THE OHIO STATE UNIVERSITY - EASTERN AFRICA PARTNERSHIP

ONE HEALTH SUMMER INSTITUTE
May 6-August 23, 2019
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DEAR GLOBAL PARTNERS AND COLLEAGUES,

This year, we mark the 8th annual Ohio State Eastern Africa One Health Summer Institute (OHSI). What a wonderful journey it has been. The Summer Institute is the flagship activity of our partnership which also inspired the establishment of the Global One Health initiative (GOHi), Ohio State’s largest interdisciplinary partnership working on a global scale.

GOHi’s strategy is focused on three core and two supportive strategic areas anchored by our vision of Building Capable Professionals and Institutes for a Health and Enduring Global Community. These include: 1) Training and Education Capacity; 2) Applied Research and Implementation Science Capacity; 3) Outreach and Extension Capacity; 4) Resource Stewardship; and 5) Financial Sustainability.

The summer institute is an opportunity not only for our participating universities and research institutes from Ethiopia and East Africa to interact on topics of common interest but also paves the way for regional and international collaboration. We would like to encourage participants to make use of the opportunity for institutional collaborations and partnerships on the diverse thematic topics that require cooperation among scientists of our region with those of Ohio State and beyond.

– Afework Kassu Gizaw, State Minister, Science and Higher Education FDR Ethiopia

Ohio State has a long-standing mission to be a leader in driving positive societal impact in which we have an opportunity to make a difference. The summer institute is an excellent example of our commitment to address critical challenges by building capacity to improve health, inspire research collaboration and improve lives in communities around the world.

– Gil Latz, Vice Provost for Global Strategies and International Affairs, The Ohio State University

In the past year alone, GOHi has achieved several key milestones including, facilitating the engagement of seven universities from North America in our 2018 flagship Summer Institute; hosting a One Health Day workshop in November 2018 at Ohio State that engaged more than 110 professionals within the state of Ohio and connecting local and global partners from Latin America, Africa and the United States; fostering high priority and large research and implementation capacity building in the area of food safety funded through the United Kingdom Department for International Development and the Bill & Melinda Gates Foundation; strengthened implementation of Global Health Security with the CDC and Ethiopian partners; renewed the NIH
Fogarty Global Infectious Diseases research training program; initiated a research project on one of the most important water-borne diseases, Cholera, in Kenya led by the Kenya Medical Research Institute, among others.

Considering the extent of global problems that necessitate the One Health approach, GOHi, its partners and the world have a long way to go to effectively address major global priorities. However, our partnership is proud and humbled with the momentum it has gained in strategic locations. We have involved more than 1,100 professionals since 2012; 120 faculty members with 38 more faculty participating in 2019 alone; close to 50,000 trainees in our online system (Canvas and iTunesU combined); some 100 Ohio State students including more than 25 Global Applied Project (GAP) MBA students engaged.

This year, we anticipate the largest and most diverse number of trainees (the majority from Ethiopia as well as Kenya, Malawi, Rwanda, Tanzania, Uganda and Zambia) participating in 20+ training modules and workshops. We greatly appreciate all the wonderful sponsors and partners including the World Bank Center, CDT-Africa; Ethiopian Public Health Institute; Kenya Medical Research Institute; University of Gondar among others. We are also grateful to our sponsors including the U.S. Centers for Disease Control and Prevention; NIH Fogarty International Center; and the Bill & Melinda Gates Foundation.

Wondwossen Gebreyes
Executive Director
Global One Health initiative
The Ohio State University

Gil Latz
Vice Provost for Global Strategies and International Affairs,
The Ohio State University

Afework Kassu Gizaw
State Minister, Science and Higher Education,
FDR Ethiopia
GLOBAL ONE HEALTH INITIATIVE

OVERVIEW

The Global One Health initiative (GOHi) at The Ohio State University is the university’s largest interdisciplinary example of institutional team work operating on a global scale. GOHi improves the health of communities, builds capacity among public health professionals and provides learning opportunities for students, faculty and staff around the world. Founded in 2009 by a team of diverse faculty at Ohio State, GOHi actively serves those in need across the United States, Eastern Africa, Central and South America and Asia.

Today, hundreds of Ohio State students, faculty and staff are involved in the initiative, building capacity within cross-cutting issues including zoonotic diseases, antimicrobial resistance, cancer, maternal and child health, medicinal plants, food safety and curriculum twinning and sharing information through innovative e-learning technology. The Global One Health initiative is the university’s largest, interdisciplinary example of institutional teamwork operating on a global scale.

The scope of GOHi’s work is focused on:

- Training and Education Capacity
- Applied Research and Implementation Science Capacity
- Outreach and Extension Capacity
- Resource Stewardship
- Financial and Resource Sustainability

VISION

Capable professionals and institutional systems that support and advance a healthy, enduring global community.

MISSION

Expand capacity for a One Health approach via applied education, training, research and outreach to more efficiently and effectively address causes and effects of diseases at the interface of humans, animals, plants and the environment.
ONGOING PROJECTS

**Assessment and Risk Management of Foodborne Illnesses (TARTARE)**
Project that aims to implement a risk-based, decision-making roadmap for food safety practices with raw beef and dairy products in collaboration with University of Florida and International Livestock Research Institute.

**Brazilian Antimicrobial Resistance Network**
Collaborative research, training, outreach and capacity building to prevent and control antimicrobial resistance in Brazil.

**Bridging the Gap in Electronic Capacity in One Health**
Collaboration with universities in Kenya, Tanzania and Ethiopia to narrow the gap in scientific knowledge, technology transfer and networking using digital systems.

**Campylobacter Genomics and Enteric Dysfunction**
The collaboration between Global One Health initiative and other U.S. and Ethiopian institutions builds capacity and conducts research to tackle global hunger and food safety in Ethiopia and Burkina Faso.

**Communications Across Borders**
Partnership between The Ohio State University School of Communication and the Journalism and Communication Department at the University of Gondar to develop a journalism curriculum at the graduate level.

**Curriculum Twinning Program in Veterinary Medicine and Nursing**
Assessing, revising and updating core veterinary medicine curriculum at Ethiopian universities led by the University of Gondar and Ohio State. Supporting University of Gondar Nursing PhD students, with exchanges and training at Ohio State.

**Drug Discovery and Therapeutics, Africa**
Collaboration with the Center for Drug Discovery, Africa, led by Addis Ababa University, that includes multiple African countries to identify new therapeutics.

**Epstein-Barr Virus Cancer Research**
Collaboration with the James Cancer Hospital and Solove Research Institute and Addis Ababa Black Lion Hospital, researching the prevalence of Epstein-Barr Virus associated cancer in HIV positive individuals and setting the groundwork for vaccine research in the future.

**GenomeTrkr Partnership**
Formal partnership with U.S. Food and Drug Administration to extend work on whole genome sequencing of foodborne pathogens across a consortium of Global One Health partners.

**Global Health Security to Prevent Priority Zoonotic Diseases and Antimicrobial Resistance in Ethiopia**
Cooperative agreement with the Centers for Disease Control and Prevention and a collaboration with key Ethiopian public health institutions to prevent and control priority zoonotic diseases and antimicrobial resistance.

**International Congress on Pathogens at the Human Animal Interface**
Biannual congress with international partners and world experts in One Health to accelerate global capacity and knowledge-sharing to reduce the burden of disease, environmental hazards and their risk factors.

**One Health Eastern Africa Research Training Program, National Institutes of Health**
Collaboration with universities in Kenya, Tanzania and Ethiopia to conduct training and research with Eastern African doctoral fellows to advance the One Health platform among public health professionals.

**One Health Summer Institute**
Annually occurring One Health workshops, trainings and applied research opportunities held in Eastern Africa.

**USAID Tuberculosis Prevention Trial: Challenge TB**
Collaboration with KNCV and Aurum Institute in a clinical trial enrolling over 800 participants to optimize TB prevention protocols for HIV positive individuals.
The One Health Summer Institute trainings will take place May-August in Ethiopia and Kenya. Below is a summary of the trainings. Complete descriptions can be found on page 8. Please note that dates and times are subject to change. For the most up-to-date schedule and locations, and to register for a training, visit go.osu.edu/OneHealthSummerInstitute. Contact endashaw.1@osu.edu / +251-911-22 26 42 or gallagher.438@osu.edu / +1-614-688-1419 with questions.

<table>
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<tr>
<th>Training Modules</th>
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<td>Biomedical Research Ethics and Good Clinical Practice</td>
<td>Addis Ababa, Ethiopia</td>
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<td>Career and Professional Development</td>
<td>Gondar, Ethiopia</td>
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<td>Tabletop Exercise on Multisectoral Highly Pathogenic Avian Influenza Preparedness and Response Plan</td>
<td>Addis Ababa, Ethiopia</td>
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<tr>
<td>Environmental Health Science Applied to the Global One Health Approach</td>
<td>Addis Ababa, Ethiopia</td>
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<tr>
<td>Vaccines and Impacts on Animal and Human Health</td>
<td>Addis Ababa, Ethiopia</td>
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<td>Animal Welfare</td>
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<td>Proposal Development and Grant Management</td>
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<td>International Dairy Certificate Program</td>
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<tr>
<td>Molecular Epidemiology and Diagnostics of Infectious Diseases</td>
<td>Addis Ababa, Ethiopia</td>
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<td>Bioinformatic Analysis</td>
<td>Nairobi, Kenya</td>
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<td>One Health Eastern Africa Research Training Wetlab Preparation (Closed Session)</td>
<td>Addis Ababa, Ethiopia</td>
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<td>Disease Burden and Health Economics</td>
<td>Addis Ababa and Haramaya Ethiopia</td>
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<td>Wildlife Conservation and Epidemiology</td>
<td>Gondar, Ethiopia</td>
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<td>Infectious Disease Modeling with Emphasis on Foot and Mouth Disease</td>
<td>Sebeta, Ethiopia</td>
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<tr>
<td>Health Data Strategies and Considerations / Clinical Trial Data Monitoring</td>
<td>Addis Ababa, Ethiopia</td>
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<td>Integrating Gender into the Project Planning Cycle of Food Safety Research</td>
<td>Addis Ababa and Haramaya Ethiopia</td>
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<tr>
<td>Risk Assessment and Risk Ranking</td>
<td>Addis Ababa, Ethiopia</td>
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<tr>
<td>Introduction to Data Analytics, Statistics and Programming in Epidemiologic Research</td>
<td>Addis Ababa, Ethiopia</td>
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<td>College of Medicine Seminar Series</td>
<td>Addis Ababa, Ethiopia</td>
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<tr>
<td>Vector Borne Disease Symposium</td>
<td>Addis Ababa, Ethiopia</td>
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If you are interested in continuing your training outside of the One Health Summer Institute, there are several courses available on the Canvas platform. These courses provide professionals, globally, with key One Health courses on Environmental Science, Molecular Epidemiology, and Farm-to-Table Safety for free. To enroll, visit go.osu.edu/CanvasOneHealth.

<table>
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<tr>
<th>Instructor</th>
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<tr>
<td>Getnet Yimer</td>
<td>May 5-8; May 16-18</td>
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<td>Amanda Fark</td>
<td>May 21-23</td>
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<tr>
<td>Andrew Bowman</td>
<td>May 23-24</td>
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<tr>
<td>Michael Bisesi</td>
<td>June 3-6</td>
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<tr>
<td>Prosper Boyaka</td>
<td>June 10-12</td>
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<tr>
<td>Monique Pairis-Garcia</td>
<td>June 11-13</td>
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<tr>
<td>Wondwossen Gebreyes, Getnet Yimer, Prosper Boyaka and Phaedra Henley</td>
<td>June 12-13</td>
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<tr>
<td>Gustavo M. Schuenemann</td>
<td>June 17-21</td>
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<td>Wondwossen Gebreyes</td>
<td>June 19-21</td>
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<tr>
<td>Mostafa Ghanem and Enrique Delgado Suarez</td>
<td>June 24-27</td>
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<tr>
<td>Samuel Kariuki, Robert Onsare and Eyasu Tigabu Seyoum</td>
<td>July 1-12</td>
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<tr>
<td>Robert Scharff and Mengistu Ketema</td>
<td>July 3-5; July 8-10</td>
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<td>Amanda Berrian</td>
<td>July 9-10</td>
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<tr>
<td>Rebecca Garabed</td>
<td>July 15-18</td>
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<td>Milisa Rizer and Thomas Bentley</td>
<td>July 29</td>
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<td>Kathleen Colverson</td>
<td>August 5-7; August 12-14</td>
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<tr>
<td>Barbara Kowalcyk and Kara Morgan</td>
<td>August 5-9</td>
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<tr>
<td>Barbara Kowalcyk and Ewy Mathé</td>
<td>August 12-15</td>
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<tr>
<td>Robert Baiocchi and Electra Paskett</td>
<td>TBD</td>
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<tr>
<td>Abhay Satoskar and Eyasu Tigabu Seyoum</td>
<td>August 20-21</td>
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For updated information and the complete schedule, visit go.osu.edu/OneHealthSummerInstitute. You will also find more information about registration online.
**SUMMER TRAINING MODULES**

<table>
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<th>Module</th>
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<tr>
<td><strong>BIOMEDICAL RESEARCH ETHICS AND GOOD CLINICAL PRACTICE</strong></td>
<td>Getnet Yimer</td>
<td>May 6-8 and May 16-18</td>
<td>Addis Ababa, Ethiopia (Addis Ababa University)</td>
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This training will provide an overview of principles of Good Clinical Practice (GCP) focusing on safety, integrity and quality of clinical trials. GCP training describes local and international regulations, the responsibilities of investigators, sponsors, monitors, regulatory bodies, research participants and the Institutional Review Board in the conduct of clinical trials. Specific areas of focus will also include the rights, safety and well-being of participants, and conducting clinical trials in accordance with approved plans with reliability and integrity.

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<tr>
<td><strong>TABLETOP EXERCISE ON MULTISECTORAL HIGHLY PATHOGENIC AVIAN INFLUENZA PREPAREDNESS AND RESPONSE PLAN</strong></td>
<td>Andrew Bowman</td>
<td>May 23-24</td>
<td>Addis Ababa, Ethiopia</td>
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This discussion-based exercise deals with outbreaks of highly pathogenic avian influenza (HPAI) threatening Ethiopia. The exercise is designed to challenge the existing HPAI response plan and move participants through select phases of an HPAI outbreak. This exercise will identify strengths and areas needing improvement with regard to prevention, detection, response, recovery and communications. It will enhance the connections across all levels of government between field actions and laboratory response during an outbreak of HPAI and allow for refinement of emergency policies and response plans.

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<tr>
<td><strong>CAREER AND PROFESSIONAL DEVELOPMENT</strong></td>
<td>Amanda Fark</td>
<td>May 21-23</td>
<td>Gondar, Ethiopia (University of Gondar)</td>
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This session will set out to explain what comprises a program geared toward helping students decide what they want to do with their veterinary degree and how they can achieve that goal. It will cover the history of such programs within higher education and how they have evolved over time. Additionally, we will talk about what makes a program successful.

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<tr>
<td><strong>ENVIRONMENTAL HEALTH SCIENCE APPLIED TO THE GLOBAL ONE HEALTH APPROACH</strong></td>
<td>Michael Bisesi</td>
<td>June 3-6</td>
<td>Addis Ababa, Ethiopia (Ethiopian Public Health Institute)</td>
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The lecture- and case-based applied course content will include sources of hazardous environmental agents (microbiological, chemical and physical), distribution and fate in major environmental matrices (air, water, soil, food), and, environmental exposure pathways and modes that may adversely impact the health of humans, animals and plants.
VACCINES AND IMPACTS ON ANIMAL AND HUMAN HEALTH

**Instructor:** Prosper Boyaka  
**Date:** June 10-12  
**Location:** Addis Ababa, Ethiopia (Addis Ababa University)

The goal of this workshop is to give graduate students, postdoctoral trainees and non-immunologist professionals basic terminology and immunological perspective on the impact of vaccines for animal and human health. The training will include lectures and group case studies to facilitate application of the gained knowledge in their respective activities. It will explore basic principles of vaccines (live vs. subunit vaccines, routes of delivery, adjuvants and delivery systems); factors affecting efficacy of vaccines (pathogen, environmental, and host factors); and impacts of animal vaccines for human health (zoonoses, safety and efficiency data).

ANIMAL WELFARE

**Instructor:** Monique Pairis-Garcia  
**Date:** June 11-13  
**Location:** Gondar, Ethiopia (University of Gondar)

This session will include a discussion of the history of animal welfare including the five freedoms and three schools of thought on animal welfare. Laying hens will be used as an example of the evolution of animal welfare and its application in a commercial production system.

PROPOSAL DEVELOPMENT AND GRANT MANAGEMENT

**Instructor:** Wondwosken Gebreyes, Getnet Yimer, Prosper Boyaka and Phaedra Henley  
**Date:** June 12-13  
**Location:** Addis Ababa, Ethiopia (Ethiopian Public Health Institute)

This workshop will familiarize participants with the basics of grants, cooperative agreements and contracts. It will outline funding opportunities for global research, training and outreach in the context of One Health. There will be discussion about proposal formats and how to write successful proposals. In addition, the workshop will include peer-review systems using examples of NIH, USDA, CDC and other U.S. federal review panel systems.

Visit go.osu.edu/OneHealthSummerInstitute for an updated schedule.
### INTERNATIONAL DAIRY CERTIFICATE PROGRAM

**Instructor:** Gustavo M. Schuenemann  
**Date:** June 17-21  
**Location:** Gondar, Ethiopia (University of Gondar)

The overall objective of this short course is to review key modern management and health concepts and go through an approach to develop an effective preventive program for dairy and goat farms (especially on health and nutritional-related diseases) with the purpose of increasing production while minimizing antimicrobial drug use.

### BIOINFORMATICS FOR EPIDEMIOLOGY

**Instructor:** Mostafa Ghanem and Enrique Delgado Suarez  
**Date:** June 24-28  
**Location:** Nairobi, Kenya (Kenya Medical Research Institute)

The purpose of the workshop is to provide participants with the basic principles underlying the analysis of bacterial whole genome sequencing data, as well as to provide hands-on training on the procedures of bioinformatics analyses required to obtain information for food safety and/or epidemiological applications.

### MOLECULAR EPIDEMIOLOGY AND DIAGNOSTICS OF INFECTIOUS DISEASES

**Instructor:** Wondwossen Gebreyes  
**Date:** June 19-21  
**Location:** Addis Ababa, Ethiopia (Ethiopian Public Health Institute)

This training will include an overview and discussion of core molecular approaches, introduction and core methods such as gene amplification, restriction, hybridization, genotyping, genomics and gene cloning procedures; analysis and interpretation of genotypic data; and practical applications in public health. There also will be an overview of methods selection criteria and validation, and attendees will study the application of genotyping, data interpretation and troubleshooting.

The One Health Summer Institute is a joint program focusing on building the capacity of healthcare workforce within the institute and the country at large through the One Health concept. One Health is a global effort to enhance human, livestock and ecosystem health through strengthening interdisciplinary collaboration and coordination.

– Ebba Abate, Director General, Ethiopian Public Health Institute

### DISEASE BURDEN AND HEALTH ECONOMICS

**Instructor:** Robert Scharff and Mengistu Ketema  
**Date:** July 3-5 and July 8-10  
**Location:** Addis Ababa (Ethiopian Public Health Institute) and Haramaya (Haramaya University), Ethiopia

This workshop provides participants with an understanding of how economics can be used to explain, measure, and manage infectious diseases. The course starts with an overview of the economic approach, with an emphasis on how incentives drive behavior that amplifies or mitigates disease. Next, attendees learn how economic burden of illness estimates are measured and the role they play in prioritizing the many risks faced by humans. Finally, we describe how to conduct economic evaluations of disease interventions (e.g. benefit-cost analysis, cost effectiveness analysis). Other topics examined include data use and limitations, empirical methods, the need to work well in multidisciplinary teams, and how cultural and demographic factors may affect analyses.
WILDLIFE CONSERVATION AND EPIDEMIOLOGY

Instructor: Amanda Berrian  
Date: July 11-12  
Location: Gondar, Ethiopia (University of Gondar)

This session will use a One Health approach to explore health and disease dynamics at the human-wildlife interface. Participants will use case studies to understand complexities of wildlife health and conservation, including pathogen transmission dynamics, human dimensions and a changing environment. Participants will have the opportunity to discuss regional wildlife health issues and develop One Health solutions considering appropriate stakeholders.

INFECTIOUS DISEASE MODELING WITH EMPHASIS ON FOOT AND MOUTH DISEASE

Instructor: Rebecca Garabed  
Date: July 15-18  
Location: Sebeta, Ethiopia (National Animal Health Diagnosis and Investigation Center)

An intensive course that provides an introduction to computer models of infectious diseases and their applications. This course includes lecture and laboratory sessions and focuses on applications rather than mathematical theory. Students will start from existing code and work towards writing their own disease models.
HEALTH DATA STRATEGIES AND CONSIDERATIONS / CLINICAL TRIAL DATA MONITORING

Instructor: Milisa Rizer and Thomas Bentley
Date: July 29
Location: Addis Ababa, Ethiopia

This workshop examines the components of health data and strategic considerations. Key Electronic Medical Record (EMR) approaches such as ‘best of breed’ vs. single vendor will be discussed along with implementation of best practices. Data integration and interoperability elements will be examined. Governance and decision making will be reviewed. Finally, research opportunities, considerations and potential benefits will be discussed.

INTEGRATING GENDER INTO THE PROJECT PLANNING CYCLE OF FOOD SAFETY RESEARCH IN THE DAIRY AND BEEF VALUE CHAINS

Instructor: Kathleen Colverson
Date: August 5-7 and August 12-14
Location: Addis Ababa and Haramaya, Ethiopia

The purpose of the workshop is to provide tools and approaches for selected faculty and graduate students to assist with the collection of gendered data in the DFID-Gates funded livestock projects, with a focus on the dairy and beef value chains in Ethiopia. The workshop will be interactive and include context specific case studies.

RISK ASSESSMENT AND RISK RANKING

Instructor: Barbara Kowalcyk and Kara Morgan
Date: August 5-9
Location: Addis Ababa, Ethiopia (Ethiopian Public Health Institute)

This course will provide an introduction to concepts, terms and methodology in risk assessment and risk ranking. Risk assessment entails the identification and analysis of potential future outcomes that may have a negative impact. Human health risk assessment, which will be the focus of this class, involves the characterization of potential negative impacts to health, including both chronic and acute health impacts. Estimating risks is the first step, and then ranking them as a method for prioritizing them for investment of resources is the next step. This introductory session would be a good first step in a study of the use of risk to inform decisions in a risk-based decision making approach.

Visit go.osu.edu/OneHealthSummerInstitute for an updated schedule.
INTRODUCTION TO DATA ANALYTICS, STATISTICS AND PROGRAMMING IN EPIDEMIOLOGIC RESEARCH

**Instructor:** Barbara Kowalcyk and Ewy Mathé  
**Date:** August 12-15  
**Location:** Addis Ababa, Ethiopia

This workshop is an introduction to principles of data analysis, including data cleaning, quality checking and visualization, statistical analysis and handling large datasets. The programming language used will be “R”. Lectures, case studies and small group exercises will be used. At the conclusion of this course, students will have an understanding of how to approach the analysis of datasets collected from epidemiological research and informing decision-making around foodborne and zoonotic diseases.

VECTOR BORNE DISEASE SYMPOSIUM

**Instructor:** Abhay Satoskar and Eyasu Tigabu Seyoum  
**Date:** August 20-21  
**Location:** Addis Ababa, Ethiopia (Ethiopian Public Health Institute)

Globally Neglected Tropical Diseases (NTDs) were not given the required attention at various levels until recently. The planned symposium on NTDs will bring researchers, academicians, policy makers and other stakeholders in Ethiopia to discuss current developments on the research, diagnosis, prevention and control of NTDs in Ethiopia. It will also create an opportunity for Ethiopian Public Health Institute (EPHI) to evaluate the implementation of the NTDs Master Plan in Ethiopia, which hopes to design a sustainable integrated national NTD prevention, control and elimination program.

Kenya is among high burden countries for foodborne infections in the region and utilizing the improved infrastructure capacity at KEMRI, the One Health Summer Institute is an excellent opportunity to showcase the most current molecular technologies and applied scientific and didactic skills to professionals in Kenya.

— Sam Kariuki, Director of the Centre for Microbiology Research, Kenya Medical Research Institute
Through Ohio State’s One Health Summer Institute and other going projects, we have highly benefited through capacity building, experience sharing and research and outreach projects in the last 11 years since we signed a memorandum of understanding in 2008. The outreach projects also benefited our community through awareness creation on zoonotic diseases, food safety and other issues.

– Asrat Atsedeweyn
President, University of Gondar
**IMPACT STATISTICS**

102 Ohio State students involved in Global One Health initiative projects to date

1,100+ Participants to date

91 Ethiopian staff trained for rabies control

120 Faculty involved in the trainings to date

30,200+ iTunes U subscribers from over 90 countries

78 Unique courses offered

50 Institutions involved to date

12 International agreements

91 Ethiopian staff trained for rabies control
To learn more about Global One Health initiative’s impact around the world, visit globalonehealth.osu.edu.

95
Participated in the antimicrobial resistance Training of Trainers

30,400
Dogs and cats vaccinated against rabies

18,865
Enrolled in the GOHi Canvas Courses curriculum

130
Trainings and workshops offered to date
FACULTY

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The Ohio State University faculty and staff, in conjunction with partners from the Centers for Disease Control and Prevention (CDC), Ethiopian Public Health Institute, Urban Agriculture and other key stakeholders, have worked together since 2016 to address priority zoonotic diseases and antimicrobial resistance (AMR) in Ethiopia under the Global Health Security Agenda. By leveraging the One Health framework, we are strengthening future capacity in Ethiopia while making an impact today. To date, some notable achievements of the team include:

**Rabies**
- 30,400+ animals vaccinated
- 136+ Ethiopian para-veterinarians and other front-line staff trained for surveillance, control and bite-case management

**AMR**
- 56 health care providers received targeted training on clinical specimen collection
- Created and distributed open source materials for specimen collection trainings
- Developed standards for measuring impact of trainings using established protocols

**Brucellosis**
- 3 distinct geographical regions across Ethiopia were assessed for burden and risk factors of human and animal Brucellosis
- 42 laboratorians from 10 national laboratories trained in human and animal brucellosis diagnostics
- 45 field staff trained in methods to collect data electronically
- ~13,000 household, human and livestock surveys conducted
- ~9,000 animal and human blood samples collected and analyzed

The CDC is a key OHSI sponsor.
Graduate students, Megan Kowalcyk, College of Public Health, The Ohio State University, and Mari Schroeder, College of Agriculture, Food and Environment, University of Kentucky, are conducting research on "Wastewater Discharge into and Irrigation Water Extracted from the Akaki River: Survey of Local Perception and Potential Solutions."

Due to Ethiopia’s lack of infrastructure surrounding wastewater treatment and the common practice of wastewater reuse for irrigation, the quality of irrigation water is of great concern for public health in Addis Ababa. The Akaki River is the main source of irrigation water for the farms downstream of Addis Ababa.

The major causes of death and disability in the region are enteric pathogens; and the top two factors contributing to death and disability are malnutrition and insufficient quality of water, sanitation and hygiene.

Thus, examining water quality of irrigation water and WASH practices in the households using water from the Little Akaki River is essential for improving and protecting human health.

The project consists of two phases: literature review and survey of farmers and those living in slums located in the Akaki River and Awash River Basin watersheds.
The Ohio State Fisher College of Business sends students around the world every semester as part of the Global Applied Projects (GAP), which is an experiential learning course that prepares students for international business through an immersive, hands-on business experience in a location outside of the United States. A group of six students were in Ethiopia from May 4 - 25 to complete their project with Ohio State’s Global One Health initiative (GOHi), where they completed a comprehensive water supply assessment to better address environmental health challenges and opportunities from a One health perspective.

Competencies developed include:
- Gaining project management, industry and cultural expertise
- Practicing leadership, management, communication and teamwork skills
- Honing data collection and analytic skills
- Synthesizing information to draw relevant conclusions and make actionable recommendations
- Crafting compelling presentations
GOHi’s One Health East Africa Research and Training (OHEART) Program aims to strengthen and sustain the international research-training program shared between Ohio State and Institutes of Higher Learning in eastern Africa. The specific mission of the program is to train future researchers and trainers using an integrated multidisciplinary One Health approach. The ultimate goal is to establish sustainable research and training capacity for zoonotic infectious foodborne, vectorborne and waterborne pathogen research in eastern Africa. OHEART will build a critical mass of capable scientists that can effectively conduct research on infectious diseases, implement prevention tactics and innovate control systems.

OHEART is supported by a research training grant (titled: Sustainable One Health Research Training Capacity: Molecular Epidemiology of Zoonotic Foodborne, Vectorborne and Waterborne Pathogens in Eastern Africa) awarded by the U.S. National Institutes of Health (NIH)-John E Fogarty International Center Global Infectious Diseases (GID) program. Ongoing activities of the program include research, pre-doctoral training of PhD students, post-doctoral fellows and short-term trainees that focuses on foodborne, vectorborne and waterborne pathogens, molecular epidemiology, bioinformatics and research ethics.

Through OHEART, 14 individuals will receive training through the Track II Fellowship who will participate in six weeks of training comprised of didactic modular courses in six areas:

- Ethics in biomedical research and biosafety
- Introduction to molecular epidemiology and bioinformatics
- Environmental health and infectious diseases
- Vector-borne diseases
- Immunology and vaccine development
- Adjunct skills (proposal writing, grant management and scientific communications)

Fellows will also participate in two weeks of practical laboratory training.
Foodborne illnesses result in an estimated 600 million illnesses annually. Low- and middle-income countries bear most of the burden, largely due to poor food handling practices, weak regulatory systems and inadequate food safety laws.

This project, funded by a $3.39 million grant from the Bill & Melinda Gates Foundation and the UK Government’s Department for International Development (DFID), aims to develop and implement a risk-based framework for food safety management and resource allocation with the goal of reducing foodborne illnesses and deaths and increasing equitable consumption of a safe, affordable and nutritious diet.

The research study, led by Barbara Kowalcyk, assistant professor in the College of Food, Agricultural, and Environmental Sciences at The Ohio State University, builds on the strong foundation of food safety work conducted at Ohio State. The work will focus on three major food safety hazards in Ethiopia:

- Non-typhoidal Salmonella
- Diarrheagenic Escherichia coli
- Campylobacter

Consumption of beef and dairy is increasing in Ethiopia and elsewhere in Africa as their economies improve. However, traditional processing of these products occurs in informal settings, utilizes raw products and rarely involves safe food handling practices such as pasteurization and thorough cooking before eating. The study will investigate cost-effective, gender-sensitive and socio-culturally acceptable ways to improve the safety of raw beef and dairy products.
Strengthening surveillance of adverse events following immunization (AEFI) is a critical component of a successful and resilient immunization program.

The U.S. Centers for Disease Control and Prevention (CDC), together with the World Health Organization are conducting a rapid systems assessment of the AEFI surveillance system in Ethiopia in order to strengthen understanding of AEFI surveillance in the country and reduce barriers to reporting AEFI.

In collaboration with CDC, Ohio State will assist with conducting interviews for stakeholders, data analysis, and presentation to stakeholders, which include the Ethiopia Ministry of Health, Public Health Institute, Public Health Emergency Management and Food and Drug Administration.

The project will take place May 1-August 15. Its investigators are Getnet Yimer and Desalegne Mengesha, GOHi Regional Office, Shu-Hua Wang, Ohio State Internal Medicine and Elizabeth Gardiner, Ohio State consultant.
The One Health Day symposium at Ohio State takes place during the week of One Health Day, celebrated every year on November 3 to provide a forum for internal and external stakeholders in public health and One Health-related fields to convene and address intersectoral objectives including:

- Strengthening awareness of the integrated, collaborative One Health approach
- Sharing knowledge about enhanced surveillance, prevention, mitigation and intervention activities to address causes and effects of diseases at the interface of humans, animals, plants and the environment
- Increasing understanding of the impact One Health issues have on communities locally and globally

With over 100 participants, the symposium welcomed One Health students, scientists and professionals from across the United States and from partner organizations in Brazil, Ethiopia and Kenya.

The symposium also provided continuing education credit for registered sanitarians and veterinarians. Invited speakers presented on One Health-related topics that included Leadership in One Health, Zoonotic Diseases, Antimicrobial Resistance and One Health and How to Communicate the Implications of One Health in Your Backyard and Abroad.