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ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

SEMINAR

Monday, January 11th, 2016
@ 11.30 a.m.

Conference Room AI 1153

Florent MASSON

INSA de Lyon

Hosted by Prof. Bruno Lemaitre

Insights into a symbiotic trade-off: Immunity and cell processes in weevil endosymbiosis control

Many insect species rely on intracellular mutualistic bacteria, called obligatory endosymbionts, for their development and reproduction. These bacterial partners supply them with metabolic components lacking in their diet, driving their successful adaptation to nutritionally unbalanced environments. Although such associations have been widely investigated on a physiological and evolutionary point of view, the mechanisms involved in the maintenance and the control of endosymbionts by the host remain elusive.
Using the cereal weevil, *Sitophilus oryzae*, and its obligate endosymbiont *Sodalis pierantonius* as a model system, we were able to reveal several mechanisms ensuring a tight control of the endosymbiont load. At the larval stage, when host needs are stable, endosymbionts are statically maintained through a modulated immune response. At the adult stage when host needs are changing, immune control is strengthened by cell processes that adjust symbiont load to the host metabolic requirement, allowing the host to optimize its developmental time span and securing the cost and benefit trade-off of symbiosis. I will discuss how these different strategies selected during host-symbiont coevolution ensure the tight adjustment of endosymbionts population along the insect life cycle and according to its physiological needs.