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Journée des Doctorants

Lundi 14 Mars (9 h -14h)

Amphi Ampère – Bât. Gabriel

Au programme : 8 posters, 11 présentations orales dont 1 invité surprise + 1 buffet

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Investigation of the adaptive strategies of *Listeria monocytogenes* in soil/plants mesocosms

Angela Ortiz Camargo – Pascal Piveteau

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Listeria monocytogenes is a foodborne pathogen that affects primarily the vulnerable groups of the population (immune-compromised people, pregnant women, children, and elderly), with low incidence but high mortality. In the last few years, severe outbreaks caused by this bacteria have been associated with the consumption of fresh produce and dairy products. Due to this, soil and plants are considered the first stage of contamination before primary products are processed or transported to the final consumer. Therefore, it is important to understand how *L. monocytogenes* is able to survive and remain in soil and in association with plants. The present study will focus in elucidating the genetic and proteomic tools used by this bacterium for its prevalence in soil/plant. An analysis of the transcriptome of *L. monocytogenes* will be carried out in order to investigate the mechanisms of physiological adaptation of the bacteria in response to different circumstances in soil and the rhizosphere. In correlation with these results, a proteomic analysis will be carried out to compare protein expression and transcriptome changes during survival of *Listeria monocytogenes* in this environment. According to the results a limited number of genes will be selected for further analysis. Deletion mutants will be constructed and their phenotypes will be determined under a range of environmental conditions (soil, rhizosphere, biofilms, and mammalian host).

From an ecologic perspective, the consequences of perturbations (lack of oxygen, high and low temperature) of the soil habitat on *Listeria monocytogenes* population dynamics will be investigated and the shifts in the soil microbiota diversity will be followed by pyrosequencing. These data will give further insights on the correlation between diversity and the ability of organisms to invade habitats under a regimen of perturbations. Results will help to comprehend how this foodborne pathogen can remain in soil to later become a treat for consumers and farm animals' health.

Key words: *Listeria monocytogenes*, soil, plants, rhizosphere, transcriptomics, proteomics, survival mechanisms, population dynamics.