

US–Africa Workshop on Genetics & Disease Control

University of Cape Coast, Cape Coast, Ghana August 8 – 12, 2011

Opportunity for Graduate Student Participation



What is Genetics and Disease Control?

Mathematical models of disease epidemiology and control increasingly incorporate the impacts of genetics. These impacts, whether on diseases of humans, animals or plants, are reflected in diverse ways such as the use of genetic engineering to directly help control disease vectors, the use of models of the likely evolution of pathogens to predict novel strains, or the examination of the role of host genetics in determining susceptibility. Further, genetic perspectives contribute in complex and often implicit ways to a variety of factors already included in many epidemiological models: effects of climate, ecology, human population densities, infectivity, vector life cycle, and many others. Incorporating genetic effects into predictive epidemiological models and determining the risks and benefits from genetic engineering strategies involve sophisticated questions in the mathematical sciences. These questions, which are the subject of this workshop, are often of particular significance when addressing uniquely African problems. For example, individual medical attention may not be readily available, so that population-level interventions, on a multi-national scale, may provide the greatest possible health benefits. This workshop will bring together geneticists, statisticians, epidemiological modelers, mathematicians, and others to focus on current problems in genetics and disease control.

The Workshop

There will be a 5-day Workshop on Genetics and Disease Control which will be combined with tutorials that will serve to prepare participants to interact with interdisciplinary researchers from around the world, who will discuss their work.



Topics to be covered include pathogen genetics (such as evolution in response to selective pressures, genetic drift, and evolutionary landscapes), host genetics (such as diversity of host genetics as it influences pathogen susceptibility and interactions between host genetics and disease control measures), and vector genetics (such as genetic diversity in vector competence for multiple strains/pathogens affects, and rotation/application strategies for insecticides to reduce emergence and spread of insecticide resistance). Various modeling paradigms will be discussed, as well as introductory lectures on related topics.

Call for Papers

The sponsors seek submission of papers on original and unpublished research in areas of genetics and disease control that include pathogen genetics, host genetics, and vector genetics.

Submissions

If you would like to contribute a paper or a poster, please send title/abstract to Christine Spassione at spassion@dimacs.rutgers.edu no later than **June 1, 2011**, with an indication of your preference as to oral presentation or presentation as a poster. You will be notified of acceptance of your paper as soon as possible after you submit it. For questions or more information, see the website or contact Eugene Fiorini, Associate Director of DIMACS and Program Coordinator (usai@dimacs.rutgers.edu).

Graduate Student Support

Financial support is available to graduate students. Deadline for full consideration is **March 15, 2011**. Review of graduate student applications begins **March 31, 2011**.

The Workshop is organized by the Center for Discrete Mathematics and Theoretical Computer Science (DIMACS) and the Mathematical Biosciences Institute (MBI), with funding provided by the US National Science Foundation, the Society for Mathematical Biology and other sponsors.

DIMACS

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