

## **Pathoecology and evolution of the cholera-causing pathogen *Vibrio cholerae***

*Vibrio cholerae*, the causative agent of cholera, is considered to be an important model organism for studying infectious diseases. However, compared to its pathogenic potential in humans, much less is known about the bacterium's lifestyle in its primary habitat, the aquatic environment. Such environmental habitats often contribute to pathogen emergence, which is frequently accomplished through the acquisition of novel genetic information by means of horizontal gene transfer (HGT). Natural competence for transformation as a mode of HGT plays a key role in bacterial evolution and *V. cholerae* enters the competence state upon growth on chitinous surfaces.

In this talk, I will give a brief summary about the regulatory network that drives competence in *V. cholerae*. I will also show imaging-based data that had led to important new insights into the mechanistic aspects of the DNA uptake process. Moreover, I will present evidence that the type VI secretion system (T6SS) of diverse pandemic *V. cholerae* strains is part of the competence regulon. T6SS is a molecular killing device, and we have demonstrated that it fosters HGT by the deliberate killing of neighboring bacteria followed by the absorption of their DNA.

In the final part of my talk, I will go back to the pathogen's environmental lifestyle and present recent findings on how *V. cholerae* establishes a replication niche within free-living aquatic amoebae. This interaction will serve as a non-human host model for future studies that aim at elucidating the role that virulence factors play in the environmental existence of *V. cholerae*.