Cologne Evolution Colloquium

CRC 1310 Predictability in Evolution

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Ecological dynamics of decision making in temperate bacteriophages

Due to their ability to choose between lysis and lysogeny, temperate phages represent a classic model system for molecular decision making. While the coinfection by multiple phages is known to favor lysogeny over lysis, the role of multiple coinfections in the phage-host infection dynamics is unclear. By analyzing a full-stochastic model capturing the interaction dynamics between billions of bacteria and phages with single cell/phage resolution, we show that the average number of coinfections is determined by the relative phage growth rate. Furthermore, this number has a hard physical upper bound of around two, and coinfections can thus provide only little information to adjust the fate decision to environmental conditions. Nevertheless, this information suffices to attenuate a trade-off between phage growth and produced lysogens, resulting in a strong competitive advantage.

Wednesday, January 15, 2020, 17:00
Institute for Biological Physics, Zülpicher Str. 77a
Seminar Room 0.02, Ground Floor

Hosted by Michael Lässig