



ESPCI  
Laboratoire PMMH  
10 rue Vauquelin, 75231 Paris Cedex 05



## Séminaire PMMH

Amphithéâtre Langevin (A4), Escalier N, 2<sup>ème</sup> étage

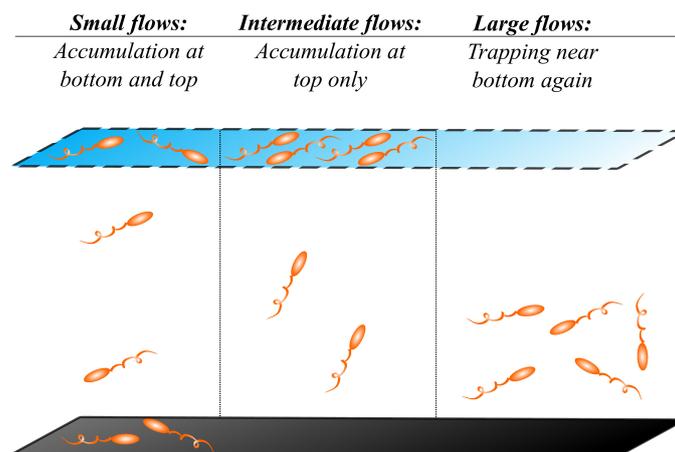
Vendredi 12 février 2016, 11h00-12h00

### Andreas Zöttl et Arnold Mathijssen

University of Oxford

#### Hydrodynamics and noise in confined microswimmer suspensions

Active particles and biological microswimmers such as bacteria or sperm cells moving in their natural environment are continually subjected to fluid flow and confining surfaces. To understand the underlying basic physical mechanisms in these environments their locomotion in microfluidic channels is nowadays widely studied under controlled conditions. Here we present recent theoretical and numerical investigations of microswimmer motion in confinement and in microchannel Poiseuille flow. We first discuss the effects of hydrodynamics and noise for the motion close to a single wall and build up to the dynamics of one and many microswimmers in strong quasi-2D confinement. Second, we discuss the effect of Newtonian and non-Newtonian fluid flow on the dynamics of microbes. Third, we show how the combination of flow and bounding surfaces leads to wall accumulation and detachment triggered by the flow strength. Following these results, we discuss implications on the entrapment of swimming bacteria in corners.



Prochain séminaire : vendredi 19 février, Laurent Chevillard (ENS-Lyon)  
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