



**Jean-Baptiste Leducq, PhD; Professeur Adjoint**  
Département de Phytologie (FSAA) - IBIS - CRIV  
Université Laval

Evolutionary and ecological genomics of *Methylobacterium*.

**LE JEUDI 15 septembre 2022 À 12 H 30**

Pavillon Charles-Eugène Marchand, salle Hydro-Québec (1210)

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**Abstract:**

*Methylobacterium* is a model microbe and an important group of the phyllosphere, the aerial part of plants. Ironically, *Methylobacterium* has mostly been studied outside plants. We investigated ecological and evolutionary factors driving *Methylobacterium* phyllosphere communities.

By coupling *Methylobacterium*-directed barcoding and culture methods, we revealed an outstanding diversity in the temperate forest of Quebec, of which a majority was yet undescribed. Seasonal and spatial dynamics of *Methylobacterium* diversity in the phyllosphere reflected growth performances in the lab, suggesting contrasted strategies in response to environmental variations. By realizing the first phylogenomic inference of *Methylobacterium* evolutionary history, explicitly accounting for plant-associated diversity, we demonstrated that *Methylobacterium* contains four divergent groups of bacteria, questioning its taxonomy. We inferred an ancient transition in *Methylobacterium* lifestyle from soil to the phyllosphere, stressing the significance of plants in *Methylobacterium* evolution.

Together, our work on *Methylobacterium* paves the way for further investigation of adaptive strategies and evolutionary mechanisms driving the underappreciated phyllosphere diversity.

**Hôte :** Davoud Torkamaneh

**Responsable :** Juan Carlos Villarreal Aguilar  
juan-carlos.villarreal-aguilar@bio.ulaval.ca