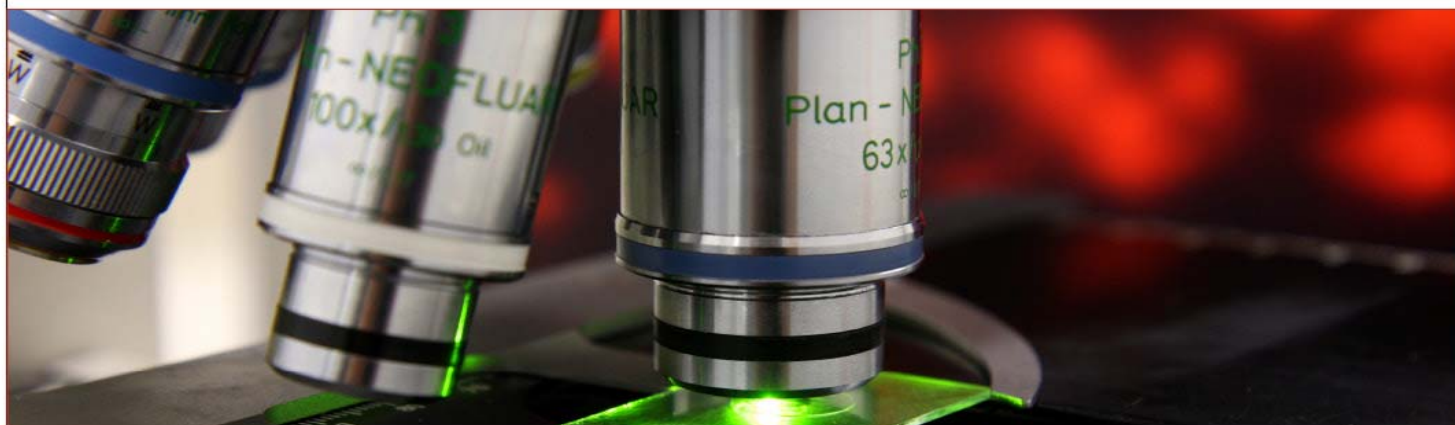


# SÉMINAIRES ET CONFÉRENCES



## Marie Eliot

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### « Uncovering the secrets of Streptomyces bacteria »

Streptomyces are soil-dwelling bacteria that are renowned for their complex multicellular life cycle, and their metabolic capabilities. Within the soil, Streptomyces exist as part of a much larger microbial community, and as such, we have been examining the effect that other microbes have on Streptomyces growth and development. We found that when Streptomyces venezuelae was cultured next to fungi, it responded with a completely novel behaviour that we have termed 'exploratory growth'. Remarkably, exploratory growth can be communicated to more distantly growing streptomycetes through a volatile metabolite. We identified this volatile compound as being trimethylamine (TMA), and have shown that TMA production by *S. venezuelae* not only promotes exploratory growth, but can also inhibit the growth of other bacteria through iron starvation.

Beyond TMA, the metabolic repertoire of Streptomyces bacteria includes antibiotics, chemotherapeutics, immunosuppressants, and anti-parasitic agents, amongst many others. However, it is now known that Streptomyces have the genetic capacity to produce far greater numbers of these metabolites than had ever been seen in the laboratory. In many cases, the genes directing the production of these unknown or 'cryptic' metabolites are simply not expressed under laboratory conditions. Consequently, there is tremendous interest in developing ways to stimulate the production of these compounds, and mine this untapped metabolic reservoir for novel natural products. We have identified a transcription factor that is responsible for repressing many of these cryptic metabolic clusters, and are working to exploit what we know about its activity to stimulate the production of new molecules, and identify novel antibiotics.



Faculté de médecine  
Département de biochimie  
et médecine moléculaire

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**Le lundi 15 avril 2019, 11h30**

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