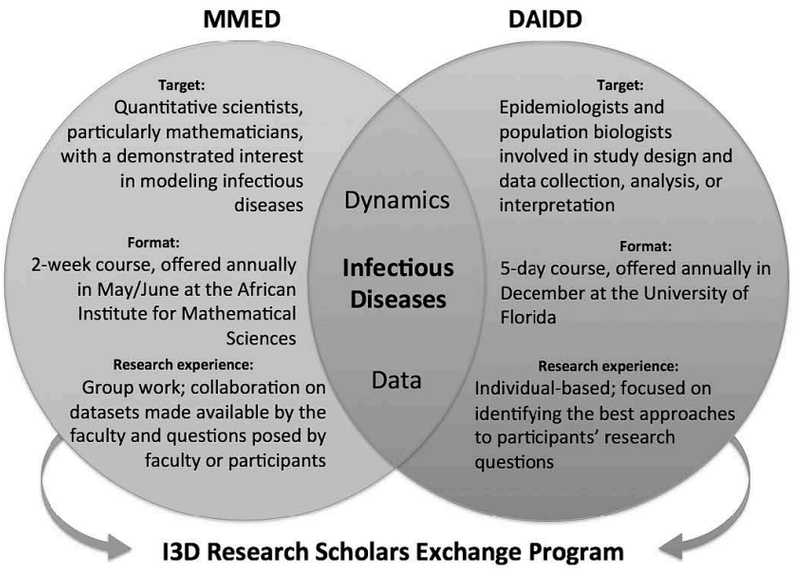
STRENGTHENING US-AFRICA CONNECTIONS & CAPACITY IN INFECTIOUS DISEASE DYNAMICS

JULIET PULLIAM



Mathematics and simulation are essential tools in infectious disease control, enabling decision-makers to explore control policies before implementing them, interpret trends, and predict emerging threats.

The ICI3D Program, a collaboration between the UF Emerging Pathogens Institute and the South African Centre for Epidemiological Modelling and Analysis (SACEMA), provides intensive training in these methods to students and researchers from the US and Africa and aims to cultivate an international network of researchers from diverse backgrounds. The program comprises two distinct but overlapping International Clinics on Infectious Disease Dynamics and Data and a complementary research scholars exchange program.

The Clinic on the Meaningful Modeling of Epidemiological Data (MMED), held at the African Institute of Mathematical Sciences in South Africa, targets quantitative scientists, including mathematicians, statisticians, and infectious disease epidemiologists. Participants engage with meaningful questions about infectious disease dynamics by integrating mathematical models with epidemiological data. Participants learn to use data to inform the construction of the simplest or clearest models appropriate to answer a given question, rather than on development of complex mathematical models unrelated to data.

The Clinic on Dynamic Approaches to Infectious Disease Data (DAIDD), held annually at the University of Florida, targets public health researchers and population biologists interested in studying infectious diseases. Instruction focuses on how the complex dynamics of pathogen transmission influence study design and data collection for addressing problems in infectious disease research. Participants develop written research proposals for their systems of interest and receive guidance in seeking out the resources necessary for carrying out their proposed research.

The International Disease Dynamics and Data Research Scholars Program (I3D) funds scholars to spend 6 weeks working on an approved research project at the ICI3D faculty member's home institution. The exchange program allows I3D scholars from Africa to work with ICI3D faculty at North American institutions and American I3D scholars to work with ICI3D faculty at African institutions.

Since the ICI3D program's inception in 2012, the MMED and DAIDD clinics have provided training to 126 participants, 82 based at African institutions and 44 from US institutions. During this time, 14 UF participants from 9 departments and degree programs have attended the MMED and/or DAIDD clinics.

In addition, the first 3 I3D Scholars completed their exchanges in 2014. Joseph Sempa, a researcher at Infectious Diseases Institute, Uganda was supervised by Dr. Steve Bellan, an ICI3D faulty member based at The University of Texas at Austin. Joseph completed a project focused on novel prognostic markers for HIV-related health outcomes in an urban cohort in Kampala, Uganda. Sarah Ackley, a PhD student in Epidemiology at University of California – San Francisco (UCSF), was supervised by Dr. John Hargrove of SACEMA and completed a project on estimating tsetse fly mortality from entomological surveillance data, which has important implications for understanding transmission and control of the parasitic disease trypanosomiasis. Ernest Mwebaze, a PhD student at Makarere University in Uganda was supervised by Dr. Travis Porco of UCSF and completed a project on evaluation of clinical trial data from a trachoma elimination program.

More information on the ICI3D Program, including application information for the MMED and DAIDD clinics is available at http://www. ici3d.org.

Juliet Pulliam is assistant professor in the Department of Biology and Emerging Pathogens Institute and the director of the ICI3D Program. The ICI3D Program is supported by the National Institute of General Medical Sciences of the National Institutes of Health.