Graduate Schools
Infection Immunity and Cancer, UniGe & UniL: CUS
Biology & Medicine, CMU

Seminar in Microbiology

Monday, 27th November, 2017

Salle de séminaire, E07.3347.a, CMU

11:30 – 12:30

Prof. Cecile Morlot

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The new kid on the block: a secretion-like hybrid complex involved in bacterial sporulation

During spore formation in *Bacillus subtilis* a transenvelope complex is assembled across the double membrane that separates the mother cell and the forespore. This complex (called the "A-Q complex") is required to maintain forespore development. Bioinformatics suggests that the A-Q complex could function as a new type of secretion apparatus. The Morlot lab has found that SpoIIIAG, which resembles the EscJ/PrgK/FliF family of ring-forming proteins found in Type III secretion systems, assembles into an oligomeric ring in the periplasmic-like space between the two membranes, with a C30 symmetry and a cup-and-saucer architecture with a large central pore. Point mutations in the predicted oligomeric interface disrupted ring formation in vitro and impaired forespore gene expression and efficient spore formation in vivo. This suggests that the A-Q transenvelope complex acts a conduit that connects the mother cell and the forespore. The GerM lipoprotein has been shown recently to be required for the localization of the A-Q complex around the forespore. Insights into the structure of this family of proteins of unknown function will also be presented and integrated into the assembly model of the A-Q complex.

Selected publications:

- Peptidoglycan O-acetylation is functionally related to cell wall biosynthesis and cell division in Streptococcus pneumoniae. Bonnet J…. **Morlot** C, Vernet T, Di Guilmi AM. Mol Microbiol. 2017.
- Enterococcus hirae LcpA (Psr), a new peptidoglycan-binding protein localized at the division site. Maréchal M, Amoroso A, **Morlot** C, Vernet T, Coyette J, Joris B. BMC Microbiol. 2016.
- A ring-shaped conduit connects the mother cell and forespore during sporulation in Bacillus subtilis. Rodrigues CD, …., **Morlot** C. PNAS. 2016.
- Autophosphorylation of the Bacterial Tyrosine-Kinase CpsD Connects Capsule Synthesis with the Cell Cycle in Streptococcus pneumoniae. Nourikyan J, …., **Morlot** C, … Grangeasse C. PLoS Genet. 2015
- Remodeling of the Z-Ring Nanostructure during the Streptococcus pneumoniae Cell Cycle Revealed by Photoactivated Localization Microscopy. Jacq M, …, **Morlot** C. MBio. 2015
- A highly coordinated cell wall degradation machine governs spore morphogenesis in Bacillus subtilis. **Morlot** C, Uehara T, Marquis KA, Bernhardt TG, Rudner DZ. Genes Dev. 2010.

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