

Training future leaders in diagnostics

GRADUATION RARELY MEANS THE END

of education, especially in the medical world. A veterinary degree opens doors to countless further training opportunities. The College of Veterinary Medicine and the the New York State Veterinary Diagnostic Laboratory/Animal Health Diagnostic Center offer residency programs that let DVMs delve into in the cellular side of disease. In the residencies for Diagnostic Sciences and Clinical Pathology, veterinarians wanting to gain more experience in diagnostics come to Cornell to practice for three years under the mentorship of seasoned specialists before testing to become board-certified specialists themselves.

Residency in Diagnostic Sciences

Wonhee Cha pioneers the nation's first veterinary residency program in diagnostic sciences here at the AHDC. With a collection of experience in international clinical service and epidemiology research under her belt, she is honing her diagnostic skills in preparation for a future foray facing infectious diseases of the third world.

After earning her DVM from Kon-kuk University in Korea, Cha volunteered in Tan-

zania for two years as a public health veterinarian. "The entire country has just one veterinary school and about 250 registered veterinarians," says Cha. "Everywhere I turned, people and their animals needed help. One day I would be stitching up dogs or helping breed livestock, the next I would be educating farmers about husbandry techniques or working on establishing Tanzania's first x-ray-capable veterinary center."

Cha's commitment to international veterinary fieldwork blossomed during her tenure in Tanzania. "When I visited villages to vaccinate chickens against Newcastle Virus, I saw just how vital their animals' health was to their livelihood. People relied on their chickens for eggs, meat, and trade. Any infectious outbreak could be devastating." When the experience ended, Cha pursued her burgeoning interest in epidemiology at the laboratory of infectious diseases and molecular biology at Ohio State University, earning a master's degree.

"I was studying ways of detecting and differentiating types of the Avian Influenza virus," says Cha, "and I began to realize how important it is to have good diagnostic tools. Without accurate diagnostics, you can never

hope to study any epidemic. I wanted to learn these tools in a clinical setting.”

So Cha came to the College of Veterinary Medicine in 2008 to learn the diagnostic skills she needed, and to apply them to hands-on disease research at the College’s integrated hospital and diagnostic lab. As the solitary inaugural resident in the country’s first diagnostic sciences residency program, Cha is paving the way for the future of the field.

“We need more people who can do veterinary diagnostic work,” says Dr. Craig Altier, microbiologist at the AHDC and supervisor of the innovative position. “Most of us got our experience on the job. We were starting to worry about what will happen as we grow older. There are very few diagnostics training programs and it’s hard for a young person to get involved. So we worked to develop this new kind of residency.”

While other diagnostic residencies focus on a single area from the start, residents in this program spend the first year rotating through each of the AHDC’s thirteen sections, gaining an understanding of each diagnostic area and a comprehensive look at the field as a whole. In her first year Cha spent time in each section, including anatomical pathology, avian disease, bacteriology, clinical pathology, comparative coagulation, serology and immunology, endocrinology, molecular diagnostics, parasitology, quality milk production services, toxicology, virology, and veterinary support services.

“This is the only program that gives such an expansive overview, and that allows veterinarians to choose between different diagnostic specialties,” says Altier. “We want to train students who will become leaders in the field, with a broad enough scope that they could one day actually run a diagnostic laboratory.”

Following a year of rotations, Cha settled into the section of bacteriology, where she does a combination of fieldwork and research studying bacteria in dairy cattle of the New York State watershed. “Everyone is my teacher,” says Cha.



“I’m surrounded by a wealth of knowledge and experience, from the technicians to the faculty, everyone has so much to teach. I feel humbler every day.”

In her third and final year, Cha continues her work in bacteriology, hoping to finish her PhD before setting out to pursue her dream of addressing infectious diseases of animals in developing countries.

Residency Program in Clinical Pathology

Sometimes you can look at an animal and know what’s wrong, but many mysteries of disease lurk far beneath the surface, in the cells themselves.

Clinical pathology residents Drs. Nora Springer and Erika Gruber ’06 are scientific sleuths who traded magnifying glasses for stethoscopes, investigating samples on the biochemical and cellular levels to study and diagnose disease.

“We deal with swabs, smears, and samples from almost any fluid or part of the body,” says Springer, who spent several years testing samples as a licensed veterinary technician before earning her DVM at Kansas State in 2008 followed by a small-animal internship at Louisiana State University. “This includes blood, urine, bone marrow, tumor cells, materials that can give cellular or chemical clues.”

Clues can come from all kinds of cells, and part of a clinical pathologist’s job is to recognize what is normal and what is not from each sort of sample. When a sample comes in, the clinical pathology residents provide the front line of investigation. After inspecting, describing, and forming a preliminary diagnosis, they consult with the lab’s board-certified pathologists, Drs. Tracy Stokol, Heather Priest, and Deanna Schaefer, who look over the report and discuss it with the residents.

Unlike most pathology programs, the discussion doesn’t stop there. Cornell’s program encourages collaboration, and all five staff dedicated to clinical pathology pool their perspectives three times a week.

“I chose Cornell because of the program’s strong structure and unique team-oriented approach,” says Springer, who is in her second year of the three-year residency. “This is the only program I’ve found where residents and clinical pathologists regularly meet to discuss cases as a group.”

“You gain a lot by hearing different opinions from people trained in different environments,” says Stokol, one of the three clinical pathologists who supervise the program. “Our residents must do a rotation in anatomic pathology, and can also choose to rotate through other specialties, including oncology, toxicology, and large or small animal medicine. That’s been very helpful for them.”

Clinical pathology residents divide time between clinical service and research, exposing them to both sides of the field.

“Cornell has a rich history and philosophy regarding research,” says Stokol. “We expect our residents to complete a research project. We want to invest in them the intellectual curiosity of asking ‘why is this happening’ and ‘how can I test that?’ Residents challenging you is part of the fun. It makes you think about what you know. Is it based on true evidence or is it just something your teacher told you? It’s good to challenge the status quo, that’s how you learn new things.”

“This program drew me because it’s so well-rounded, emphasizing the diagnostic aspects of both research and clinical work,” says Gruber, a first-year resident and Cornell alum who returned after a small-animal internship at Colorado State followed by three years of veterinary relief work.

At the end of their three years of service, Gruber and Springer will apply their knowledge in a three-day examination for board certification in clinical pathology. Several career paths branch out for a newly ordained clinical pathologist. Some go on in academia, pursuing PhDs and becoming tenure-track research professors or opting for a clinical track position that emphasizes teaching and service. Others go into diagnostic practice in labs like the AHDC, or into private industry, particularly in the field of pharmaceuticals. The government offers further jobs for trained clinical pathologists.

“We need people who can spread their knowledge and educate the next generation,” says Stokol. “We need future professionals who can encourage young people like Nora and Erika to go on in clinical pathology. The ultimate goal of academics is training our replacements. This is a challenging and rewarding field, and it’s a pleasure to work with people who share your passion.”

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