Examining HIV progression mechanisms via mathematical approaches

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The progression of HIV infection to AIDS is unclear and underexamined. Many mechanisms have been proposed, but their significance is unknown. We have developed a simple HIV viral dynamics model that incorporates such mechanisms. Analysis and simulation are used to determine model parameters connected with these mechanisms that most affect output behaviours that mark progression to AIDS (increases in viral load and decrease in T-cell count). Bifurcation analysis reveals forward and backward bifurcations, and periodic orbits, that indicate interesting connections between model parameters and disease outcomes such as viral blips. In this talk, I will review our model and discuss implications of our results.

⋆Mini-Symposium: Modeling Virus Infection