## Contents

<table>
<thead>
<tr>
<th>Page</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Agenda</td>
</tr>
<tr>
<td>9</td>
<td>Participants</td>
</tr>
<tr>
<td>10</td>
<td>Activities</td>
</tr>
<tr>
<td>18</td>
<td>Cornell’s Partnership with the NIH</td>
</tr>
<tr>
<td>20</td>
<td>US Army Medical Research Institute for Infectious Diseases</td>
</tr>
<tr>
<td>22</td>
<td>Presentations and Prizes</td>
</tr>
<tr>
<td>23</td>
<td>Program Scholars and Their Research</td>
</tr>
<tr>
<td>38</td>
<td>Counselors and Facilitators</td>
</tr>
<tr>
<td>40</td>
<td>Housing</td>
</tr>
<tr>
<td>41</td>
<td>Time Out</td>
</tr>
<tr>
<td>42</td>
<td>Program Dinner</td>
</tr>
<tr>
<td>44</td>
<td>Program Alumni</td>
</tr>
<tr>
<td>45</td>
<td>Where Are They Now?</td>
</tr>
<tr>
<td>54</td>
<td>What Did They Say?</td>
</tr>
</tbody>
</table>

Inside back cover........ In the Limelight
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 22 years. During this time, 513 alumni have participated. These individuals came from 62 veterinary colleges in 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 27 outstanding scholars participated in this years Program. 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.

This year marked a transition for the Program with Professor John Parker taking over the Directorship of the Program from Professor Douglas McGregor upon his retirement. Despite his “retirement,” Professor McGregor remains strongly involved in the program in an ex officio capacity and we thank him for his continuing support and help. The transition was particularly smooth as a consequence of Professor McGregor’s dedication to the Program and willingness to provide advice and wise counsel to the new Director.

Research is a 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 employment and leadership opportunities for veterinary graduates in academia, government, and industry.

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. As new challenges arise, we expect to provide practical guidance to scholars as their choice of careers unfolds.

John Parker BVMS, PhD
Program Director
Our continued success depends on finding ways to improve the program and to set new goals. Each year we evaluate all program components and ask if they are meeting the desired goals. This year we introduced a new “Hypothetical Disease” module in which we asked our scholars to prepare a short “blue sky” grant proposal that would substantively tackle the problem of equine laminitis. The purpose of the module was to provide a clear example of a problem in veterinary medicine where hypothesis-driven basic research is likely to lead to advances in our understanding of the mechanisms that underpin the pathogenesis of this disease.

We continue to look for new opportunities to add value to the program. Prominent in that connection is our effort to capitalize on the accomplishments of program alumni by asking them to motivate and assist each other and their more junior colleagues. To further that objective, we plan to launch an alumni web portal that will provide a convenient way for alumni to remain in contact and to share advice, experience, and opportunities. We expect that this resource will further enrich the careers of our alumni and provide a link that will last long beyond the Summer Program.
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:

National Institutes of Health
Deutscher Akademischer Austauschdienst
The Albert C. Bostwick Foundation
Mellon Foundation
Pfizer Inc.
Boeringer-Ingelheim Co.
The Wellcome Trust

The program organizers also thank the facilitators, counselors, and mentors who took part in the 2011 program. Thanks also to Ms. Alison Keggan, the Program Coordinator, and to Ms. Alice Bizri, 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.

Publications

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 www.vet.cornell.edu/OGE/Leadership
## 2011 Leadership Program Agenda

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>Monday, June 6</td>
<td>Opening Meeting</td>
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<td>Biological &amp; Chemical Safety Training</td>
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<td>Welcome BBQ</td>
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<td>Tuesday, June 7</td>
<td>Library Orientation</td>
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<td>Laboratory Orientation</td>
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<td>Wednesday, June 8</td>
<td>Radiation Safety Training</td>
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<td>Saturday, June 11</td>
<td>Career Discussion</td>
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<td>Monday, June 13</td>
<td>Leadership Module</td>
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<td>Reception &amp; Dinner</td>
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<td>Thursday, June 16</td>
<td>National Institutes of Health</td>
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<td>Friday, June 17</td>
<td>U.S. Army Medical Research Institute for Infectious Diseases</td>
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<td>Monday, June 20</td>
<td>Creativity in Science</td>
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<td>Monday, June 27</td>
<td>Infectious Diseases Workshop</td>
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<tr>
<td>Tuesday, June 28</td>
<td>Research Project Previews</td>
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<td>Tuesday, July 5</td>
<td>Drug Design Workshop</td>
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<td>Thursday, July 7</td>
<td>Reunion Dinner</td>
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<tr>
<td>Wednesday, July 13</td>
<td>Leadership in Action</td>
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<td>Thursday, July 14</td>
<td>Residency Training</td>
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<td>Friday, July 15</td>
<td>Translational Science</td>
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<td>Monday, July 18</td>
<td>Industry Workshop</td>
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<td>Tuesday, July 19</td>
<td>Research Training</td>
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<td>Tuesday, July 26</td>
<td>Hypothetical Research</td>
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<td>Wednesday, August 10</td>
<td>Research Presentations</td>
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<tr>
<td>Thursday, August 11</td>
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<td>Friday, August 12</td>
<td>Exit Meeting</td>
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### 2011 Leadership Program Scholars

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<tr>
<td>Ángel Abuelo</td>
<td>University of Santiago</td>
<td>Marjory Brooks/James Catalfamo</td>
<td>Population Medicine/Diagnostic Sciences</td>
<td>Bostwick Foundation</td>
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<td>Hannah Atkins</td>
<td>Texas A&amp;M</td>
<td>Colin Parrish</td>
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<td>Jessica Beck</td>
<td>University of Georgia</td>
<td>Cynthia Leifer</td>
<td>Microbiology/Immunology</td>
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<td>Shawna Buerkle</td>
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<td>Theodore Clark</td>
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<td>Alyssa Chandler</td>
<td>University of Edinburgh</td>
<td>Nate Sutter</td>
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<td>Timothy Chua</td>
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<td>Natasza Kurpios</td>
<td>Molecular Medicine</td>
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<td>Catherine Diggins</td>
<td>Cornell University</td>
<td>Robert Weiss</td>
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<td>Scott Dudis</td>
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<td>Rachel Dutkosky</td>
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<td>Kristin Eifers</td>
<td>TiHo Hannover</td>
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<td>Linda Huang</td>
<td>Virginia/Maryland CVM</td>
<td>Kenneth Simpson</td>
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<td>Jessica Magenwirth</td>
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<td>Celine Mortier</td>
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<td>Emily Moser</td>
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<td>Enio Sanmarti</td>
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<td>Michelle White</td>
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<td>Gregory Acland/Anna Kukekova</td>
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<td>Sarah Wood</td>
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<td>Yrjö Gröhn</td>
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<td>Erasmus zu Ermgassen</td>
<td>Cambridge (Selwyn College)</td>
<td>Alexander Travis</td>
<td>Baker Institute</td>
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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. Professor David Fraser moderated the discussion with assistance from Professor Elizabeth Simpson, Dr. Michelle Haven, and Mr. Andrew Sage.
Leadership in Action

The film entitled, “A Few Good Men” illustrates strengths and deficiencies of individuals cast in the role of leaders. Leadership characteristics illustrated by the film were discussed by the students, and Professors David Fraser, Douglas McGregor, Drew Noden and John Parker.
Infectious Diseases
A workshop moderated by Professors Larissa Minicucci, John Parker, and Philip Carter featured discussions of antibiotic resistance and diseases that 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 focused. Having done so, 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 and veterinary public health.
Drug Design

Dr. Michelle Haven, a senior executive of Pfizer Animal Health, 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. Dr. David Medina assisted Dr. Haven in this module. Later the same evening, the two facilitators answered questions regarding the range of employment opportunities for veterinarians at Pfizer and the advanced training required to be competitive for such positions.
Industry Workshop

Drs. Gerard Hickey, Charlie Hsu, 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 capacity to see relationships between seemingly unrelated phenomena is a valuable skill in individuals who conduct research as a major component of their professional activities. In an informal meeting, Dr. Theodore Elsasser drew a parallel between creativity in science, music, and the visual arts. His presentation encouraged students to think broadly about a research project before formulating an hypothesis and designing experiments calculated to provide definitive answers and move the project forward in an orderly manner. Professor Dale Bauman contributed his own thoughts to this phase of the discussion.

Hypothetical Research

Veterinary students have a strong desire to work on problems of importance to animal disease. Although, intellectually one can understand how research in basic science is important for veterinary problems, emotionally the desire to help animals is so strong it tends to encourage students to move away from hypothesis-driven research towards applied or observational science. 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 equine laminitis. Facilitators, Drs Natazca Kurpios, Chris Schaffer, and Joe Wakschlag, then reviewed the proposals and made suggestions before the students presented their ideas to Dr. Tom Divers, an expert on equine laminitis.
Career Explorations

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

Professor David Fraser and Drs. Hannah Bender, Derek Cavatorta, and Carole Harbison reviewed career options available to veterinary graduates who aspire to careers in science. The four counselors emphasized the importance of selecting a superior environment for graduate research training and a mentor who has a successful training record.

Professors Julia Felippe and Don Schlafer commented on residency programs in the clinical sciences and pathology, respectively. The two counselors emphasized factors one should consider in seeking a residency; the expectations of training organizers, and the satisfactions of pursuing a clinical or veterinary service career.

A companion meeting addressed issues related to graduate research training. Professors Natasza Kurpios
and Douglas McGregor identified aspects of training 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.
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 G. Wyatt
Executive Director, Office of Intramural Research

The Cornell-NIH Partnership
Dr. John S. L. Parker
Director, Cornell Leadership Program

“Some Assembly Required: Mechanism of Rotavirus Genome Replication and Packaging”
John Patton, PhD
Chief, Rotavirus Molecular Biology Section,
Laboratory of Infectious Diseases
National Institute of Allergy and Infectious Diseases, NIH

“NF-kappaB Signaling in Cancer: Deregulation and Targeting”
Christine Annunziata, MD, PhD
Investigator, Medical Oncology Branch
National Cancer Institute, NIH

“Nanoparticle Platforms for Molecular Imaging”
Shawn Chen, PhD
Chief and Senior Investigator, Laboratory of Molecular Imaging and Nanomedicine,
National Institute of Biomedical Imaging and Bioengineering, NIH

“Seeing the Light: Visual Cycle Metabolic Disease”
Michael Redmond, PhD
Chief, Laboratory of Retinal Cell and Molecular Biology, National Eye Institute, NIH

“Noroviruses: Developing Strategies to Sink the Cruise Ship Virus”
Kim Green, PhD
Chief Caliciviruses section, Laboratory of Infectious Diseases,
National Institute of Allergy and Infectious Diseases, NIH

Closing Remarks
Dr. John Parker
Armed Services & Infectious Disease

Leadership Program scholars had the privilege this year of visiting the U.S. Army Medical Research Institute for Infectious Diseases. Senior members of the Institute’s staff described the remarkable progress being made at USAMRIID in addressing still unresolved problems of infectious diseases, which are of special concern to the uniformed services. The scientific program was followed by a short tour of the superb research facilities at USAMRIID.

Agenda

Welcome
  Colonel John Skvorak
  Commander, USAMRIID

“Smallpox: Update on an Ancient Scourge”
  Lieutenant Colonel Jennifer Chapman

“Antibiotic Treatment Options for the Treatment of Diseases Caused by Category A and B Pathogens. Therapies Tested Using the Mouse Model”
  Major Charles Marchand

Tour of facilities
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 Jessica Beck for the best overall research achievement as judged by her underlying hypothesis, investigative protocol, results, and presentation. Additional prizes were awarded to Timothy Chua, Celine Mortier, and Michelle White for exceptional achievements in integrative biology, cell biology, and molecular biology, respectively. An additional prize was awarded to Erasmus zu Ermgassen for the best student presentation from the UK or Australia. This prize is given in honor of Dr. David Fraser, who has served as a counselor and the co-director of the program for over twenty years. The Selection Committee for the 2011 Leadership Program salutes these individuals and congratulates the entire group for their commitment to research and the excellence of their presentations.

**Program Prize**
*Jessica Beck (left)*
Sortilin is critical for macrophage response to CpG DNA through Toll-like receptor 9

**Cell Biology Prize**
*Celine Mortier (right)*
Pathogen-associated molecular pattern (PAMP)-triggered immunity against Salmonella in produce plants

**Integrative Biology Prize**
*Timothy Chua (left)*
Left-specific vasculogenesis in dorsal mesentery

**Molecular Biology Prize**
*Michelle White (right)*
Association of the HTR2C gene with selection for behavior in silver foxes

**UK & Australia Prize**
*Erasmus zu Ermgassen (above)*
How sperm form their tails – mapping protein expression in the elongating spermatid
Ángel Abuelo Sebio, University of Santiago, Hematology

*TMEM16f expression in platelets of normal and Scott affected dogs*

I applied to the Leadership Program during my Master year at Veterinary School. This summer was the best mind-opening experience of my career and kindled my interest in translational science. I’m now considering residency training after completing a PhD.

My research at Cornell focused on Scott syndrome, a bleeding disorder that has been identified in humans and dogs, where the platelets of affected patients are unable to promote normal coagulation. The rationale for my project is that the expression of a transmembrane protein (TMEM16f) is altered in lymphocytes of humans affected with Scott syndrome, and I hypothesized that this protein would be similarly altered in platelets from dogs with Scott syndrome. I identified this protein in the platelets and found that it is expressed in the membrane and cytosol of the cell, but without an obviously different expression pattern between normal and affected dogs.

I would like to express my gratitude to Dr. Marjory Brooks and Dr. James Catalfamo for their great mentoring during this summer. I also would like to acknowledge all of the participants of this year’s program for the great moments that I had and with some of them I hope to remain friends forever.
Hannah Atkins, Texas A&M University  
*Development of a contraceptive vaccine based on canine parvovirus-like particles*

In the United States, it is estimated that there are between 60 and 100 million feral cats. In addition to concern for the general health and welfare of these cats, there is also concern about their role in the spread of diseases and their effect on wildlife. Many control measures have been implemented, including euthanasia and trap, neuter, and return (TNR) programs. However, the efficacy of these programs is controversial. Immunosterilization is one solution to the feral cat problem. Current immunocontraceptive vaccines used in cats are designed to target the sex hormone-triggering peptide called gonadotropin-releasing hormone (GnRH). Additional improvements need to be made on these vaccines to increase their immediate and long-term efficacy.

This summer, I had the privilege of working in the Parrish Laboratory at the Baker Institute for Animal Health on a new immunosterilant. For this project, canine parvovirus (CPV) virus-like particles (VLPs) were engineered to contain peptides such as GnRH, gonadotropin associated peptide (GAP), or a maternal antigen that embryos require (MATER). GnRH and GAP peptides target hormones responsible for triggering the release of testosterone or estrogen, while MATER targets oocytes. The use of CPV as a delivery vector for these peptides is projected to increase host immune response without causing complete destruction of the antigen before the body has a chance to respond. This is due to the similarity between CPV and feline panleukopenia virus (FPLV), a virus to which many feral cats have antibodies. Next, the VLPs produced will be tested in mice and, ultimately, cats.

Jessica Beck, University of Georgia  
*Sortilin is critical for macrophage response to CpG DNA through Toll-like receptor 9*

As a third-year veterinary student, I have gained experience in many aspects of veterinary medicine, but not in less traditional careers paths, such as basic scientific research. I have been interested in research for a long time, but wasn’t sure if it was the right career for me. I applied to the Leadership Program to gain research experience and hopefully help me define my future goals. In the end, this program was perfect for me: an excited and interested student with limited lab knowledge or skills.

My research project was on a family of immune sensors that detect bacterial and viral infection. Toll-like receptors (TLRs) are critical immune sensors for host defense, but also contribute to autoimmune disease. My research identified a new association between one of these TLRs and a protein called Sortilin. I showed that cells deficient in Sortilin had reduced response through the TLR. These studies are important clinically since inhibition of receptor signaling will reduce inflammation in patients suffering with autoimmune disease.

Members of Dr. Leifer’s lab were extremely supportive of my research efforts. They were more than happy to help at any time. Through my experience there, I learned firsthand the importance of working with great people. Thanks to my laboratory friends and colleagues; I could not have asked for a better experience in the Cornell Leadership Program.
Shawna Buerkle, University of Georgia, Immunology

*Developing vaccine candidates for “Ich” using the model organism Tetrahymena thermophila*

The Leadership Program is as much a professional development course as it is a summer research experience. I was attracted to the program for the chance to learn about postgraduate training and career opportunities while concurrently experiencing research related to veterinary medicine.

I worked in Dr. Ted Clark’s lab on Ichthyophthirius multifiliis, or white spot disease. Since Ich is an obligate parasite, it presents challenges for subunit vaccine development. We used the model organism Tetrahymena thermophila, a pond ciliate, to produce Ich proteins for development of a subunit vaccine. Tetrahymena is a protozoan with facile genetics and the ability to be grown large-scale in a laboratory setting. The Funky protein has been determined to be the most highly expressed protein in the Ich genome. Tetrahymena clones containing the Funky gene were cultured, induced, and stimulated to secrete the Funky protein in a protein-rich matrix secreted by Tetrahymena known as PRISM. PRISM provides a convenient platform to harvest, purify and quantify target proteins. Processed PRISM containing the Funky protein was then injected into juvenile channel catfish that were subsequently challenged with wild-type Ich. Results from this challenge study are pending.

I would like to thank all the members of the Clark lab for their mentorship and support this summer. Special thanks to NIH for providing financial support. Finally, I’d like to thank the program directors, facilitators, our program coordinator Alison, and my fellow participants for teaching me so much about leadership and career development while still making the summer a fun and exciting experience.

Alyssa Chandler, Cornell University, Genetics

*Fine Mapping Quantitative Trait Loci for Body Size in the Horse*

I applied to the Leadership Program curious about the range of opportunities available to veterinary graduates. Throughout the course of the summer this program has highlighted the numerous prospects for DVMs in public health, research, and industry. The Leadership Program has given me unique insight into the importance of an advanced research degree. Following the completion of my DVM I plan to pursue Residency and PhD training and hope to find a place in academia as a researcher and clinician.

The Sutter lab investigates genes determining body size in the dog, horse, and rabbit. Previously the lab identified loci in the horse genome associated with body size. Towards my aim of fine mapping two of these loci, I identified new sequence variation using capillary sequencing and refined the size-associated haplotypes found in Shires, Clydesdales, Percherons, and Caspians, Falabellas, and Shetland ponies. Looking ahead, this work sets the stage for the lab to identify the causal mutations contributing to size variation at each locus.

I thank Dr. Sutter for his amazing mentorship, as well as the members of his lab for their help and collaboration. I especially thank my lab-mate Ariel Loredo with whom I collaborated on this project. Special thanks to Drs. Parker, McGregor, and Fraser for the opportunity to participate in this wonderful program, and to my fellow students for an unforgettable summer.
Timothy Chua, University of Edinburgh, Developmental Biology

Left specific vasculogenesis in dorsal mesentery.

I was introduced to the Leadership Program in my second year of veterinary school at Royal Dick Veterinary School. It sounded like a great opportunity. It provided exposure to research together with workshops that explored various nontraditional careers paths. True to what was advertised, I now have a clearer idea of what research entails and broadened my perspective on various exciting possibilities after graduation. I will be heading back to Singapore to be a lab animal veterinarian and eventually pursue a residency and possibly further training in research.

During the summer, I was working in Dr Kurpios laboratory, studying embryology. The laboratory is trying to answer a fundamental question of how small intestine coils counterclockwise. It was found that this highly conserved coiling was initiated by changes in the dorsal mesentery, which suspends the gut tube, early in development. These changes result in left-sided tilt of the gut tube. An important transcription factor initiating this change is Pitx2. The lab is trying to determine the downstream molecular effects of Pitx2.

It was also found that there is a left specific blood vessel formed on the left side of the dorsal mesentery at the same time when the gut tube tilts towards the left. My project was to characterize changes in the formation of blood vessels in the dorsal mesentery throughout development using chicken embryos and to try to understand what induces this phenomenon.

My many thanks to Drs. McGregor, Fraser and Parker for organizing such an amazing program. Also a great thank you to my mentor, Dr. Kurpios, who was a great inspiration.

Catherine Diggins, Cornell University, Cell Biology

Analysis of Apoptosis in HUS1 Conditional Knockouts

I participated in the Leadership Program to become more familiar with non-traditional veterinary careers. I’ve loved my clinical experience so far, but have always been intrigued by how and why things work. Pursuing scientific questions has always interested me, and I’ve been hesitant to completely shut the door on research. I had hoped this program would help crystallize my interests. However, my experiences this summer have instead opened my eyes to just how many career opportunities exist for veterinarians, especially in the areas of public health, industry, and academia. I’m even more excited about the possibility of a non-traditional career and am thinking seriously about pursuing further degrees after vet school.

The Weiss lab is focused on cell cycle checkpoints and the cell’s response to DNA damage and replicative stress, particularly the ATR and ATM signaling pathways, and the essential DNA damage checkpoint signaling protein, Hus1. My summer project, under Dr. Weiss’s postdoctoral associate, Dr. Amy Lyndaker, focused on the role of Hus1 during meiosis and spermatogenesis. We analyzed levels of apoptosis in the testes of Hus1 conditional knockout mice and found that there is an increase in apoptosis in mutant mice. This indicates that Hus1 is essential for germ cell development.

I would like to genuinely thank the entire Weiss lab for welcoming me into their lab and making my summer so enjoyable. I’d especially like to thank Dr. Weiss for his guidance and Amy for taking me under her wing and answering all of my endless questions.
Scott Dudis, Cornell University, Virology

Correlations between infection with a canine homolog of hepatitis C virus and canine liver disease

As a dual-degree DVM/MPH candidate, I am fully committed to the concept of One Health. I applied to the Leadership Program to continue my own research interests in infectious disease and to explore alternative career pathways in veterinary medicine. The program presented numerous opportunities that helped reaffirm my career goals. I am currently a 2nd Lieutenant in the United States Army Reserve Medical Services Corps and upon graduation will be promoted to Captain in the Army Veterinary Corps under the Public Health Command.

As a member of the Parker Lab, I started on a new project investigating the prevalence of a new Hepatitis C-like Virus in dogs with liver disease. A recent publication had described an HCV-related viral homolog in dogs, which was tentatively named Canine Hepacivirus (CHV). Finding a viable non-human model to study Hepatitis C-like virus is incredibly important for the more than 200 million people who suffer from chronic active hepatitis worldwide, so that we can better understand the infectious mechanisms and create targeted pharmaceuticals for prevention and treatment. My project involved collecting RNA from various liver tissue samples from the Cornell College of Veterinary Medicine Pathology Department and then using specific primers and RT-PCR to test for the presence of canine hepacivirus to see whether or not dogs with liver disease have a higher incidence of infection by the virus. My results indicated that dogs with liver disease do not appear to have a higher prevalence of CHV infection than normal dogs.

I am particularly grateful to Dr. John Parker for mentoring me as both program director and as my project advisor, and special thanks go to lab members Brian Ingel and Alex Amaro for their tremendous support.

Rachel Dutkosky, University of Tennessee, Epidemiology

Modeling Biologic Variation: Stochastic Transmission Dynamics of Escherichia coli O157:H7 Populations in a Heterogeneously Shedding Cattle Herd

I am interested in wildlife and emerging infectious diseases. Gaining epidemiology research experience is invaluable in my pursuit of this exciting veterinary field. I applied to the Leadership Program because I wanted to know more about pursuing a non-traditional career path in veterinary medicine. I also looked forward to forming connections with future veterinarians, living in the U.S. and internationally.

I investigated the transmission dynamics of Escherichia coli O157:H7 bacterial populations in a cattle herd. Understanding how these bacterial populations develop within cattle is important to mitigate their transmission during the food production process, and subsequently decrease disease in human populations. I endeavored to simulate realistic transmission scenarios, such as simulating a cattle herd that replicates and releases Escherichia coli O157:H7 into the environment at different rates and amounts. To achieve these scenarios, I recreated multiple-population computer models and modified original parameters, such as carrying capacity, replication rate, and passage rate, in the average cattle host. I incorporated random, mathematical elements into model equations to more accurately create and observe these biologic scenarios within my model.

Through continuously unusual interactions with facilitators, mentors, and peers, I gained a deeper understanding of various veterinary career opportunities. I gained confidence in my communication and problem-solving skills. I thank all facilitators, mentors, and participants who made this program a success, and Drs. Fraser, Gröhn, McGregor, and Parker for their encouragement. Ultimately, I will build upon the invaluable information and connections to develop my career goals and serve society.
Kristin Elfers, Tierärztliche Hochschule, Hannover, Virology  
*Feline Infectious Peritonitis Virus: Differences in the sequence of the Spike Protein in different Tissues*

The Leadership Program was a great experience, especially as I had never been to the United States before. Beside the fantastic weather, I came to know 26 interesting and interested students who really impressed me during our preparation for workshops and with their motivation.

I spent the 10 weeks in Professor Gary Whittaker’s lab working on the Feline Infectious Peritonitis (FIP) Virus. I sequenced the S- or spike protein of this feline coronavirus in cats diagnosed with FIP and compared the sequences of the virus in different tissues within the same cat and in different cats. The goal of my project was to identify sequence motifs within the spike protein that are predictive of FIP.

This kind of work was completely new to me, so I was really lucky to have such pleasant and helpful colleagues in my lab. Special thanks should go to Beth Licitra, who taught me all the basics I needed to know for my lab work and who always had time to answer my questions! Of course I also want to thank Dr. Gary Whittaker and all members of the Whittaker Lab and thanks to the DAAD for sponsoring me.

Carson Grant, University of Calgary, Virology  
*Adenosine Monophosphate-Activated Protein Kinase Dynamics in Herpes Simplex Virus Infected Cells*

The Cornell Leadership Program is exactly what I needed. I have always found the plethora of opportunities within veterinary medicine to be one of the most exciting facets of our field; in this program I have had the rare opportunity to see the avenues in veterinary medical careers that are often out of sight in our clinically focused veterinary education. While laboratory research as a career path has been a major consideration since my undergraduate education, this program’s balance between immersion in a research environment and exposure to different research-based careers has allowed me to focus and distill my career goals.

My research in the laboratory of Dr. Joel Baines focused on changes in the adenosine monophosphate activated kinase (AMPK) enzyme system in cells infected with Herpes Simplex Virus. AMPK is a cell sensor system that detects deviations in cellular energy status, such as happens in stressed (or virus-infected) cells. When activated, this enzyme system has the capacity to fundamentally shift cellular metabolism to a state unfavorable for viral replication. My investigations looked at how HSV interacts with the AMPK system, either to block or commandeer its actions. Understanding how the virus manipulates this highly conserved system will provide insight into the cellular environment that is required to allow for viral replication.

I would like to express my sincere thanks to the entire Baines lab for the exceptional guidance and direction they provided me throughout this summer. I would also like to thank our dedicated directing staff, whose keen insights have helped steel my determination and build a genuine excitement about developing my own career.
Ellen Hart, Texas A&M University, Biomedical Engineering

Shades of Pink: Optimizing 3D in vitro models of bone cell cultures for the study of breast cancer metastasis

I applied for veterinary school expecting to pursue a less-traditional career pathway. After two years in school and an internship with the FDA, I was convinced that clinical practice held little appeal to me. I anticipated that the Cornell Leadership Program would enlighten me about non-traditional options in veterinary medicine. It did.

In vitro modeling is critical to the study of many diseases. Such modeling allows study of cell-cell interactions that more closely mimic those found in vivo, providing for a more complete understanding of physiological processes as well as a better streamlined transition of in vitro studies into in vivo treatments. Breast cancer preferentially metastasizes to bone, which is the leading cause of death in advanced cases of the disease. My research this summer focused on optimizing scaffolds for the 3D growth of bone cell cultures in vitro. This modeling will allow for a more complete understanding of the in vivo cellular signaling involved in perpetuating the metastatic cascade.

Thank you to everyone who made this summer come to fruition. My special thanks to Dr. Claudia Fischbach for graciously welcoming me into her laboratory; Dr. Maureen Lynch for including me in her research; all the members of the Fischbach lab whose unique insights showed me the inseparable connection between engineering and biology; and Drs. Timothy Cudd, Michael Murphy, Carlos Martinez del Rio, and Roger Smith for allowing me to “stand on the their shoulders.”

Linda Huang, Virginia-Maryland Regional College of Veterinary Medicine, Gastroenterology

The role of fucose metabolism in the invasion and persistence of Adherent Invasive E. coli

As a child I had a strong interest in the sciences and medicine. Eventually I decided to pursue a DVM with the intent of applying my veterinary skills to a career in biomedical research. During my first year of veterinary school I heard about the Cornell Leadership Program for Veterinary Students and realized it was the perfect opportunity for me to see how veterinary training complemented a research career.

Under the mentorship of Dr. Kenneth Simpson, I focused on how key genes involved in fucose metabolism affect the ability of the MT8 E. coli strain to invade and persist in host cells. As an adherent invasive E. coli strain, MT8 is a useful tool to study the etiopathogenesis of inflammatory bowel diseases such as Crohn’s Disease. By studying wild-type MT8 and mutants that had certain genes deleted, I hoped to determine how fucose metabolism impacted the virulence of adherent invasive E. coli. My hypothesis was that the mutants would be less able to utilize fucose, an oligosaccharide found in mucin, and would be less virulent when fucose was the primary carbohydrate source. My work entailed comparing the growth of these microbes under various microenvironments and conducting invasion and persistence assays in tissue cultures of Caco-2 intestinal epithelial cells and J774 macrophages.

I would like to thank the program facilitators for their dedication to running this program. I would also like to thank Dr. Simpson and the rest of the Simpson lab for their guidance and my friends and program-mates Viktoria and Kristin for their support.
Per Karlsson, The Royal Veterinary College, Biomedical Engineering

Quantification of amyloid-β in animal models of Alzheimer’s disease

The Cornell Leadership Program gave me an unparalleled experience to gain relevant research experience, improve professional skills and to explore career paths. I have thoroughly benefited from all aspects of the program and extended my network with life-long friends having similar career aspirations as my own. This experience has truly inspired me to continue on a path with strong components of research and clinical work within industry, government, or academia.

This summer I worked in the Schaffer Lab on analysis methods for Alzheimer’s disease (AD). The pathogenesis of this disease has recently moved from being entirely neurological in origin to include a major vascular component. This paradigm shift might offer new therapeutic targets for its management and treatment. Amyloid-β, the hallmark of AD, may be a cause or consequence of disruptions in microvascular blood flow. These peptides are found as solitary plaques near vessels throughout the brain of AD patients. To study their effect on cerebral blood flow dynamics, mouse models of AD are imaged in vivo using two-photon excited fluorescence microscopy. Quantification of the resulting image volumes is a complex task. I developed image processing algorithms to locate and characterize amyloid-β deposits within the brain vessel network. These tools can be used when drug targets are evaluated for AD.

For my work, I would like to thank Dr. Chris Schaffer and Dr. Nozomi Nishimura; their guidance was invaluable. For sponsoring my time at Cornell, I would like to thank the Wellcome Trust.

Marion Leiberich, Tierärztliche Hochschule, Hannover, Microbiology

Macrophage migration and phagocytosis

Ten months ago I wasn’t sure if I should apply to the Cornell Leadership Program. Today I am glad I did, and I am grateful to have been accepted. The Program was a unique chance to look into research and the diverse career opportunities the veterinary profession offers.

For the first time I worked in a lab – Dr. Russell’s lab - which focuses on Mycobacterium tuberculosis. For my research project I studied macrophage migration and phagocytosis. I worked with a new μ-slides system to observe and document macrophage migration by taking pictures. The μ-slide assay did not work as expected, and after many different approaches I still could not see macrophage migration. Finally, I focused on imaging the two different types of phagocytosis using fluorescent beads coated with different agents. I had to be patient but after all, I recorded some nice videos documenting the differences between the phagocytosis of microbes and apoptotic cells. I guess that’s what research is like! And I must say, I enjoyed it!

The program strengthened my idea to follow a research career path and to do a PhD when I graduate. In my research I hope to combine laboratory and field work to focus on wild animal medicine.

I’d like to thank my mentor Dr. Russell and his research team, especially Neelima Sukumar who was always willing to help me whenever I had a question. Thank you all, I had a great summer!
Jessica Magenwirth, Freie Universität Berlin, Molecular Biology
Cellular Metabolism Triggers Microvesicle Generation in Cancer Cells

The Cornell Leadership Program has been an exceptional experience where I have explored non-traditional career paths for veterinary graduates. The experience impacted my career, since I now want to pursue a PhD after finishing my veterinary degree.

Microvesicles (MVs) are unusual vesicular structures that bud from the surfaces of cancer cells. They contain oncogenic cargo that can be transferred to other cancer cells or to normal cells, where they trigger signaling events that promote cell growth and survival. Thus, understanding how MVs are generated could have important consequences for preventing cancer progression. My project in Dr. Richard Cerione’s laboratory was to determine whether the changes in metabolism that accompany the induction of malignant transformation could influence MV-biogenesis. I was able to show that the highly aggressive MDAMB231 breast cancer cells constitutively generate MVs, and that when the MVs from these cells are added to normal NIH3T3 fibroblasts, the MVs protected these recipient fibroblasts from serum-starvation-induced apoptosis. I then went on to uncover a connection between cancer cell metabolism and MV-biogenesis by showing that inactivating a key enzyme involved in the metabolic reprogramming of cancer cells, namely glutaminase, inhibited MV-generation in MDAMB231 cells. These data suggest that the generation of MVs by cancer cells is coupled to altered cellular metabolism.

I would like to thank the Cerione lab, especially Drs. Cerione, Antonyak and Milano, for their support and encouragement this summer.

Céline Mortier, Ghent University, Bacteriology
PAMP Triggered Immunity against Salmonella in produce plants

When I applied to the Leadership Program, my goal was to get a concrete idea of what doing research really means. The way this program combines learning about practical research aspects and exploring alternative career paths makes it a unique experience.

I worked in Dr. Craig Altier’s lab this summer. My research project focused on Salmonella in produce plants. The number of cases of salmonellosis caused by contaminated vegetables and produce plants continues to increase. In addition to surface contamination of plants, Salmonella can also enter plant tissues. In the latter case, washing vegetables is ineffective. With that in mind, I looked at immunity in plants against Salmonella. If plants can defend themselves against Salmonella, this would reduce drastically the tissue form contamination.

Using the pathogen-associated molecular pattern triggered immunity (PTI) assay, developed by the Boyce Thompson Institute for Plant Research, I investigated which components of Salmonella bacteria can induce immunity. Such knowledge might enable plant breeders to develop Salmonella-resistant plants and hence limit the number of cases of food-induced Salmonella infections.

I would like to thank Dr. Altier for guiding me this summer in a very patient and stimulating way, and Chien-Che Hung for teaching me all the techniques I needed. Also many thanks to Dr. Gregory Martin and Dr. André Velásquez, for the use of their facilities in the BTI and their great coaching.
**Emily Moser, Cornell University, Animal Behavior**

*Human-Induced Fear Response in Mice*

In the United States, it is estimated that nearly 30 million mice per year are used in biomedical research, testing, and education. Inbred laboratory rodents, which have been isolated from predators for hundreds of generations, still respond with a fear-like defensive behavior to cat and rat odors. In mice, the vomeronasal organ, a unique sensing component of the olfactory system, detects and processes predator chemicals that stimulate innate risk assessment and avoidance behaviors. The objective of this study was to: (1) develop a behavioral assay to quantify innate fear in mice and (2) determine if mice have an innate fear of humans based on odor detection. First, a mouse behavioral assay was developed with the known predator chemical found in rat urine to elicit stereotypical fearful behaviors. Second, mouse behavior assays were conducted to evaluate the capacity of human secretions (saliva, urine, and dander) to elicit innate fear responses comparable to rat odorants. My results suggested that C57BL/6N and Swiss Webster mice do not have a statistically significant fear response to the human secretions tested.

I am starting my second year of veterinary school at Cornell University in the fall. I applied to the Leadership Program due to my interest in a research career studying olfaction, pheromone sensing, and animal behavior. I want to thank Dr. Germain Rivard, Dr. Dave Lin, and the Leadership Program for supporting me and my research endeavors.

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**Maureen O’Brien, Ohio State University, Hematology**

*Detection and Immunopuriﬁcation of Equine Monocytes*

Last summer I participated in the summer research program at The Ohio State University. I enjoyed the opportunity and learned a great deal, but I was still uncertain if I wanted to pursue a career in research. A mentor recommended the Leadership Program and I applied with two goals: to acquire additional research experience and to explore non-traditional career paths.

My project emerged from an observation that methods for equine monocyte purification using immunomagnetic purification yielded at best 60 to 80% monocytes, with the remaining cells comprised of lymphocytes and neutrophils. Reducing the numbers of non-monocyte cells in the isolation should eliminate any potential influence of these cells on observed responses. The focus of my project was to improve monocyte purity by using flow cytometry to select the best antibody for immunomagnetic bead-based monocyte purification. We identified two anti-human antibodies that cross react with markers on equine monocytes; monocyte purity was improved to 83 to 90% for a CD14 antibody (biG10) and to 92 to 97% for a CD163 antibody (BerMac3). These results are invaluable for examining the influence of monocytes in infectious or immunological disease processes.

I extend my sincerest appreciation to Dr. Tracy Stokol, Dr. Wee Ming Yeo, the Stokol Laboratory, and the Cornell Veterinary Clinical Pathology Department. My research project was a fantastic experience, especially because of the phenomenal mentorship.
Karina Radefeld, Freie Universität Berlin, Molecular Medicine

*Palmitoylation of Gα13*

I have just completed my third year of veterinary school and became fascinated with research thanks to my apprenticeship as a biological laboratory technician at Bayer HealthCare Pharmaceuticals before my studies. I applied for admission to the Leadership Program expecting to get deeper insight into positions in the veterinary research field that would give me the opportunity to connect my deep interest in veterinary medicine as well as research. Ultimately, I am interested in learning more about how a disease works at the molecular level. Therefore, my research project in the Department of Molecular Medicine has been a perfect match for me.

The Linder lab is working on palmitoylation, which is a post-translational modification of proteins. During my summer project I investigated the palmitoylation of Gα13, a subunit of one of the four subfamilies of heterotrimeric GTP-binding proteins (G proteins). Gα13, among other things, plays a role in regulating pathways concerning cell proliferation, migration, and metastatic invasion. I infected insect cells, specially qualified for protein expressions, with baculoviruses bearing the Gα13 gene. Then, I harvested and purified the G protein using affinity chromatography and tested different protein acyltransferases in a special enzyme assay using radioactive labeled palmitate. A greater understanding of this modification mechanism gives the opportunity for targeted development of enzyme inhibitors.

I would like to thank my fellow classmates for the unforgettable time we had together. A special thanks goes to Professor Maurine Linder and her lab members who helped me enjoy every single day in the lab.

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Heather Rhoden, Oklahoma State University, Immunology

*Characterization of IL-7 synthesis in CHO cells transfected with Equine IL-7 gene*

I applied for the Cornell Leadership Program because I wanted to gain more experience in research. When I applied I hoped to work in an infectious disease lab for the summer. However, I was assigned to the Equine Immunology lab and at first was nervous that I might not like the research. However, now looking back, I can truly say that it has been one of the most rewarding research experiences I’ve had.

The Equine Immunology lab under the direction of Dr. Julia Felippe focuses on common variable immunodeficiency (CVID) in horses, which is characterized by late onset B-cell depletion. The lab is currently developing models to understand equine B-cell development and maturation. Interleukin-7 (IL-7) is an important molecule in the B-cell development. My project focused on characterizing equine IL-7 synthesis in a transfected cell line, by using many techniques that were new to me including flow cytometry, fluorescent microscopy, Western Blot, and ELISA. My results will aid the lab in developing a model for equine B-cell development and lead to a better understanding of mechanisms leading to B-cell depletion in horses affected with CVID.

My sincere thanks go to everyone in the Felippe lab for guidance and support throughout my project, for making me feel at home, and most importantly teaching me that immunology can be both interesting and a very powerful research tool.
Viktoria Rungelrath, Tierärztliche Hochschule Hannover, Cancer Biology

Effects of inhibitors on PADI2 expression in BT-474 and DCIS cancer cell lines and on IL-8 and COX-2 expression in the ductal carcinoma in situ Xenograft model

I am about to enter my fourth year of veterinary training at the Tierärztliche Hochschule Hannover. After having finished my studies I plan to complete my education by writing a dissertation or doing a PhD. I would like to explore different fields of research as I progress along my career path. I applied to the Leadership Program because I believed it to be a unique chance to get an idea of what research is like.

My research in Dr. Coonrod’s lab of Epigenetics and Reproductive Biology focused on the role of an enzyme called Peptidylarginine deiminase 2 (PADI2) in the development of invasive breast cancer. PADI2 is a member of a family of enzymes that post-translationally catalyze the conversion of protein-bound arginine to citrulline in a calcium dependent manner. Since PADI2 is one of the most up-regulated genes in luminal breast cancer, the development of inhibitors represents a novel therapeutic approach to breast cancer.

I would like to thank all members of the Coonrod lab, especially John McElwee and Brian Cherington, for their help and support throughout the summer. I would also like to thank Boehringer-Ingelheim and DAAD for their financial assistance.

Enio Sanmarti, Cornell University, Immunology

The role of CD8+ cells in hypersensitivity pneumonitis, a TH17 mediated disease

Throughout my undergraduate experience I have been very involved with research. This, along with the veterinary experience, shaped my career goal to pursue a DVM/PhD and residency training in internal medicine in order to translate science to better provide for our furry friends. The Leadership Program provides invaluable information from the best in different fields, both in academia and industry, while effectively training us, via modules, to be leaders in veterinary medicine. This program has illuminated the path I must take in order to be in academia, and it has inspired me to apply for the dual degree here at Cornell University.

My research project in Dr. Avery August’s laboratory focused on the role of TH-17 cells in hypersensitivity pneumonitis. The August laboratory had previously identified an increase in this cell population in the mouse model when treated with the thermophilic actinomycete, Saccharopolyspora rectivirgula, found in mouldy grain. My project was looking at the role of CD8+ cells in the disease and it effects on TH17 cells. The role of CD8+ cells in activating TH17 cells might shed light in the pathophysiology of the disease as well as provide new insights on possible targets for a cure. This disease affects humans and cattle, but TH17-mediated hypersensitivity is believe to be associated with many other diseases, for example multiple sclerosis, psoriasis, juvenile diabetes, rheumatoid arthritis, and Crohn’s disease among others.

Dr. August’s laboratory taught me about a fascinating and fast evolving discipline: immunology that fits perfectly with a career in translational science. Special thanks go to him for his great mentoring. Additionally, I would like to thank Sonia Mohinta, the graduate student in charge of the project, for being a great teacher and role model.
Lauren Smith, Texas A&M University, Immunology

The sweet cause of sweet itch: cloning & expression of allergenic salivary proteins of Culicoides sonorensis

I applied to the Cornell Leadership Program in order to explore whether research was right for me and to learn about opportunities to pursue non-traditional career paths. The program did just that, and in the process I made some lifelong friends.

I had the opportunity to work on equine immunology and allergy in the Wagner Lab. My research project focused on salivary proteins of Culicoides sonorensis (biting midges) known to induce an allergic disease in horses (called summer eczema or sweet itch). After isolation of genetic material of a few specific allergens from the salivary glands (including a sugar enzyme), the genes were sequenced to evaluate their similarity to those same genes found in Culicoides species in Europe. The genes were also cloned into expression vectors to allow further testing to evaluate which ones induce an allergic response in horses. Because of different Culicoides species in Europe compared to the US, differences in genes, and thus allergenicity, are expected. My research should shine light on this matter and help to define the allergens that cause summer eczema.

I would like to give a special thank you to Dr. Bettina Wagner and Susanna Babasyan for their continuous support and guidance throughout my research. I, also, owe a lot of gratitude to Drs. Craig and Gumpel for their recommendation letters and mentorship, to Drs. McGregor, Fraser, and Parker for coordinating such an unforgettable, career-changing experience, and to the NIH that sponsored my fellowship.

Michelle White, Cornell University, Genetics

Association of the HTR2C gene with selection for behavior in silver foxes

Several years after my undergraduate training, I remained unable to decide between a career in veterinary medicine and one in genetics. The Leadership Program has helped me plan a successful career doing both.

The Acland lab collaborates with the Institute of Cytology and Genetics in Norvosibirsk, Russia, where 50 years of selective breeding of silver foxes has led to distinct populations of “tame” and “aggressive” animals. Transcriptome analysis revealed significant differences in expression of the HTR2C gene between tame and aggressive foxes. HTR2C is a member of the serotonin receptor family that plays an important role in behavior.

To test whether different HTR2C alleles were favored in different fox populations, I first designed PCR primers to amplify regions of DNA within and near the gene to identify fox single-nucleotide polymorphisms (SNPs). I used these SNPs to estimate linkage disequilibrium (LD) in the region of the X chromosome harboring the HTR2C gene to evaluate the frequencies of HTR2C-associated SNP haplotypes in three populations: tame, aggressive, and unselected foxes. I found significant differences in these haplotype frequencies between tame and aggressive populations.

To test whether any of the HTR2C alleles contribute to behavioral differences among tame and aggressive populations, I created a meiotic linkage map of the X chromosome and then performed genetic mapping of behavior in fox experimental pedigrees.

I truly appreciate the mentorship and enthusiasm of Drs. Gregory Acland, Anna Kukekova, and Svetlana Temnykh; Jennifer Johnson, and the other Acland lab members. I also thank the program directors, facilitators, Alison, and the other students for their dedication to the program and its participants.
Sarah Wood, Western College of Veterinary Medicine, Epidemiology

**Mathematical modeling of ceftiofur resistance in commensal enteric E. coli**

I applied to the Leadership Program to explore veterinary research as a potential career path. As I enter my final year of veterinary school this fall, I hope to apply to a PhD program in epidemiology. The Leadership Program has given me the guidance and encouragement I need to pursue a non-traditional career in veterinary medicine.

For my summer research, I used mathematical modeling to describe the population dynamics of enteric Escherichia coli during treatment with ceftiofur, the only third-generation cephalosporin licensed for use in cattle. Clinically, there is a need for dosing recommendations that minimize the dissemination of ceftiofur resistance among enteric E. coli. Mathematical models are an effective method to test different dosing strategies and bacterial properties that influence the dissemination of ceftiofur resistance. In my model, I determined the parameter values that created the four following scenarios during ceftiofur treatment: (1) susceptible and resistant E. coli die; (2) only sensitive E. coli survive; (3) only resistant E. coli survive; and (4) susceptible and resistant E. coli coexist. I found that the fitness cost, the plasmid loss rate, and the conjugation rate were the most influential bacterial parameters determining the dissemination of ceftiofur resistance. My model supported the use of high initial doses of ceftiofur as a treatment strategy to minimize ceftiofur resistance.

Thank you to my mentor, Dr. Gröhn, and my laboratory group for their kindness and helpful discussions.

Erasmus zu Ermgassen, University of Cambridge, Reproductive Biology

**How sperm form their tails – mapping protein expression in the elongating spermatid**

Correct sperm tail formation is an absolute prerequisite for sperm motility and fertility. Seventy percent of infertile men have sperm tail abnormalities leading to reduced sperm motility. The sequence through which sperm form their tails is still largely a mystery, however. I worked under the supervision of Dr. Chinatsu Mukai in the Travis lab to map how the proteins in the sperm tail assemble as the tails of murine sperm lengthen. In particular, I applied fluorescent immunohistochemistry to two problems. I hoped firstly to identify how two accessory structures in the tail, the outer dense fibers and fibrous sheath, form. Although in the mature sperm the fibrous sheath encircles the outer dense fibers, they are thought to form in opposite directions - one from head to tail, the other from tail to head. Secondly, I attempted to visualize the distribution and onset of expression of two glycolytic enzymes, PGK2 and GAPDHS, in the tail of sperm. These enzymes are unusual in that they are tethered to a solid support – the fibrous sheath of the sperm tail.

I’ve really enjoyed the entire 10 weeks, which have helped me appreciate just how many options veterinary graduates have. I’m very grateful to Dr. Fraser, Dr. McGregor, Dr. Parker, and Alison Keggan for putting together this awesome program, as well as the Wellcome Trust for their financial support. Many thanks to everyone in the Travis Lab, especially Chinatsu Mukai, who saw me through from my baby-steps in introductory pipetting to my solo western blots. I had a blast.
Alison Keggan, Program Coordinator

Being the Program Coordinator for the Leadership Program was an outstanding opportunity to interact with many successful individuals in the field of veterinary medicine. I enjoyed witnessing the hard work of the students and the friendships that were forged this summer.

The Leadership Program has confirmed my decision to apply to veterinary school next year. I look forward to the exciting opportunities in this field. Many thanks to Drs. Fraser, McGregor, and Parker for the wisdom and encouragement they have provided. Also, thank you to each of the students for everything you brought to the program this summer. Best of luck in all of your endeavors.
Facilitators & Counselors

Dr. Dale Bauman, Facilitator
Professor Animal Science
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Dr. Hannah Bender, Facilitator
Resident, Anatomical Pathology
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Dr. Philip Carter, Facilitator
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Dr. Julia Felippe, Counselor
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University of Sydney

Dr. Carole Harbison, Counselor
Dual DVM/PhD Graduate
Cornell University

Dr. Natasza Kurpios, Counselor
Assistant Professor, Molecular Medicine
Cornell University

Dr. Peggy McCann, Facilitator
Director, Regulatory Affairs
Merck Co.

Dr. Douglas McGregor, Facilitator/Counselor
Professor Emeritus, Immunology
Cornell University

Dr. John Parker, Facilitator/Counselor
Associate Professor, Virology
Cornell University

Mr. Andrew Sage II, Facilitator
President, Sage Capital Corp.

Dr. Chris Schaffer, Facilitator
Assistant Professor
Biomedical Engineering
Cornell University

Dr. Don Schlafer, Counselor
Professor, Biomedical Sciences
Cornell University
Dr. Derek Cavatorta, Counselor  
PhD Candidate, Immunology  
Cornell University

Dr. Thomas Divers, Facilitator  
Professor, Clinical Sciences  
Cornell University

Dr. Theodore Elsasser, Facilitator  
Research Scientist, Growth Biology Laboratory, USDA, Beltsville, MD

Dr. Michelle Haven, Facilitator  
Vice President, Business Development, Licensing and Strategic Planning  
Pfizer Animal Health

Dr. Gerard Hickey, Facilitator  
Director, Worldwide Regulatory Affairs  
Merck Co.

Dr. Charlie Hsu, Facilitator  
Research Veterinarian, Laboratory Animal Resources  
Merck Co.

Dr. David Medina, Facilitator  
Director, Business Development and Global Alliances  
Pfizer Animal Health

Dr. Larissa Minicucci, Facilitator  
Assistant Professor, Veterinary Public Health  
University of Minnesota

Dr. Drew Noden, Facilitator  
Professor, Biomedical Sciences  
Cornell University

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

Dr. Kenneth Simpson,  
Facilitator, Professor, Clinical Sciences  
Cornell University

Dr. Alfonso Torres, Facilitator  
Associate Dean/Public Policy  
Cornell University

Dr. Joseph Wakshlag,  
Facilitator, Associate Professor, Clinical Sciences, Cornell University

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.
To prepare tomorrow’s scientists and public health professionals
The Leadership Program scholars hosted a dinner for their mentors, module facilitators, counselors, and other guests at Willard Straight Hall on the Cornell University campus.
To prepare tomorrow’s scientists and public health professionals
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 graduates of the Leadership Program Graduates (1990-2009)

<table>
<thead>
<tr>
<th>Degree</th>
<th>No.</th>
<th>% North American Alumni</th>
<th>No.</th>
<th>% Other Alumni</th>
<th>Total No.</th>
<th>% Total Alumni</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhD</td>
<td>46</td>
<td>19.7%</td>
<td>97</td>
<td>41.8%</td>
<td>143</td>
<td>30.7%</td>
</tr>
<tr>
<td>Dr. Med. Vet.</td>
<td>NA</td>
<td>NA</td>
<td>21*</td>
<td>48.8%</td>
<td>21</td>
<td>NA</td>
</tr>
<tr>
<td>MPH</td>
<td>12</td>
<td>5.1%</td>
<td>4</td>
<td>1.7%</td>
<td>16</td>
<td>3.5%</td>
</tr>
<tr>
<td>MS</td>
<td>8</td>
<td>3.5%</td>
<td>10</td>
<td>4.7%</td>
<td>18</td>
<td>4.1%</td>
</tr>
</tbody>
</table>

* German, Swiss, and Austrian Alumni

The following table indicates that a substantial number of program alumni obtained residency training in the course of their graduate studies. Ninety residents were graduates of veterinary schools in North America while 47 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 (1990-2009)

<table>
<thead>
<tr>
<th>Residency</th>
<th>No.</th>
<th>% North American Alumni</th>
<th>No.</th>
<th>% Other Alumni</th>
<th>Total No.</th>
<th>% Total Alumni</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical</td>
<td>46</td>
<td>19.7%</td>
<td>31</td>
<td>13.5%</td>
<td>82</td>
<td>17.7%</td>
</tr>
<tr>
<td>Pathology</td>
<td>28</td>
<td>12.0%</td>
<td>8</td>
<td>3.5%</td>
<td>36</td>
<td>7.8%</td>
</tr>
<tr>
<td>Laboratory Animals</td>
<td>8</td>
<td>3.4%</td>
<td>1</td>
<td>0.4%</td>
<td>9</td>
<td>1.9%</td>
</tr>
<tr>
<td>Other*</td>
<td>8</td>
<td>3.4%</td>
<td>7</td>
<td>3.1%</td>
<td>15</td>
<td>3.2%</td>
</tr>
<tr>
<td>Total</td>
<td>90</td>
<td>38.5%</td>
<td>47</td>
<td>20.5%</td>
<td>142</td>
<td>30.7%</td>
</tr>
</tbody>
</table>

* Oncology, radiology, anesthesia, exotic animals.
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, Associate Director, Safety Assessment, Merck Research Laboratory, West Point, PA
Elizabeth Lyon-Hannah, Research Faculty, 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
Thomas Vahlenkamp, Head, Institute of Virology, School of Veterinary Medicine, Leipzig, Germany

**1991**

Prema Arasu, Vice-President International Programs, Washington State University, Pullman, WA
David Bainbridge, Clinical Veterinary Anatomist, University of Cambridge, UK
Linda Berent, Clinical Associate Professor, University of Missouri, Columbia, MO
Ian Davis, Research Assistant Professor, Genomics and Pathobiology, The Ohio State University, Columbus, OH
Dianne Hellwig, Associate Professor, Agriculture and Natural Resources, Berea College, KY
Judy Hickman-Davis, Director, Laboratory Animal Training Program/Associate Professor, Department of Veterinary Preventive Medicine, The Ohio State University, Columbus, OH

**1992**

Tomasz Betkowski, Medical Representative, Eli Lilly Co., Indianapolis, IN
Stephen Davies, Associate Professor, Parasitology, Uniformed Services University, Bethesda, MD
Mathew Gerard, Clinical Associate Professor, Large Animal Surgery, North Carolina State University, Raleigh, NC
Christine Hawke, Lecturer in Professional Practice, University of Sydney, AU
Julio Montero-Oliver, Brigade Veterinarian, US Army, Yongsan, South Korea
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, Director, Science and Technology University City Science Center, Philadelphia, PA
Emma Massey O’Neill, Lecturer, Small Animal Medicine, University College, Dublin, Ireland
Joanne Rainger, Registrar, Anesthesia, University of Sydney, AU
Ashley Reynolds, Staff Member, MSNW Inc, Washington DC
Susannah Ryan, Director Scientific Services, Chameleon Communications International, London, UK
Veiko Saluste, Chief Executive Officer, Interchemie Worken, Adelaar AS, Estonia

Alison Moore-Keir, Equine Medical Consultant, IDEXX, Cambridge, Ontario, CA
Alan Radford, Senior Lecturer, Small Animal Studies, University of Liverpool, UK
Melinda Stewart-Gabor, Pathologist, Elizabeth MacArthur Research Laboratory, Sydney, AU
Lynn Wachtman, Clinical Veterinarian and Instructor, New England Primate Center, Harvard Medical School, Southborough, MA

1994
Melissa Beall, Research Scientist, Medical Affairs, IDEXX Inc., Portland, ME
Larissa Bowman, Director, Mountain Veterinary Pathology, Ashville, NC
Leslie Gabor, Manager, Pre-Clinical Safety, Novartis Animal Health, Sydney, AU
Maria Lara-Tejero, Senior Research Associate, Department of Microbiology, Yale University, New Haven, CT
Christopher Mariani, Associate Professor, Neurology, North Carolina State U., Raleigh, NC
Sonia Mumford, Veterinary Medical Officer, Fish Health Center, Olympia, WA
Jeffrey Phillips, Assistant Professor, Oncology and Medical Genetics, University of Tennessee, Knoxville, TN
Julie Pomerantz, Associate Research Scientist, Wildlife Trust, Palisades, NY
Stacy Pritt, Director and General Manager, Biological Test Center, B. Braun Medical, Irvine, CA
Mary Thompson, Lecturer Small Animal Medicine, University of Queensland, AU
Oliver Turner, Senior Pathologist, Novartis Institute for Biomedical Research, East Hanover, NJ

1995
Gertraut Altreuther, Project Manager, Parasitology, Bayer Animal Health, Leverkusen, Germany
Philippa Beard, Lecturer, Virology, University of Edinburgh, UK
Kate Creevy, Assistant 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
Andrew Moorhead, Assistant Research Scientist, Veterinary Parasitology, U. of Georgia, Athens, GA
Tony Mutsaers, Professor, Clinical Studies, Ontario Veterinary College, Guelph, Ontario, CA

1996
Mark Doherty, Technical Service Manager, Ancare, Kirrawee, NSW, AU
Michelle Dries-Kellaway, Strategic Project Manager, Billi, (Wollongong), NSW, AU
Patricia Gearhart, Adjunct Assistant Professor, Ophthalmology, Michigan State University, East Lansing, MI
Ilse Geerars-von Vondersen, Scientist, Systems Biology and Neutrogenomics, INO, Utrecht, Netherlands
Tamara Gull, Assistant Professor, Pathobiology, Oklahoma State, Stillwater, OK
Antonia Jameson-Jordan, Lecturer, Department of Biomedical Sciences, Cornell University, Ithaca, NY
Ralph Senften 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 Duijnhoven, Research Scientist, NOTOX, the Netherlands
Constantin von der Heyden, Director, Pegasys Strategy and Development RSA, South Africa

1997
Peter Bracken, Technical Service Manager, Fort Dodge Pharmaceuticals, AU
Jonathan Happold, Senior Veterinary Officer, Epidemiology, AGDAFF, AU
Esther Kornalijnslijper, Faculty Member, Department of Infectious Diseases, University of Utrecht, the Netherlands
Tanya LeRoith, Assistant 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
Deborah Prattley, Lecturer, Veterinary Public Health, Massey University, NZ
Jonathan Werner, Principal Pathologist, Amgen, Inc., Thousand Oaks, CA
Rebecca Wilcox, MS candidate, Environmental Studies, University of Melbourne, AU
Esther Wissink-Antonis, Research Manager/Faculty, Virology, University of Utrecht, the Netherlands
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1998
Max Bastian, Senior Scientist, Paul Ehrlich Institute, Langen, Germany
Stephen Fleischer, Biologist, Center for Biologics Evaluation and Research, FDA, Bethesda, MD
Karsten Hüffer, Assistant Professor, Microbiology, 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, Lecturer, Veterinary Basic Sciences, Royal Veterinary College, London, UK
Erin Phipps-Crotty, Public Health Specialist, New Mexico Dept. of Health, Albuquerque, NM
Anne-Marije Sparnaay, Senior Policy Advisor, Ministry of Agriculture, the Netherlands

1999
Erica Behling-Kelly, Assistant Professor, Clinical Pathology, Cornell University
Nadine Bowden, PhD candidate, Molecular Virology, The Ohio State University, Columbus, OH
Christine Broster, Veterinary Clinical Training Advisor, The Brooke, UK
Robert Dickens, Training Specialist, U.S. Department of Agriculture, Raleigh, NC
Joshua Fine, Program Manager, SAIC, Animal Disease Center, Plum Island, NY
Peter Florian, Section Head In Vivo Pharmacology, Sanofi, Frankfurt, Germany
Francette Geraghty-Dusan, WHO Representative, Vientiane, Laos
Carl Holmgren, Research Scientist, Université de la Méditerranée, Marseille, France
Emily Meseck, Senior Pathologist, Wyeth Research Laboratories, Chazy, NY
Rachel Mo-Peters, Instructor, Pathology, Cornell University, Ithaca, NY
Mary Nabity, Clinical Assistant Professor, Texas A&M University, College Station, TX
Kimberley Newkirk, Assistant Professor, Anatomical Pathology, University of Tennessee, Knoxville, TN
Christopher Premanandan, Assistant Professor, Veterinary Biosciences, The Ohio State University, Columbus, OH

Rachel Tarlinton, Lecturer, Veterinary Cellular Biology, University of Nottingham, UK
Holger Volk, Lecturer, Neurology and Neurosurgery, Royal Veterinary College, London, UK

2000
Beatrice Bohme, Assistant Professor, Surgery, School of Veterinary Medicine, University of Liège, Belgium
Steven 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, Senior Veterinary Officer, Biosecurity Services, DAF, Canberra, AU
Birgit Hingerl-Viertlboeck, Postdoctoral Fellow, Immunology, University of Munich, Germany
Natali Krekeler, Ph.D. candidate, Pathology, University of 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
Simon Starkey, Director, Center for Comparative Physiology, Feinstein Institute for Medical Research, New York, NY
Knut Stieger, Research Leader, Justus – Liebig University, Giessen, Germany
Joost Uilenreef, Lecturer, Anesthesia, University of Utrecht, the Netherlands
Kevin Woolard, Postdoctoral Scientist, Cell Biology, NCI, NIH, Bethesda, MD
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To prepare tomorrow’s scientists and public health professionals
2005

Krystal Allen, PhD candidate, Cornell University, Ithaca, NY
Melanie Ammersbach, PhD candidate, Ontario Veterinary College, Guelph, Ontario, CA
Hannah Bender, Resident, Anatomical Pathology, Cornell University, Ithaca, NY
Derek Cavatorta, PhD candidate, Immunology, Cornell University, Ithaca, NY
Hille Fieten, Ph.D. candidate, Genetics, University of Utrecht, the Netherlands
Amanda Kreuder, PhD candidate, Iowa State University, Ames, IA
Rebecca Mitchell, Postdoctoral fellow, Cornell University, Ithaca, NY
Marieke Opsteegh, Postdoctoral Fellow University of Utrecht, the Netherlands
Emily Orchard Mills, PhD Candidate, Psychology, University of Sydney, AU
Tricia Oura, Resident, Diagnostic Imaging, North Carolina State University, Raleigh, NC
Johanna Rigas, Resident, Clinical Pathology, Oregon State University, Corvallis, OR
Klara Saville, MS Candidate, Center for Tropical Medicine, University of Edinburgh, UK
Catherine Trickett, PhD candidate, Animal Behavior, Bristol University, UK
Nina Weishaupt, PhD candidate, Neuroscience, University of Alberta, Edmonton, Alberta, CA

2006

Onno Burfeind, Postdoctoral Fellow, Clinic for Animal Reproduction, Freie Universität, Berlin, Germany
Bronwyn Clayton, PhD candidate, Virology, CSIRO, Geelong, AU
Janny DeGrauw, Postdoctoral Fellow, Faculty of Medicine, Utrecht University, the Netherlands
Louise Fitzgerald, Resident, Pathology, University of Pennsylvania, Philadelphia, PA
Anne Gordon-Schneider, PhD candidate, Cornell University, Ithaca, NY
Annika Haagsman, Intern, Small Animal Surgery, University of Utrecht, the Netherlands
Eva Marie Laabs, PhD candidate, Parasitology, Tierärztliche Hochschule, Germany
Jane Leadbeater, Medical Student, Griffith University, Brisbane, AU
Gelja Maiwald, Head, Companion Animal Products, IDT Biologika, Dessau Germany
Richard Meeson, Staff Clinician, Small Animal Surgery, Royal Veterinary College, UK
Ashley Neary Hartley, PhD Candidate, University of Georgia, Athens, GA
Joseph Neary, PhD candidate, Epidemiology, Colorado State University, Fort Collins, CO
John Parker, Senior Clinical Training Scholar, Neurology, University of Cambridge, UK
Tiffany Reed, Resident, Pathology, Purdue University, West Lafayette, IN
Swaantje Roth, PhD candidate, Virology, Freie Universität, Berlin, Germany

2007

Patrick Ayscue, PhD candidate, Epidemiology, Cornell University, Ithaca, NY
Sonja Broer, PhD candidate, Pharmacology, Tierärztliche Hochschule, Germany
Rosemary Brungs, Medical Student, University of Sydney, AU
Sarah Caddy, PhD candidate, Virology, Imperial College, London, UK
Elva Cha, PhD candidate, Epidemiology, Cornell University, Ithaca, NY
Boran Choi, MS candidate, Immunology, Seoul National University, Seoul, South Korea
Amy Fulton, Resident, Dentistry and Oral Surgery, University of California, Davis, CA
Ludwig Groebler, PhD candidate, Biomedicine, University of Sydney, AU
Laura Grogan, PhD candidate, Conservation Biology, James Cook University, AU
Kate Johnson, PhD candidate, Clinical Science, Royal Veterinary College, London, UK
Kristen Lewis, Resident, Pathology, The Ohio State University, Columbus, OH
Ryan Traslavina, Resident, Pathology, University of California, Davis, CA
Maria Volkman, Dr. Med. Vet. candidate, Humboldt University, Berlin, Germany
Annemarie Vorbij, Resident, Medicine, University of Utrecht, the Netherlands
Shen Yang, PhD candidate, Biomedicine, University of Maryland, Baltimore, MD

2008
Rachel Acciacca, Brigade Veterinarian, DOD Military Working Dog Hospital, Lackland AF Base, TX
Hannes Bergmann, PhD Candidate, Australian National University, Canberra, AU
Jennell Bigrigg, Resident, Comparative Pathology, Johns Hopkins University, Baltimore, MD
Anna Byron, Resident, Small Animal Medicine, North Shore Veterinary Specialist Centre, Sydney, AU
Lucie Chevallier, PhD candidate, Genetics, Pasteur Institute, Paris, France
Katharina Dinger, Dr. Med. Vet. candidate, Center for Experimental Medicine, Cologne, Germany
Johanna Dups, PhD candidate, Virology, CSIRO, Geelong, AU
Anna Heymer, Dr. Med. Vet. candidate, Nutrition, Tierärztliche Hochschule, Germany
Lisa Holz, PhD candidate, University of Veterinary Medicine, Hannover, Germany
Sally Ann Iverson, MPH Candidate, Johns Hopkins University, Baltimore, MD
Prabhpreet Kaur, Government Veterinarian, AVA Singapore
Ming Lui, Intern, Oradell Animal Hospital, Paramus, NJ
Katharine McKelvey, Intern, Theriogenology, Iowa State University, Ames, Iowa
Johanna Mleczko, PhD Candidate, Cornell University.
Anna Moore, MS candidate, Animal Behavior, University of Glasgow, UK
Dallas New, MPH Candidate, University of Saskatchewan, Saskatoon, SK, CA
Annalies Nijdam, Research Scientist, Hematology, University of Utrecht, the Netherlands

Jessica Privett, MPH Candidate, University of Sydney, Sydney, AU

2009
Jennifer Bernard, Resident, Pathology, University of Tennessee, Knoxville, TN
Floryne Buishand, PhD candidate, Cell Biology, University of Utrecht, the Netherlands
Sonja Heinrich, Dr. Med. Vet Candidate, Institute for Zoo and Wildlife, Berlin, Germany
Shuhei Ito, PhD Candidate, Cellular Biochemistry, University of Tokyo, Japan
Beth Licitra, PhD Candidate, Cornell University, Ithaca, NY
Meridith Sherrill, Intern, Small Animal Medicine and Surgery, Purdue University, West Lafayette, IN
Elizabeth Slack, PhD Candidate, Immunology, Royal Veterinary College, London, UK
Hans Winkler, Dr. Med. Vet candidate, University of Zurich, Switzerland
Bing Yun Zhu, Resident, Small Animal Medicine, University of California, Davis, CA

2010
Louise Steltzer, PhD Candidate, Max Planck Institute, Berlin, Germany
Frances Taylor-Brown, Intern, Small Animal Medicine, Royal Veterinary College, London, UK

To prepare tomorrow’s scientists and public health professionals
What Did They Say?

“I have very happy memories of the Leadership Program.”
Christine Broster, 1999

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

“The program was one of the best experiences of my life.”
Jutta Klevitz, 2003

“I remember Ithaca and Cornell and how great it was.”
Ivana Sekis, 2004

“I wouldn’t be where I am now without it.”
Nina Weishaupt, 2005

“I am now realizing how much I gained from the Leadership Program and how influential it was.”
Louise Le Flufy, 2005

“It was a fantastic experience.”
Justine Shotton, 2006

“The program was a great inspiration to me, and I met great people.”
Anton Asare, 2004

“I hope this year’s Leadership Program will be as wonderful as last year’s.”
Mirjam Brakhan, 2010

“The Leadership Program was pivotal in my deciding on my career path.”
Zachary Chillag, 2010
After an intensive first year of veterinary school at Cornell University, I packed my bags and headed to Sydney, Australia, to participate in the Veterinarians in Animal Agriculture Program. Under the tutelage of Drs. David Fraser and Alan Husband, I came to appreciate the novel challenges posed by different geography, climate, and animal production systems. My research studied stress responses in swine using a molecular immunology approach. This work broadened my horizon not only by looking at a new problem, but by seeing how basic research could influence animal production decisions.

As a corollary to the Sydney program, I was fortunate to continue my experience as a participant in the 1998 Leadership Program. Here, I worked with Dr. Judy Appleton to study cellular binding sites of the parasite, Trichinella spiralis. This work ignited my interest in infectious diseases and opened my mind to professional avenues of veterinary medicine that I had not yet considered.

After graduating from veterinary school, I began work as a mixed-animal practitioner. While honing my technical skills as a veterinarian, I frequently saw practical applications of the tools I learned in the Leadership Program. My desire to pursue work in infectious diseases grew, and I left practice to begin a residency program in Veterinary Preventive Medicine and Public Health at the University of Minnesota. As part of the residency, I earned my MPH and aided in a cross-disciplinary surveillance effort to characterize West Nile virus upon its introduction to Minnesota in 2002.

My residency training prepared me for my next opportunity as an Epidemic Intelligence Service officer with the Centers for Disease Control and Prevention. I was assigned to the Division of Vector-borne Infectious Diseases, where I worked to study plague, tularemia, and Lyme disease in their natural settings. My work took me to Uganda and Madagascar to work with Ministries of Health to assess plague risk and develop prevention programs for the disease.

My passion for public health was solidified, and participation in these training opportunities was the inspiration for my current position. The excellent mentoring that I received along the way, through programs such as the Leadership Program, instilled in me the desire to encourage other veterinarians to work in public health. I now work at the University of Minnesota as the Director of the DVM/MPH program. To date, I have watched over 50 veterinary students complete training in public health and go on to careers in government, academia, and private industry.
For more information about the Leadership Program, contact

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Leadership Program for Veterinary Students
Baker Institute for Animal Health
College of Veterinary Medicine
Cornell University
Ithaca, NY 14853
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