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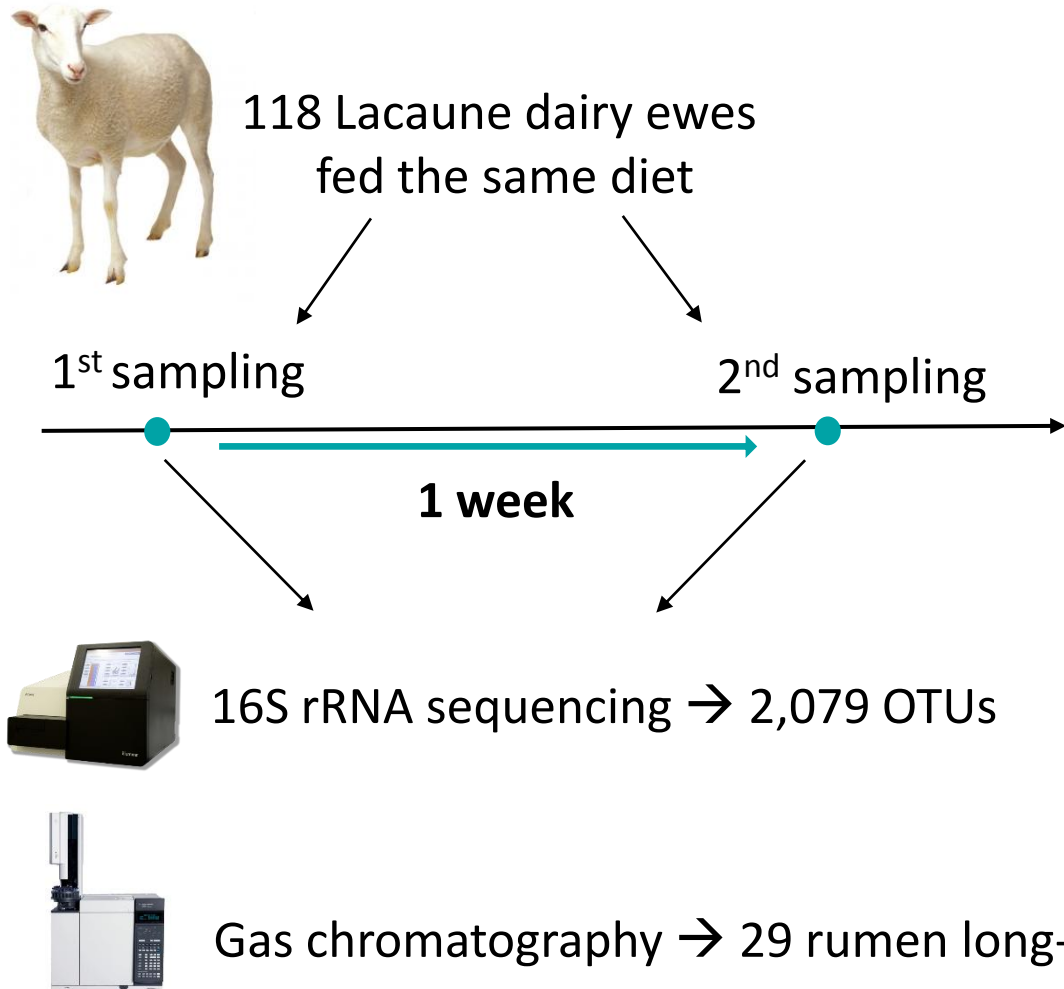
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Is rumen bacterial community composition in sheep stable ?

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Objective

Determine if conclusions about rumen bacteria are transposable from one week to the other.

Compositional data

Imputation of zero values

Centered log-ratio transformation

Linear mixed models

$$\text{Repeatability} = \frac{\text{animal variance}}{\text{total variance}}$$

Analyses on residuals

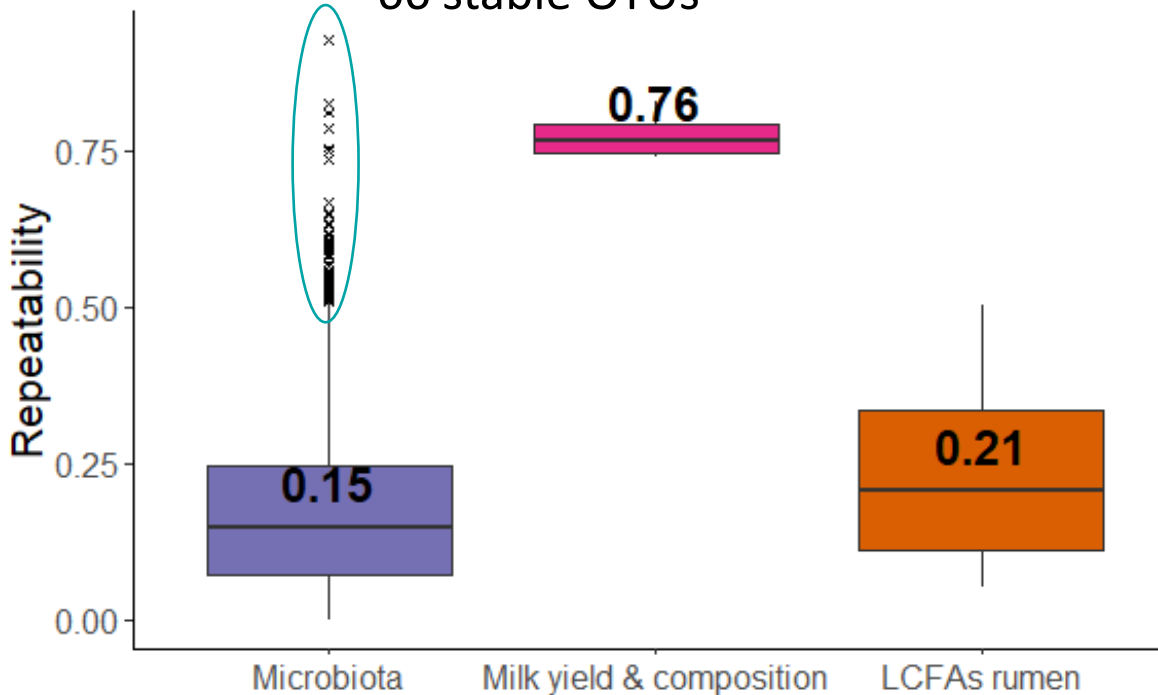
Sparse partial least square discriminant analysis (sPLS-DA)
Sparse partial least square analysis (sPLS)/ Pearson correlations

Unstability of rumen bacteria over 1 week

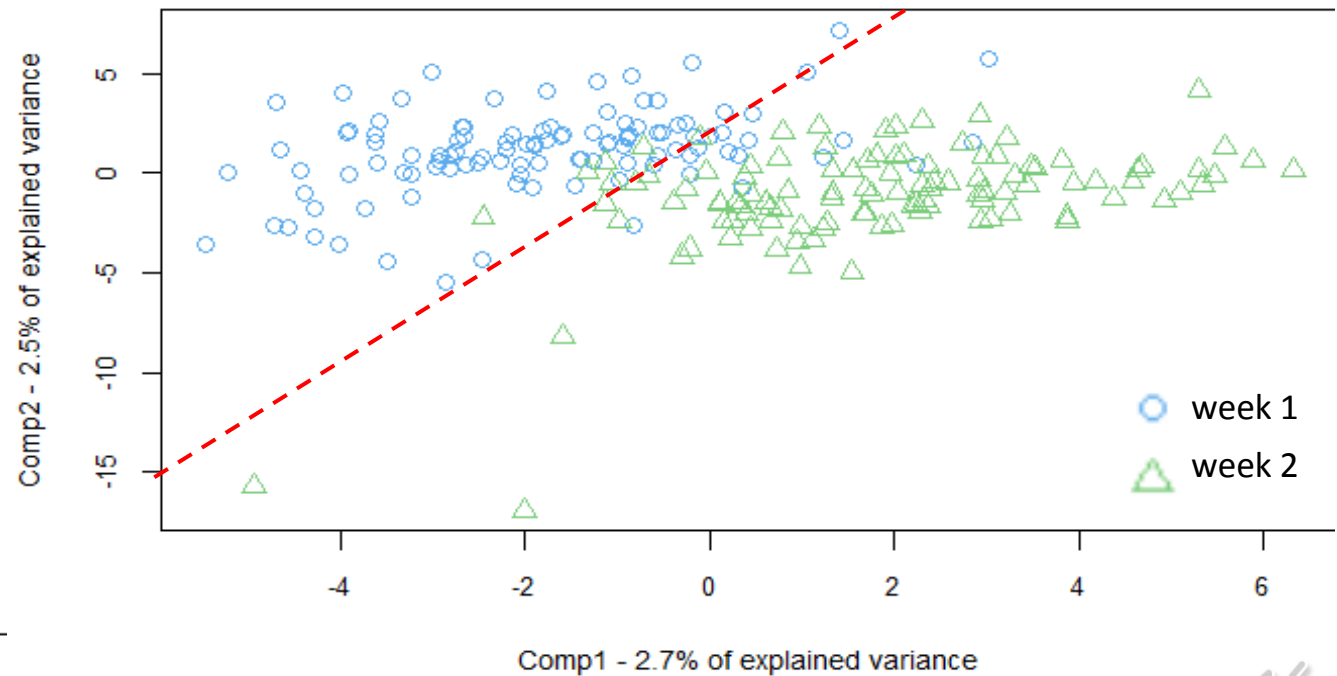
Low and highly variable **repeatability** of the OTUs even if **66 stable OTUs** (repeatability > 0.5)

Discrimination of the two weeks of sampling according to bacteria composition

66 stable OTUs



sPLS-DA on the week effect

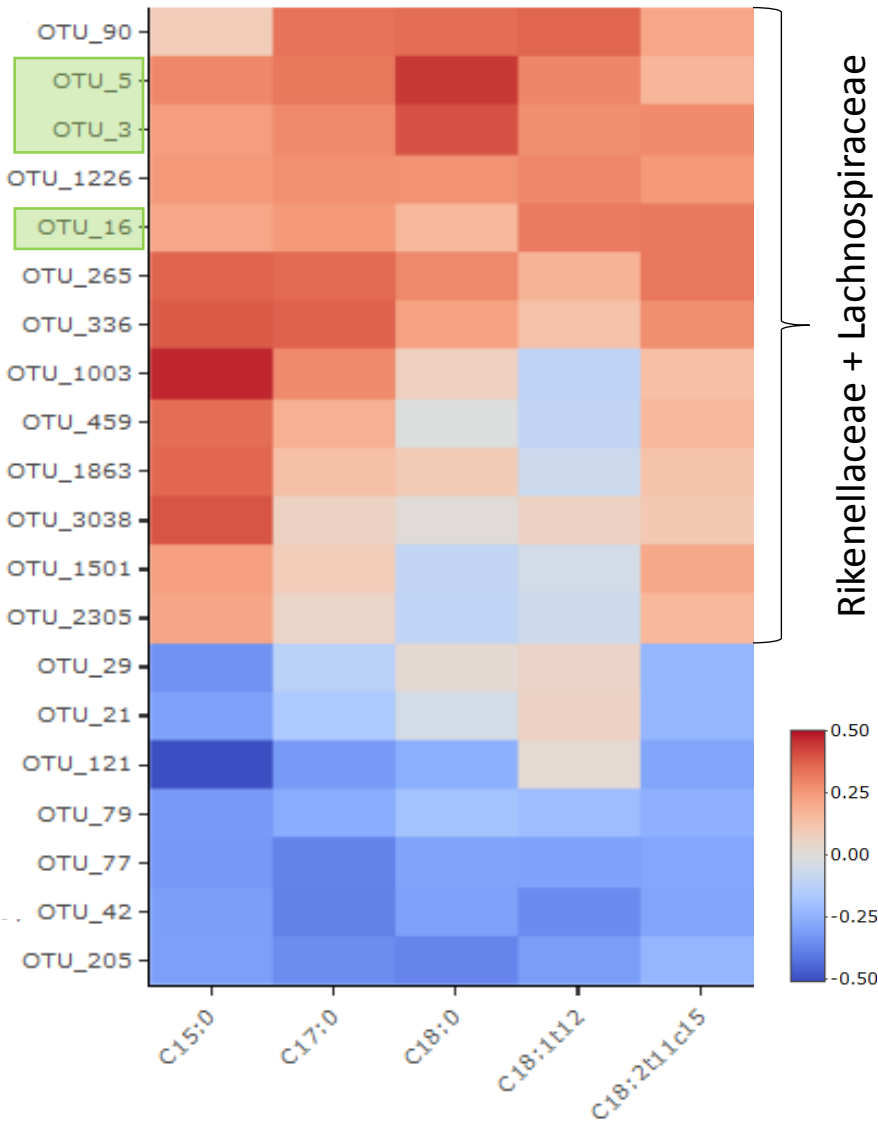


Overall error rate = 0.21

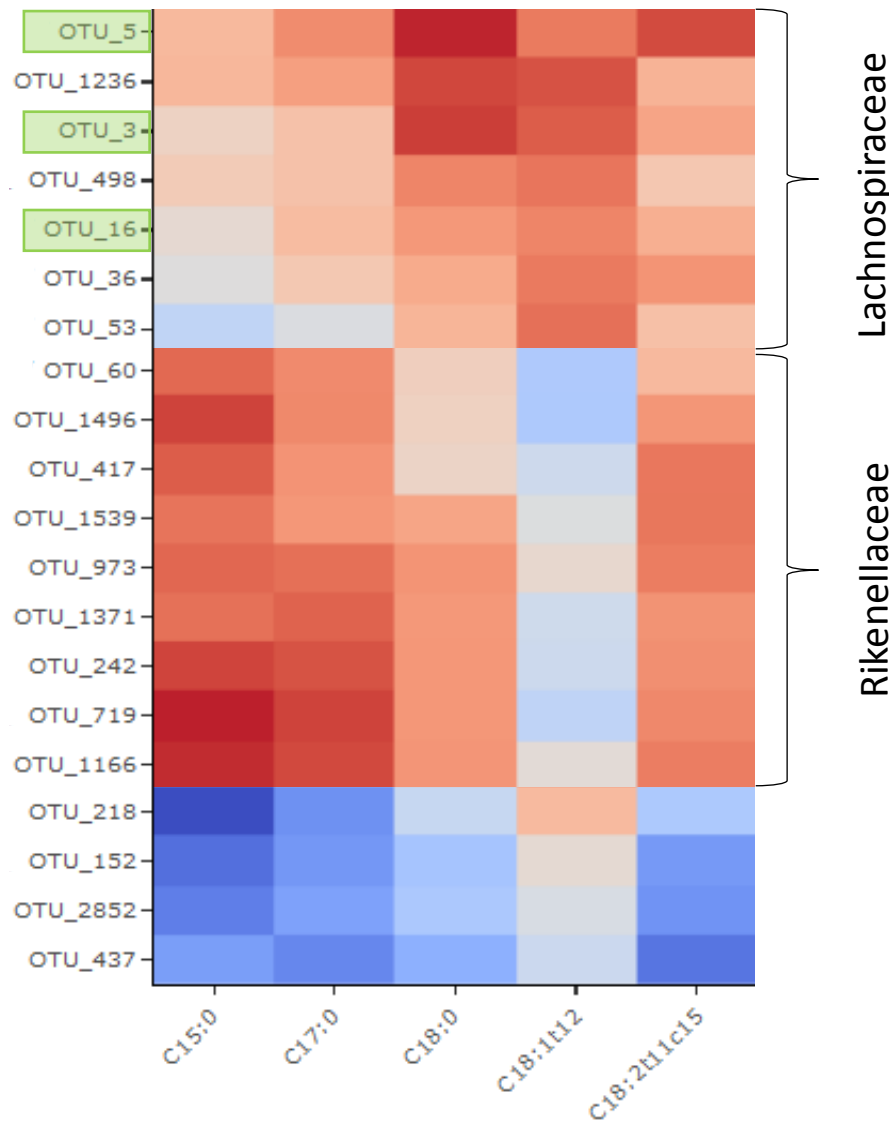


Pearson correlations between the 20 OTUs most associated to the rumen long-chain FAs (sPLS)

Week 1



Week 2



Few OTUs conserved between the 2 weeks

Similar correlations conserved at **family level** between the 2 weeks

Conclusion: Unstability of rumen bacteria and variable links between bacteria and FAs depending on the taxonomic level

