

## Seminar in Microbiology

Monday, 30<sup>th</sup> January, 2017

Salle de séminaire, E07.3347.a, CMU

**11:30 – 12:30**

**Prof. Melanie Blokesch**

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### **Pathoecology and evolution of the cholera-causing pathogen *Vibrio cholerae*.**

Understanding how pathogen emergence occurs and how virulence factors and antibiotic resistance spreads amongst bacteria is of prime importance. Horizontal gene transfer (HGT) plays a key role in the transfer of genetic information from one bacterium to another and in the balance between genome maintenance and evolution. Natural competence for transformation is one of three modes of HGT in prokaryotes. Large pieces of DNA containing a series of genes can be transferred by natural transformation without the involvement of mobile genetic elements. This process can quickly foster evolution, and natural transformation is known to be involved in the spread of antibiotic resistance and the emergence of new pathogens. The Blokesch lab has made key contributions by elegantly outlining molecular mechanisms by which DNA is first liberated and then taken by bacteria,

#### **Recent key publications:**

- Metzger *et al.* (2016) Independent regulation of type VI secretion in *Vibrio cholerae* by TfoX and TfoY. **Cell Rep.**, 15:951-958.
- Van der Henst *et al.* (2016) An intracellular replication niche for *Vibrio cholerae* in the amoeba *Acanthamoeba castellanii*. **ISME J.**, 10:897-910.
- Borgeaud *et al.* (2015) The type VI secretion system of *Vibrio cholerae* fosters horizontal gene transfer. **Science**, 347: 63-67.
- Seitz *et al.* (2014) ComEA Is Essential for the Transfer of External DNA into the Periplasm in Naturally Transformable *Vibrio cholerae* Cells. **PLoS Genet.**, 10:e1004066.
- Seitz and Blokesch (2013) DNA-uptake machinery of naturally competent *Vibrio cholerae*. **PNAS**, 110:17987-92.
- Lo Scudato and Blokesch (2013) A transcriptional regulator linking quorum sensing and chitin induction to render *Vibrio cholerae* naturally transformable. **Nucleic Acids Res.**, 41: 3644-58.
- Lo Scudato and Blokesch (2012) The Regulatory Network of Natural Competence and transformation of *Vibrio cholerae*. **PLoS Genet.**, 8:e1002778.