



MPI Colloquium

SPEAKER

Prof. Dr. Thomas Höfer

Theoretical Systems Biology, Deutsches Krebsforschungszentrum, Heidelberg

TOPIC

Virus infection vs. innate immune response at single-cell resolution

ABSTRACT

Animal cells have developed sophisticated molecular defenses against viruses that are triggered by viral infection. As these innate immune mechanisms can prevent virus replication, pathogenic viruses must outpace them. To study this race, we have developed mathematical models that describe how virus infection and the ensuing interferon response split a susceptible host cell population into infected and protected subpopulations. Model analysis shows that there is a discrete threshold for viral spread. We confront these models with time-lapse imaging data of dengue virus infection of lung epithelial cells and thus identify critical parameters that control whether the virus overcomes the spreading threshold. Our findings suggest that antiviral drugs that inhibit the formation of replication organelles by dengue virus – and other plus-strand RNA viruses – will synergize with the innate immune response of the host.

Thursday, April 5, 2018, 4.00 p.m.

Max Planck Institute for Dynamics of Complex Technical Systems
Sandtorstraße 1, 39106 Magdeburg
Seminar room *Prigogine*