

INFLUENCE OF A PREPUBERTAL DIETARY PROTEIN RESTRICTION ON EWES' BLOOD TRANSCRIPTOME IN RESPONSE TO AN INTRAMAMMARY INFLAMMATORY CHALLENGE



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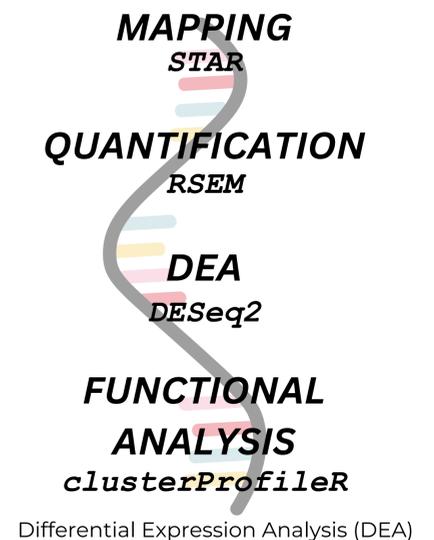
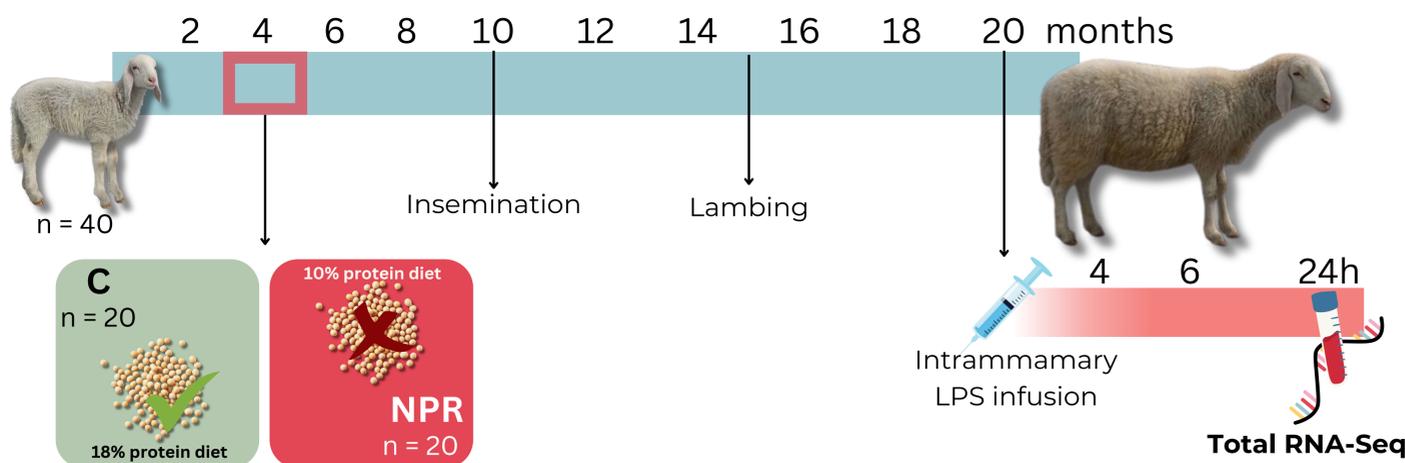
BACKGROUND

- Prepuberty is a sensitive life stage when hardship conditions can have a strong effect on adult animal fitness. Nutrition, including food composition and availability during this period, plays a crucial role in shaping the immune response in adulthood.
- Mastitis poses a significant challenge for dairy sheep flocks, but the effects of prepubertal nutritional restrictions on ewes' response to mastitis in later life remains poorly understood.

OBJECTIVE

This study investigates the impact of a prepubertal nutritional protein restriction (NPR) on the blood transcriptome response to an intramammary infusion of *E. coli* lipopolysaccharide (LPS) in dairy ewes.

MATERIAL & METHODS



RESULTS

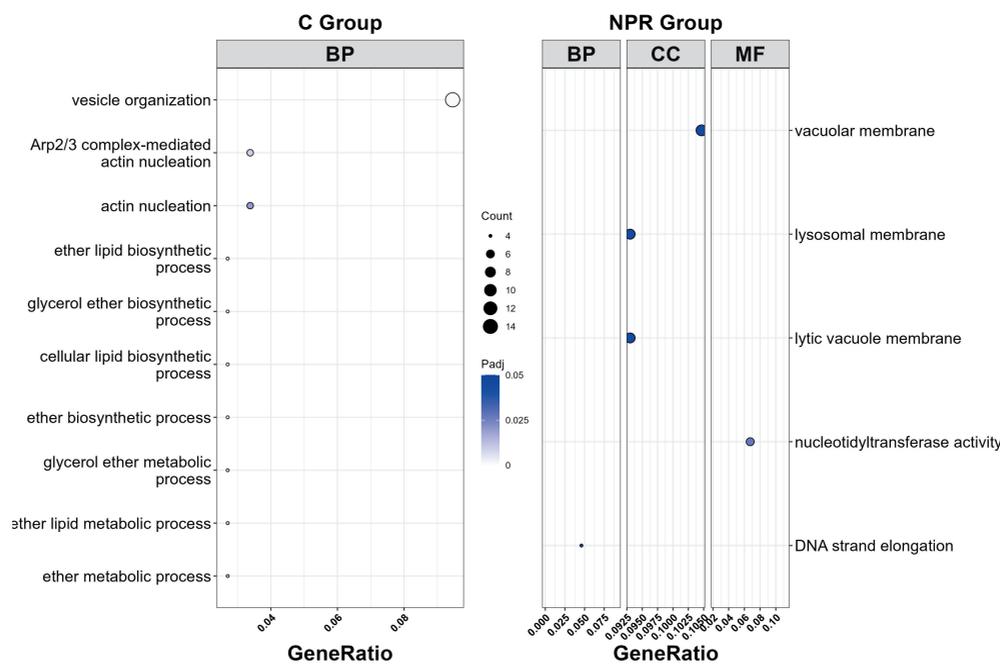
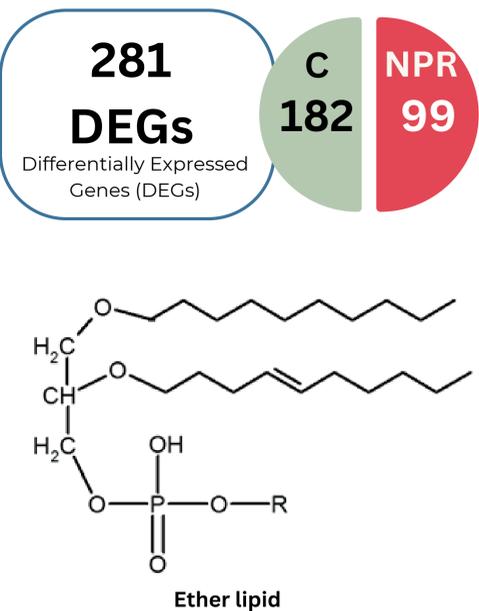
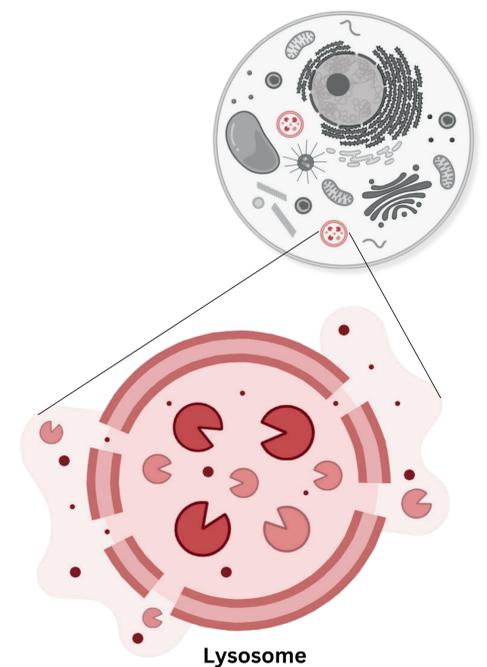


Figure 1: Functional enrichment analysis results for the DEGs in each group.



The study found that DEGs overexpressed in the C group were associated with the **metabolism of ether lipids**, which are **primordial modulators of cellular signaling** and have been reported to show **immunosuppressive properties** (Figure 1).

In addition, significantly enriched **lysosome**-related terms were detected in the NPR group (Figure 1). The key function of lysosomes is **autophagy**, which has an important **anti-inflammatory effect** in healthy cells whereas defective autophagy activates **inflammation**.

CONCLUSIONS

This preliminary analysis suggests that **dietary protein restriction** during **prepubertal development** may influence the **inflammatory response** to an **intramammary infusion** of LPS in adult dairy ewes. This is consistent with our previous study reporting different levels of **blood inflammatory biomarkers** in the two groups studied (Pelayo et al., 2023).



Pelayo, R. et al. (2023)

ACKNOWLEDGEMENTS

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