

## Seminar in Microbiology

Monday, 16<sup>th</sup> November, 2015

Salle de séminaire E07.3347.a (ex 7172), CMU

**11:30 – 12:30**

**Xavier de BOLLE**

University of Namur, Namur, BE



### **Genetic analysis of cell cycle control and intracellular trafficking of the *Brucella abortus* pathogen**

The de Bolle lab is studying how the bacterial cell division cycle influences virulence, growth and survival of the human and animal pathogenic *Brucella* species inside the host. Recent findings from the de Bolle lab indicate that the regulatory circuitry controlling the cell cycle of alpha-proteobacteria also play an important role in establishing a productive infection by an asymmetric division and the unipolar growth of *Brucellae* as first shown by the de Bolle group. This growth mode generates poles with specialized functions (through polar recruitment of polar adhesins or of cell cycle regulators) and progeny cells with different fates. Xavier will talk about the cell cycle transcriptional regulator A (CtrA) that directs this fate switch and about recent Tn-Seq analyses of a cellular infection model for *Brucella*.

#### **Key publications:**

- *Brucella abortus* Cell Cycle and Infection Are Coordinated. De Bolle et al Trends Microbiol. 2015
- A NAD-dependent glutamate dehydrogenase coordinates metabolism with cell division in *Caulobacter crescentus*. Beaufay et EMBO J. 2015
- G1-arrested newborn cells are the predominant infectious form of the pathogen *Brucella abortus*. Deghelt et al. Nat Commun. 2014
- Quorum sensing and self-quorum quenching in the intracellular pathogen *Brucella melitensis*. Terwagne et al PLoS One. 2013.
- *Brucella melitensis* MucR, an orthologue of *Sinorhizobium meliloti* MucR, is involved in resistance to oxidative, detergent, and saline stresses and cell envelope modifications. Mirabella et al J Bacteriol. 2013
- The histidine kinase PdhS controls cell cycle progression of the pathogenic alphaproteobacterium *Brucella abortus*. Van der Henst , et al J Bacteriol. 2012
- The asymmetric distribution of the essential histidine kinase PdhS indicates a differentiation event in *Brucella abortus*. Hallez et al . EMBO J. 2007