

1135-92-1716

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Mathematical models of virus infections. Preliminary report.

Motivated by recent experimental data, this talk will investigate mathematical models regarding the evolutionary outcomes of viral infections, specifically human immunodeficiency virus (HIV), in humans. The presentation will analyze how the interplay between multiplicity of infection, synaptic cell-to-cell transmission of the virus, and free virus transfer can affect the dynamics of an infection taking place. We consider models with competition between virus strains, characterized by different mutations, to see how each strain's infection strategy can affect outcome. Finally, we will discuss how recombination between virus strains can change the evolutionary outcomes of infection and influence the course of disease. The overall goal of the project is to better understand the dynamics of viral infections, specifically HIV, and to help design more effective healthcare and vaccination approaches. (Received September 24, 2017)