



Ohio State students and faculty gather with colleagues from the University of Gondar before setting out to survey citizens, health care workers, and community leaders about their understanding of rabies.

One world, healthy

A new partnership is taking Ohio State talent to Ethiopia to help solve some of the country's most dire health problems.

By **NICOLE KRAFT**

Wondwossen Gebreyes was a practicing veterinarian in his homeland of Ethiopia when he first participated in One Health. He just didn't know it at the time.

The term "One Health" describes the promotion of global interconnectivity between human and veterinary medicine, within the framework of public and ecosystem health. More simply, it means researching and understanding the links between human health, animal health, and the environment in an effort to best serve the needs of humankind.

For Gebreyes, who was working in a region of his country where healthy cattle



Wondwossen Gebreyes, left, Ohio State's director of global health programs, chats with a student at Addis Ababa University.

were as important as healthy humans—or even more important—the concept was front and center every day.

"Life depended on cattle: hierarchy, food, farming, transportation," he said. "People didn't ask, 'How is the family?' They asked, 'How are your cattle?'"

As Gebreyes worked to keep cattle healthy, a physician colleague often asked if he could piggy-back on his animal vaccination program in order to immunize the area's children against polio. Both doctors knew that caregivers would never take the time to bring children for a vaccine. At a livestock clinic, however, the whole family shows up. Adding a health check for kids along with the animals would get the attendance the doctors—and the community—needed.

"That is One Health in action," Gebreyes said.



Construction seems to be booming everywhere. This is in the Akaki district south of Addis Ababa.



Eric Sauvageau, right, an associate professor of neurological surgery at Ohio State, reviews CT scans with neurologists at Addis Ababa University's Black Lion Hospital.



Friendly faces peer over a metal fence surrounding a home in Addis Ababa.

Everyone benefits

Now a professor and director of global health programs for the College of Veterinary Medicine, Gebreyes is taking the One Health concept back to Ethiopia—as well as Kenya and Tanzania—with a far broader scope. Through the new One Health Summer Institute—part of the national, overarching One Health Initiative—two dozen Ohio State faculty, staff, and students traveled to the Horn of Africa to provide education and training to academic and regulatory institutes. The inaugural session ran from June 17 to Aug. 10.

“Our goal is to establish a partnership in research, clinical training, and service-learning outreach that will be mutually beneficial and sustainable,” Gebreyes said. “This is a platform for our students to see [health issues] in a world beyond

their textbook, and for us to train the next generation of trainers in Ethiopia.

“We are not ‘helping’ them. This is not a handout. We are training them so that they can be the health professionals of the future, and [we are providing] opportunities for Ohio State students to learn in a very unprecedented and life-changing way.”

Ethiopia, long associated in the West with famine and disease, actually has seen growth and development over the past three decades. Its population has exploded from 33.5 million to 90 million, and its gross domestic product has grown by 10 percent in the past two years. Academically, it has expanded in the past decade from three universities to 30.

Health problems, however, continue to go undertreated, with an estimated one doctor for every 30,000 people,

according to Marie Stopes International, a global nonprofit health services organization. Although Ethiopia's universities are expected to produce thousands of new physicians in the coming years, the current quality of medical education is inferior to that in the West.

That's where Ohio State comes in.

New approach to community health

Ohio State's relationship with Ethiopia began in 2007 when the university was invited, along with other academic institutions from the U.S., Canada, and Europe, to take part in a workshop on expanding the country's advanced degree programs. That soon developed into a partnership with Addis Ababa University and the University of Gondar to educate faculty from across the country in modern skills and techniques.

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Right: At Addis Ababa University, medical personnel meet with a representative of the Centers for Disease Control to discuss how to spread awareness about rabies.

Center: Wondwossen Gebreyes walks with Michael Bisesi, senior associate dean of Ohio State's College of Public Health, in his boyhood neighborhood in Addis Ababa.



Andrew Shaw, right, clinical instructor of neurological surgery at Ohio State, and Eric Sauvageau take a break with doctors at Black Lion Hospital.

The purpose also was to develop education, service-learning, and research partnerships to benefit the Ohio State community, particularly students.

By 2009, with courses taught in part by Ohio State faculty, Addis Ababa and Gondar universities began offering doctoral programs in infectious diseases.

A master's degree program followed in 2010, as did a \$1 million National Institutes of Health grant to create a five-year joint research and training program.

A year later, the first International Congress on Pathogens at the Human-Animal Interface was held in Addis Ababa. The conference brought together hundreds of medical professionals from 35 countries around the globe to address the region's health challenges.

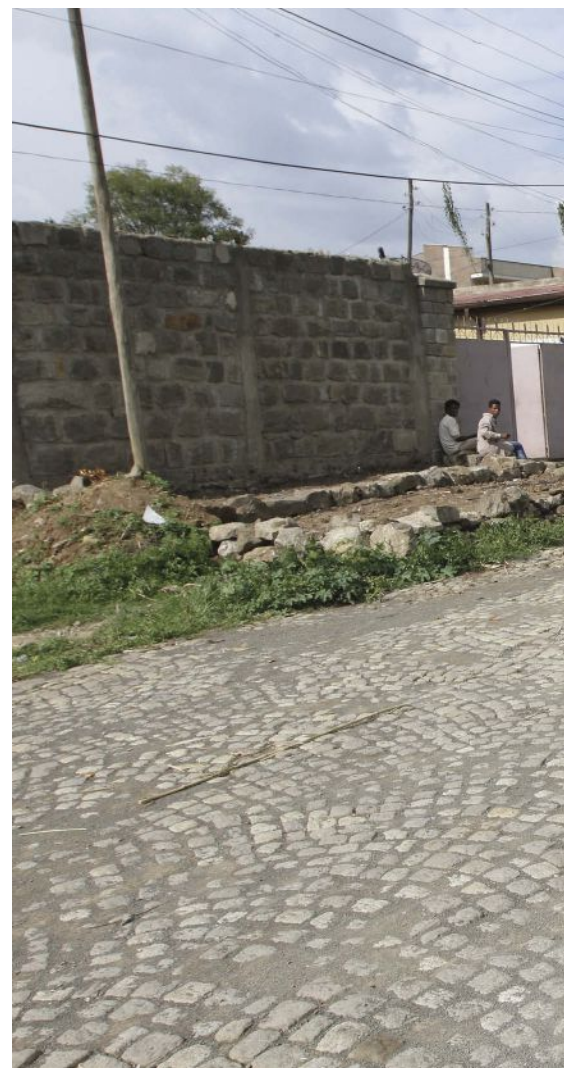
"A number of areas started to emerge where we knew we could collaborate—

cancer research, nursing, infectious diseases—and that got [some] attention," said Gebreyes.

Most important, it caught the eye of Lonnie King, dean of the College of Veterinary Medicine and executive dean of Ohio State's health sciences colleges, which also include dentistry, medicine, nursing, optometry, pharmacy, and public health.

King, who previously directed the Centers for Disease Control's National Center for Zoonotic, Vector-Borne, and Enteric Diseases, said that after arriving at Ohio State in 2009, he knew his long-term strategic plan needed to include global health and the embracing of the One Health concept.

The idea had significant potential in the countries of east Africa where human and animal lives—and deaths—are tightly intertwined.



"When we get into the rural areas, we see life with animals and people are all one," King said. "[People] are earning less than two dollars a day, and their lives and health are dependent on these animals. When you realize that, you see a whole different approach to looking at community health.

"We have addressed malaria, tuberculosis, HIV. While those are hugely important, they often do not include looking at a holistic strategy [to address] more underlying problems. Are there better approaches to preventing multiple diseases?"

Road map for the future

The pursuit of a better approach led to a trip to Ethiopia for all seven health sciences deans in 2012 and the development of a task force that conducted site visits and met with academic partners



Students enter the dean of medicine's office at the University of Gondar.

in Ethiopia and medical and government officials to gain support.

By early 2013, the task force had developed a draft plan that included key health issues and academic training among its priorities.

Usha Menon, vice dean of the College of Nursing, had come to Ohio State from Arizona State only six months before she was asked to join the team that visited Ethiopia in 2012, as well as the task force. She said she made some “incredible connections” in Ethiopia.

“They want their faculty to develop and grow. If we were serious about making a difference, we had to help them,” she said.

That’s why the college sent four faculty members to take part in the Summer Health Institute. “We are walking the walk by doing this,” Menon said.

“It’s not about just going there. It’s about building capacity or knowledge acquisition. It’s about learning and growing at the same time. This is one of the joys for the nursing college—to be community focused and be part of a campus without walls that helps us grow and develop.

“It also puts Ohio State in the forefront of doing something very important in a shrinking world.”

In addition to nursing, educators for the One Health Summer Institute came from across the health sciences as well as the College of Food, Agricultural, and Environmental Sciences. They taught courses in areas such as neurosurgery, optometry, ethics in biomedical research, and international trade and environmental health.

The group also tackled a trio of wide-reaching projects: confronting the rabies

epidemic in Ethiopia; developing a cervical cancer screening and treatment program; and addressing environmental hygiene and food safety.

The summer sessions ranged from five days to five weeks. The \$110,000 for Ohio State faculty travel and lodging was provided primarily by the Ethiopian universities, while Ohio State underwrote student scholarships and pilot research and outreach projects.

“Our trainees were not classical students,” Gebreyes said. “These were early-career faculty members enrolled in postgraduate degree programs who needed to understand these big topics to address the greater need across their country. We are providing them with a road map for what they need to do, so they can take it and move ahead with their own resources.”

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Above: Women sell fruits and vegetables on an Addis Ababa street near a slaughterhouse. **Right:** Castoffs from the slaughterhouse end up in trash piles near where the produce is grown.



Right: Dogs typically go about their business without much attention to people.



Above: Ally Sterman, a veterinary student at Ohio State, works with faculty from the University of Gondar to interview the mayor of Woreta about rabies.



Left: Rickety-looking wooden scaffolding supports construction workers at the University of Gondar's new four-story hospital.

Karla Zadnik, associate dean of the College of Optometry, said the need for training became apparent to her as she walked the streets of Gondar. She saw people suffering from chronic and blinding eye diseases the likes of which she does not often encounter at home: “Opaque trachoma, white eyes, huge eye turns—way out or way in,” she said. “I was astonished at the number of cases that were no longer treatable but *had* been treatable at some time in past. This is a country lacking in even the most basic care.”

That, however, is only one of the problems. Zadnik cited the fact that virtually no one in Ethiopia wears glasses, due in part to a cultural stigma.

She also noted that despite the availability of top-level equipment, the smallest diagnostic tools and treatments—eye drops and dilation medication, for example—remain scarce.

“This is an amazing opportunity to see factors that are affecting people’s health that we know how to solve,” she said. “We have to evaluate the needs and where we can make a difference.”

The big picture

Recognizing the difference he can make in the world was exactly the lesson Korbin Smith brought home from Ethiopia. Smith is a former All-American in track and field who is finishing his undergraduate degree in health sciences with an eye toward medical school. (See page 20 for more about Smith.)

Smith joined Alison Norris, a professor with a joint appointment in public health and medicine, for her rabies research study. He said that most people—including his mother—could not understand his desire to visit the third world.

“People associate Africa with danger and hunger. But the negative connotations about poor, starving people are completely false. People are more generous than any nation I’ve ever seen.

“It made me realize how truly blessed I am in this country, with reliable power, Internet, medical care,” Smith said. “We take all these things for granted. These people are no different from me and you—they were just born somewhere else. Why do I deserve what I have?”

Helping students such as Smith understand global issues is one of the motivating factors behind the Ethiopia partnership, said King. His ultimate goal, however, is to make the most of the opportunities presented by the One Health Initiative.

As the only university in the world with all its health colleges on one campus, Ohio State is in a position to team up with Ethiopia in ways never before imagined—and to make a difference the world over.

“We can really do some things that can’t be done with just individual researchers working together, or a single school with multiple faculty,” King said. “We can now look at the bigger picture and broader community health.

“This is not a helping hand. It’s an opportunity to learn from each other and allow students across health professions to learn about problem solving and working at the human-animal [and ecosystem] interface in a way that will have benefits worldwide.” ■