Webinar: Mathematical Modeling of Malaria Transmission by Mosquitoes

Presented by:
Associate Professor Vitaly V. Ganusov
National Institute for Mathematical and Biological Synthesis, University of Tennessee, Knoxville
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MEET YOUR MODERATOR

Louis J. Gross, PhD

Director, National Institute for Mathematical and Biological Synthesis (NIMBioS)

Director,, The Institute for Environmental Modeling, University of Tennessee

Chancellor’s Professor of Ecology and Evolutionary Biology and Mathematics, University of Tennessee
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Upcoming Webinars

*Mathematical modeling of malaria transmission by mosquitoes*

**Date:** 3:30 EDT Tuesday, April 21, 2020  
**Speaker:** Dr. Vitaly Ganusov, Assoc. Professor, Microbiology, University of Tennessee, Knoxville  
**Moderator:** Dr. Louis Gross, NIMBioS Director and Chancellor’s Professor of Ecology and Evolutionary Biology and Mathematics at the University of Tennessee  

**Abstract:** Malaria is a disease caused by parasites from the genus *Plasmodium*. Every year, 200 million individuals experience malaria, and approximately 500,000 of these individuals die. It is well established that malaria is transmitted from person to person by mosquitoes. Yet, quantitative details of how likely a bite by an infected mosquito results in infection remains poorly understood. In my talk I will analyze experimental data in which mosquitoes, carrying *Plasmodium yoelii* sporozoites, bite individual mice, and mathematically model the likelihood of infection as a function of several parameters (number of sporozoites per mosquito, feeding time, blood take probability) that were recorded in the data. Our results suggest that infection probability depends strongly on the number of sporozoites mosquitoes carry, and less on the probing time, and is independent of whether a mosquito takes the blood meal or not. I will also discuss implications of these results for modeling epidemiological dynamics of malaria and for clinical trials of malaria vaccines.
MEET YOUR PRESENTER

Vitaly Ganusov, PhD

Associate Professor of Microbiology and Mathematics, University of Tennessee
Webinar Objectives

1. Introduce the topic of malaria lifecycle
2. Provide examples of experiments aimed at understanding how malaria parasites-carrying mosquitoes transmit infection.
3. Illustrate how the use of mathematical modeling and statistics helps interpret experimental data.