

Seminar in Microbiology

Monday, 6th November, 2017

Salle de séminaire, E07.3347.a, CMU

11:30 – 12:30

Prof. Laure Weisskopf

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The smell of bacteria and its impact on plant growth and health

Recently the significance of volatile compounds as mediators of bacterial interactions with plants and fungi has become increasingly evident. The Weisskopf lab aims at characterizing the volatile-mediated impact of bacteria on plants and phytopathogens, at identifying bioactive molecules, at analyzing the regulation of their emission by the bacteria and at elucidating their mode of action. Exploring the chemical interactions between *Burkholderia glathei* and fungi they recently found that beneficial interactions with fungi might contribute to the survival strategy of *Burkholderia* species in environments with sub-optimal conditions, including acidic soils. While a lower abundance of several starvation factors that were highly expressed in pure culture of *B. glathei*, fungal co-cultivation gave rise to stress factors, as indicated by the increased expression of multidrug efflux pumps and proteins involved in oxidative stress response. This suggests that the ability of *Burkholderia* to establish a close association with fungi mainly lies in the capacities to utilize fungal-secreted metabolites and to overcome fungal defense mechanisms.

Recent publications:

- Mining the Volatilomes of Plant-Associated Microbiota for New Biocontrol Solutions
Bailey A, **Weisskopf** L. *Front Microbiol.* 2017.
- Long-Chain Alkyl Cyanides: Unprecedented Volatile Compounds Released by *Pseudomonas* and *Micromonospora* Bacteria. Montes Vidal, **Weisskopf** L, Müller R, Schulz S. *Angew Chem* 2017.
- The Anti-Phytophthora Effect of Selected Potato-Associated *Pseudomonas* Strains: From the Laboratory to the Field. Guyer..... **Weisskopf** L. *Front Microbiol.* 2015.
- Molecular mechanisms underlying the close association between soil *Burkholderia* and fungi. Stopnisek N, Zühlke D, Carlier A, Barberán A, Fierer N, Becher D, Riedel K, Eberl L, **Weisskopf** L. *ISME J.* 2016
- *Pseudomonas* strains naturally associated with potato plants produce volatiles with high potential for inhibition of *Phytophthora infestans*. Hunziker, **Weisskopf** L. *Appl Environ Microbiol.* 2015
- The inter-kingdom volatile signal indole promotes root development by interfering with auxin signalling. Bailey A, Groenhagen U, Schulz S, Geisler M, Eberl L, **Weisskopf** L. *Plant J.* 2014.