

MICHIGAN STATE  
UNIVERSITY

Institute for Global Health







## OUR MISSION

The mission of the Institute for Global Health is to provide global health education, research and capacity building for our partners that will position Michigan State University as a leader in addressing and solving global health challenges. IGH works with health-related colleges, as well as with agricultural, social and environmental scientists and nutritionists to foster and coordinate research, education, and development at a global level. IGH collaborates with Michigan-based hospitals affiliated with MSU's College of Osteopathic Medicine to raise awareness of global health issues and help improve clinical services and health outcomes for underserved regions of the world.

## A MESSAGE FROM OUR DIRECTOR



International medical electives provide future physicians, nurses and other health care professionals with unparalleled opportunities for building clinical skills, learning about health care systems and exploring rich cultures.

The biannual Cuba Medical Elective offers future physicians and nurses a unique look at one of world's most fascinating health care systems. Students interact with Cuban health care professionals — healers who excel in diagnosing and preventing disease without many of the technological advances commonly found in U.S. hospitals and clinics.

Every March, the Guatemala Medical Service Elective enables medical students to learn about tropical diseases and build clinical care abilities under the supervision of practicing physicians. They work in urban and rural communities, develop problem-solving skills and broaden their knowledge of public health issues.

Through the Peru Global Medical Elective, osteopathic medical students, residents and physicians travel to Peru each August to care for underserved Peruvians in urban health clinics and from a floating clinic on the Amazon River. They also conduct research in collaboration with a cadre of international investigators.

Thanks to numerous partners in Michigan, in other U.S. states and internationally, the MSU Institute for Global Health provides unique experiences that enrich hundreds of future doctors' lives and careers.

**William Cunningham, D.O., M.H.A.**

Director of the Institute for Global Health



# ONE HEALTH: A GLOBAL HEALTH CONCEPT

## ONE HEALTH OFFERS OPPORTUNITIES FOR TRANSDISCIPLINARY RESEARCH, EDUCATION

by Mike Chaddock, D.V.M., EML



There is compelling evidence that our planet is in peril. Human, wildlife and domesticated animal populations face growing health risks from climate change, population growth, zoonotic pandemics and increased urbanization. Local and global environmental factors also impact these issues.

One Health is a collaborative, multidisciplinary initiative comprising individuals working locally, nationally and globally to attain sustainable optimal health and well-being for humans and animals. It is the intersection and inextricable link between human and animal health, and the connections between health and natural and man-made environments.

For many individuals, implementing One Health concepts and their related socioeconomic impacts is a cultural, behavioral and paradigm shift. Many One Health concepts are driven such socioeconomic issues as population growth; nutritional, agricultural and trade practices; globalization; land use; accelerated urbanization; deforestation; habitat encroachment; and climate change.

Now is the time for academic institutions to step forward in leading new One Health initiatives to create research-driven solutions and train the next generation of innovative leaders. One Health concepts are ideally suited to provide robust, system-wide health-related solutions that the global society will need and expect. There is an enormous unrealized potential for intercollegiate collaboration. Working together, institutions can leverage their strengths to solve many of the most pressing health issues.

One Health concepts and case studies could effectively be incorporated into curricula, with examples and impacts discussed in teaching models, assignments and high-impact projects throughout many disciplines including those outside the traditional health sectors. Unique opportunities exist for the integration and incorporation of One Health-related concepts throughout undergraduate, graduate and professional programs; in other words, integrate One Health concepts throughout the university curriculum, where appropriate.

At the heart of the One Health initiative is the role of engaging students in educational opportunities around a team concept. It is important to identify opportunities that would enable students from various disciplines and colleges to form teams. Team approaches involving people with different, yet complementary skills and experiences provide synergy in addressing complex, important societal needs. It is essential that students learn how to work collaboratively with colleagues across professions to address important societal issues involving health and wellbeing.

# MASTER OF SCIENCE IN GLOBAL HEALTH (MsGH)

The Michigan State University Institute for Global Health is developing a new online Master of Science in Global Health (MsGH) degree program. The program includes both new and existing courses based on the suggested competencies of the Consortium of Universities for Global Health. The program builds on the globally recognized strengths of Michigan State University and is unique among global health master's degree programs in its multidisciplinary focus and inclusion of courses from multiple colleges. Prospective students are health professionals or pre-professionals, drawn from the medical, nursing and veterinary medicine disciplines or individuals seeking technical skills to work in a global health organization.

As the program is multidisciplinary in nature, students will be in courses with other students drawn from diverse professions and will acquire knowledge and skills applicable to all sectors related to health (environmental, agriculture, animal and human health). The program will include two tracks: a thematic track for clinical and current professionals interested in learning about global health but planning to apply clinical or other professional skills in a global setting, and a technical track for individuals who are seeking skills to work in a global setting.

Core courses in the program include Introduction to Global Health Practice, Global Burden of Disease, Global Health Management, One Health, Ethical Issues in Global Public Health, Epidemiology or Methods in Global Health, and Global Health Integrating Experience. Students will be required to select among over ten global health field experiences. The program will require a minimum of 42 credits including 18-20 credits from required courses and 14-15 credits of electives. A maximum of 3 independent study credits, in addition to the practicum, will be allowed.

The program is supported through an actively engaged advisory committee composed of faculty from across the university. The anticipated start date is Fall 2019.

If you would like further information on the MsGH program, you may contact the following:

William Cunningham D.O., M.H.A.  
Assistant Dean for West Michigan  
College of Osteopathic Medicine  
Director of Institute for Global Health  
william.cunningham@hc.msu.edu

Rebecca Malouin Ph.D., M.P.H., M.S.  
Director of MsGH Program  
Institute for Global Health  
rebecca.malouin@hc.msu.edu  
(517)-388-3837







## TEN YEARS PROVIDING HEALTH, WELLNESS AND RESEARCH IN PERU AND THE AMAZON

by Gary L. Willyerd, D.O., FACOEP-D, FAODME

The Michigan State University College of Osteopathic Medicine offers the Peru Global Medical Elective every August. Since its 2008 inception, the program's primary focus has been delivering basic health care to those most in need. To better achieve this goal and offer consistent health delivery, a clinical research element was added in 2009. International research teams work in conjunction with the medical outreach initiative, investigating community preventive health care strategies. The teams are comprised of physicians, residents, medical and pre-medical students. There's also a partnership with Universidad César Vallejo (UCV), a Peruvian medical school that has fostered a synergic approach to research development. Each year medical students explore new aspects of health care delivery and preventive medicine. The focus is on educating the students about critical thinking and exposing them to unique research projects. They also learn about epidemiology, barriers to health care delivery, and most importantly, how to explore transdisciplinary solutions to disease. Representatives from many MSU colleges have taken part, including engineering, natural science and agriculture and natural resources. We have also collaborated with organizations including Engineers Without Borders, the U.S. Centers for Disease Control and Prevention and the Peace Corps.

Students have a learning opportunity outside the classroom and are encouraged to think like clinical scientists. Each year, most of the 30-plus medical students who travel to Peru take part in some aspect of research. Their work has been highlighted in various publications, garnished numerous awards, grants and fellowships. It has also been fundamental in the unexpected integration, acknowledgement, and granting of licensure for osteopathic physicians in Peru. We learned that though clinical medicine can treat an individual, an entire population can be affected through research. The best examples of this mantra include an ongoing water quality project that has included a partnership with the MSU College of Engineering and has resulted in a gravity-based physical and biological filtration system to decontaminate Amazon river water.

Another example is the loop-mediated isothermal amplification (LAMP) project, a relatively novel technology that has the potential to transform diagnostic capabilities at remote, low-resource medical clinics. LAMP is a fast, sensitive, specific and cost-effective diagnostic assay that could revolutionize our approach to tropical medicine. It's been useful in the rapid detection of life-threatening infections in the underdeveloped tropical regions where we provide care. Participants also began a study using magnetic nanoparticles (MNPs) to aid in detecting Mycobacterium tuberculosis (Mtb) via point-of-care microscopy at an estimated cost of \$0.05 per test. This project uses MNPs to separate bound bacteria from the medium via neodymium magnets and the detection of Mtb via microscopy. In addition to the ongoing research, we anticipate starting numerous ultrasound-centered projects investigating disease prevalence, STI/STD Loop testing, pediatric resuscitation models and HPV serotyping to determine the utility of HPV prevention using the existing vaccine. All of these projects are geared toward preventive efforts, the cornerstone of osteopathic philosophy.

### Program Accomplishments, 2007-2017:

- Patients treated: More than 12,000
- Medications and supplies delivered: In excess of \$1,000,000
- Medical students participating: 243
- Physician specialties represented: Dentistry; Dermatology; Ear, Nose and Throat; Obstetrics/Gynecology; Osteopathic Manipulative Therapy; Family Medicine; Emergency Medicine; Internal Medicine; Pediatrics; Podiatry and Rehabilitation Medicine
- Abstracts written to date: 89



## WHAT WE DO

The Institute for Global Health at MSU, in the spirit of the first land-grant university, has a deep commitment to improving the quality of life in resource-poor and disadvantaged communities around the world. The institute opens the door to the world through the following global programs for undergraduate pre-professional students and graduate students in medicine, nursing and veterinary medicine.

### Annual Study Abroad Programs

- Belem, Brazil
- Havana, Cuba
- Santo Domingo, Dominican Republic
- Tecpan, Guatemala
- Seoul, Republic of Korea
- Blantyre, Malawi
- Merida, Mexico
- Kathmandu, Nepal
- Iquitos, Peru
- Istanbul and Konya, Turkey

### Independent Clerkship Rotations

- Rotations in Malawi, Mexico, Haiti and 56 countries for medical residents in the last four years

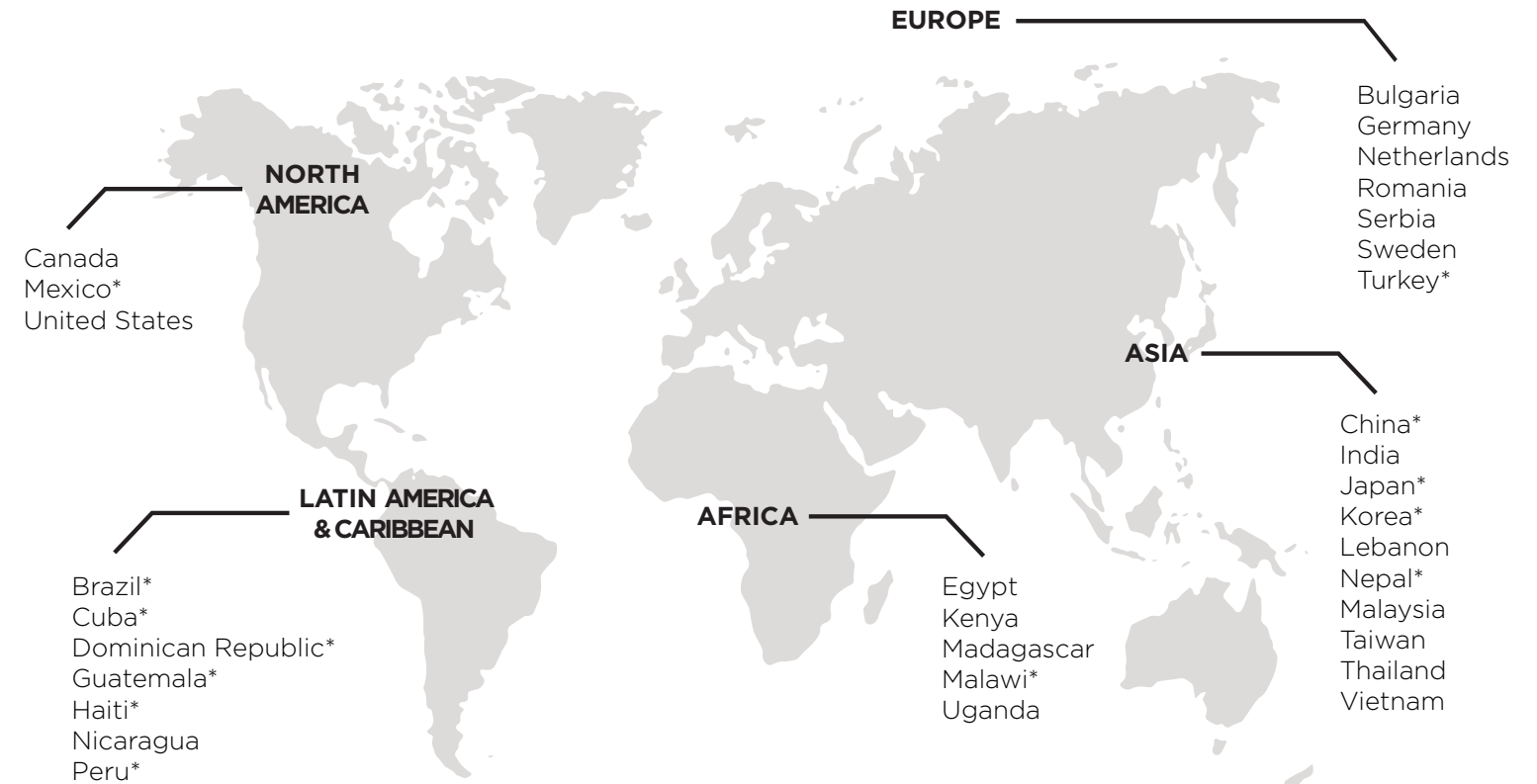
### Global Health Training Programs

- China
- Japan
- Republic of Korea

## OUR HISTORY

The Institute had its genesis in 1987, when Dr. Roy Gerard of the Department of Family Practice received \$4.2 million from the W.K. Kellogg Foundation to implement the Kellogg International Fellowship Program in Health. By 1989, the fellowship program had grown into a full-fledged institute, directed by Dr. Evangelos Petropoulos with Dr. Herbert Whittier as associate director. Under this leadership, IIH (now IGH) was involved in many successful training, research, and advisory initiatives in the field of International Health. In the past 29 years, IIH has continued to flourish as MSU's focal point of international health by expanding training, educational, scholarship and research programs, as well as collaborative partnerships around the world.

## INSTITUTE FOR GLOBAL HEALTH PRESENCE



*\*Countries students studied abroad 2017-18*

### Ongoing Research Projects

#### Malawi:

- Dr. Terrie Taylor, Cerebral Malaria in Children in Africa

#### Mexico:

- Dr. Jed Magen, Zika Impact on Child Development
- Dr. Zhiyong Xi, Wolbachia Project, Combating Zika in the Yucatan
- Dr. Tom Voice and Dr. Dave Long, Merida Water Quality Project
- Dr. Donald Bartkowski, Pediatric Urology Cooperation

#### Peru:

- Dr. Evangelyn Alocilja, Dr. Kenny Briceno, and Dr. Shane Sergent, Disease Outbreak Prevention through Global Biosensing Networks
- Li Ning - Peru Sugar Cane Burning Impact on Heavy Metal Air Pollution

#### Uganda & Detroit:

- Dr. Irene Xagorarakis, Dr. John Kaneene, Dr. William Cunningham, A Smart Integrative System for Early Detection and Prediction of Water-Related Viral Outbreaks



## STUDY ABROAD

The Institute for Global Health currently offers nine health and medical study abroad programs, providing MSU students opportunities to gain a better understanding of health care systems in other countries, different clinical practices, and develop cultural competency. Courses in Mexico and the Dominican Republic are designed for undergraduate students who are considering a career in the medical field. The Cuba, Guatemala, Korea, Turkey, Peru, Brazil and Malawi programs are designed for osteopathic and allopathic medical students and graduate nursing students. Through clinical shadowing in our partner hospitals and interacting with the host physicians and local medical staffs, students observe clinical procedures such as surgery and childbirth and learn about the patient-physician relationship in other cultures. Learning is reinforced by didactic lectures and cultural excursions in each country.

## CURRENT PROGRAMS

- Tropical Medicine and Infectious Diseases, *Belem, Brazil*
- The Cuban Health Care System & Culture, *Havana, Cuba*
- Dominican Republic, Health Care Delivery System and Culture, *Dominican Republic*
- Guatemala Medical Mission, *Tecpan, Guatemala*
- Korean Health Care Delivery System & Culture, *Seoul, Republic of Korea*
- Clinical Tropical Medicine, *Blantyre, Malawi*
- Community Medicine and Mayan Culture in the Yucatan, *Merida, Mexico*
- Peru Medical Service, *Iquitos, Peru*
- Turkish Health Care Delivery System & Culture, *Istanbul & Konya, Turkey*
- One Health, *Kathmandu, Nepal*





## GLOBAL HEALTH TRAINING

To meet the mission of Michigan State University and the Institute for Global Health, the IGH provides certificate programs for advanced educational training. These programs offer international students and professionals a new perspective on medical disciplines while helping them develop cultural competency and language proficiency. Health care students and professionals take part in learning activities on campus and at selected medical/health institutions across Michigan with guidance from American physicians, medical students and administrators.

### CUSTOMIZABLE CERTIFICATE PROGRAMS MEET THE NEEDS OF INTERNATIONAL HEALTH CARE PROFESSIONALS AND STUDENTS

#### **Global Osteopathic Manipulative Medicine Training** *2-4 Weeks, East Lansing*

Eastern traditional medicine professionals broaden their knowledge of the American model of osteopathic care, philosophy and practice through hands-on experience.

#### **Global Medical Shadowing Program** *4-8 Weeks, Sparrow and McLaren Greater Lansing hospitals*

International medical students and professionals learn about American medicine and health care delivery in a hospital environment.

#### **Global Health Care Professional Shadowing Program** *4-8 Weeks, McLaren Greater Lansing Hospital and Ingham County Health Department*

International health care professional students explore health care management and delivery.

#### **Global Hospital Management Training Program** *2 Weeks, Various Michigan hospitals*

International physicians and health care administrators learn about American hospital management with leadership and supply chain perspectives.

Learn more about these programs by addressing an email to:  
**[SungSoo.Chung@hc.msu.edu](mailto:SungSoo.Chung@hc.msu.edu)**.



**Sung Soo Chung**  
Associate Director  
Institute for Global  
Health Education and  
Training Programs

# MICHIGAN STATE UNIVERSITY AFFILIATED FACULTY

## AGRICULTURE & NATURAL RESOURCES

**Joan B. Rose, Ph.D.**  
Water microbiology, water quality, public health

**Celina Wille, Ph.D.**  
Community development, nutrition education

**Felicia Wu, Ph.D.**  
Global health, agriculture, trade

## COMMUNICATION ARTS & SCIENCES

**Peter Lapine, Ph.D.**  
Voice restoration after laryngectomy, videostroboscopic imagery, vocal fold dynamics, speech acoustics, resonance disorders

**Maria Lapinski, Ph.D.**  
Social-psychological factors on health, environmental risk behaviors with a focus on culturally-based differences & similarities, One Health communication

## ENGINEERING

**Evangelyn C. Alocilja, Ph.D.**  
Nano-biosensors, point-of-care-diagnostics

**Syed A. Hashsham, Ph.D.**  
Point-of-care diagnostics

**Peter Lillehoj, Ph.D.**  
BioMEMS, nanotechnology, microfluidics, biosensors, point-of-care diagnostics

**Brian Thompson, Ph.D.**  
High speed machinery, composite materials, smart materials, design methodologies, community development

**Thomas C. Voice, Ph.D.**  
Environmental health, water quality

## HUMAN MEDICINE

**P. Greg Gulick, M.D.**  
Telemedicine

**Michael R. Rip, Ph.D.**  
Public health

**Norbert E. Kaminski, Ph.D.**  
Immunopharmacology, immunotoxicology

**Tom Tomlinson, Ph.D.**  
Ethics and humanities in the life sciences, social issues in medical science

**James E. Trosko, Ph.D.**  
Cancer genetics, adult stem cells, toxicology, environmental health, food security

## JAMES MADISON COLLEGE

**Siddharth Chandra**  
Behavior and policy relating to addictive substances, the intersection of economics, health, history in Asia

## NATURAL SCIENCE

**David T. Long, Ph.D.**  
Environmental health, water quality

**Zhiyong Xi, Ph.D.**  
Disease vectors, mosquitoes, infectious disease, microbiology & molecular genetics

## NURSING

**Patricia Peek, D.N.P. RN, PNP-BC, Ph.D.**  
HIV/AIDS, family adaptation to chronic childhood respiratory disorders

**Randolph Rasch, Ph.D., RN, FNP, FAANP**  
Nursing

**Teresa Wehrwein, Ph.D., RN, NEA-BC**  
Nursing education

## OSTEOPATHIC MEDICINE

**Farha Abbasi, M.D.**  
Global mental health program

**Margaret Aguwa, D.O., M.P.H.**  
Community and public health, family planning

**Andy Amalfitano, D.O., Ph.D.**  
Gene transfer to treat genetic and non-genetic diseases

**Michael Boivin, Ph.D., M.P.H.**  
Neuropsychiatry of HIV/AIDS

**William Cunningham, D.O., M.H.A.**  
Emergency medicine, hospital management

**Lisa DeStefano, D.O.**  
Manual medicine

**Peter Gulick, D.O., FACOI, FACP**  
HIV/AIDS, Hepatitis B and C, hematologic malignancies

**Furqan Irfan, M.D., Ph.D.**

**Jed Magen, D.O.**  
Global mental health program

**Justin McCormick, Ph.D.**  
Carcinogenesis

**Peter Reeves, Ph.D.**  
Postural neuromuscular support systems

**Jake Rowan, D.O.**  
Manual medicine, community health

**Gary Willyerd, D.O., FACOEP-D, FAODME**  
Family and community medicine

## SOCIAL SCIENCES

**Rene Hinojosa, Ph.D.**  
Transportation planning, evaluation in planning, methods of regional analysis

**Pilar Horner, Ph.D.**  
Drug use & abuse, social welfare policy, sexuality, social aspects of HIV/AIDS

**Khalida Zaki, Ph.D.**  
Cultural diversity, disease and society, social demography

## VETERINARY MEDICINE

**Theresa M. Bernardo, D.V.M., M.Sc.**  
Medical informatics, agricultural health, international trade, disease surveillance & reporting

**John Kaneene, D.V.M., M.P.H., Ph.D.**  
Epidemiology of infectious diseases, zoonoses

# ADVISORY COUNCIL

The Institute for Global Health Advisory Council provides guidance and consultation to the director in the area of international health management. The council comprises the following dedicated faculty and staff members:

**William Cunningham D.O., M.H.A. (ex officio)**  
Director, Institute for Global Health  
Assistant Dean, College of Osteopathic Medicine

**Charles Gliozzo Ph.D. (Emeritus)**  
Professor Emeritus, Office for Education Abroad

**John Kaneene D.V.M, MPH, Ph.D. (Emeritus)**  
University Distinguished Professor  
Large Animal Clinical Sciences

**James Trosko Ph.D. (Emeritus)**  
Professor Emeritus, Pediatrics and Human Development

**Siddharth Chandra, A.M., B.A., Ph.D.**  
Director, Asian Studies Center

**Mark Notman, Ph.D.**  
Associate Dean of Administrative Services  
College of Osteopathic Medicine

**Laurie Medina, Ph.D.**  
Director, Center for Latin American and Caribbean Studies

**Michael Rip, Ph.D., M.Sc.**  
Founding Director, Program in Healthcare Administration  
Broad College of Business

**Mary Anne Walker, M.A.**  
Director, Global Engineering Office

**Teresa Wehrwein, Ph.D., RN, NEA-BC, ANEF**  
Associate Professor Emerita,  
College of Nursing

**Melinda Wilkins, D.V.M., MPH, Ph.D.**  
Director, Online Master of Science in Food Safety program  
Assistant Professor, Department of Large Animal Clinical Sciences

**Gary Willyerd D.O. (non-voting)**  
Medical Director Institute for Global Health  
Associate Dean, College of Osteopathic Medicine

# STAFF

**William Cunningham D.O., M.H.A.**  
Director, Institute for Global Health & Associate Dean for Global Health  
William.Cunningham@hc.msu.edu

**Sung Soo Chung**  
Associate Director, Institute for Global Health  
Sungsoo.Chung@hc.msu.edu

**Michael F. Miller**  
Coordinator of Global Health Research Programming  
Senior Administrative Assistant  
Michael.F.Miller@hc.msu.edu

**Gary Willyerd**  
Associate Dean for Southeast Michigan  
Director, Peru Global Outreach  
Gary.Willyerd@hc.msu.edu

**Rebecca Malouin**  
Associate Director of Research  
Rebecca.Malouin@hc.msu.edu

**Qing Xia**  
Associate Director of Global Education  
XiaQing@msu.edu

**Rusti Sidel**  
Coordinator of Study Abroad Courses  
Assistant to the Director  
Rusti.Sidel@hc.msu.edu

**Sonam Sethi**  
Graduate Assistant  
Sonam.Sethi@hc.msu.edu

**Vraj Tripathi**  
Technical Assistant  
Tripat13@msu.edu

**Stephen Brown**  
IT Analyst  
Brown495@msu.edu

**Jade Greear**  
Undergraduate Intern  
GreearJa@msu.edu

**Xavie He**  
Finance Assistant  
HeXiao1@msu.edu



# Institute for Global Health

Michigan State University  
West Fee Hall  
909 Fee Road, Room B320  
East Lansing, MI 48824

Phone: (517) 353-8992  
Fax: (517) 355-1894  
[ighealth.msu.edu](http://ighealth.msu.edu)  
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