Universität Basel

Research Project

Bacterial Type IV Secretion (T4S): Cellular, Molecular, and Evolutionary Basis of the Subversion of Host Cell Functions by Translocated Effector Proteins

Third-party funded project

Project title Bacterial Type IV Secretion (T4S): Cellular, Molecular, and Evolutionary Basis of the Subversion of Host Cell Functions by Translocated Effector Proteins
Principal Investigator(s) Dehio, Christoph ;
Project Members Stanger, Frédéric ; Siamer, Sabrina ; Ben Tekaya, Houchaima ;
Organisation / Research unit
Departement Biozentrum / Molecular Microbiology (Dehio)
Department
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Status Completed

In the initial funding period of the SNSF grant 31003A-132979 we used Bartonella and Brucella – two related zoonotic pathogens engaging the widespread type IV secretion (T4S) mechanism for establishing chronic bacterial infection - as models to study the cellular, molecular and evolutionary basis of the subversion of host cell functions by T4S-translocated effector proteins. For the three year prolongation period the established multidisciplinary experimental approach will be extended by adopting yeast as surrogate model for studying conserved eukaryotic processes targeted by T4S effectors. Subproject A will focus on the structure/function analysis of Bartonella effector proteins (Beps) translocated by the VirB T4S system of Bartonella and their physiological consequences on the host, with particular emphasis on studying the subversion of immune signaling processes. Subproject B will focus on the functional analysis of effector proteins translocated by the distinct VirB T4S system of Brucella and their physiological consequences on host cell interaction, with particular emphasis on studying the intracellular trafficking events from a late endosomal compartment, where the VirB system is activated in response to acidification, to the endoplasmic reticulum (ER)-related replicative niche of Brucella. Together, these studies will contribute to establishing a molecular paradigm for the role of T4S effectors in triggering chronic bacterial infection.

Keywords type IV secretion (T4S), Bartonella effector proteins
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Follow-up project of 380293 Bacterial Type IV Secretion: Cellular, Molecular, and Evolutionary Basis of the Subversion of Host Cell Functions by Translocated Effector Proteins.

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ID	Kreditinhaber	Kooperationspartner	Institution	Laufzeit - von	Laufzeit - bis
2291861	Dehio, Christoph	Schirmer, Tilman, Professor	Biozentrum, University of Basel	01.10.2013	30.09.2016