Bacterial viruses (bacteriophages or phages) are the most abundant viruses of the Biosphere. Their vast majority are tailed phages whose viral particle is composed of an icosahedral DNA-filled capsid and of a tail which is the genome delivery device to the host bacterium. Our team investigates the mechanisms of viral particle assembly and cell infection by tailed bacteriophages. The approach is interdisciplinary combining genetics, biochemistry, structural and cell biology.

Studies on assembly of the bacteriophage SPP1 viral particle aim to dissect the molecular mechanisms engaged to build an infectious >30 MDa machine of homogeneous size and shape. We investigate individual reactions that lead to formation of the procapsid shell and its subsequent filling with the viral genome.

Finally, we are investigating the highly efficient strategies that tailed phages use to enter host Gram-positive bacteria and to hijack cell machineries for their optimal multiplication and dissemination. Characterization of the cellular processes targeted by the phage and the underlying molecular mechanisms aims to understand infection but also to dissect cell biology processes supporting conversion of the cell system into a viral factory.

From: https://www.i2bc.paris-saclay.fr/spip.php?article580&lang=en

Recent publications:


Chaban et al., 2015. Structural rearrangements in the phage head-to-tail interface during assembly and infection. Proc Natl Acad Sci U S A. 112:7009-14


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