

Rosie Allister, PhD Candidate, Epidemiology, University of Edinburgh, UK

Mieke Baan, PhD Candidate, Endocrinology, University of Wisconsin, Madison, WI

John Baker, Associate Consultant, Bain & Co., London, UK

Patrick Carney, PhD Candidate, Epidemiology, Boston University, Boston, MA

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Heather Martin, Laboratory Animal Veterinarian, Hoffman-LaRoche, Nutley, NJ

Siobhan Mor, Lecturer, Food Safety, University of Sydney, Sydney, AU

Kate Patterson, Senior Science Writer, Garvin Institute, University of New South Wales, AU

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Karla Stucker, Postdoctoral Fellow, J.Craig Venter Institute, Rockville, MD

Lyn Wancket, Pathologist, MAMSA, Northwood, OH

Christiane Wrann, Research Scientist, Cell Biology, Dana-Farber Cancer Institute, Harvard University, Cambridge, MA

2004

Anton Asare, USDA Medical Veterinary Officer, University of South Carolina, SC

Carolin Block, Clinical Trials Manager, Roche Pharma AG, Basel, Switzerland

Matthew Breed, Staff Scientist, National Institute of Health, Bethesda, MD

Andrew Broadbent, Research Fellow, Virology, Pirbright Institute, UK

Karla Drechmann, Research Scientist, Vaccine Development, Boehringer Ingelheim, Germany

Annika Krengel, Veterinarian, Wilhelma Zoo, Stuttgart, Germany
Sylvia Mallye, Senior Clinical Scholar, Surgery, University of Glasgow, UK

Robert Ossiboff, Molecular Pathology Fellow, Wildlife Conservation Society, Bronx, NY

Allison Rogala, Postdoctoral Fellow, Infectious Diseases, University of North Carolina, Chapel Hill, NC

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Katherine Scollan, Assistant Professor, Cardiology, Oregon State University, OR

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Katy Townsend, Assistant Professor, Small Animal Surgery, Oregon State University, Corvallis, OR

Claire Underwood, Academic Clinician, University of Queensland, Brisbane, AU

Johanna Rigas, Assistant Professor, Clinical Pathology, Washington State University, Pullman, WA

Klara Saville, Veterinary Advisor, The Brooke, London, UK

Catherine Trickett-Tisdall, Education Officer, Noah's Ark, Food Farm, Bristol, UK

Nina Weishaupt, Postdoctoral Fellow, Neuroscience, University of Western Ontario, London, Ontario, CA

2006

Onno Burfeind, Research Assistant, Clinic for Animal Reproduction, Freie Universität, Berlin, Germany

Bronwyn Clayton, Postdoctoral Fellow, Virology, CSIRO, Geelong, AU

Alexander Corbishley, PhD candidate, Immunology, Roslin Institute, University of Edinburgh, UK

Janny de Grauw, Resident, Anesthesiology, University of Utrecht, The Netherlands

Louise Fitzgerald, Resident, Pathology, University of Pennsylvania, Philadelphia, PA

Anne Gordon-Schneider, PhD candidate, Cornell University, Ithaca, NY

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Eva-Marie Laabs, PhD candidate, Parasitology, Tierärztliche Hochschule, Hannover, Germany

Jane Leadbeater, Medical Student, Griffith University, Brisbane, AU

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2005

Krystal Allen, Resident, Laboratory Animal Medicine, University of Pennsylvania, Philadelphia, PA

Melanie Ammersbach, PhD candidate, Clinical Pathology Ontario Veterinary College, Guelph, Ontario, CA

Hannah Bender, Lecturer, Veterinary Pathology, Murdoch University, Perth, AU

Hille Fieten, PhD Candidate, Genetics, University of Utrecht, The Netherlands

Amanda Kreuder, PhD candidate, Microbiology, Iowa State University, Ames, IA

Rebecca Mitchell, Postdoctoral Fellow, Centers for Disease Control and Prevention, Atlanta, GA

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Emily Orchard-Mills, PhD Candidate, Psychology, University of Sydney, AU

Bo Raphael, Biosecurity Officer, Australian Department of Agriculture, Fisheries and Food, Canberra, AU
Richard Meeson, Lecture, Surgery, Royal Veterinary College, London, UK

Ashley Neary Hartley, Intern, Small Animal Medicine, College of Veterinary Medicine, University of Tennessee, Knoxville, TN

Joseph Neary, PhD Candidate, Epidemiology, Colorado State University, Fort Collins, CO

John Parker, PhD Candidate, Neurology, University of Cambridge, UK

Tiffany Reed, PhD Candidate, Cancer Biology, NIH, Bethesda, MD

William Sander, AAAS Science and Technology Policy Fellow, US Environmental Protection Agency, Washington DC

Justine Shotton, MS Candidate, Wildlife Medicine, Royal Veterinary College, London, UK

Laura Spoore, PhD candidate, Bacteriology, Roslin Institute, University of Edinburgh, UK.

2007

Patrick Ayscue, EIS Officer, CDC, San Francisco, CA

Sonja Bröer, Postdoctoral Scientist, Pharmacology, Tierärztliche Hochschule, Hannover, Germany

Stephen Burr, PhD Candidate, Immunology, Cambridge University, UK

Sarah Caddy, PhD Candidate, Virology, Imperial College, London, UK

Eva Chen, Principal Biometrician, Novartis, East Hanover, NJ

Boran Choi, PhD candidate, Pathobiology, John’s Hopkins University, Baltimore, MD

Ludwig Groebler, Veterinary Medical Educator, European Surgical Institute, Hamburg, Germany

Laura Grogan, PhD Candidate, Conservation Biology, James Cook University, AU

Kate Johnson, PhD Candidate, Clinical Science, Royal Veterinary College, London, UK

Kristin Lewis, Resident, Pathology, The Ohio State University, Columbus, OH

Mihaela Swift, MSc candidate, Oriental & African Studies, University of London, UK

Ryan Trasavina, Postdoctoral Fellow, National Institute of Neurological Diseases and Stroke, NIH, Bethesda, MD

Maria Volkmann, PhD Candidate, Freie Universität, Berlin, Germany

Annemarie Voorbij, PhD Candidate and Resident, Medicine, University of Utrecht, The Netherlands

Shen Yang, Postdoctoral Fellow, Cell Biology, Eidgenössische Technische Hochschule, Zürich, Switzerland

2008

Rachel Acceia, Branch Chief, Veterinary Services, Camp Lejeune, Marine Base, NC

Hannes Bergmann, PhD Candidate, Immunology, Australian National University, Canberra, AU

Jennifer Bernard, Pathology Fellow, San Diego Zoo, San Diego, CA

Anna Byron-Dengate, M.S. Candidate, Hematology, University of Sydney, Sydney, AU

Lucie Chevalier, Assistant Professor, Physiology, University of Versailles, Saint-Quentin-Yvelines, France

Katharina Dinger, PhD Candidate, University Hospital, Cologne, Germany

Johanna Dups, PhD Candidate, Virology, CSIRO, Geelong, AU

Anna Heymer, Dr. Med. Vet. candidate, Nutrition, Tierärztliche Hochschule, Hannover, Germany

Lisa Holz, PhD Candidate, Cardiology, University of Tübingen, Germany

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Sally Ann Iverson, ORISE Research Fellow, Plum Island Animal Disease Center, NY

Prabhpreet Kaur (nee Singh), Government Veterinarian, AVA, Singapore

Joshua Leach, MSc Candidate, Beatson Institute for Cancer Research, Glasgow, UK

Katherine McKelvey, Resident, Theriogenology, North Carolina State University, Raleigh, NC

Joanna Mleczko, PhD Candidate, Biotechnology, Cornell University, Ithaca, NY

Dallas New, MSc Candidate, Epidemiology, University of Saskatchewan, Saskatoon, SK, CA

Annelies Nijdam, Research Scientist, Hematology, University of Utrecht, The Netherlands

Kimberley Schiller, Management Consultant, Accenture, London, UK

James Swann, Resident, Small Animal Medicine, Royal Veterinary College, London, UK

2009

Florynu Buishand, PhD candidate and Resident, Small Animal Surgery, Cell Biology, University of Utrecht, The Netherlands

Alisa Guen Bradbury, Anesthesiologist, University of Edinburgh, UK

Nancy Erickson, PhD Candidate, Pathology, Freie Universität, Berlin, Germany

Jenna Gettins, MPH candidate, University North Carolina, Chapel Hill, NC

Laura Gay, PhD Candidate, Pharmacology, Tierärztliche Hochschule, Hannover, Germany

Sonja Heinrich, Dr. Med. Vet Candidate, Institute for Zoo and Wildlife, Berlin, Germany

Alan Humphreys, Clinical Veterinarian, Charles River Laboratories, Boston, MA

Shuhei Ito, Medical Service Liaison, GlaxoSmithKline, Tokyo, Japan

Beth Licitra, PhD Candidate, Cornell University, Ithaca, NY

Greta Schmoyer, Veterinary Medical Officer, USDA APHIS VS, Indianapolis, IN

Meredith Sherrill, Resident, Small Animal Medicine, University of Missouri, Columbia, MO

Elizabeth Slack, Patent Officer, J.A. Kemp, Oxford, UK

Katrina Stewart, Resident Medicine, Purdue University, Lafayette, IN

Jakob Trimpert, PhD Candidate, Virology, Freie Universität, Berlin, Germany

Sarah van Rijn, Resident in Small Animal Surgery, University of Utrecht, The Netherlands.

Jolanda Verhoef, Resident, Pathology, Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon, CA

Hans Winkler, PhD Candidate, Pharmacology, University of Zurich, Switzerland

2010

Mirjam Brackhan, PhD Candidate, Pharmacology, Tierärztliche Hochschule, Hannover, Germany

Heike Breuer, PhD Candidate, Pharmacology, Tierärztliche Hochschule, Hannover, Germany

Zachary Chillag, Base Veterinarian, U.S. Army, Guam

Greg Dickens, Head Veterinarian, CERCOPAN, Cambridge, UK

Clinton Doering, Resident, Comparative Veterinary Ophthalmology, University of Calgary, Alberta, CA

Line Greve, PhD Candidate, Sports Medicine, Royal Veterinary College, London, UK

Sarah Hooper, Resident, Laboratory Animal Medicine, University of Missouri, Columbia, MI

Marie Killenby, MPH Candidate, Epidemiology, Harvard School of Public Health, Boston, MA

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Brina Lopez, PhD Candidate, Equine Medicine, University of Georgia, Athens, GA
Louise Steltzer-Seeker, PhD Candidate, Cell Biology, Scottish Agricultural College, Edinburgh, UK
Eliza Smith, Researcher, Food Safety and zoonoses, International Livestock Research Institute, Nairobi, Kenya
Frances Taylor-Brown, Resident, Neurology, Royal Veterinary College, London, UK
Daniel Woodburn, Resident, Zoological Pathology, University of Illinois, Urbana, IL
Sirma Yaemsiri, Resident, Small Animal Medicine, University of California, Davis, CA

2011
Angel Abuelo Sebio, PhD Candidate, Metabolism, University of Santiago de Compostela, Spain
Hanna Atkins, Postdoctoral Research Fellow, Wake Forest School of Medicine, Winston-Salem, NC
Jessica Brown Beck, Resident, Pathology, College of Veterinary Medicine, Purdue University, Lafayette, IN
Alyssa Chandler, Intern, Small Animal Medicine, NCSU, Raleigh, NC
Timothy Chua, Government Veterinarian, AWA, Singapore
Catherine Diggins, Intern, Regional Veterinary Referral Center, College of Veterinary Medicine, Cornell University, Ithaca, NY
Scott Dudis, Base Veterinarian, U.S. Army, Tacoma, WA
Ratchel Dutkosky-McEnroe, Resident, Pathology, Purdue University, Lafayette, IN
Kristin Elfers, PhD Candidate, Physiology, Tierärztliche Hochschule, Hannover, Germany
Linda Huang, Resident, Pathology, Michigan State University, East Lansing, MI
Per Karlsson, PhD Candidate, Surgery, Imperial College, University of London, UK
Maureen O’Brien, Resident, Pathology, Texas A&M University, College Station, TX
Karina Radfield Stein, Dr. Med. Vet Candidate, Reproductive Biology, University of Vienna, Austria
Heather Rhoden, Intern, Small Animal Medicine, Texas A&M University, College Station, TX

Viktoria Rungeirath, Dr. Med. Vet., Microbiology, University of Liepzig, Germany
Lauren Smith, Resident, Radiation Oncology, University of Wisconsin School of Veterinary Medicine, Madison, WI
Sarah Wood, Resident, Pathology, Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon, CA

2012
Molly Benner, Intern, College of Veterinary Medicine, University of Missouri, Columbus, MS
Luca Bertzbach, PhD Candidate, Institute for Virology, Freie Universität Berlin, Germany
Josep Duato-Bohm, DPhil Candidate, Molecular Biology, University of Oxford, UK
Erasmus zu Ernagination, PhD Candidate, Environmental Science, University of Cambridge, UK
Hilary Hu, PhD Candidate, Neurobiology, Iowa State University, Ames, IA
Lucas Smolders, Resident, Surgery, Postdoctoral Fellow, University of Zurich, Switzerland
Hanna Telama-Castro, PhD Candidate, Food Safety, University of Helsinki, Finland

2013
Bosco Yeung, Intern, Small Animal Medicine, Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon, Canada

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What Did They Say

"I still think of the wonderful time I had at Cornell and the great friends I met"
Susannah Lillis, 2002

"I wouldn't be where I am now without it"
Nina Weishaupt, 2005

"It was a fantastic experience"
Justine Shotton, 2006

"Such good memories"
Marion Leiberich, 2011

"I enjoyed the program immensely"
Jenna Gettings, 2009

"I often wonder what my career would look like without the program"
Anna Byron-Dengate, 2008

"The Leadership Program gave me the confidence and vision to pursue further training in science"
Sarah Wood, 2011

"The Leadership Program was pivotal in my deciding on my career path"
Zachary Chillag, 2012

"I still look back at my time at Cornell with great joy"
Helena Wittgenstein, 2012

"I look back at the program as some of the best weeks of my life"
Dimo Naujokat, 2014
Since being invited to write this summary of my career I have had the opportunity to reflect on the ways my summer at the Cornell Leadership program altered the paths of both my career and personal life. I attended the program after my first year in veterinary school and it is not an exaggeration to say that it fundamentally changed my life.

I learned the fundamentals of the research process in Dr. Geoffrey Sharp's lab — everything from how to use the library for finding background material to purifying pancreatic islets from rats. Acquiring this proficiency led to me obtaining a research fellowship during my next two years at the University of Illinois, which paid for my tuition, substantially reducing my student loan debt. This lab experience also proved to be the stepping stone for my starting a PhD program.

However, my experiences were not limited to the laboratory. Evenings at Cornell were filled with social time and good friends. I was introduced to Jimmy Buffet and country line dancing. I brought both interests back, and upon returning to Illinois, joined some classmates and instructors in a line dancing class at the local rec center. My dance partner in that class became my husband three years later. I doubt we would have ever started to date if it weren't for that class. We have been married 20 years and have two beautiful daughters, ages 17 and 6.

After earning my DVM in 1994, I worked for a small animal practice for a year in Danville, IL. However, upon being offered a residency in clinical pathology, I returned to the University of Illinois for a combined residency and PhD, which I finished in 2002.

There were a number of teaching positions open at veterinary schools in 2002. We chose the University of Missouri because my husband and I were drawn to Columbia by the people and the Midwest college town atmosphere. I selected a clinical track position that allowed me to concentrate on teaching and diagnostic work. While at Missouri, I also studied for and passed the anatomic pathology boards in 2006. As a double boarded pathologist, I am very involved in the ACVP and am a member of the Certifying Exam Board.

While serving on the MU College of Veterinary Medicine admission's committee, I developed an interest in working within the College's administration on curriculum and student issues. This led to a role in the College's strategic planning process. When the dean offered me the interim associate dean for academic affairs position, I saw it as an opportunity to help move the College forward during a time of transition. I applied and was chosen for the permanent position in 2012. I still maintain a small appointment in the clinical pathology lab and teach several online courses for veterinary technicians who are pursuing a bachelor's or master's degree.
For more information about the Leadership Program, contact

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