

Lecture Series & Workshops 2019-2021

From Single Organisms to Systems Ecology and Evolution

Brucella abortus, a polarized bacterial pathogen with a peculiar envelope

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- 7th of October 2020, 12 PM
- [Link to Webex Event](#)

For individual meetings with Prof. De Bolle, please **register** by mail to secretary@microbiology.lu so that we can initiate the contact.

Brucella abortus is a pathogen causing bovine brucellosis, a worldwide zoonosis. These bacteria belong to the alpha-Proteobacteria class, like the model bacterium *Caulobacter crescentus*. Although they have very different lifestyles and morphologies, *Brucella* and *Caulobacter* share a well conserved cell cycle control pathway, modulating the CtrA two-component regulator. In *B. abortus*, CtrA controls cell division, which is consistent with the role of the orthologues in other alpha-Proteobacteria. Interestingly, CtrA also binds many promoters of genes producing proteins involved in envelope biogenesis. Within the alpha-Proteobacteria class, the Rhizobiales order display several examples of unipolar growth. In *B. abortus*, we showed that outer membrane proteins and lipopolysaccharide are inserted at a unique pole and at the division site, the positions at which immature peptidoglycan is also localized. The outer membrane of *B. abortus* was found to be static and heterogeneous. Recently, we found that many integral outer membrane proteins are covalently bound to peptidoglycan. Altogether, these results reveal that *B. abortus* cells are highly organized at the molecular level.

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