Life Sciences Seminar

Look Who s Talking: Bacteriophage Inter-Cellular Communication (A Current but Not so New Field of Study)

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Bacteriophages are viruses of bacteria. The concept of inter-cellular communication among viruses has been recently rediscovered in the guise of small-molecule-based mechanisms, dubbed arbitrium systems (ASs). These are expressed by some Bacillus subtilis phages. Even more recently, a phage has been identified which is able to recognize and respond to Vibrio cholerae quorum-sensing signal molecules. In both cases, what is observed are modifications of the timing of phage-induced bacterial lysis. With ASs, phage-induced bacterial lysis is delayed. That is, phage lysogenic cycles rather than lytic cycles are displayed when phage-infection-produced signaling molecules are present, in the environment, at relatively high concentrations. With the V. cholerae system, lysis instead is accelerated, with prophages induced when a bacterium-encoded quorum-sensing signal (autoinducer) is present, also at relatively high densities. Quorum-sensing system gene homologs have also been found in a Clostridium difficile phage genome. In a general sense, many or all of these mechanisms can be described as examples of phage social behaviors that result in a phenotypic plasticity in phage lysis timing. Notwithstanding these newly discovered systems, however, virus-virus communication was first discovered over 70 years ago. I will consider the ecology of these and other mechanisms of virus-virus intercellular communication, including my own work in this area studying bacteriophage T4 of Escherichia coli.

Wednesday, January 23, 2019 01:00pm - 02:15pm
Meeting room 1st floor / Central Bldg. (I01.1OG - Zentralgebäude)

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