



Life Sciences Seminar

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 injection 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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