CBGP
Centre de Biologie pour la Gestion des Populations

Mardi 15 février 2022, 11:00
Salle de réunion (25 pers.) + visio

A SONG OF SAP AND BLOOD

par
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In the first part of my talk, I will explore the co-evolution of whiteflies and their primary endosymbiont candidatus *Portiera aleyrodidarum*.

Whiteflies rely on *Portiera* to obtain essential amino acids not present in their plant-sap diet. Indeed, *Portiera* has been co-diverging with whiteflies since their origin and therefore reflects their host evolutionary history. In general, and similarly to other primary endosymbionts, *Portiera* displays stable genomes after millions of years of co-divergence with their hosts. However, *Portiera* of the sweet-potato whitefly *Bemisia tabaci* has lost the ancestral genome order and shows a rare event in nutritional symbionts: the appearance of genome instability. Interestingly, the appearance of *Portiera* genome instability can be interpreted in the context of whiteflies' development and *Portiera* maternal transmission.

For the second part of my talk, I will present my ongoing work on the evolution of the *Coxiella* genus with a focus on the intracellular pathogen *Coxiella burnetii* and its tick-associated endosymbiotic relatives.

Coxiella burnetii is the causative Q fever agent in humans, a zoonotic disease that ranges from asymptomatic to flu-like symptoms. Interestingly, *C. burnetii* can persist for long periods in the environment as a resistant form but also is able to exploit the phagolysosome of the host's cells, which has an acidic pH of 4.5. Several *C. burnetii* related intracellular bacteria have established mutualistic relationships with ticks and compensate for their unbalanced diet (blood) by producing B vitamins. Both *C. burnetii* and *Coxiella* endosymbionts evolved from the same pathogenic ancestor. The presence of a pathogenic island together with the acid and alkaline resistance mechanisms presents in *C. burnetii* but lost in *Coxiella* endosymbionts seem essential to colonize the phagolysosome and survive in the external environment.