

Seminar 2016

Subcellular Decision Making: Virus Interactions within the Cell



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Living cells make fate-determining decisions based on signals from their environment. Understanding the decision making process is essential for unveiling the mysteries of life and for improving human health. I will discuss our recent study of a paradigmatic system of cell-fate determination, the bacterium *E. coli* and its virus – phage lambda, using a live-cell 4-color system combined with computational modeling at the single-virus/single-virus-DNA resolution. The textbook picture is: upon infection by phage lambda, *E. coli* undergoes one of two alternate pathways - lytic (violent) or lysogenic (dormant). With the high-resolution studies, this paradigmatic system has been revealed to be more complicated than previously thought. Our study suggests that individual phages vote and interact within the cell: they cooperate during lysogenization, compete among each other during lysis, and confusion or coexistence between the two pathways occasionally occurs. I will also discuss the sources/mechanisms for phages to make different decisions and utilize variable strategies for their development.

Friday October 14, 2016

2:30 PM

Laufer Center Lecture Hall 101

Host: Gábor Balázsi