



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*

*With support from the National Science Foundation
(DBI-1300426)*



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



HOW TO INTERACT TODAY

The image shows a Zoom meeting window displaying a NIMBioS website. A central overlay window titled "Question and Answer" is active, featuring the text "Question appears here" and "Welcome Feel free to ask the host and panelists questions". Below this text is a text input field with the placeholder "Type your question here..." and the instruction "Type here" in bold. The input field is highlighted with a red border. At the bottom of the Zoom window, the "Q&A" icon in the bottom toolbar is also highlighted with a red border. The background website includes the NIMBioS logo, navigation links like "Calendar", "MAP | Contact | Login", and various news items such as "Due to the evolving coronavirus canceled. Read more »" and "IMPACT Discover the ways we have transformed science".



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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.



NIMBioS.org A recording of this webinar
will be posted within two days



MEET YOUR PRESENTER



Vitaly Ganusov,
PhD

*Associate Professor of Microbiology
and Mathematics, University of
Tennessee*

April 14, 2020

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.