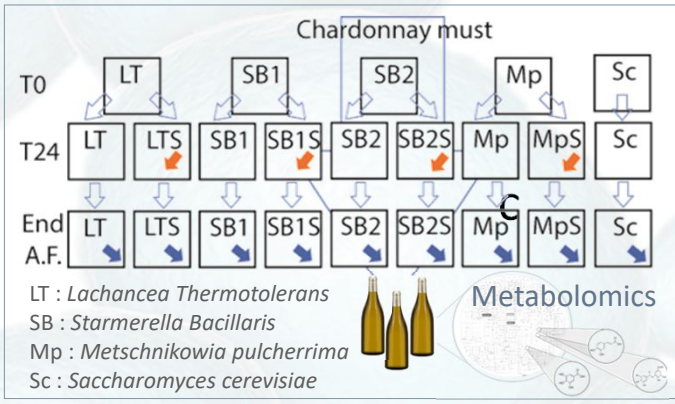
Yeast interactions in Chardonnay wine fermentation

Impact of different non-Saccharomyces yeast species using ultra high-resolution mass spectrometry

Roullier-Gall C[1], David V[1], Bordet F[1], Schmitt-Kopplin P[2] & Alexandre H[1].

[1]Université de Bourgogne, IUVV, Dijon, France / [2]Technische Universität München, Freising Germany

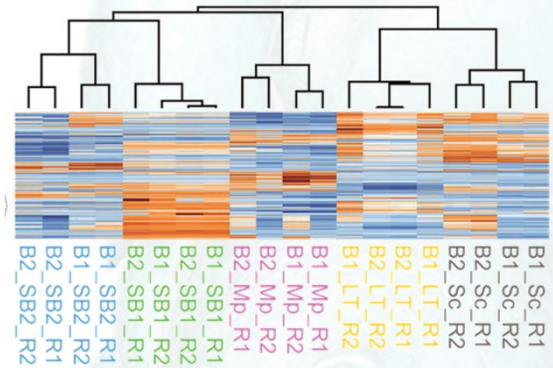
Aim : During alcoholic fermentation, when yeasts grow simultaneously, they often do not coexist passively and in most cases interact with each others. They interact by producing compounds and fermentation products that can affect the wine chemical composition and therefore alter its aromatic and sensory profile.

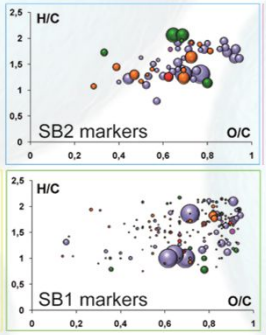


Methods : Chardonnay must inoculated with non-Sc and *Sc* for sequential fermentation were screened for metabolite composition using uHRMS.

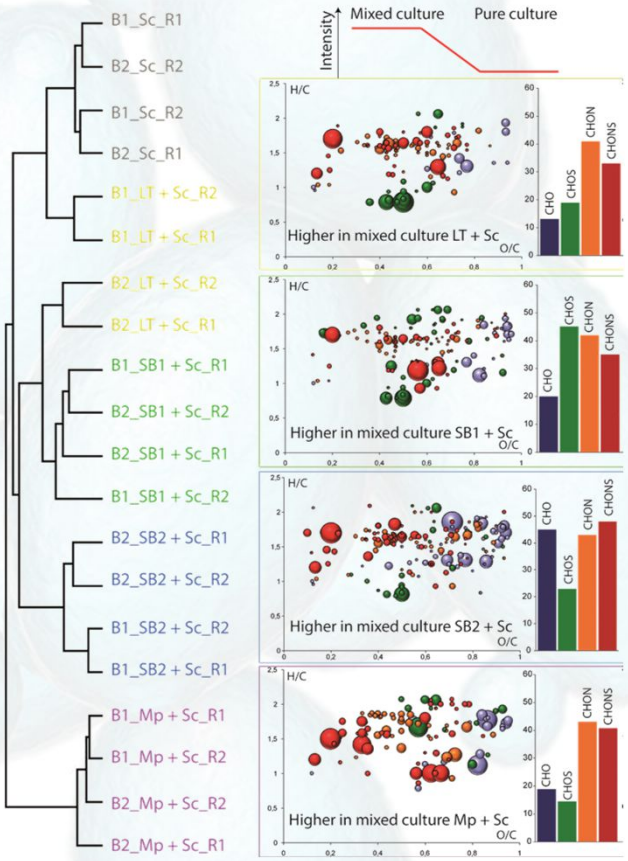
(Roullier-Gall *et al.*, 2020)

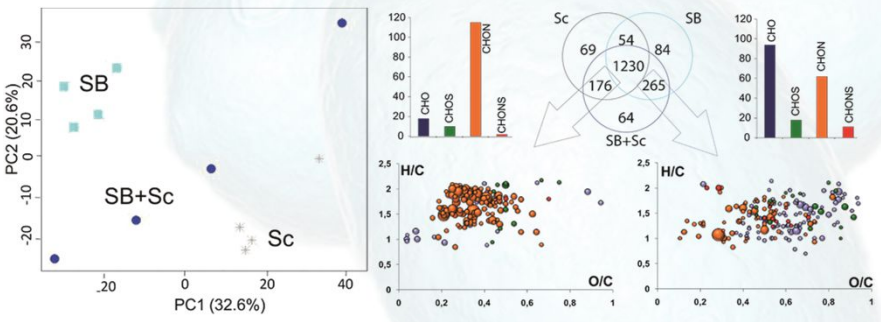
Results : Interspecies and intraspecies differences exist between yeasts in terms of metabolites production and wines can be easily differentiate according to the yeast strain used for the fermentation.





- Pure cultures could be discriminated from cocultures based on their metabolite profile.
- New metabolites appeared in wines from sequential fermentation and some other metabolites are not detected anymore compared to single cultures.





- Biomarkers were extracted and annotated to characterize yeast species impact on wine final composition.

CONCLUSIONS: Metabolomics analysis demonstrated that :

1- Yeast species could be discriminated based on their metabolism 2- Yeast metabolism is species dependent 3- Co-cultures modifies the non-volatile wine profile 4- wine compositions reflect yeast-yeast interactions modulating their metabolisms.