

Rumen fatty acids linked to phenotypes in Romane lambs selected for feed efficiency

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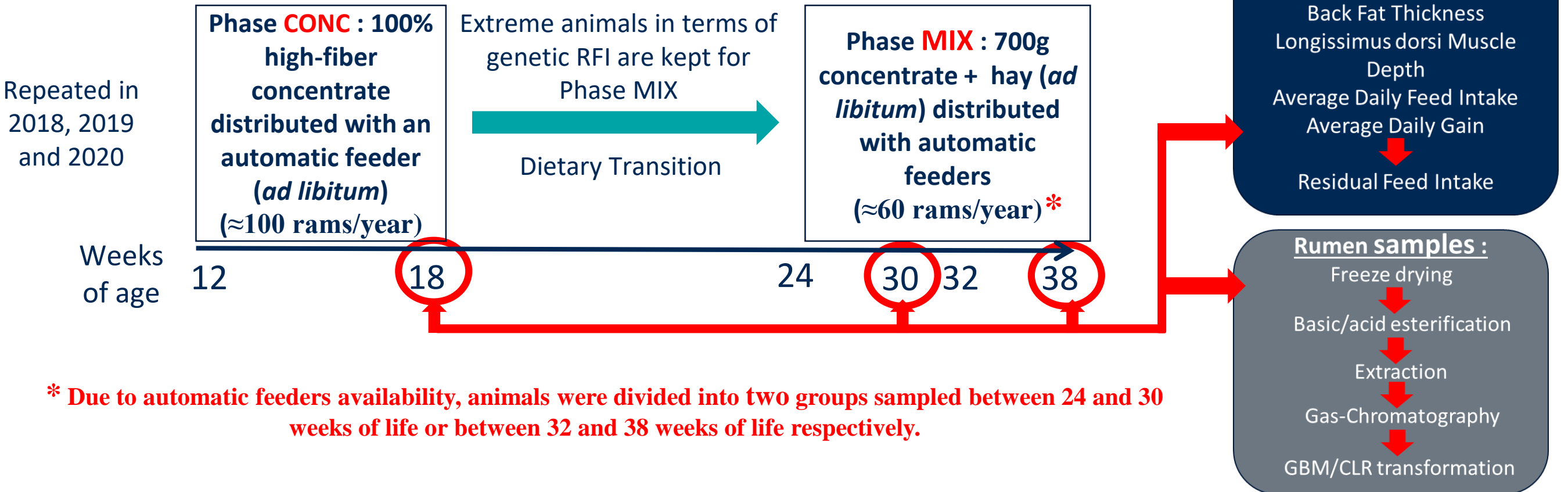
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1. Introduction

- Mechanisms underlying Feed Efficiency (FE) are not fully understood.
- Microbial metabolism of the dietary lipids is responsible for the formation of bioactive intermediates that could be involved in FE variability.
- Divergent selection on residual feed intake (RFI) is a good tool to investigate biological processes underlying feed efficiency : after 3 generations of selection under a 100% concentrate diet an important difference between **efficient (rfi -)** and **inefficient animals (rfi +)** was reached (~1.9 genetic standard deviation).

2. Experimental design



→ Fatty Acid profiles and phenotypes were corrected for year and pen effects in phase CONC, and year, period and pen effects in phase MIX

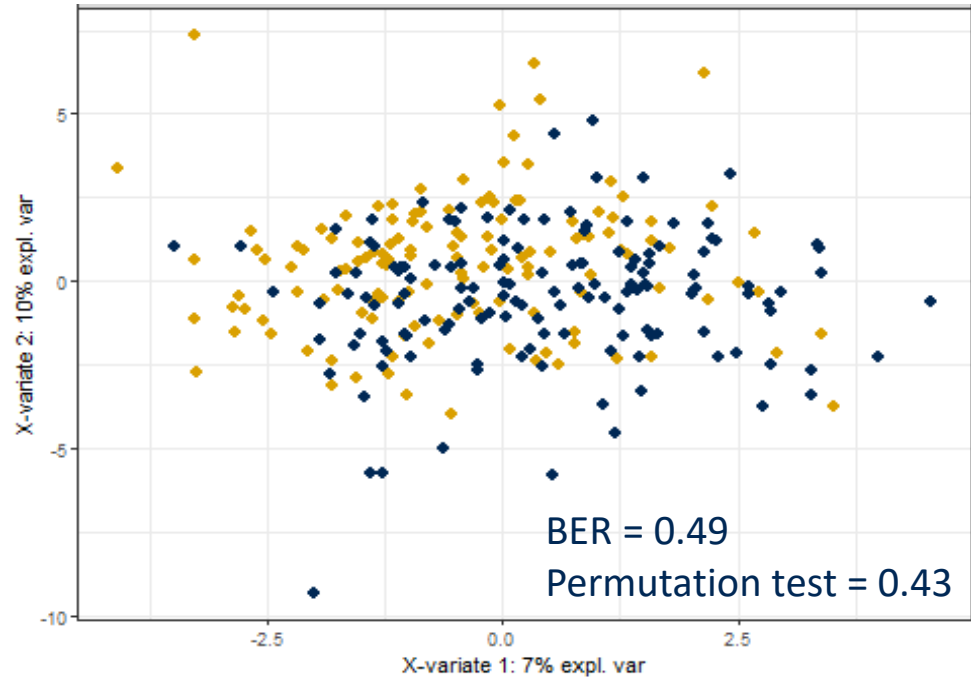
3. Results

CONC Phase

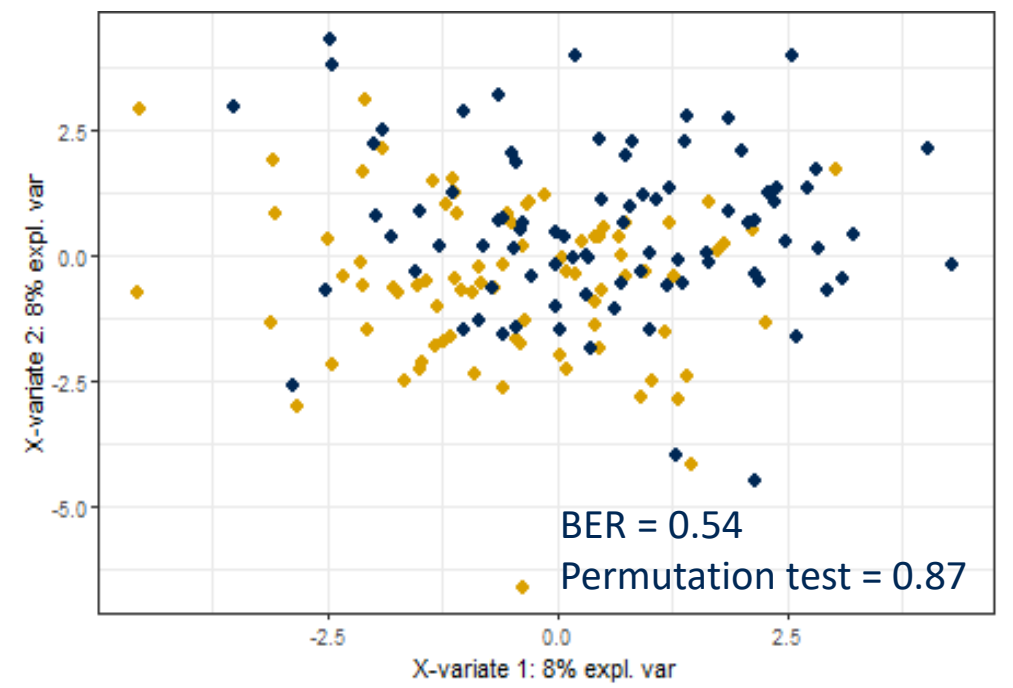
MIX Phase

Rumen fatty acid profiles are not modified by genetic selection on RFI

PLS-DA of CLR-transformed FA profiles by line



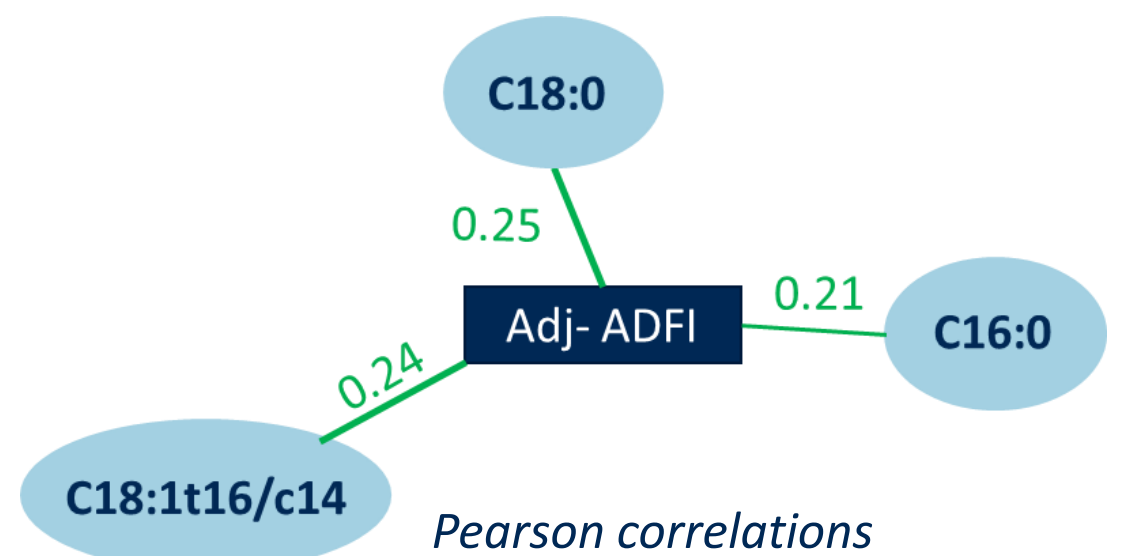
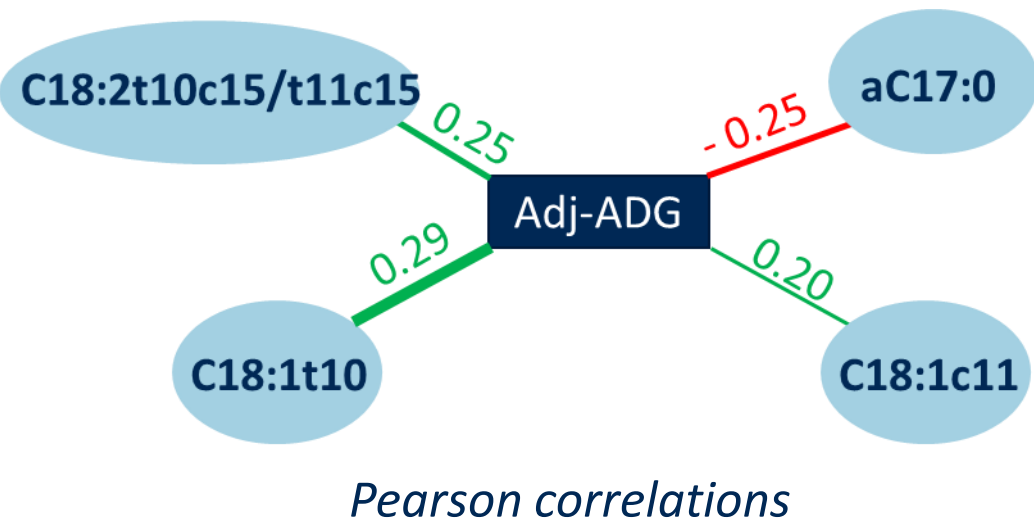
PLS-DA of CLR-transformed FA profiles by line



Rumen fatty acid profiles are weakly correlated to phenotypes whatever the diet

→ In phase CONC, the **PLS regression** identified ADG as the main phenotype variable linked to the fatty acid profile in the data set and C18:1 t10 as the main fatty acid linked to the phenotypes.

→ In phase MIX, ADFI is the main phenotype highlighted in the **PLS regression** and is mostly correlated with C18:0.



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