

# Early feed restriction modifies the colonic epimural bacterial community and feed efficiency traits during the fattening period of Merino lambs

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Food and Agriculture  
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# Introduction

**Robust animals**

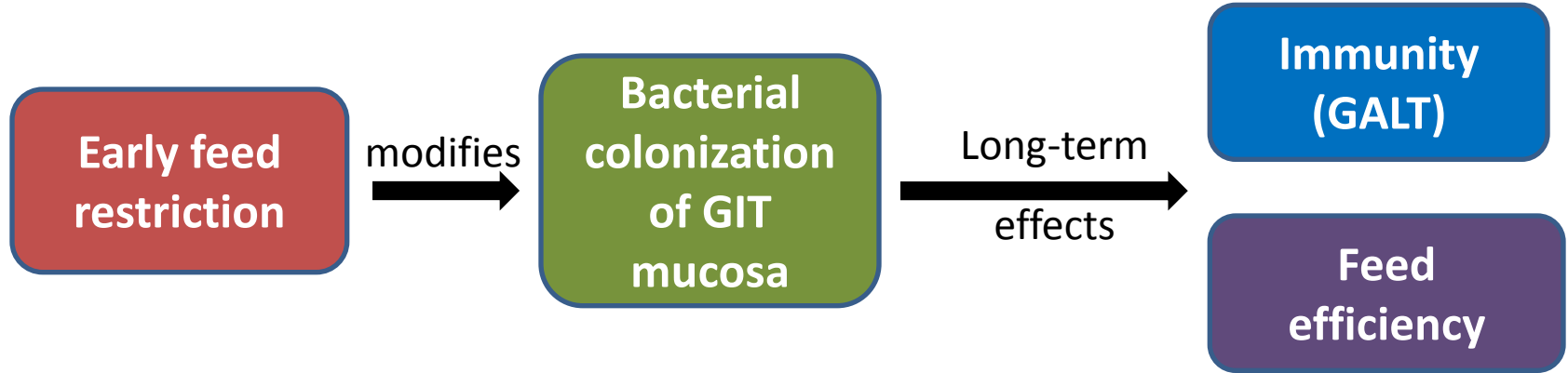


**Lower susceptibility to infections**



**Expression of a high production potential**

# Introduction



# Introduction

## **Our purpose:**

To assess if bacterial colonization of colon mucosa is modified by early feed restriction during the suckling period of lambs, hence promoting long-term effects on feed efficiency and colonic immune parameters during the fattening period.

# Material and methods

## SUCKLING PERIOD



12 lambs *AD LIBITUM*



12 lambs **MILK RESTRICTED**

# Material and methods

## FATTENING PERIOD

- Same level of DMI (35 g/kg BW each day)
- Slaughter target BW: **27 kg**

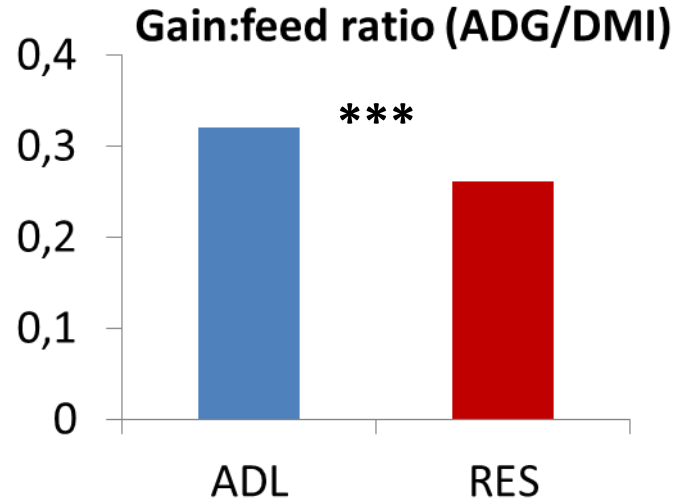
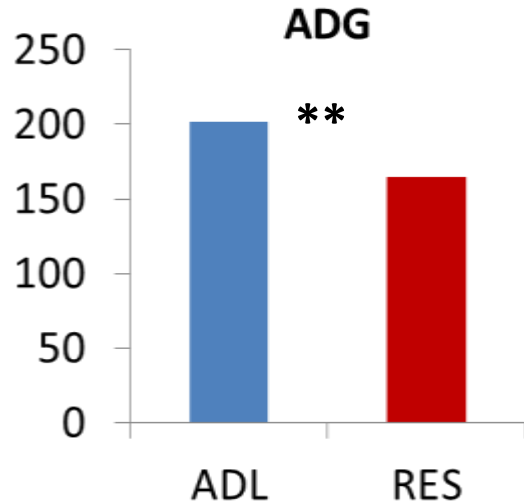
**Colon tissue samples** were collected for

- ✓ Microbiological analysis (T-RFLP)
- ✓ Immunohistochemistry (IHQ)
- ✓ Gene expression of TLRs (qRT-PCR)
- ✓ IgA quantification (ELISA)

# Results and discussion

Suckling period, feed restriction: ↓ ADG

Fattening period: similar DMI but different feed efficiency



# Results and discussion

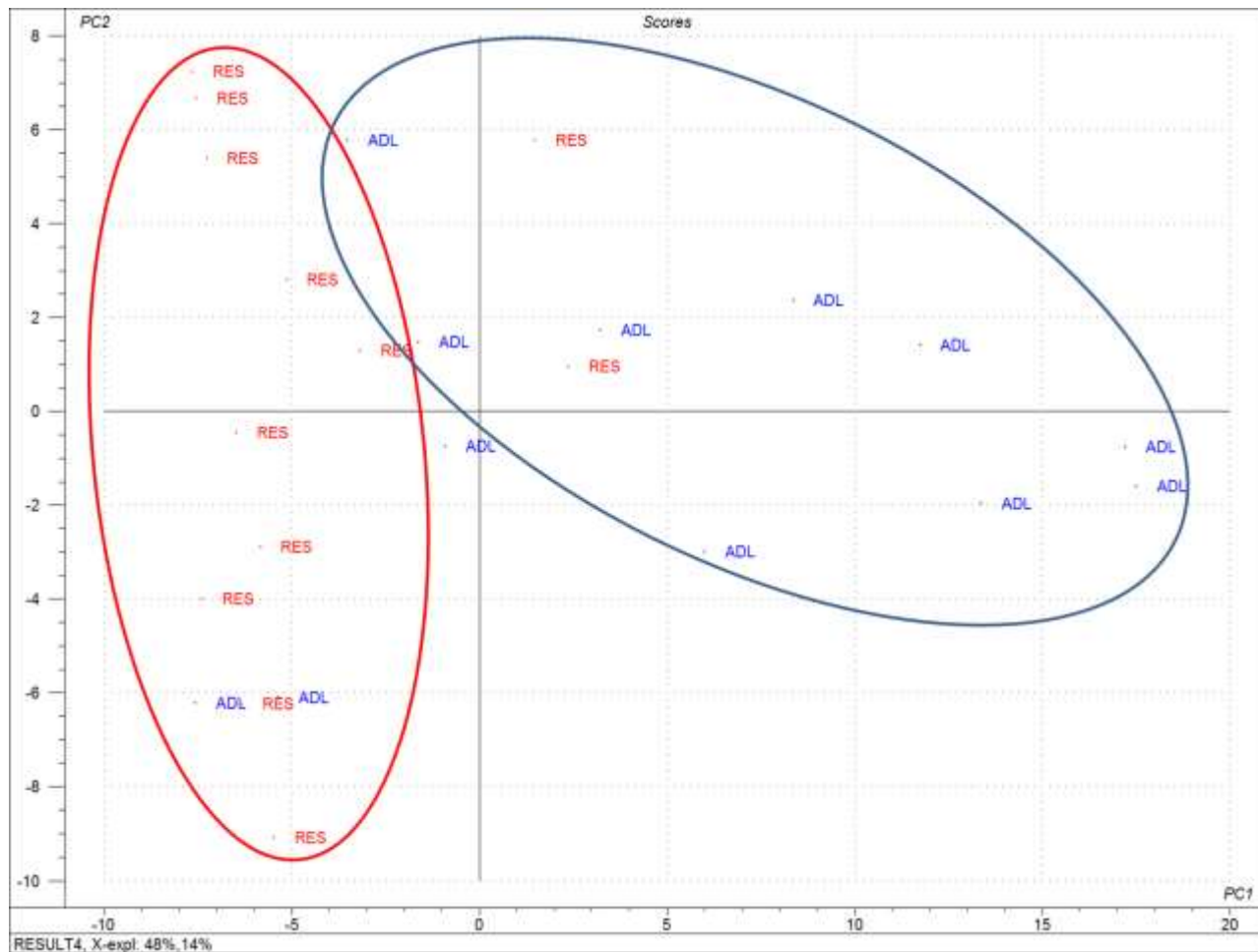
## Colonic epimural bacterial community

T-RFLP



Principal Component Analysis



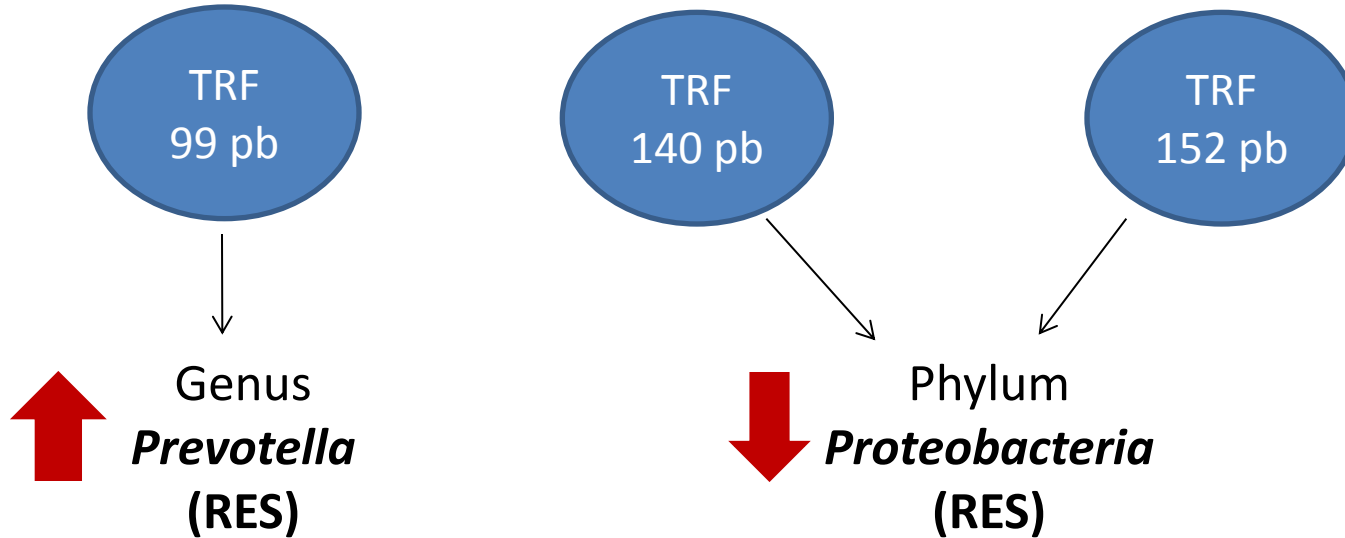


RESULT4, X-expl. 48%, 14%

# Results and discussion

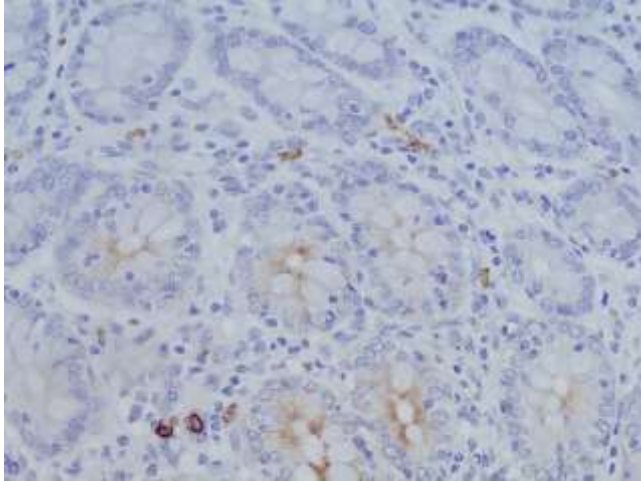
## Colonic epimural bacterial community

Discriminant analysis

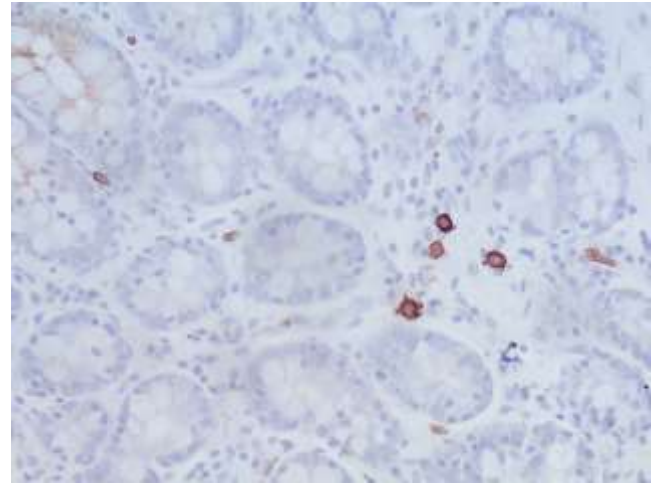


# Results and discussion

## B-cells, CD20+



**ADL**

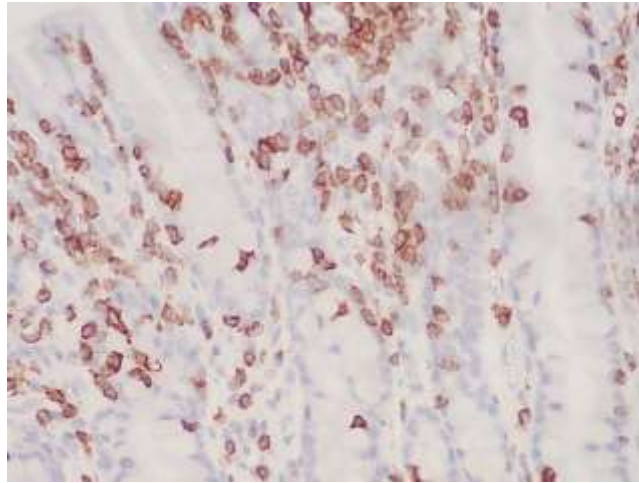


**RES**

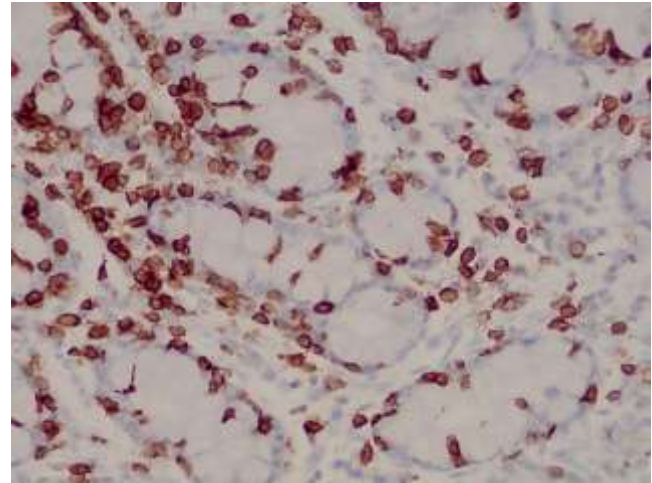
Number per field (40×)    **3.50**    vs.    **3.84**    ( $P = 0.522$ )

# Results and discussion

## T-cells, CD3+



**ADL**

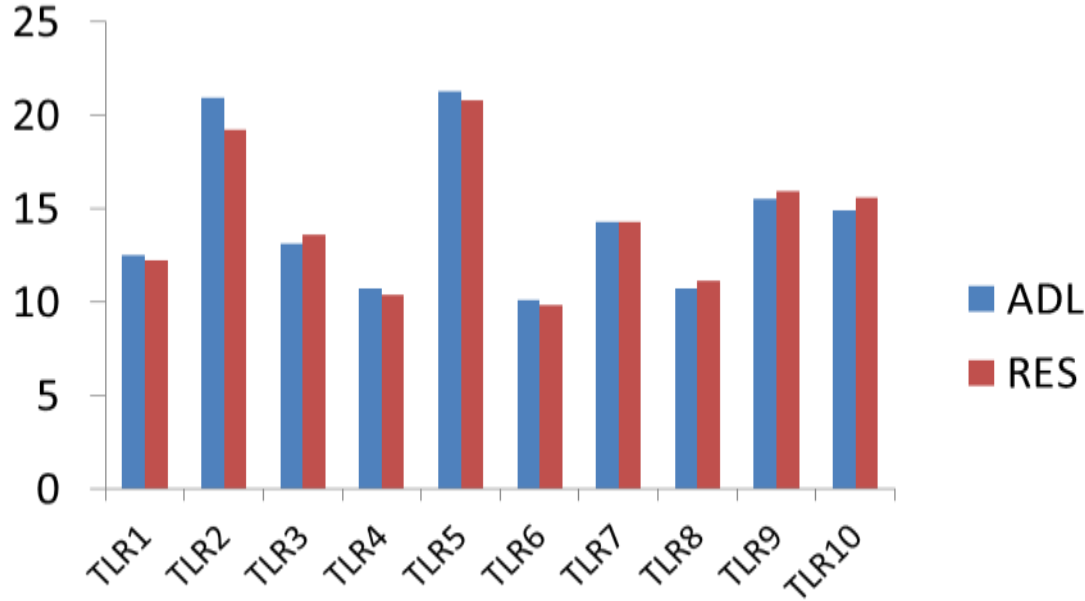


**RES**

Number per field (40×) **138** vs. **159** ( $P = 0.181$ )

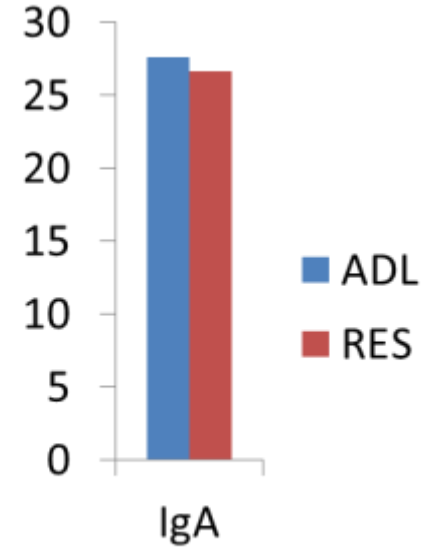
# Results and discussion

## TLRs expression ( $\Delta Cq$ )



( $P > 0.5$ )

## pg IgA/ $\mu$ g protein



( $P = 0.394$ )

# Conclusions

**Early feed restriction of lambs promotes:**

- ✓ **A reduction of feed efficiency traits during the fattening period**
- ✓ **A decrease of *Proteobacteria* and an increase of *Prevotella* (colon), not associated with differences in immune parameters**

# Thank you!

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