Seminar/Talk

Structural insights into the triggering of a bacteriophage genome injection device

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Host:

Bacterial viruses, or bacteriophages, are the most abundant biological entities on the planet. During their infection process, the most complex bacteriophages use a large, contractile tail structure to inject their genome into the host cell. Contraction of the tail is regulated by the baseplate, the tail s most complicated structure, although it has not been understood how this is done.
In order to answer this question, we have solved the structure of the 6-MDa baseplate of bacteriophage T4 in its pre- and post-host attachment states using cryo-electron microscopy, at a resolution of 4.1 and 6.8 Å, respectively. Our results show not only the complete organization of the baseplate in near-atomic detail, but also the transformation it undergoes upon attachment. Furthermore, we have proposed a minimal set of proteins required for all contractile injections systems, including the type VI secretion system and the R-type pyocin. Finally, we have constructed a pseudo-atomic model of the complete, 20-MDa bacteriophage T4 tail structure in its pre- and post-contraction states, revealing how attachment to the host cell can initiate contraction of the tail sheath.

Monday, February 27, 2017 09:45am - 10:45am
Mondi Seminar Room 2, Central Building

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