

Seminar in Microbiology

Monday, 1st February, 2016

Salle de séminaire Salle E07.3347.a, CMU

11:30 – 12:30



Romain MERCIER

CR2, Laboratoire de Chimie Bactérienne, CNRS-IMM,
Aix-Marseille Université, FR

Biology of cell wall-free (L-form) bacteria and characterisation of an unexpected mode of proliferation in walled bacteria.

After the discovery of the MatP replication-terminus organization protein of *E. coli*, Romain Mercier explored the proliferation mode of wall-less bacteria known as L-forms using *Bacillus subtilis*, and recently *E. coli*, as model systems. He discovered that L-forms propagate by “membrane-blebbing” and tubulation, primitive cellular growth modes arising from de-regulated membrane synthesis rates, that predisposes wall-less bacteria to oxidative damage by reactive oxygen species (ROS) originating from the electron transport pathway. He is now exploring the link of gliding motility with cell constriction in *Myxococcus xanthus* at the LCB/CNRS.

Key publications:

- *Cell growth of wall-free L-form bacteria is limited by oxidative damage.*
Kawai Y, **Mercier R**, Wu LJ, Domínguez-Cuevas P, Oshima T, Errington J. *Curr Biol.* 2015
- *General principles for the formation and proliferation of a wall-free (L-form) state in bacteria.*
Mercier R, Kawai Y, Errington J. *Elife.* 2014
- *Bacterial cell morphogenesis does not require a preexisting template structure.*
Kawai Y, **Mercier R**, Errington J. *Curr Biol.* 2014
- *Excess membrane synthesis drives a primitive mode of cell proliferation.*
Mercier R, Kawai Y, Errington J. *Cell.* 2013
- *Crucial role for membrane fluidity in proliferation of primitive cells.*
Mercier R, Domínguez-Cuevas P, Errington J. *Cell Rep.* 2012
- *The MatP/matS site-specific system organizes the terminus region of the E. coli chromosome into a macrodomain.*
Mercier R, Petit MA, Schbath S, Robin S, El Karoui M, Boccard F, Espéli O. *Cell* 2013.