



BIOINFORMATICS SEMINAR

ROY DAR

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UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

VIRAL-HOST RELATIONSHIPS IN HIV: WHO CONTROLS WHO?

Viral-host relationships have evolved to determine viral decision-making at multiple scales. Genetics and single-cell experimentation open new opportunities for quantitative virology. I will discuss two projects on how human immunodeficiency virus (HIV) and its infected host cell control one another at the promoter and cellular levels. At the promoter level, similarity of viral and host promoters couple viral-host gene expression to decelerate host-cell migration (control by the virus). While at the cellular level, decision-making of HIV is cell-size-dependent, with latently infected cells reactivating exclusively in larger host-cell sizes (control by the host-cell). Viral-host relationships at multiple scales may guide potential therapies and advance diagnostics.

BIOGRAPHY

Roy Dar is an Assistant Professor of Bioengineering at the University of Illinois at Urbana-Champaign. He is affiliated with the Carl R. Woese Institute for Genomic Biology, Cancer Center at Illinois, Electrical and Computer Engineering Department, and the Center for Biophysics and Quantitative Biology. He received a B.Sc. in Physics and Mathematics at the Hebrew University of Jerusalem in Israel in 2004 and a Ph.D. in Biophysics from the University of Tennessee, Knoxville in 2011 where he performed his research at Oak Ridge National Laboratory (under Michael Simpson). He later trained as an NIH Ruth Kirschstein postdoctoral fellow at the Gladstone Institutes for Virology and Immunology at the University of California, San Francisco (under Leor Weinberger) where he studied the exogenous drug control of HIV decision-making in single cells. At the University of Illinois, he has received the NSF CAREER and NIH Trailblazer Awards for Early Stage Investigators. His lab aims to understand the fundamentals and applications of modulating fluctuations of gene expression in mammalian cells. His lab works on biasing HIV decision-making and stem cell fate determination at the single-cell level, genome-wide problems in systems biology, and viral-host relationships.

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3:30 PM

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