2016 Annual Report

LEADERSHIP PROGRAM FOR VETERINARY STUDENTS

Cornell University
College of Veterinary Medicine
To prepare tomorrow’s scientists and public health professionals
A Commitment to Excellence

The mission of the annual Cornell Leadership Program for Veterinary Students is to provide students with learning experiences that clarify and reinforce their commitment to careers in science. The Program is distinguished by a tradition of excellence that spans 27 years. During this time, over 600 alumni have participated. These individuals came from 67 veterinary colleges in all parts of the world and many, as we had hoped, have become scientific leaders within the veterinary profession. We are delighted to report that 18 outstanding scholars participated in this year’s program. Already some of these scholars have committed to a career that will involve research. It is too early to know where they will take their careers; however, based on the outstanding achievements of past participants we expect great things from them.

Research is a major focus of the Leadership Program. Program scholars undertake 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 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. 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 detailed practical career guidance on how to succeed and prosper as veterinary research scientists.

It is always wonderful to hear about the career achievements of our alumni. Their experiences provide valuable insight into the problems facing veterinarians in research careers. Issues such as student debt and shrinking budgets for research are important factors that influence career choices. As new challenges arise, we expect to provide practical guidance to scholars as they choose their careers.
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 Inc.  
Bristol University  
Cornell Feline Health Center  
Deutscher Akademischer Austauschdienst  
National Institutes of Health  
Royal Veterinary College  
University of Cambridge  
Zoetis Inc.

The program organizers also thank the facilitators, counselors, and mentors who took part in the 2016 program. Thank you to Ms. Megan He, the Program Student Coordinator, Ms. Bonnie Coffin, Ms. Alexis Wenzki-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/oge/Leadership
Program Agenda

Monday, June 6  
Opening Meeting and Ethics Discussion  
Biological & Chemical Safety Training  
Welcome BBQ

Tuesday, June 7  
Student Mentor Breakfast & Laboratory Orientation

Saturday, June 11  
Career Exploration Discussion

Monday, June 13  
Role Playing Leadership Module

Reception & Dinner

Thursday, June 16  
Visit to National Institutes of Health

Friday, June 17  
Visit to National Library of Medicine

Wednesday, July 6  
Research Project Previews

Monday, July 11  
Infectious Diseases Workshop

Thursday, July 14  
Reunion Dinner

Monday, July 18  
Careers in Industry Workshop

Tuesday, July 19  
Research Training

Thursday, July 21  
Leadership in Action

Monday, July 25  
Creativity in Science Workshop

Wednesday, July 27  
Translational Science

Friday, July 29  
Wine and Cheese Event

Monday, August 8  
Career Planning

Wednesday, August 10  
Research Presentations

Thursday, August 11  
Research Presentations  
Farewell Dinner
### 2016 Leadership Program Scholars

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<tr>
<th>Name</th>
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<td>Julia Barnes</td>
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To prepare tomorrow’s scientists and public health professionals

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 Tracy Stokol, Professor Douglas McGregor, and Dr. Bruce Kornreich.

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 and Douglas McGregor offered points to consider as well as feedback for the students to ponder.

Infectious Diseases
A workshop moderated by Professors Terence Dermody, Andres Vasquez-Torres, John Parker, and Gerlinde van de Walle featured discussions of antibiotic resistance, Zika virus infection, influenza virus infection, and plague. These infectious agents are responsible for emerging or re-emerging diseases in humans and animals. Program scholars selected the diseases on which they wanted to focus. 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.

Careers in Industry
Drs. Gerard Hickey, Emily Hickey, and Peggy McCann conducted mock interviews for three positions in the pharmaceutical industry and at Merck & Co. in particular. 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.
Creativity in science: the ‘Creative spark’

This year with sponsorship from Royal Canin Inc., Cornell University College of Veterinary Medicine, and the Office of the Vice-Provost, we hosted a workshop focused on creativity and what spurs creativity in science. To help us in this discussion, we invited four world-renowned scientists: Dr. Harold Varmus, the 1989 Nobel prize winner in Physiology or Medicine, and The Lewis Thomas University Professor of Medicine, Weill Cornell Medical College; Dr. Randy Schekman, the 2013 Nobel prize winner in Physiology or Medicine, and University Professor, UC Berkeley; Dr. Lynn Maquat, the 2015 Canada Gairdner International Award Winner and Professor of Oncology, Biochemistry and Biophysics, University of Rochester; and Dr. Xiaowei Zhuang, a member of the US and Chinese National Academy of Sciences and David B. Arnold Professor of Science, Harvard University. Following an introduction to the panel by Cornell University Interim President Hunter Rawlings, Prof. Richard Cerione moderated a discussion among these preeminent scientists. The discussion covered a broad range of topics of importance in science, including creativity, competition for grants and funding, the pernicious effect of journal impact factors on science, and other topics of importance in science. The panelists then entertained questions from the audience that numbered more than 250. The Cornell veterinary Leadership students attended the workshop and then met individually with each of the facilitators over lunch and in private meetings afterward.
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.

Professor David Fraser and Drs. Nora Springer and Robert Ossiboff 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, Douglas McGregor, and John Parker 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 career in “translational” science was discussed. The ensuing discussion led by Professors Julia Felippe and Jonathan Cheetham 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 to the NIH!
Dr. Richard Wyatt, MD
Executive Director, Office of Intramural Research

“Evaluation of the Aurora kinase pathways in Ewing sarcoma as potential targets for therapeutic intervention”
Dr. Amy McCalla, DVM
Fellow, Comparative Biomedical Scientist Training Program, North Carolina State University, Pediatric Oncology Branch, NCI

“Using mouse models to study primary immunodeficiencies”
Dr. Pamela Schwartzberg, MD, PhD
Senior Investigator and Branch Chief, Genetic Disease Research Branch, NHGR

“The interleukin 7 pathway in lymphocytic leukemia”
Dr. Scott Durum, PhD
Senior Investigator, Head, Cytokines and Immunity Section, Cancer and Inflammation Program, NCI

Tour of NIH Clinical Center, Building 10, South Lobby

“Research Training Opportunities for Veterinarians and Students”
Dr. Mark Simpson, DVM, PhD
Director, NIH Comparative Biomedical Scientist Training Program, Head, Molecular Pathology Unit, Laboratory of Cancer Biology and Genetics, NCI

Melanie Daub, MBA
Program Officer, Graduate and Medical Education Programs Office of Grants and Special Programs, Howard Hughes Medical Institute

“Genomic analysis from strains to microbiomes”
Dr. Julie Segre, PhD
Senior Investigator, Microbial Genomics Section, NHGRI

“The dog genome: simplifying the genetics of complex traits”
Dr. Heidi Parker, PhD
Staff Scientist, Comparative Genetics Section (Ostrander Lab), NHGRI

“Transcranial application of A2A receptor agonists decreases neocortical cell death following mild traumatic brain injury”
Dr. Sara Corps, DVM
Fellow, Comparative Biomedical Scientist Training Program, North Carolina State University, Viral Immunology and Intravital Imaging Unit, NINDS

Closing Remarks
After more than a decade, the Leadership Program again visited the National Library of Medicine (NLM) in the Lister Hill Building on the NIH campus. Dr. Clement J. McDonald, M.S., M.D., the director of the Lister Hill National Center for Biomedical Communications and Distinguished Professor Emeritus of Medical Informatics at the Indiana University School of Medicine hosted our group.

The NLM is recognized as the world’s largest medical library, and hosts Medline, the indispensable database of biomedical publications and communications. The session presenters were Dr. McDonald, a member of the National Academy of Medicine, recognized for his pioneering efforts in the field of patient record digital databases, electronic medical records or “EMRs”, and his colleague, Dr. George Thoma.

Agenda National Library of Medicine

Welcome (Dr. Clement McDonald, MD, Director, Lister Hill National Center for Biomedical Communications)

“Order Entry, Health Information Exchanges, Standards, and Research on Big Data” (Dr. Clement McDonald, MD, Director, Lister Hill National Center for Biomedical Communications)

“Image Analysis and Machine Learning in Disease Detection” (Dr. George Thoma, Ph.D., Branch Director, Communications Engineering Branch)

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 Elizabeth Goldsmith for the best overall research achievement as judged by her underlying hypothesis, investigative protocol, results, and presentation. Additional prizes were awarded to Michelle Teunissen, Robert Blakely, and Christopher Shiprack, for exceptional achievements in integrative biology, cell biology, and molecular biology, respectively. Rupert Lang was awarded a prize for the highest-ranking presentation by a scholar from the United Kingdom or Australia. The Selection Committee for the 2016 Leadership Program salutes these individuals and congratulates the entire group for their commitment to research and the excellence of their presentations.

UK and Australia Prize
Rupert Lang
Role of mucin in parvovirus and influenza virus transmission and environmental survival

Cell Biology Prize
Robert Blakely
In vitro microfluidic vascular model of platelet-mediated equine herpesvirus type 1 infection

Program Prize
Elizabeth Goldsmith
Sex-related differences of CD8 T-cells

Integrative Biology Prize
Michelle Teunissen
The putative role of the long noncoding RNA Player in Pitx2-mediated organogenesis

Molecular Biology Prize
Christopher Shiprack
Generation and characterization of a soluble feline PD-1 ligand
Julia Barnes  
University of Tennessee College of Veterinary Medicine  
Comparative Biomedical Research

Investigating the effect of the equine epithelial cell secretome component TIMP2 on cell viability in triple negative breast cancer.

Before the program, my interests lied in the areas of theriogenology and reproductive physiology. But after the Leadership Program, I have started to consider careers in industry and translational medicine. Though I am still unsure about my future path, it is beneficial to know all the opportunities available to me and the steps I need to take to get there.

I worked at the Baker Institute in Dr. Gerlinde van de Walle’s lab, where I investigated the effect of the protein TIMP2, secreted by equine mammary epithelial cells, on breast cancer. Since mares rarely have mammary tumors, it’s suspected that products secreted by their cells might control tumorigenesis. TIMP2 is a secreted protein that controls cell growth and blood vessel development. My aim was to clone the TIMP2 gene from equine cells so that it could be used in overexpression studies in target cells. The hope is that equine TIMP2 might be used to treat breast cancer by decreasing cancer cell survival. I was successful in isolating the equine TIMP2 gene, but the rest of the data is still pending.

A special thanks to Dr. Van de Walle for being a wonderful, supportive mentor, as well as Melissa Ledet for letting me bother her the entire summer. I am also grateful to Becky Harman, Matt Pennington, and Gat Rauner for their help. Additional thanks are due to Drs. Parker, Fraser, and McGregor for facilitating this program, as well as Megan He for dealing with my fellow participants and me. I am grateful to the NIH and Zoetis Inc. for the financial support.

Carolyn Bender  
University of Kansas College of Veterinary Medicine  
Ageing Research

SIRT6 mediates nicotine-induced protection of dopaminergic neurons.

My summer in Dr. Libert’s ageing lab has greatly strengthened my scientific technique. I came to the Leadership Program with a desire to strengthen my experience as a veterinary scientist and critical thinker. With the help of Dr. Libert, Adam Francisco, and Justin Nicholatos, I was able to see a study through from beginning to end, while getting the mentorship I needed, but still retaining independence. This experience was an incredible opportunity that has been a huge step towards my career goal of becoming a laboratory animal veterinarian and veterinary research scientist. I am thankful to have worked closely with this team of experienced scientists that accepted me into their lab and taught me so much in a short amount of time. Before coming to Cornell I was not considering a PhD as I did not think I would enjoy a job that was 100% research. After this summer in Dr. Libert’s lab, however, I have begun to see my potential as a researcher and believe more doors have been opened for me. I am grateful to the NIH and Zoetis Inc. for the support to attend the Cornell Leadership Program this summer.
Georg Beythien  
**Free University, Berlin**  
**Virology**  
Efficient synthesis of viral proteins in the face of translation shutdown during reovirus infection.

This summer I had the opportunity to join the Parker Lab, which conducts research on how mammalian reoviruses (REOVs) manipulate the translational machinery of the host for their own benefit. During infection, cells try to inhibit viral replication by phosphorylating the alpha subunit of the translation initiation factor eIF2 (eIF2α). This in turn leads to general repression of host cell translation. In contrast to many other viruses, REOVs are able to maintain effective viral protein synthesis under these conditions. My hypothesis was that REOVs avoid the effects of phosphorylated eIF2 by hijacking parts of a cellular mechanism called the "integrated stress response" (ISR) and recruiting them to the sites of viral replication and assembly within the cell. Under conditions where the ISR is activated the GADD34 protein promotes the dephosphorylation of eIF2 through protein phosphatase 1 (PP1), thereby allowing a certain amount of translation to take place. Through western blots and immunofluorescence microscopy, I was able to show that reovirus infection triggers an ISR and leads to increasing concentrations of GADD34 inside the cell. In addition, I found evidence that the virus is rerouting GADD43, as well as PP1, to the sites of its replication. Taken together with previous work, my findings support the hypothesis that REOVs use compartmentalization as a novel mechanism to avoid host translational suppression.

I would like to thank Drs. Parker, McGregor and Fraser, my supervising postdocs Pablo and Bart as well as all my fellow program participants for an incredible summer! Furthermore, I am very grateful for the generous financial support of my stay, that was provided by the DAAD.

Robert Blakely  
**Cornell University**  
**Biotechnology**  
In vitro microfluidic vascular model of platelet-mediated equine herpesvirus type-1 infection

During the start of my veterinary education, I had a very rigid career plan to ultimately become a small animal clinical oncologist. As the curriculum progressed, I began to develop a strong interest in cancer biology and research. I would like to combine these two passions and pursue a PhD and oncology residency in order to contribute to both clinical medicine and oncological research. My initial research experience was with the Veterinary Investigators Program in the summer of 2015 and I continued to advance my research skills this summer with the Leadership Program. I am grateful to have participated in this program because of not only the valuable research experience but also the intense career development aspect which has benefitted me tremendously.

Under the mentorship of Dr. Tracy Stokol, I was given the opportunity to experience new fields of research including virology, biotechnology and cellular biology. A new discovery by Dr. Stokol has shown platelets (in addition to previously known leukocytes) are able to harbor and spread viral infection leading to progressed clinical manifestations of equine herpesvirus type-1 such as abortion and equine herpesvirus myeloencephalopathy. My project focused on creating a microfluidic vascular model using primary harvested equine aortic endothelial cells to test the efficiency of platelets to transfer equine herpesvirus under flow conditions. Platelets are a new a therapeutic target in the pathogenesis of this virus, which is significant since platelets are found in much higher quantities in the blood than leukocytes. With further optimization of this protocol, we will be able to block the platelets using therapeutic agents in our model in the hopes to slow or stop the progression of equine herpesvirus in affected animals.

I would like to sincerely thank Dr. Tracy Stokol for having me in her lab for the second consecutive summer. I’ve always benefited from her mentorship and it was a pleasure being part of the lab again. I worked closely with Dr. Priscila Serpa, whose patience and guidance carried me throughout this project. And lastly, I would like to graciously thank Drs. Parker, Fraser, and McGregor for their efforts on behalf of the students participating in the Leadership Program. This was an incredibly beneficial experience and I am thankful to have been selected to participate. I am grateful for the financial support of the NIH and Zoetis Inc.
Ariana Boltax  
Cornell University  
Biomedical Engineering

Lu/BCAM mediates red blood cell adhesion and cortical capillary stalling in mouse models of polycythemia vera

The Veterinary Leadership Program here at Cornell has been a truly transformative and inspirational experience that has successfully paired an intensive research experience with valuable leadership development training. I worked in the lab of Drs. Chris Schaffer and Nozomi Nishimura, studying a myeloproliferative disorder called Polycythemia Vera, in which red blood cells are overproduced and “stick” to the lining of blood vessels, leading to blood flow disturbances and life threatening health consequences. Using both cell-based models and live mouse models, we are working to elucidate a molecular mechanism for the “stickiness” of these red blood cells. In the process, I have been exposed to a wide variety of experimental tools ranging from basic genotyping and cell culture to mouse surgeries and advanced neuro-imaging. I have also received valuable and individualized mentorship from Drs. Schaffer and Nishimura who have helped me navigate my research and even provided advice and guidance for my future career directions. This mentorship, paired with the leadership development modules that were incorporated into this program and collaborative support of my fellow program participants, have helped me to define a clear path to my ultimate career goal of working as a professor in academia. I am very grateful for the financial support of the NIH and Zoetis Inc.

Kristina Ceres  
Cornell University  
Disease Modeling

Use of an individual based model to determine the contribution of environmental transmission in Mycobacterium avium subsp. paratuberculosis

This summer I created an individual-based model of Johne’s disease in a dairy herd. Johne’s disease is caused by Mycobacterium avium subsp. paratuberculosis (MAP), and causes chronic diarrhea, wasting, and decreased milk production in dairy cows. It is well documented that animals are most likely to become infected with MAP through ingesting contaminated material in their environment, but there are few models of Johne’s disease that describe environmental transmission. In our model we decided to include direct transmission of MAP from the animal’s environment to the susceptible animal as the primary source of infection. We also included three levels of hygiene management controls to determine the impact of hygiene practices on MAP prevalence.

I have been interested in conservation medicine and the idea of “One Health” for a long time, but until recently didn’t know how I could work to improve the health of not just animals, but also humans and the environment we share. My research experience this summer opened my eyes to a whole new way of approaching biomedical research and conservation medicine. I would like to thank Dr. Gröhn for introducing me to mathematical modeling and for helping me to recognize how useful learning computer and modeling tools can be in my career development. I’d like to thank Dr. Al-mamun for his continuous support to help make my summer project successful. I would also like to thank Drs. McGregor, Fraser, and Parker and Megan He for bringing us together and challenging us through thoughtful exercises and workshops. Lastly I would like to thank the NIH and Zoetis for their financial support.
Megan Du Toit
University of Queensland
Cancer Biology

Identification of PAD2 and PAD4 activity in hemangiosarcomas and mast cell tumors

My time in the Cornell Veterinary Leadership Program has been a great experience which has broadened my horizons in many ways. I have gained a scope of understanding of what a career in veterinary research would entail and invaluable experience in working in a laboratory. Furthermore, I have been lucky to explore some beautiful parts of the U.S. and form some amazing friendships.

My research project this summer was to identify the role of peptidylarginine deaminase (PAD) enzymes in canine mast cell tumors and hemangiosarcomas using immunohistochemistry techniques on paraffin-embedded tissue sections. These enzymes are involved in normal physiological and inflammatory processes in the body, but have also been found to be upregulated in many inflammatory diseases and cancers. I found that the presence of PAD enzyme activity in mast cell tumors was directly correlated with tumor tissue; however, further research is required to determine the role of these enzymes in hemangiosarcomas. I hope that one day this type of research will be able to establish a potential therapeutic role for PAD inhibitors in the regression of these tumors.

I would like to thank everyone at the Conrod lab for welcoming me into their team this summer. It was a very friendly and helpful lab that I thoroughly enjoyed being a part of. In particular, I would like to thank Dr. Scott Conrod for his mentorship, and Lynne Anguish for all of her guidance and help along the way. I would also like to thank the facilitators for organizing such an amazing program, and our student coordinator Megan He for working so hard to ensure every event and module was a success. Finally, I would like to thank the Cornell Feline Health Center, Zoetis Inc., and the Bostwick foundation for sponsoring my studies.

Elizabeth Goldsmith
Colorado State University
Immunology

Sex-related differences of CD8 T cells

I began the DVM/MPH program at Colorado State University with an interest in research. This summer, I entered the Leadership Program to diversify my laboratory skill sets, learn more about opportunities for veterinarians pursuing research careers, and develop skills in creative problem-solving and leadership. I am currently pursuing a career in anatomic pathology with an interest in research and diagnostics.

In humans, males have a higher prevalence of many infections, whereas females have a higher prevalence of autoimmune diseases and more severe symptoms for some infectious diseases. These sex-related differences may be due to cell-intrinsic differences and/or differences in the host's hormonal environment. We investigated sex-related differences in the behavior of CD8+ T cells from male and female mice. We performed several experiments to describe cell-intrinsic and environmental differences in the behavior of CD8+ T cell collected from female and male mice. We found that female CD8+ T cells are intrinsically different than their male counterparts, shown by their increased sensitivity to stimulation and their more rapid proliferation and differentiation post-infection within the same external environment. In addition, female CD8+ T cells became more terminally differentiated in a female hormonal environment when compared to CD8+ T cells in a male hormonal environment.

I would like to thank Dr. Brian Rudd, Jocelyn Wang, Dr. Neva Watson, and the rest of the Rudd lab for their mentorship and encouragement over the summer. I learned so much during my time at Cornell from mouse handling to flow cytometry and everything in between. Finally, I would like to thank the NIH and Zoetis Inc. for funding me during the Cornell Leadership Program.
Megan He
Cornell University
Program Student Coordinator

Megan is majoring in Biological Sciences and has a strong interest in a career in veterinary medicine when she graduates. Megan served as this year’s student coordinator and helped with the organization and running of the program. Megan was a major factor in the success of this year’s program and we wish her well with her future career plans.

Luisa Hell
TiHo Hannover
Cancer Biology

Proteomic analysis of novel 9-1-1 DNA clamp subunit HUS1 interactors in genome maintenance

The Cornell Leadership Program has been an amazing opportunity to improve my basic science research skills and sharpen my scientific thinking. We were introduced to many different professional opportunities for veterinarians and the possibility of doing translational research, combining basic but clinically applied research with clinical practice does not seem impossible anymore thanks to very inspiring veterinary scientists I met at Cornell University.

I worked on the proteomic analysis of the 9-1-1 complex subunit HUS1 in genome maintenance this summer. To protect our genome, cells have evolved surveillance mechanisms known as the DNA damage response (DDR) to access and repair damaged DNA. A key element of the DDR is ATR driven DNA checkpoint signaling, which responds to DNA replication stress. ATR activation requires the RAD9A-HUS1-RAD1 (9-1-1) DNA clamp which is loaded onto damage sites.

Protein phosphorylation is a key regulatory mechanism that controls DDR. I performed comparative phosphoproteomic analysis in HUS1 proficient and deficient cells using stable isotope labeling based competitive MS to elucidate their phosphoproteome and understand the role of HUS1 in regulating DNA damage-induced checkpoint signaling.

We also identified interactions of HUS1 with neddylation pathway components. Neddylation is a post-translational modification that activates ubiquitin ligases which tag target proteins for proteosomal degradation. It is known to release DNA repair factors after effective DNA damage repair and we have implicated HUS1 in this process for the first time.

I would like to thank the Weiss lab, especially Dr. Weiss and Darshil Patel for their great mentorship and support. I also want to thank Boehringer-Ingelheim for the generous funding of my scholarship.
Rupert Lang
Royal Veterinary College
Virology

Role of mucin in parvovirus & influenza virus transmission and environmental survival

I am about to enter my final year of veterinary training at the Royal Veterinary College and feel very fortunate to have been given the opportunity to participate in the Veterinary Leadership Program. It has been an amazing chance to gain research experience, explore a diverse range of non-traditional career paths and I have made some lifelong friends along the way.

I feel very privileged to have been able to work in the Parrish laboratory at the Baker Institute for Animal Health alongside many inspirational scientists. My project involved investigating the transmissibility and environmental survival of Parvovirus and Influenza Virus, two very significant global pathogens. Specifically, I was elucidating whether mucous allows the viruses survive more effectively in the environment. The project has been an amazing experience and work ranged from performing intricate lab techniques to harvesting mucus from pigs at necropsy. Although mucous didn’t seem to have a significant protective effect on the survival of Parvovirus, my project highlighted just how resilient the virus was in the environment as it was able to remain infective after being dried at 70°C overnight. There were, however, some differences seen between the effects of bovine and porcine mucus on Influenza survival. Ten weeks has flown by and I only managed to perform some initial experiments in this area and there is still much more work to be done.

I would like to thank all of the members of the Parrish Lab and Baker Institute for their support this summer. In particular, I would like to thank Dr. Parrish for his incredible mentorship and Wendy Weichert for all of her technical help and support. Finally, I am grateful to the Royal Veterinary College for providing the financial support to allow me to participate in the Leadership Program.

Lucy Mackintosh
Cambridge University
Bacteriology

Molecular mechanisms of nuclear antigen immunogenicity using a typhoid toxoid model.

I’m about to begin my fifth year of vet school at Cambridge University and whilst working in private veterinary practice has been a goal of mine since the beginning of high school I have recently developed an interest in careers outside of private practice. The Cornell Leadership Program has been truly perspective changing for me and has encouraged me to consider careers in research or industry as interesting and worthwhile career paths. I’m now really looking forward to exploring the many opportunities available to veterinary graduates through further study and specialization and am particularly interested in the possibility of pursuing a career in pathology.

My project in Dr. Song’s lab focused on the immune response to typhoid toxin in mice which due to the toxin’s unique structure is useful for studying the effect of cellular location on immunogenicity. I first found that the immune response is highly biased towards the CdtB subunit which is targeted to the nucleus. I then used PCR and Gibson Assembly to develop several mutant forms of the toxin that either lack the signal that targets them to the nucleus or have a different signal to that present in the wild type toxin. These mutants could be used in the future to analyze the effects of location on immunogenicity and antigen processing.

I would like to thank Dr. Song and the others in her lab for being so welcoming and for all their help and guidance. I would also like to thank Cambridge University for their generosity in funding my place on the program.
Anna Molyneux
University of Bristol
Bacteriology

The effect of weak acids on the viability and SPI-1 expression of Salmonella typhimurium in milk replacer

My application to the Veterinary Leadership Program emanated from my desire to explore the veterinary field in greater depth than just private practice. My aim was to gain experience in an academic research environment – something that I had never had before. During my time in Dr. Altier’s lab, I worked to determine the effect of weak acids on the viability and invasion gene expression of Salmonella typhimurium in calf milk replacer. By adding either formic or citric acid to milk replacer inoculated with Salmonella typhimurium to achieve pH 4, 4.5 or 5, I was able to measure the colony numbers at 0, 4, 6, 12 and 24 hours. I also ran α-galactosidase assays to determine invasion gene expression of the remaining bacteria. This project interested me due to Salmonella strains being a constant burden on the dairy farming industry, as well as the public health implications of the disease. The skills I have developed in Dr. Altier’s laboratory have prepared me well for beginning an MSc in Control of Infectious Diseases at the London School of Hygiene and Tropical Medicine in September 2016. After I graduate in 2018, I hope to embark on a PhD program to develop my research skills further. Thank you to Dr. Altier, Dr. Colleen Eade, Staci Nugent and Dr. Chien-Chie Hung for their patience, support and amazing mentorship over the summer. Thank you also to the University of Bristol for funding my place on this wonderful program.

Svenja Maier
TiHo Hannover
Immunology

Quantification of equine CCL3 in a fluorescent bead-based assay

I applied to the Cornell Leadership Program to gain insight into research-based careers available to veterinarians as well as to gain more research experience. Participating in this program has broadened my understanding of veterinarians in research and has solidified my desire to pursue a career in academia as a veterinary scientist.

For my research project this summer, I worked in the Wagner laboratory investigating equine immunology. The lab focuses on the analysis of host immunity to equine herpesvirus type-1 (EHV-1) and on Culicoides hypersensitivity. Both of these are highly relevant diseases in equine medicine. To further understand the immune response throughout the progression of these diseases, the lab seeks to establish a fluorescent bead-based assay that is able to detect different analytes simultaneously in a single sample. My project was part of this assay development with the goal to establish such an assay for CC-chemokine ligand 3 (CCL3) that is a proinflammatory chemokine relevant for clearing viral infections. My first step was the selection of a pair of monoclonal antibodies against CCL3, followed by specificity validation and standard optimization. Finally, I integrated the assay for CCL3 into the already established multiplex assay for two other chemokines and was successful in analyzing the first biological samples.

I would like to thank Prof. Dr. Bettina Wagner and all members of her laboratory for their guidance and support throughout this summer. Thanks a lot for the amazing time! I would also like to thank Boehringer Ingelheim for providing financial support.
Christopher Shiprack
Oregon State University
Immunology/cancer biology

Generating and characterizing a soluble feline PD-1 ligand

Despite having made the decision to become a veterinarian at the ripe age of six, I have never doubted it. I knew that I would someday be a doctor for animals and that I would spend my days in the clinic making the lives of other creatures better. It was during my undergraduate degree that I realized that a career in research would better suit my desire to improve the lives of as many animals as possible. Veterinary school has strengthened this newfound passion and the Cornell Leadership Program has solidified it. I am now certain that a career in research and academia is where my passions and talents will ultimately culminate.

I entered veterinary medicine with an interest in becoming a small animal clinician. In my first year of the veterinary curriculum, I realized I wanted to impact both animal and human health as a veterinarian. I began to look into the One Health Initiative and translational medicine. Now, as a rising third year student, I have solidified my interests in veterinary pathology and research. In the future, I hope to work in an environment that focuses on the One Health Initiative while practicing translational medicine.

My research focused on trying to better understand how recently identified compounds work to inhibit cholesterol metabolism and reduce bacterial survival in Mycobacterium tuberculosis (Mtb). I did this through comparative studies with Mycobacterium bovis BCG (BCG). A key property of these compounds is that they induce production of a secondary messenger, cyclic AMP (cAMP), in Mtb. I found that BCG also produces high levels of cAMP in the presence of these compounds. However unlike in Mtb, these compounds do not inhibit cholesterol metabolism and bacterial growth in BCG. In this comparative study, it was further found that the bacterial-derived cAMP, induced by the compounds, gains access to the macrophage cytosol and dampens the immune response. With these findings, these compounds could be potential therapeutics for tuberculosis infections in the future.

I would like to thank Drs. Parker, Fraser, and McGregor for the opportunity to participate in the Cornell Leadership Program. I also want to thank Dr. Vanderven and the members of his lab for teaching me about research. In addition, I thank the NIH and Zoetis Inc. for funding me this summer.

Caroline Moon
Virginia Polytechnic
Bacteriology

Understanding the mechanism of orphan compounds through comparative studies in Mycobacteria

I entered veterinary medicine with an interest in becoming a small animal clinician. In my first year of the veterinary curriculum, I realized I wanted to impact both animal and human health as a veterinarian. I began to look into the One Health Initiative and translational medicine. Now, as a rising third year student, I have solidified my interests in veterinary pathology and research. In the future, I hope to work in an environment that focuses on the One Health Initiative while practicing translational medicine.

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To prepare tomorrow’s scientists and public health professionals
Kate Thompson  
North Carolina State University  
Endocrinology/surgery

Quantifying the effect of vertical sleeve gastrectomy on atherosclerosis burden

This summer I had the privilege to work with Drs. McGavigan and Cummings in the Cummings Lab. My investigation focused on the effects of bariatric surgery on atherosclerosis development in a mouse model. With obesity and its co-morbidities becoming an increasing challenge for global health, there is a pressing need to investigate and identify pharmaceutical targets for treatments. Currently, the most effective treatment for obesity and its related challenges is bariatric surgery. Bariatric surgery has been shown to cause reduction or remission of health challenges like diabetes and heart disease, often independent of weight loss. There is a metabolic change that occurs after surgery to improve obesity related health challenges, and understanding that mechanism is crucial to developing safe and effective treatments for the patients with atherosclerosis.

Coming into the Cornell Leadership Program, my experience with other research-oriented veterinarians was limited. My previous labs were staffed with highly trained and intelligent scientists, but most lacked a veterinary perspective. During my summer at Cornell I learned how to explore research with a veterinary mind and a focus on translational medicine. The program’s teaching modules and mentorship sharpened my understanding of the modern role of veterinary scientists, and sharing a house with the other students pushed me to take on new perspectives. I am incredibly grateful to Drs. Fraser, McGregor, and Parker for their tremendous insight and mentorship during this program. I would also like to thank the members of the Cummings Lab, especially my mentor Dr. Anne McGavigan. Finally, thank you to the NIH and Zoetis Inc. who made this program possible and to my fellow scholars who made this program unforgettable.

Michelle Teunissen  
Utrecht University  
Developmental Biology

The putative role of the long noncoding RNA Playrr in Pitx2 mediated organogenesis.

During the last years of my veterinary degree, I realized that because of my passion for the various challenges that both research and the small animal clinics provide, it is my aspiration to combine these two aspects of veterinary medicine into my future career. The Leadership program provided insights into the many research careers that could fulfill this wish, which definitely helped me to decide on my own career path.

During this summer I had the honor of working in the Kurpios lab. In this lab the developing gut and dorsal mesentery is used as a model system to study the way Pitx2 mediates organogenesis. Instead of focusing on the downstream regulatory pathways, my project was aimed at understanding the genomic mechanisms that regulate the precise spatiotemporal Pitx2 expression. An important regulator could be the long noncoding RNA (lncRNA), Playrr, which is found in close proximity to the Pitx2 gene. Early research showed that this lncRNA was expressed in a complementary way to Pitx2. My role in the project was to further identify the domains of Playrr expression in E9.5 and E10.5 mouse embryos, using whole mount in situ hybridization.

I would like to thank professor Kurpios for the opportunity to work in her lab. In addition, I would like to thank Frances Chen for the daily supervision, the excellent conversations we had, and her efforts to learn Dutch. I furthermore would like to thank Drs. Parker, McGregor and Fraser for the opportunity to participate in this program. Finally, I would like to thank my sponsors, the Cornell University Feline Health Center, Zoetis Inc., and the Boatwick Foundation, who made it possible for me to come here.
Brittany Zumbo  
Michigan State University  
Cancer Cell Biology

Developing a fascin inhibitor for canine lymphoma cells

My passion for research is long standing and has followed me into vet school. I find myself wanting to contribute to the veterinary medical field in a larger way, mainly through biomedical research. My drive to push the medical field forward is what made me apply to the Veterinary Leadership Program. Participating in this program has helped me identify future career paths in veterinary research and has provided me with skills to not only be a progressive veterinary scientist, but also a leader in our field.

My research in Dr. Richard’s lab focuses on the effect produced by a fascin inhibitor drug on canine lymphoma cells. Fascin is a protein that can help cancer cells migrate to another portion of the body. We hope by inhibiting this protein, we can mitigate cancer malignancy. We are currently testing the effect of this drug on canine lymphoma cell lines by measuring cell viability and eventually, cell migration. Our collaborator has already shown that the drug can hinder human breast cancer cell migration. In addition, we will test this drug in a clinical trial with canine oncology patients, at Cornell, in conjunction with the standard cancer treatment. Our hope is that this drug will help prolong cancer remission times. If it does, it could eventually be incorporated into other treatment protocols and benefit both human and animal oncology.

I would like to thank the Richard’s lab for all the help and support this summer, as well as all the facilitators. I’d also like to thank Drs. Parker, Fraser, and McGregor for organizing such a great program and offering support along the way. Finally, I’d like to thank the NIH and Zoetis Inc. for funding my participation.
Facilitators

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

Dr. Jonathan Cheetham, VetMB, PhD
Assistant Professor
Dept. of Clinical Sciences
Cornell University

Dr. Terence Dermody, MD
Chair and Professor
Dept. of Pediatrics
University of Pittsburgh School of Medicine

Dr. Julia Felippe, Med Vet, MS, PhD
Professor
Dept. of Clinical Sciences
Cornell University

Dr. David Fraser, AM, BVSc, PhD
Professor & Dean Emeritus
Dept. of Animal Science, Faculty of Veterinary Science
University of Sydney

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

Dr. Gerard Hickey, DVM, PhD
President,
Synergy Regulatory Services, LLC.

Dr. Bruce Kernreich, DVM, PhD
Associate Director
Feline Health Center
Cornell University

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

Dr. Douglas McGregor, MD, DPhil
Professor Emeritus
Cornell University

To prepare tomorrow’s scientists and public health professionals
To prepare tomorrow’s scientists and public health professionals

Dr. Robert Ossiboff, DVM, PhD
Clinical Assistant Professor
Zoological Pathology Program
University of Illinois at Urbana-Champaign

Dr. John Parker, BVMS, PhD
Associate Professor
Baker Institute for Animal Health
Cornell University

Dr. Nora Springer, DVM
Post-doctoral graduate fellow
Dept. of Biomedical Engineering
Cornell University

Dr. Tracy Stokol, BVSc, PhD
Professor and Director of Clinical Pathology
Dept. of Population Medicine & Diagnostic Sciences
Cornell University

Dr. Gerlinde van de Walle, DVM, PhD
Assistant Professor
Baker Institute for Animal Health
Cornell University

Dr. Andres Vasquez-Torres, DVM, PhD
Professor
Dept. of Immunology & Microbiology
University of Colorado Anschutz Medical Campus

Dr. Robert Weiss, PhD
Associate Professor
Dept. of Biomedical Sciences
Cornell University
Housing

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.

Time out

Apart 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.

Program Dinner

The Leadership Program scholars hosted a dinner for their mentors, module facilitators, counselors, and other guests on the grounds of the Baker Institute.

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 (1990-2015)

The following table indicates that a substantial number of program alumni obtained residency training in the course of their graduate studies. One hundred and one of these individuals were graduates of veterinary schools in North America while fifty-two 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.

<table>
<thead>
<tr>
<th>Degree</th>
<th>North American Alumni</th>
<th>Percentage</th>
<th>Other Country Alumni</th>
<th>Percentage</th>
<th>Total Alumni</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhD</td>
<td>52</td>
<td>17.5</td>
<td>135</td>
<td>43.1</td>
<td>197</td>
<td>30.7</td>
</tr>
<tr>
<td>Dr. Med. Vet</td>
<td>NA</td>
<td>NA</td>
<td>22</td>
<td>29.7*</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>MPH</td>
<td>15</td>
<td>5.1</td>
<td>8</td>
<td>2.6</td>
<td>23</td>
<td>3.8</td>
</tr>
<tr>
<td>MS</td>
<td>8</td>
<td>2.7</td>
<td>15</td>
<td>4.8</td>
<td>23</td>
<td>3.8</td>
</tr>
</tbody>
</table>

NA = Not applicable

*Percentage of German and Austrian Alumni

North American Alumni N = 297
Other Country Alumni N = 313
Total Alumni N = 610
German and Austrian Alumni N = 74

Residency Training of DVM Alumni of the Leadership Program (1990-2015)

<table>
<thead>
<tr>
<th>North American Alumni</th>
<th>Percentage</th>
<th>Other Country Alumni</th>
<th>Percentage</th>
<th>Total Alumni</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>112</td>
<td>37.7</td>
<td>57</td>
<td>18.2</td>
<td>169</td>
<td>27.7</td>
</tr>
</tbody>
</table>

NA = Not applicable

North American Alumni N = 297
Other Country Alumni N = 313
Total Alumni N = 610
German and Austrian Alumni N = 74
Where Are They Now?

Listed below are the positions currently occupied by program alumni who have completed their veterinary education and are pursuing careers in science or public health.

**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, Director, Safety Assessment, Merck Research Laboratory, Philadelphia, PA
Richard Haworth, Head, Pathology, GlaxoSmithKline, Middlesex, UK
Elizabeth Lyon-Hannah, Associate Professor, Boise State University, Boise, ID
Melissa Mazan, Associate Professor and Director, Sports Medicine, Tufts University, North Grafton, MA
Rebecca Papendick, Senior Scientist, Zoological Society of San Diego, San Diego, CA
Richard Haworth, Head, Pathology, GlaxoSmithKline, Middlesex, UK
A. W. (Dan) Tucker, Senior Lecturer, Veterinary Public Health, University of Cambridge, UK
Thomas Vahlenkamp, Professor and Head, Institute of Virology, School of Veterinary Medicine, Leipzig, Germany

**1991**
Prema Arasu, Professor, Pathobiology, Kansas State University, Manhattan, 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
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, Infection Biology, 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, Technical Associate, Academic Diagnostic Biology, UNAM, Mexico
Louise Southwood, Associate Professor, Large Animal Emergency and Critical Care, University of Pennsylvania, New Bolton Center, Philadelphia, PA
Reinhard Straubinger, Dean, School of Veterinary Medicine, Ludwig Maximilian University, Munich, Germany
1993
Virginia Fajt, Associate Professor, Pharmacology, Texas A&M University, College Station, TX
Deborah Hoyle, Career Track Fellow, Epidemiology, Roslin Institute, University of Edinburgh, UK
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 Rainier, Anaesthesiologist, University of Queensland, Brisbane, AU
Ashley Reynolds, Program Officer, MSNW, Inc., Redmond, WA
Susanna Ryan, Director, Medical Communications, Ruter Ltd, London, UK
Veiko Saluste, Chief Executive Officer, Interchemie Worken, Adelaar AS, Estonia
Malinda Stewart-Gabor, Veterinary Pathologist, NSW Department of Primary Industries, Sydney, AU
Lynn Wachtman, Senior Research/Clinical Veterinarian, Massachusetts Institute of Technology, Cambridge, MA

1994
Melissa Beall, Medical Affairs Manager, IDEXX Inc., Portland, ME
Larissa Bowman, Director, Mountain Veterinary Pathology, Ashville, NC
Leslie Gabor, Manager, Head Study Execution and Laboratories, Elianco, Sydney, AU
Maria Lara Tejero, Associate Research Scientist, Microbial Pathogenesis, Yale University, New Haven, CT
Christopher Mariani, Associate Professor, Neurology, North Carolina State University, Raleigh, NC
Sonja Mumford, Veterinary Medical Officer, Olympus Fish Health Center, U.S. Fish & Wildlife Service, Olympia, WA
Jeffery Phillips, Associate Dean, Research, Lincoln Memorial University, Knoxville, TN
Mary Thompson, Associate Professor, Small Animal Medicine, Murdoch University, Perth, AU
Oliver Turner, Director, Pathology, Novartis Institute for Biomedical Research, East Hanover, NJ

1995
Gertraut Attreuth, Clinical Project Manager, Parasitology, Bayer Animal Health, Leverkusen, Germany
Philippa Beard, Career Track Fellow, Virology, University of Edinburgh, UK
Kate Creasy, Associate Professor, Small Animal Medicine, University of Georgia, Athens, GA
Rachael Gray, Senior Lecturer, Veterinary Anatomy, University of Sydney, AU
Wendy Harrison, Managing Director, School of Public Health, Imperial College, London, UK
Andrew Moorhead, Associate Research Scientist, Infectious Diseases, University of Georgia, Athens, GA
Anthony Mutsaers, Assistant Professor, Oncology, Ontario Veterinary College, Guelph, Ontario, CA

1996
Mark Doherty, Portfolio Manager, Merial Inc., Sydney, AU
Michelle Drise-Kellaway, CEO, Early Start University of Wollongong, AU
Tamara Gull, Assistant Professor, Pathobiology, Oklahoma State, Stillwater, OK
Antonia Jameson-Jordan, Lecturer, Biomedical Sciences, Cornell University, Ithaca, NY
Ralph Sennett-Rupp, Head, Information Technology, Provet AG, Berne, Switzerland
Allison Stewart, Professor, Equine Internal Medicine, Auburn University, Auburn, AL
Edwin van Duijnhoven, Research Scientist, WIL Research Europe, BV, Den Bosch, The Netherlands
Constantin Von der Heyden, Managing Director, Pegasys Capital, Cape Town, South Africa

1997
Peter Bracken, Principal Specialist, Regulatory Affairs, Boehringer Ingelheim, St. Joseph, MO
Jonathan Happold, Principal Veterinary Officer, Department of Agriculture and Water Resources, Canberra, AU
Tanya LeRoith, Associate Professor, Pathology, Virginia Tech, Blacksburg, VA
Lucy Neave, Lecturer, Creative Writing, Australian National University, Canberra, AU
Patricia Pesavento, Professor, Pathology, Microbiology, and Immunology University of California, Davis, CA
Paul Plummer, Associate Professor, Microbiology, Iowa State University, Ames, IA
Rachel Walker, Research Scientist, Elanco Ltd., University of Sydney, AU
Jonathan Werner, Principal Pathologist, Amgen, Inc. Thousand Oaks, CA
Rebecca Wilson-Fisher, Animal Welfare Officer, RMIT University, Melbourne, AU
Esther Wissink-Antonis, Head Research Affairs, Faculty of Law, Economics and Governance, University of Utrecht, Utrecht, Netherlands

1998
Max Bartian, Senior Scientist, Paul Ehrlich Institute, Langen, Germany
Erin Phipps-Crotty, Research Scientist, Microbiology, University of New Mexico, Albuquerque, NM
Amanda de Morre, Senior Lecturer, Reproductive Immunology, Royal Veterinary College, London, UK
Steven Fleischer, Director of Therapeutic Drugs, Office of New Drug Evaluation, 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 Minucci, Director, DVM/M.P.H. Program, University of Minnesota, Minneapolis, MN
Anne Marije Sparnaaij, Project Manager, Netherlands Food Safety Authority, Amsterdam, The Netherlands

To prepare tomorrow’s scientists and public health professionals
1999
Erica Behling-Kelly, Assistant Professor, Clinical Pathology, Cornell University, Ithaca, NY
Christine Broster, PhD Candidate, Microbiology, University of Bordeaux, France
Nadine Bowden-Ramos, Staff Research Fellow, Food and Drug Administration, Washington DC
Robert Dickens, Veterinary Medical Officer, U.S. Department of Agriculture, Raleigh, NC
Joshua Fine, Principal Senior Scientific Advisor, Tunnell Government Services, Washington D.C.
Peter Florian, Director of Pharmacology R&D, Sandi, Frankfurt, Germany
Françoise Gasaghyan-Dusan, AUSVETPLAN Field Policy Officer, Animal Health, Canberra, AU
Bronwen Harper, Staff Member, Box Hall Institute, Melbourne, AU
Carl Holmgren, Neuroscientist, Center for Advanced European Studies and Research, Bonn, Germany
Emily Meeck, Director, Project Pathology, Novartis Institute for Biomedical Research, East Hanover, NJ
Mary Nabity, Clinical Assistant Professor, Pathobiology, Texas A&M University, College Station, TX
Kimberly Newkirk, Associate Professor, Anatomical Pathology, University of Tennessee, Knoxville, TN
Rachel Peters, Senior Scientist, Takeda Pharmaceuticals, Cambridge, MA
Christopher Premanandan, Assistant Professor, Veterinary Biosciences, The Ohio State University, Columbus, OH
Christine Broster-Reix, Research Scientist, Microbiology, University of Bordeaux, Bordeaux, France
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, Senior Research Fellow, Department of Biochemistry and Molecular Biology, Monash University, Melbourne, AU
Katherine Evans, Hermon Fellow in Quantitative Genetics, University of Nottingham, Nottingham, UK
Toby Floyd, Veterinary Research Scientist, Pathology, Veterinary Laboratories Agency, Addleston, UK
Samuel Hamilton, Director, Animal Disease Preparedness Services, DAFF, Canberra, AU
Rachel Geisler-Allavena, Senior Lecturer, Pathology, University of Queensland, Brisbane, AU
Natalie Krekeler, Lecturer, Veterinary Reproduction, University of Melbourne, Melbourne, AU
Jamie Lovaglio, Biorepository Scientist, Pacific Northwest National Laboratory, Richland, WA
Richard Luce, EII Officer, US Centers for Disease Control and Prevention, Atlanta, GA
Fiona Narrs-Ransom, Postdoctoral Fellow, Microbiology, University of Melbourne, AU
Knut Riesiger, Professor, Ophthalmology, Faculty of Medicine, Justus – Liebig University, Giessen, Germany
Joost Uilenreef, ECVAI Residency Supervisor, University of Utrecht, The Netherlands
Birgit Vierthoek, Senior Research Scientist, Immunology, Institute of Animal Physiology, Ludwig Maximilian University, Munich, Germany
Kevin Woolard, Assistant Professor, Pathology, University of California, Davis, CA

www2.vet.cornell.edu/education/other-educational-opportunities/leadership-program-veterinary-students-cornell-university

2001
Rachel Ballantyne, Scientific Support Manager, Royal Canin Co., United Arab Emirates
Julie Chevreau, Associate Director, Animal Care, McGill University, Montreal, PQ
Karim Holzer, Scientific Program Officer, Food Safety, Pew Charitable Trust, Philadelphia, PA
Katherine Hughes, Lecturer, Veterinary Pathology, University of Cambridge, UK
Stephanie Janeczko, Senior Director, Veterinary Outreach, ASPCA, New York, NY
Robert Klepflieb, Professor, Veterinary Pathology, Freie Universität, Berlin, Germany
Maeva May, Public Health Analyst, National Heart, Lung, and Blood Institute, NIH, Bethesda, MD
Timothy Myersall, Associate Director, Biological Resources, 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
Jason Stanyt, Staff Scientist, VetPath Laboratories, Perth, AU
Amy Warren-Yates, PhD Candidate, Neurobiology, Associate Professor, Pathology, University of Calgary, Calgary, Alberta, CA
Robin Yates, Associate Professor, Comparative Biology, University of Calgary, Calgary, Alberta, CA
Bevin Zimmerman, Scientific Director, Janssen Pharmaceutical Co., Springhouse, PA

2002
Karim Darpe, Lecturer, Veterinary Virology, University of Surrey, Guildford, UK
Karyn Havas, Head of Diagnostic Services Section USDA-APHIS, Plum Island, NY
Patrick Kenny, Head, Department of Neurology and Neurosurgery, Royal Veterinary College, London, UK
Steven Luing, Scientist, Genentech, San Francisco, CA
Anne Lu, Program Officer, Horizons Venture, Hong Kong.
Michael Mienaltowski, Assistant Professor, Applied Physiology, University of California, Davis, CA
Andrew Miller, Veterinary Pathologist, Cornell University, Ithaca, NY
Simon Priestnall, Senior Lecturer, Pathology, Royal Veterinary College, London, UK
Kelly Stiller-Brooks, Veterinary Field Service Clinician, Iowa State University, IA
Christine Bayley Tresise, Veterinary Pathologist, Gribbles Pathology, Melbourne, AU
Barbara Tännler Werhli, Marketing and Technical Manager, Zoetis Inc., Zürich, Switzerland

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2007
Patrick Ayscue, EIS Officer, CDC, Atlanta, GA
Sonja Bröer, Postdoctoral Scientist, Pharmacology, Tierärztliche Hochschule, Hannover, Germany
Stephen Burr, PhD Candidate, Immunology, Cambridge University, UK
Sarah Caddy, Postdoctoral Fellow, Microbiology, Imperial College, London, UK
Elva Cha, Research Assistant Professor, Epidemiology and Economics, Kansas State University, Manhattan, Kansas
Boran Choi, PhD Candidate, Neuroscience, Johns Hopkins University, Baltimore, MD
Ludwig Groebler, Staff Veterinarian, Johnson & Johnson, Erkrath, Germany
Laura Grogan, PhD Candidate, Conservation Biology, James Cook University, AU
Kate Johnson, PhD Candidate, Clinical Science, Royal Veterinary College, London, UK
Kristin Lewis, Pathologist, Flagship Biosciences, Westminster, CO
Kay Russo, Service Specialist, Boehringer Ingelheim, Loveland, CO
Ryan Traslavina, Captain, US Army, Fort Detrick, 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 Acciacca, Marina Corps Veterinary Officer, 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
Lucie Chevallier, Director of Research, Genetics, University of Arlort, Paris, France
Katharina Dinger, Postdoctoral Fellow, Molecular Biology, Cologne, Germany
Johanna Dupe, Postdoctoral Fellow, Parasitology, Australian National University, Canberra, AU
Anna Heymer, Dr. Med. Vet. candidate, Nutrition, Tierärztliche Hochschule, Hannover, Germany
Lisa Holz, PhD Candidate, Cardiology, University of Tübingen, Germany
Sally Ann Iversen, Vet. Med. Officer, USDA, Plum Island, NY
Joshua Leach, Resident, Pathology, University of Glasgow, UK
Dallas New, Research Scientist, Health Quality Control, University of Saskatchewan, Saskatoon, SK, CA
Annelies Nijdam, Postdoctoral Fellow, Epidemiology, Netherlands Cancer Institute, Amsterdam, Netherlands
Kimberly Schiller, Management Consultant, Accenture, London, UK
James Swann, Senior Clinical Training Scholar, Royal Veterinary College, London, UK

2009
Guen Bradbury, Innovation Consultant, Innovia Technology, Cambridge, UK
Floryne Buishand, Postdoctoral Associate, Oncology, National Cancer Institute, NIH, Bethesda, MD
Nancy Erickson, PhD Candidate, Pathology, Freie Universität, Berlin, Germany
Jenna Gettings, MPH candidate, North Carolina State University, Raleigh, NC
Laura Gey, PhD Candidate, Pharmacology, Tierärztliche Hochschule, Hannover, Germany
Sonja Heinrich, PhD Candidate, Institute for Zoo and Wildlife, Berlin, Germany
Alas Humphreys, Clinical Veterinarian, Baylor College of Medicine, Houston, TX
Shubai Ito, Program Officer, GlaxoSmithKline, Tokyo, Japan
Beth Licitra, PhD Candidate, Cornell University, Ithaca, NY
Greta Schmoyer, USDA APHIS Inspector, Knoxville, TN
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 Verhoof, MSc candidate, Pathology, Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon, CA
Hans Winkler, PhD Candidate, Pharmacology, University of Zurich, Switzerland

2010
Mirjam Brackhan, Postdoctoral Fellow, Neuroscience, Oslo University, Oslo, Norway
Heike Breuer, PhD Candidate, Pharmacology, Tierärztliche Hochschule, Hannover, Germany
Jennifer Cassano, Intern, Large Animal Medicine, Tufts University, North Grafton, MA
Zachary Chillag, Base Veterinarian, U.S. Army, Guam
Greg Dickens, Inventor, Innovia Technology Cambridge, UK
Line Greve, PhD Candidate, Sports Medicine, Royal Veterinary College, London, UK
Sarah Hooper, PhD Candidate, Nutrition, University of Missouri, Columbia, MO
Marie Killerby, EIS Fellow, CDC, Atlanta GA
Anne Kimmerlein, MS, Preventative Veterinary Medicine, University of California, Davis, CA
Erina Lopez, PhD Candidate, Equine Medicine, University of Georgia, Athens, GA
Kathleen O'Hara, MPH Candidate, Infectious Diseases, University of California, San Jose, CA
Gertje Petersen, PhD Candidate, Genetics, Otago University, Dunedin, NZ
Eliza Smith, Research Fellow, International Livestock Research Institute, Nairobi, Kenya
Loise Stiertz-Seeker, PhD Candidate, Cell Biology, Scottish Agricultural College, Edinburgh, UK
Frances Taylor-Brown, Resident, Neurology, Royal Veterinary College, London, UK
Daniel Woodward, PhD Candidate, Zoology, University of Illinois, Urbana, IL
2011
Ángel Abuelo Sebio, Lecturer in Ruminant Health and Production, Charles Sturt University, Wagga Wagga, New South Wales, AU
Hanna Atkins, Ph. D. Candidate, Wake Forest University, Winston-Salem, NC
Jessica Brown Beck, PhD Candidate, Cancer Biology, National Cancer Institute, NIH, Bethesda, MD
Timothy Chua, Veterinary Officer, AISTAR, Singapore
Scott Dudis, Army Veterinarian, US Military Training Mission, Saudi Arabia
Kristin Eilers, Research Scientist, Faculty of Life Sciences, Ruhr-University of Applied Sciences Klevé, Germany
Linda Huang, Resident, Pathology, Michigan State University, East Lansing, MI
Per Karlsson, PhD Candidate, Surgery, Imperial College, University of London, UK
Marion Leiberich, PhD Candidate, Microbiology, University of Pretoria, South Africa
Jessica Magenworth, MPH Candidate, Johns Hopkins University, Baltimore, MD
Céline Mortier, PhD Candidate, University of Ghent, Belgium.
Maureen O’Brien, Assistant Lecturer, Pathology, Texas A&M University, College Station, TX
Lauren Smith, Resident, Radiation Oncology, University of Wisconsin, Madison, WI
Karina Radefeld Stein, Dr. Med. Vet Candidate, Reproductive Biology, University of Vienna, Austria
Viktoria Rungeleit, DVM Candidate, Microbiology, University of Leipzig, Germany
Michelle White, PhD Candidate, Genetics, College of Veterinary Medicine, Cornell University, Ithaca, NY
Sarah Wood, PhD Candidate, Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon, CA
Erasmus zu Ermgassen, PhD Candidate, Environmental Science, University of Cambridge, UK

2012
Luca Bortzbach, PhD Candidate, Institute for Virology, Freie Universität, Berlin, Germany
Debbie Burnett, PhD Candidate, Immunology, Gavin Institute, Sydney, AU
Rosemary Cullander, Intern, Veterinary Emergency Center, Toronto, Canada
Anna Maria Gartner, Dr. Vet. Med. Candidate, Exotic Animal Medicine, Giessen University, Giessen, Germany
Anna Goodrow, Resident, Laboratory Animal Medicine, Johns Hopkins University, Baltimore, MD
Anja Gremmer, PhD Candidate, Neurobiology, Max Planck Institute for Brain Research, Frankfurt, Germany
Robert Holly, Base Veterinarian, US Army, Fort Bragg, NC
Hilary Hu, PhD Candidate, Neurobiology, Iowa State University, Ames, IA
Laura Schmertmann, PhD Candidate, Pathology, University of Sydney, Sydney, AU
Lucas Smolders, Postdoctoral Fellow, Surgery, University of Zurich, Switzerland
Hanna Telama-Castro, PhD Candidate, Food Safety, University of Helsinki, Finland
Adam Werts, Resident, Comparative Animal Medicine, Johns Hopkins University, Baltimore, MD
Helena Wittgenstein, PhD Candidate, Freie Universität, Berlin, Germany

2013
Casey Cazer, PhD Candidate, Epidemiology, Cornell University, Ithaca, NY
Iva Cvitas, PhD Candidate, Molecular Biology, Life Science Graduate School, Zurich, Switzerland
Angus Fisk, PhD Candidate, Neurology, University of Oxford, UK
Lucy Hardwick, Captain, UK Army Veterinary Corp
Nandita Kataria, Medical Student, University of Sydney, Sydney, AU
Hendrik Sake, PhD Candidate, Biotechnology, Medical School, Hannover, Germany
Wilfred Leung, PhD Candidate, Cornell University, Ithaca, NY
Svenja Wieschert, PhD Candidate, Medical School, Hannover, Germany
Bosco Yeung, Intern, Royal Veterinary College, London, UK

2014
Callum Bonnie, Intern, Small Animal Medicine, Sydney, AU
Alicia Brenton, Resident, Laboratory Animal Medicine, Johns Hopkins University, Baltimore MD
Fabian Lean, PhD Candidate, Infectious Disease, Australian Animal Health Laboratory, Geelong, AU
Alexandra Jeasrma, MS Candidate, Equine Medicine, Utrecht University, The Netherlands
Emily Milonowiski, Intern, Small Animal Medicine, Royal Veterinary College, London, UK
Dimo Naujokat, Dr. Vet. Med. Candidate, Business Administration, Tierärztliche Hochschule, Hannover, Germany
Susanne Soprel, PhD Candidate, Infectious Diseases, Heinrich Pette Institute, Hamburg, Germany
Isabel Ralle, PhD Candidate, Cardiology, Medical School, Hannover, Germany
Vanessa Wallace, MPH Candidate, Virginia-Maryland Technical University, Blacksburg, VA

2015
Souheila Benfrid, PhD Candidate, Virology, Pasteur Institute, Paris, France
Amy DiDomenico, Small Animal Rotating Internship, Veterinary Specialty Hospital, North Carolina
Simon Freuh, PhD Candidate, Molecular Biology, Cornell University, Ithaca, NY
Yun Ha Hur, PhD Candidate, Molecular Biology, Cornell University, Ithaca, NY

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What Did They Say?

“Very happy memories”
Christine Broster
1999

“The program propelled me along the career path I am now pursuing”
Stephen Daley
2000

“An amazing experience”
Maeva May
2001

“A great inspiration for me”
Anton Asare
2004

“An awesome summer at Cornell!”
Hannah Bender
2005

“I often think of the great time I had in Ithaca”
Annemarie Voorbij
2007

One of the best things I ever did”
Jolanda Verhoeof
2009

“The program was pivotal in my career”
Zachary Chillag
2010

“Ten wonderful weeks”
Helena Wittgenstein
2012

“An extraordinary program”
Aimee Heinz
2013
I was introduced to science at an early age in a rather atypical fashion. My father is an organic chemist, need I say more. Before I could ride a bike, I had developed a fascination with dripping acetone onto cylinders of dry ice. I remember saliently a number of my elementary school classmates being upset when, as part of a career week presentation, my Dad dissolved their milk money into particulate dust in a vibrantly blue solution of copper sulfate. They were not as awe-struck by the reaction they witnessed as he had hoped. Although it would take me years to fully realize it, I was.

My interest in science was further strengthened by experiences I had as an undergraduate and veterinary student. As a biology major at the University of Illinois, I participated in the Howard Hughes Undergraduate Research Fellowship Program. During summers, I completed various internships at the pharmaceutical company where my father worked. It was within the context of these opportunities that I was introduced to veterinary research and pathology. When I applied to veterinary school, I made it clear on my applications that I had no interest in private practice and wanted a career in research. At the time, I had no idea how much those statements would further affect my career trajectory. I was just being honest. The institutional support I received as a veterinary student to further support my interest in research was irreplaceable. Dr. Sheila Allen, Associate Dean of Academic Affairs at the time, provided funding that allowed me to work in the laboratory of Dr. Don Evans during my first year at the University of Georgia. Dr. Allen also encouraged me to apply to the Leadership Program that summer. I did, and subsequently spent a beautiful Ithaca summer in the lab of Dr. Geoffrey Sharp under the supervision of Dr. Tom Schermerhorn, exploring mechanisms of insulin secretion. When I returned to Georgia, I began working in the laboratory of Dr. Corrie Brown and participated in the Georgia Veterinary Scholar’s program that following summer. Every experience I had was vastly different in terms of content, but similar thematically. There is something irresistible to me in trying to understand how things work.

In the Limelight:

Erica Behling-Kelly
Assistant Professor, Cornell University

After veterinary school I enrolled in the Comparative Biomedical Sciences graduate program at University of Wisconsin, Madison. The group of people I shared this training experience with were amazing. Those years in Madison were some of the most enthralling days I remember, made even more challenging and exciting by the arrival of our first son. My PhD advisor, Dr. Charles Czuprynski, was and continues to be, a tremendous mentor. I often hear myself parroting his words to my own students. After completing my PhD, I did a stint as a post-doctoral fellow at the University of Texas Southwestern Medical Center. While in Texas, we had our second son. When the opportunity arose to return to veterinary medicine and Madison, to complete a residency in veterinary clinical pathology, I seized on it. I enjoyed every day of my 3 year residency, largely because of the stellar mentors I had: Drs. Karen Young, Kristen Friedrichs, and Julie Webb. Clinical pathology is the ideal field for me. Did I mention my mother is an artist? In my current role as an Assistant Professor in Clinical Pathology at Cornell, I have the best of both worlds and can engage both halves of my brain. Daily, I can revel at the beauty of cells under the microscope and attempt to relate their form to function, and often dysfunction. I also have the opportunity to explore fundamental questions in my research laboratory and to try and inspire undergraduate and veterinary students to do the same. What could be more fun than being paid to be curious and ask questions, while still enjoying the visual complexities of biology?
For more information about the Leadership Program, contact

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