

# Séminaire

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**Conférencier invité**

Vendredi 19 Oct. 2012

**A 11h15 - Salle des séminaires**

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## MreB dynamics and morphogenetic function in *Bacillus subtilis*

Cell morphogenesis in non-spherical bacteria relies on two major determinants: the peptidoglycan cell wall and the actin-like MreB cytoskeleton, which was postulated to organize elongation-specific peptidoglycan-synthesizing complexes along sidewalls. We recently used total internal reflection fluorescence (TIRF) microscopy to visualize the dynamic relation between MreBs and cell wall synthesis. We showed that MreB proteins assemble into discrete patches that move processively around the cell periphery in both Gram-positive and Gram-negative rod-shaped bacteria. In *Bacillus subtilis*, the three MreB isoforms (MreB, Mbl and MreBH) together with transmembrane morphogenetic factors traditionally linked to sidewall elongation (MreC, MreD, RodA, PBPH and PBP2a) form cell wall biosynthetic complexes whose motility is largely powered by cell wall synthesis itself, while MreB polymers restrict patch speed and directionality in the membrane. To further investigate the molecular basis for the dynamics and the morphogenetic role of MreB proteins, we are currently characterizing several MreBs mutations. An example concerning an MreB isoform-specific mutant that affects the speed of the MreB-associated cell wall synthetic complexes will be presented. Finally, we have also found that MreB-associated complexes involved in the early, presumed cytoplasmic, stages of peptidoglycan precursor synthesis also exist in *B. subtilis*, suggesting that MreB proteins may also coordinate the recruitment and/or delivery of precursors to the cell wall synthesizing machineries.

**Hôte : Thierry Vernet (IBS/ Groupe Pneumocoque)**