

# MICROBIOLOGIE, INFECTIOLOGIE ET IMMUNOLOGIE



## CONFÉRENCE

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#### **Evolution of Human Bacterial Symbionts: the Tortoise and the Hare.**

Symbiosis is classically defined as a long-term relationship between two dissimilar organisms, herein a bacterium, pathogen or not, and its human host. This long-term relationship requires at its inception, evolution of the bacteria to reach and survive at the site of infection. Next, the bacterium has to acquire mechanisms necessary to be maintained in the host population. In the end, the bacterium can develop a life style restricted to its host, with no alternative reservoir, after which the bacterium co-evolves with the host. This stepwise adaptation occurs through genetic alterations where only permissive changes are selected at each of these steps. Using high throughput sequencing, it is now possible to identify these genetic modifications by performing genomic comparisons and use these data as the basis of biological experiments that aim to understand their consequences. As a proof of concept, we have studied human obligate symbionts: *Mycobacterium tuberculosis* and *Neisseria meningitidis*. While these two bacteria are both well adapted to humans, the nature of the symbiotic relationship is completely different. *M. tuberculosis* is often dormant and isolated from other microbes in structures called granulomas. In contrast, *N. meningitidis* is surrounded by microbial competitors in the open-space called the nasopharynx. This presentation will review our major findings in the field of bacterial symbiont evolution and the implication that they have on our understanding of bacterial pathogenicity and physiology.

**Jeudi 30 janvier 2014 à 11h30**

**Pavillon Claire McNicoll, salle Z-317**

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