Researchers from multiple disciplines will gather to explore opportunities for new applied research during the Pan-American One Health Workshop, Nov. 8-11 in Merida, Mexico.

The One Health initiative focuses on the three transmitters of disease in society: humans, animals and the environment. It is imperative that researchers, governmental representatives, administrators and students understand the relationships between these realms and the importance of addressing the world’s most pressing health issues through transdisciplinary education and research.

Though One Health is a global concept, faculty members from several Michigan State University colleges and units have developed a partnership with their peers in Mexico, Cuba, and Peru to co-sponsor this event.

The goals of the Pan-American One Health workshop include creating transdisciplinary international teams to address One Health topics, developing doctoral students through new collaborative programs, drafting publications, exploring collaborative research proposals and grants and encouraging reciprocal faculty and student exchanges.

Faculty members who are interested in attending the conference, administrators who would like to become sponsors or others who would like more information can visit the MSU Institute of International Health website at http://iih.msu.edu/pan-american-one-health/.
NIH AWARDS TERRIE TAYLOR $8.4 MILLION TO DEVELOP FIRST MALARIA TREATMENTS

By Kim Ward, MSU Communication and Brand Strategy

Terrie Taylor, an MSU University Distinguished Professor of internal medicine and an osteopathic physician, will use an $8.4 million grant from the National Institute of Allergy and Infectious Diseases, part of the National Institutes of Health, to build on her groundbreaking research that was published in the New England Journal of Medicine in 2015.

Taylor and her team discovered children with cerebral malaria develop massively swollen brains that are forced out through the bottom of the skull and compress the brain stem. The pressure causes the children to stop breathing and die.

“Because we now know that brain swelling is the likely cause of death, we can focus on identifying new treatments,” Taylor said. “One intervention we will evaluate uses ventilators to breathe for the children. We know from studying children who have survived cerebral malaria that the brain swelling does go down after a few days. This tells me that if we can help them breathe, they may survive. It may be that simple to save children’s lives.”

The second treatment Taylor will test is a saline solution to potentially shrink the brain swelling. Though medical researchers have developed effective drugs to kill the malaria parasite, efforts to treat the effects of the disease have been unsuccessful. If Taylor’s treatments are successful they will be the first developed for cerebral malaria.

MSU President Lou Anna K. Simon said the grant will allow Taylor to continue her mission to save children’s lives.

“We are grateful to NIH for their support for this critically important research. Dr. Taylor and her team will now use the discoveries about how malaria kills to develop treatments that will spare more families in Africa and beyond from its most tragic effects.”

“Cerebral malaria kills a child every two minutes,” Taylor said. “We, as a global community, should be concerned and support efforts to save these children even as we try to eradicate the disease.”

Taylor and team will conduct their next phases of research in Malawi’s first pediatric surgery and intensive care unit scheduled to open in April. The new facility is being built by Raising Malawi, an organization founded by pop legend Madonna. Taylor’s battle against malaria, which she refers to as the “Voldemort of parasites,” has been waged since 1986. She has spent six months of every year in the African nation of Malawi, conducting malaria research and treating children.

LEARNING AND ASSESSMENT CENTER PARTNERS WITH INSTITUTE OF INTERNATIONAL HEALTH

The Michigan State University Learning and Assessment Center is an innovative facility where students and medical professionals can practice health care skills. Established in 2006, the MSU LAC is the first faculty of its kind in Michigan and the first in the Big 10 to be accredited by the Society for Simulation in Healthcare. The center boasts more than 15,000 square feet of space and more than 20 spaces ranging from high-fidelity simulation rooms to debriefing rooms and exam rooms. The LAC affords students, faculty, and other health care providers with unique resources and the ability to experience highly realistic simulations of real medical situations.

The LAC features sophisticated, high-fidelity mannequins that are so lifelike that they can be programmed to cry and show pain or other emotions. Standardized patients also participate to help prepare future medical professionals for what they will face in clinical settings and allow them to gain the skills they need to be proficient in their respective fields.

The center is used by students from MSU’s colleges of human, osteopathic and veterinary medicine, as well as College of Nursing students. Participants complete exercises that test knowledge and skills that are taught in the classroom so that they can build patient care skills before extending their learning in clinical settings.

The LAC also provides a learning space for pre-college students and other visitors, who take part in classes or programs designed to introduce them to health care careers.

In January 2017 the IHJ Hosted 15 students from South Korea’s Daedong College health care professional/pre-nursing programs, who took part in experiences in the LAC.
Four research studies conducted during MSUCOM’s 2016 Peru Global Outreach Elective earned awards from the Bureau of International Osteopathic Medicine during the American Osteopathic Association’s recent OMED conference in Anaheim, California.

Second-year student George Park won for best overall abstract in both the outreach and research categories for his abstract, The Detrimental Effects of Biomass Sugarcane Burning on Human Airway Epithelial Cells. Sugarcane is a naturally occurring toxic metal found in rocks and soil, which over time can leach into water and once ingested, lead to renal disease.

Second-year student Laura Harding won first place in the Biomedical student research category for her work titled, Use of Region-Specific Human Papilloma Virus Serotypes in Improving Cervical Cancer Prevention Methods in Peru. Cervical cancer is one of the deadliest cancers for women worldwide, and Harding wanted to know if its prevalence could be mitigated by use of the Human Papilloma Virus (HPV) vaccination.

“This work is especially relevant in regions such as those we visited in Peru, which lack access to the medical infrastructure necessary to provide preventative and therapeutic measures,” she said.

Partnering with physicians at Peru’s Universidad César Vallejo, she collected cervical cell samples from across the country for DNA analysis. Harding concluded that the current HPV vaccination alone may not be sufficient to protect against cervical cancer in Peru, and that additional strategies, such as early screening and creating a type-specific vaccine, should be utilized.

Fourth-year MSUCOM student Samantha Ward won second place for her abstract, Urine Arsenic and MDA Levels in the Adult Population of Pataz Peru. Arsenic is a naturally occurring toxic metal found in rocks and soil, which over time can leach into water and once ingested, lead to renal disease.

Ward collected and tested urine and blood samples from 102 patients from the Pataz province and found that 93.1 percent of them showed elevated urine arsenic levels, compared to only 5.5 percent of control patients. She concluded that the population in Pataz has renal impairment due to the high levels of arsenic in the water and would certainly benefit from filtration to prevent further damage.

The samples were shipped to Xagoraraki’s laboratory immediately upon arrival, viruses were extracted from the experimental cartridge filters used for sample collection and DNA and RNA extraction was performed. The researchers had alarming findings such as high abundance of hemorrhagic viruses, respiratory viruses, enteroviruses, picornaviruses, papilloma viruses, herpesviruses, noroviruses, influenza viruses and many others in all their samples.

One of the primary researchers on the Uganda Water Project, Irene Xagoraraki, said, “Our objective is to use the preliminary data for a larger wastewater-based-epidemiology study. The central premise of this work is that community wastewater represents a snapshot of the status of public health. Analyzing wastewater or wastewater- polluted water is equivalent to obtaining and analyzing a community urine and fecal sample. Monitoring changes in virus concentration and diversity excreted in community wastewater, in combination with monitoring metabolites and biomarkers for population adjustments, allows early detection of outbreaks.”

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FOUR MSUCOM STUDENTS WIN INTERNATIONAL RESEARCH AWARDS

Waterborne viruses have a significant impact on humans, especially in developing countries. MSU researchers (Prof. Irene Xagoraraki, Prof. John Kaneene, Dr. William Cunningham; and graduate students Joyce Nakayaza, Evan O’Brien and Huyen Wu) in collaboration with Makerere University (Prof. Noah Kiwanuka) are studying diversity and abundance of human viruses in natural waters in Kampala-Uganda. In the summer of 2016 the team collected multiple samples from lakes across Uganda and the samples were analyzed for the presence of human viruses. The samples were shipped to Xagoraraki’s laboratory and analyzed immediately for the presence of viruses. The samples contained a wide range of viruses including norovirus, norovirus, enterovirus, picornavirus, papilloma virus, herpesvirus, norovirus, influenza virus and many others in all their samples.

One of the primary researchers on the Uganda Water Project, Irene Xagoraraki, said, “Our objective is to use the preliminary data for a larger wastewater-based-epidemiology study. The central premise of this work is that community wastewater represents a snapshot of the status of public health. Analyzing wastewater or wastewater-polluted water is equivalent to obtaining and analyzing a community urine and fecal sample. Monitoring changes in virus concentration and diversity excreted in community wastewater, in combination with monitoring metabolites and biomarkers for population adjustments, allows early detection of outbreaks.”

Irene and her team continue to gather data from Uganda and are developing a large-scale study for further research.
Since 1959, due to an economic embargo, Cuba has been isolated from much of the western world, despite being only 90 miles from the coast of the United States. In early December 2016, 20 Michigan State University College of Osteopathic Medical Students traveled to Havana, Cuba to learn more about their health care system and culture. This study-abroad trip offered a unique opportunity for MSUCOM students to be immersed in a society which has been largely untouched by American culture. During the week-long course, students accompanied Cuban physicians on home visits and participated in the check-up of patients.

The focus on prophylactic and preventive care in a socialized system is what inspired James Conwell, MSUCOM public health society officer, to take part in this trip. “It was amazing to learn about how Cuba has made health the main focus of society, as opposed to economic activity.”

Conwell and his classmates learned that health must be a consideration in each part of public life, and that care begins early for Cubans. “Pregnant women see their physicians once every two weeks, and have frequent home visits to ensure that both the mother and fetus are healthy. That level of prenatal care takes a lot of time, dedication and responsibility for the entire clinic. He has committed his entire life to medicine and the health of the people for over a decade. When I was there I got to see him work tirelessly until every patient had been seen, regardless of how long that took. My experience has made me even more inspired to be a doctor, to work hard and be committed to the health of my patients and their families. Cost of healthcare is not a barrier to any person accessing their health care system, and physicians are able to spend time getting to know their patients and families.”

Conwell was inspired by the level of attention to the doctor-patient relationship. “If I could incorporate one part of what I learned in Cuba into my future practice as a physician, it would be to work on establishing long-lasting relationships with my patients and my community, so that better health can be achieved for all.”

Jake Sadle, president of MSUCOM’s International Osteopathic Medicine Organization was impressed with Cuba’s home visit system.

“Local primary care clinicians must see each of their patients once a year. If a patient has a contributing risk factor, such as diabetes or hypertension, the doctor must see their patient twice a year, with one encounter taking place at the patient’s house.”

Sadle believes that this home visit system would have immense value in the United States where he notes, “Processed food and drink, if regularly available at home, contribute far too much sugar, fat and salt into our diets. Wherever environmental conditions contribute to a disease, disease prevention must also be considered.”

Cubans also believe in improving health care internationally. They send medical personnel abroad, while simultaneously bringing medicine and healthcare to underprivileged communities. “They train foreign physicians to assist in some of the most medically underserved regions of the world such as Sub-Saharan Africa and Central America, and they also train American students,” he said. “These American students mostly come from medically underserved black, Latino and LGBT communities throughout the U.S. After speaking to these Americans, many planned to return to their homes to help heal their local communities.”

Sadle and Conwell articulated that all 20 MSU students gained insight, and expressed immense appreciation for this once-in-a-lifetime experience.

Memories of a Mexican Medical Elective


As a fourth-year medical student with eyes on a neurouromusculoskeletal/osteopathic manipulative medicine residency and a heavy dedication to international medicine, I came to the IH looking for one more exceptional experience before my graduation. I had traveled to Kenya, Turkey as part of an IIH elective during my first year of medical school for a four-week program. At that time, it was apparent to me that the Turkish people had a dire need for manual medicine. Through the IH, I was able to coordinate three months of rotations in Konya and Antalya, Turkey in dermatology, pediatrics specialties, including cardiology and immunology, and neurosurgery. I even got a few days of exposure to acupuncture!

It was an invaluable experience for my learning of how medical systems work on an international level, and about giving lectures and spreading the word about OMM to a community where there was a great need for manual medicine. I give my sincere thanks for IH for the amazing opportunities I was given during my time in Merida, Mexico.

TRAVELING TO TURKEY: REFLECTIONS ON AN INTERNATIONAL ELECTIVE


I learned so much from the 2016 study abroad trip to Yucatan, Mexico, ranging from how to prep for surgery, to how to examine a newborn baby and a lot of the Yucatan culture. I loved the group that I was able to share this experience with and without them and my incredible director, Sung Soo Chung, this trip would have not been the amazing first trip out of the country that I have always dreamed of.

The four hospitals that I visited were the Hospital Materno Infantil, Centro de Salud, O’Horan Hospital, and Hospital Regional de Alta Especialidad. I even got a few days of exposure to basic care services.

I give my sincere thanks for IIH for the amazing opportunities I was given during my time in Merida, Mexico.

Discovering a New World and New Opportunities in Madagascar

By Amber Fauneaucht, fourth-year MSU College of Osteopathic Medicine student from Jackson, Michigan.

The international elective to Madagascar was one of the most fulfilling opportunities in my life.

Being away from home was new and exciting, but overwhelming at the same time. Once I arrived, my fears fell away and I was overcome with the beauty of the country. Madagascar is an island nation off the coast of the southern African nation of Mozambique that is rich with culture. The food is some of the best I’ve ever had, the scenery is beautiful and the wildlife is unique.

However, the most wonderful part of my trip was the people. They were warm and inviting hosts, resilient and hardworking -- something I aspire to be.

Learning about medicine and pathology from the Malagasy people was a privilege. Even more inspiring were the physicians, particularly one from Vohemar, a rural coastal town.

He is a surgeon by training, but he is responsible for the entire clinic. He has committed his entire life to medicine and the health of the people for over a hundred miles. He lives at the hospital with his family and I watched him work tirelessly until every patient had been seen, regardless of how long that took.

My experience has made me even more grateful for the privileges and resources I have in life. I hope to carry these lessons with me into practice.

Memories of a Mexican Medical Elective

By Evonte Terrell, MSU senior from Detroit majoring in human biology with minors in health promotions and biosciences humanities and society.

I learned so much from the 2016 study abroad trip to Yucatan, Mexico, ranging from how to prep for surgery, to how to examine a newborn baby and a lot of the Yucatan culture. I loved the group that I was able to share this experience with and without them and my incredible director, Sung Soo Chung, this trip would have not been the amazing first trip out of the country that I have always dreamed of.

The four hospitals that I visited were the Hospital Materno Infantil, Centro de Salud, O’Horan Hospital, and Hospital Regional de Alta Especialidad. I was also introduced to the MSU Osteopathic Clinic inside of the O’Horan Hospital.

Hospital Regional de Alta Especialidad was one of my favorite hospitals. This was the federal hospital in Yucatan where all the high priority cases are sent. When I was there I witnessed an arterial bypass in the leg. This procedure took a lot of precision and required micro surgery to cross-link and stitch the artery on the right side of the leg to the artery on the left side of the leg.

I was also able to witness a heart procedure in which a device was attached to the heart to close a hole/opening between the right and left side of the heart to keep the flow of blood circulating correctly. In Mexico, this procedure is called a cardiac implant closure device procedure, in the USA.
RENE HINOJOSA: THE EMERGENCE OF THE COLLEGE OF OSTEOPATHIC MEDICINE CUBAN STUDY ABROAD PROGRAM

Rene Hinojosa, MSU professor emeritus in urban and regional planning, played a vital role in the emergence Michigan State University’s presence in Cuba. It began in 2001 when he and Robert Thomas made an exploratory trip to Cuba, during a time when political embargo meant that all aspects of connections between the two countries were strained, at best.

Hinojosa developed relationships with key stakeholders from the University of Havana Office of Foreign Affairs and met Maria Garcia, now an adjunct professor of clinical medicine at MSU/COM, who helped make connections for the university with the Cuban medical system.

Hinojosa recalls that during the first few trips to Cuba, the island nation was recovering from what Cubans euphemistically call a “special period,” but that others might refer to as an economic downturn. He says that he noticed over the several years that he’s been going to Cuba there have been unique changes – and not simply with normalized diplomatic relations with the U.S.

“Cubans are still proud of their achievements, but have mixed feeling about their economic achievements. Residents can now buy/sell homes and travel abroad. There has been an avalanche of tourists since the recent opening of relations between the U.S. and Cuba as well,” he noted.

As someone familiar with Cuba, Hinojosa still found surprises within its medical system.

“I was surprised that doctors go and visit homes; they do not just go to homes for a cure, but also with a checklist, room by room, and they have jobs beyond medical training, which goes as deep as sanitation and nutrition,” he noted.

In 2013, the Institute of International Health began working with Hinojosa on planning the first U.S. medical student elective to Cuba in 50 years. That plan became a reality in April 2016 with more than 20 fourth-year medical students from MSU’s colleges of nursing and human and osteopathic medicine.

That first positive experience, coupled with reduced travel restrictions, has enabled IIH to open up the Cuban experience to more students and offer two experiences. The April trip offers fourth-year medical students the chance to explore patient care, while a December trip gives second-year students exposure to prevention and public health.

YOU CAN MAKE A DIFFERENCE GLOBALLY

There are myriad opportunities available to support students who take part in IIH experiences. You can make a difference in others’ lives with a financial gift of any size. Your support does not need to be as large as the $50,000 donation that came from the Jim and Diana Huckle Family Foundation of Traverse City, Michigan. Even a few dollars helps future health care workers gain a new world view, learn about themselves and get a clearer view of their future.

Financial gifts are critical to support electives for medical and nursing students. These burgeoning doctors, nurses and others travel abroad, explore new cultures and hone their clinical care skills. They return to the U.S. with new leadership abilities, perspectives and a passion for community service. Donors can also choose to contribute to existing scholarship funds for students interested in international health. The Dr. Charles A. and Marjorie A. Gliozzo Scholarship Endowment in Global Health and the Institute of International Health Student Endowment Fund both support student experiences.

Learn how you can contribute to scholarships or provide other support by contacting the IIH, visiting the IIH website iih.msu.edu or the MSU Advancement donation site: https://www.givingto.msu.edu/gift/.

UPCOMING EVENTS

July
• Korea Advanced OMM Training

August
• Service Learning, Peru study abroad

November
• Pan-American One Health Conference

December
• Comparative Health Systems, Cuba study abroad

William Cunningham, D.O., M.H.A., Director
Sung Soo Chung, Associate Director
Michael Miller, Senior Administrative Assistant
Rusti Sidel, Coordinator of Student Programs
Rene Hinojosa, Cuba Liaison
Jake Rowan, D.O., Merida Medical Education Director
Gary Willyerd, D.O., Peru Medical Director
Joe Gorz, D.O., Peru Operations Director
Shane Sergent, D.O., Peru Research Director
Kenny Briceno, M.D., Peru Liaison
Joe Gorz, D.O., Peru Operations Director
Shane Sergent, D.O., Peru Research Director
Kenny Briceno, M.D., Peru Liaison
Sarah Smith, Graduate Assistant
Stephen Brown, IT Analyst
Gabrielle Barron, Student Intern
Vad Traill, Student Intern

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College of Human Medicine
College of Nursing
College of Veterinary Medicine
International Studies and Programs