Global Animal Health Pathway Student Returns from Six Weeks in Africa

Healthier Animals, Healthier Children
by Tomasina Lucia ’14 DVM, Global Animal Health Pathway Student

I stayed in a two-room cottage, complete with mosquito netting, squat toilet, and (usually!) running water. I was fortunate that Lwak has its own market, where I was able to purchase local fruit and a lot of fish, as the village is only a few kilometers from the shores of Lake Victoria (fun fact, Lake Victoria is the second largest fresh water lake in the world). Along with following community investigators as they surveyed area households, I worked with the project’s animal health team. Instead of snapping pictures of lions and elephants—big game are not historically native to that part of Kenya—my travel photos are mostly of cattle or chickens afflicted with diseases I had previously only seen in textbooks, like foot-and-mouth disease, heartwater, East Coast fever, Newcastle disease, or anaplasmosis.

In collaboration with the Centers for Disease Control and Prevention and the Kenya Medical Research Institute, researchers from WSU’s School for Global Animal Health have been conducting a survey of 1,500 households in the Nyanza Province since 2013. Through tracking households over the course of years, researchers can identify factors contributing to overall health and welfare. Armed with this research-based quantitative information, impactful intervention points can be developed so that governmental and non-governmental programs—and consequently funding—can be

More News
China’s surging bird flu—bring in the veterinarians
go.wsu.edu/BirdFlu

Plague rises from the dead, studied in fleas at WSU
go.wsu.edu/Plague

Message from the Director
A global approach to improving health and human opportunity is embedded in the mission of the Allen School. Certainly this underlies our research agenda, which has a major focus on detecting and stopping the global spread of pathogens and antibiotic resistance. This effort is designed to protect health here at home as well as in other countries, where pathogens or resistance traits can arise as a result of close human and animal interaction. There is also a second global approach and that is in our educational mission. Our 57 graduate students, who are earning their master’s or doctoral degrees with an Allen School mentor, come from 22 different countries. The result is a dynamic educational environment that tests previously conceived assumptions about disease transmission and the economic, ecological, and sociological factors that affect the spread of infection. Equally, the unique perspectives of our students, and our faculty, which is also highly international, can provide new approaches to control—evident in one country’s setting but hidden from view in another. My hope, one that I believe is shared by our students, staff, and faculty, is that our “global learning environment” will also create a cohort of young scientists who will continue to work together in the future, perhaps living and working in different countries but united by perspectives and friendships launched in Pullman.

Guy Palmer
Creighton Endowed Chair and
Director of the Paul G. Allen School
for Global Animal Health

Continues
appropriately focused.

My main research goal on the project was to investigate relationships between smallholder livestock production, childhood health, and child intake of high-quality animal source foods. Undernutrition directly impacts 842 million people worldwide. While over the past two decades there has been great effort on the parts of local governments and transnational organizations to alleviate undernutrition, progress in sub-Saharan Africa has stalled, with hunger prevalence actually increasing over the last several years. In addition to negatively impacting growth and health within childhood, undernutrition has farther-reaching consequences into adulthood. Childhood undernutrition has been associated with decreased cognitive performance and increased incidence of non-communicable diseases later in life. Current rural sub-Saharan African diets, like those in Lwak, are notably lacking in proteins and micronutrients derived from animal source foods, like milk, meat, and eggs. These foods have been proven to increase nutritional indices and resistance to disease and decrease incidence of micronutrient deficiencies. Most Lwak households derive their food and income solely from livestock and crop production. So increasing the productivity of livestock production may allow for increased availability of animal source food to children and improved childhood health. However, connections between livestock production, consumption of animal source food, and child health and nutritional indices are complex due to realities like food-borne and zoonotic disease (a disease that travels from animals to people), both of which are increased with closer proximity to livestock.

It may seem strange that a veterinary student would be interested in human, rather than animal, undernutrition. But this area straddling animal production and health and human health is exactly where veterinarians, with our expertise in cross-species physiology and zoonotic disease, can have the most impact. For example, my preliminary research has found that there is a correlation between poultry production in small Nyanza farms and child consumption of eggs; farmers that have more chickens tend to feed their children more eggs. If there were more veterinarians in that area of Kenya, those chickens would have more routine veterinary care and, consequently, decreased incidence of disease. Healthier chickens could produce more eggs and, when slaughtered, would have more meat to provide to children and their families. At this point, you may not think of veterinarians being involved in global food safety or human health. But as more veterinary schools start offering programs in global animal health like we have at WSU I believe the work of veterinarians will have even more of a tremendous impact worldwide.

Tomasina will complete a small animal rotating internship at Cornell University next year and plans to go on to a residency to become board certified in internal medicine. Her long-range plans include a Ph.D. in global infectious disease to eventually work in global animal health. She is originally from Connecticut.
The WSU Allen School has partnered with the University of Washington and Universidade Federal de Viçosa, Brazil, to develop One Health research and training programs. One Health, or One Medicine, is a collaboration between veterinary medicine and human health professions to improve the lives and wellbeing of animals and people.

Universidade Federal de Viçosa has a well-recognized veterinary school and has recently created a new medical school on campus. The partnership between the three universities will enhance One Health efforts through collaborative work on tropical diseases and exchange programs between students in the United States and Brazil.

“This is a great opportunity for us to extend our global health partnership with the University of Washington into longstanding collaborations among WSU and Brazilian colleagues,” said Guy Palmer, Allen School director.

Faculty News

Drs. Hector Aguilar-Carreno and Douglas Call were elected to three-year terms on the WSU College of Veterinary Medicine’s immunology and infectious disease graduate program executive committee.

Dr. Felix Lankester, based in Arusha, Tanzania, was appointed an external supervisor for postgraduate and master’s students at Nelson Mandela African Institute for Science and Technology.

Dr. Mushtaq Memon was elected to serve on the board of directors of the Fulbright Association, the official alumni organization of the Fulbright Scholarship program.

Dr. Guy Palmer was recently reappointed to the Board on Global Health at the Institute of Medicine through 2016. Dr. Palmer has also been reappointed to the editorial board of Infection and Immunity through 2016 and is newly appointed to the International Scientific Advisory Board for the Nelson Mandela African institute of Science and Technology, Tanzania, 2013-2016.

Student and Fellow News

Marie Wrande, a postdoctoral associate in Dr. Leigh Knodler’s lab, was awarded a four year grant from the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning (FORMAS) to study salmonella-derived factors affecting its survival in the cytosol of intestinal epithelial cells, and activation of caspase-4 inflammasome by enteric bacteria. The award supports Dr. Wrande for 16 months training at the Allen School from her home university of Karolinska Institute, Stockholm, Sweden.

Neeraj Suthar, a student of Dr. Margaret Davis, completed his master’s degree in the immunology and infectious disease graduate program. Neeraj’s project was titled “An individual-based model of transmission of resistant bacteria in a veterinary teaching hospital.”
For past newsletters and more news about the Allen School, visit go.wsu.edu/AllenNews.