

Seminar in Microbiology

Tuesday, February 9, 2016

Salle de séminaire Salle E07.3347.a, CMU

11:30 – 12:30

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Salmonella forms intracellular persisters with TacT

It has been discovered recently that for many bacterial species, a proportion of bacterial cells grown in laboratory medium can enter a dormant-like state in which they are not affected by antibiotics. These bacteria are called persisters. It is thought that eventually, persisters can resume growth, accounting for relapses of infection. *Salmonella* is the causative agent of various diseases, ranging from gastro-enteritis to typhoid fever. We have recently discovered that upon infection of host cells, there is a dramatic increase in the proportion of the *Salmonella* population that forms persisters. A family of genes, named Toxin/Antitoxin modules, is known to be involved in the formation of persisters in a non-pathogenic bacterial species, but almost nothing is known about these genes in pathogenic bacteria like *Salmonella*. I recently started investigating their function, particularly in relation to persistence of *Salmonella* to antibiotics during infection. Understanding mechanisms of action of such genes could provide ways to prevent bacteria from becoming persisters, or force them out of that state so they become re-sensitised to antibiotics. From: <http://www.imperial.ac.uk/people/s.helaine>

Key publications:

Helaine S, Kugelberg E. 2014 Bacterial persisters: formation, eradication, and experimental systems.. Trends Microbiol. 2014 Jul;22(7):417-24. Review.

Helaine S, Cheverton AM, Watson KG, Faure LM, Matthews SA, Holden DW. 2014. Internalization of Salmonella by macrophages induces formation of nonreplicating persisters. Science. 2014 Jan 10;343(6167):204-8.

Figueira R, Watson KG, Holden DW, **Helaine S**. 2014. Identification of salmonella pathogenicity island-2 type III secretion system effectors involved in intramacrophage replication of *S. enterica* serovar typhimurium: implications for rational vaccine design. MBio. 2013 Apr 16;4(2):e00065.

Helaine S, Holden DW. 2013. Heterogeneity of intracellular replication of bacterial pathogens. Curr Opin Microbiol. 2013 Apr;16(2):184-91. doi: 10.1016/j.mib.2012.12.004. Epub 2013 Feb 26. Review.

Thompson JA, Liu M, **Helaine S**, Holden DW. 2013. Contribution of the PhoP/Q regulon to survival and replication of *Salmonella enterica* serovar Typhimurium in macrophages. Microbiology. 2011 Jul;157(Pt 7):2084-93.

Helaine S, Thompson JA, Watson KG, Liu M, Boyle C, Holden DW. 2010. Dynamics of intracellular bacterial replication at the single cell level. Proc Natl Acad Sci U S A. 2010 Feb 23;107(8):3746-51.

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