



Universität  
Basel

## Research Project

### Dynamics of the bacterial Type VI secretion system assembly and substrate delivery

#### Third-party funded project

**Project title** Dynamics of the bacterial Type VI secretion system assembly and substrate delivery

**Principal Investigator(s)** [Basler, Marek](#) ;

**Project Members** [Lin, Lin](#) ; [Schneider, Johannes](#) ;

**Organisation / Research unit**

Departement Biozentrum / Infection Biology (Basler)

**Department**

**Project start** 01.02.2015

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**Status** Completed

Bacteria evolved several secretion systems that transport molecules across biological membranes by various mechanisms. The Type VI secretion system (T6SS) is a functional homolog of a contractile phage tail. T6SS is a highly dynamic macromolecular structure with a unique mode of action. It uses mechanical force generated by the contraction of its long tail to thrust substrates into bacterial and eukaryotic cells. Using live cell fluorescence microscopy, we showed that differences in T6SS dynamics between bacteria explain differences in their function. The goal of this proposal is to further advance T6SS imaging and to provide an in-depth understanding of the basic principles of T6SS assembly and substrate delivery in various model organisms. We will primarily focus on solving the following biological questions: How is T6SS assembly initiated, regulated and localized? What are the sequential steps of T6SS assembly? How are T6SS substrates recognized and delivered? This project will open new avenues of research of the fundamental mechanisms of self-assembly and will provide unprecedented level of understanding of one of the most fascinating bacterial nano-machines.

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