# Microbial community assemblies and interspecific interactions in wheat sourdough

Judith Legrand*[1], Johan Ramsayer[1,2], and Delphine Sicard[2]

[1]Génétique Quantitative et Evolution - Le Moulon (GQE-Le Moulon) – Institut National de la Recherche Agronomique : UMR0320, Université Paris-Sud - Paris 11, AgroParisTech, Centre National de la Recherche Scientifique : UMR8120 – UMR de Génétique Quantitative et Evolution - Le Moulon, Ferme du Moulon F-91190 GIF SUR YVETTE, France

[2]UMR 1083 Sciences pour l'œnologie (SPO) – Institut National de la Recherche Agronomique - INRA, Montpellier SupAgro, Université Montpellier – 2 place Pierre Viala 34060 Montpellier cedex, France

**Abstract**

Microbial community assemblies are largely studied in complex environments such as ocean, gut or soil communities. Although our knowledge of microbial communities' diversity has been largely enhanced by the use of –omics technics in the last decade, observations as well as experimental and theoretical works are needed to decipher the ecological processes governing their patterns of biodiversity and how the species forming these communities interact together.

Here, we address these questions in the case of wheat sourdough microbial communities. Sourdough communities are always composed of an assemblage of lactic acid bacteria and yeasts but species composition vary between sourdoughs. As these communities are relatively simple in terms of species richness, they can represent a good opportunity to study the role of abiotic conditions and biotic interactions on community assemblies.

It has been hypothesized that yeasts and LAB interact together mainly in a non-competitive way through mutualistic supply of important metabolites, such as glucose release by LAB, or vitamins release by yeasts to the benefits of each other. However interspecific interactions in sourdough have not been extensively studied. We used two kind of approaches to investigate these interactions: i) an analysis of the network of sourdough yeast and LAB species documented in the literature to determine whether some species tend to co-occur more (or less) often than expected in the absence of interactions, ii) mono and co-culture of yeast and LAB strains sampled in natural sourdough to characterize yeast-LAB interactions. We have shown that LAB presence tends to decrease yeast density whereas yeast presence tends to decrease LAB density although results are contrasted depending on species and strains. Further work is needed to unravel the mechanisms shaping these interactions.

*Speaker