Feed restriction reduces IgA levels and modifies the ileal cytokine expressions in growing rabbits

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Health management in rabbit breading

Drug supplementation

Post weaning digestive troubles

↗ Mortality
↘ Growth

Economic losses

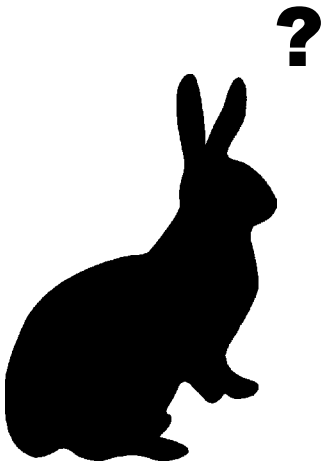
Alternative: Modification of the feeding strategies

FEED RESTRICTION

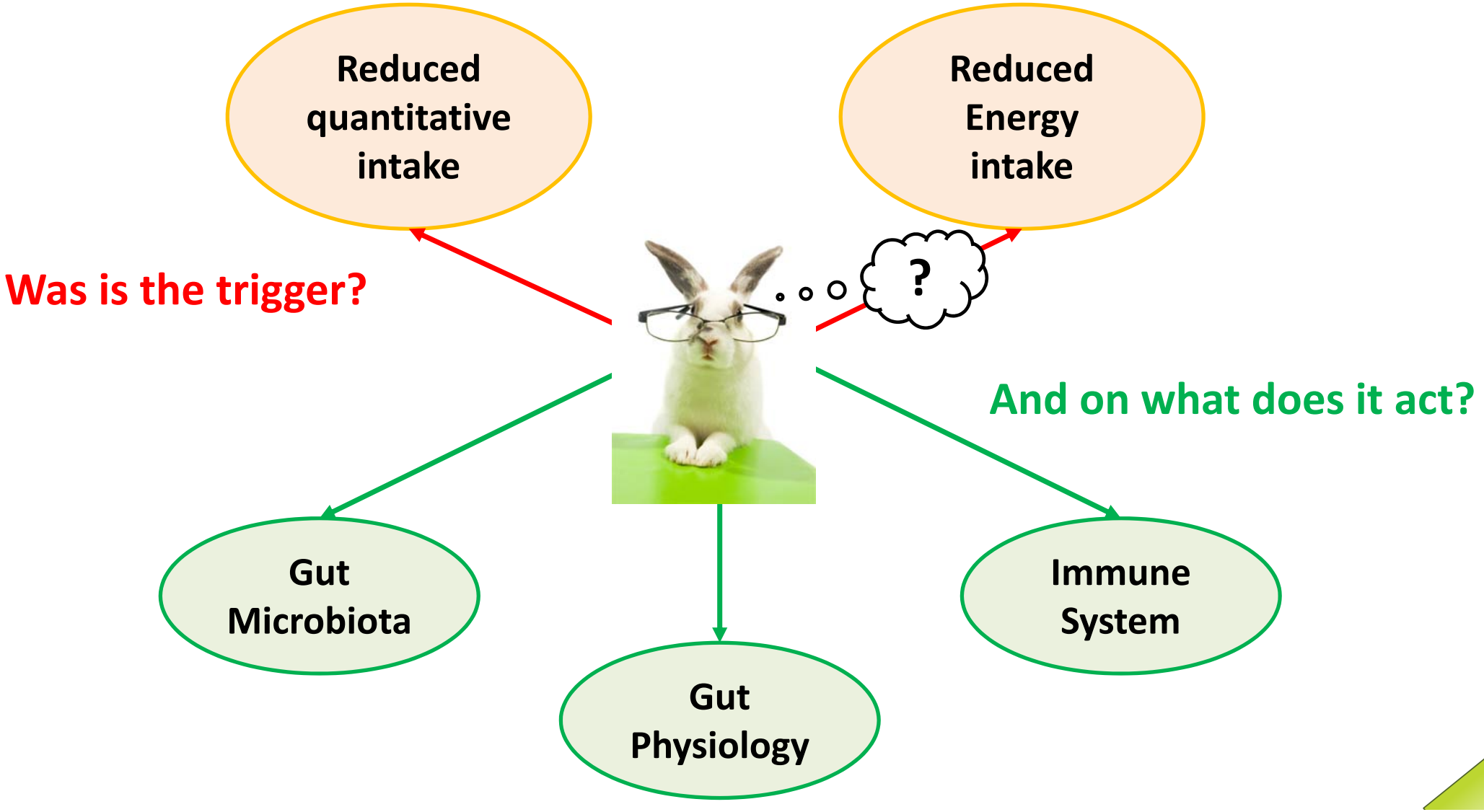
= Interesting alternative

↘ Mortality

↘ Morbidity



But how does feed restriction actually work?



Our experimental design

2x2 factorial design:

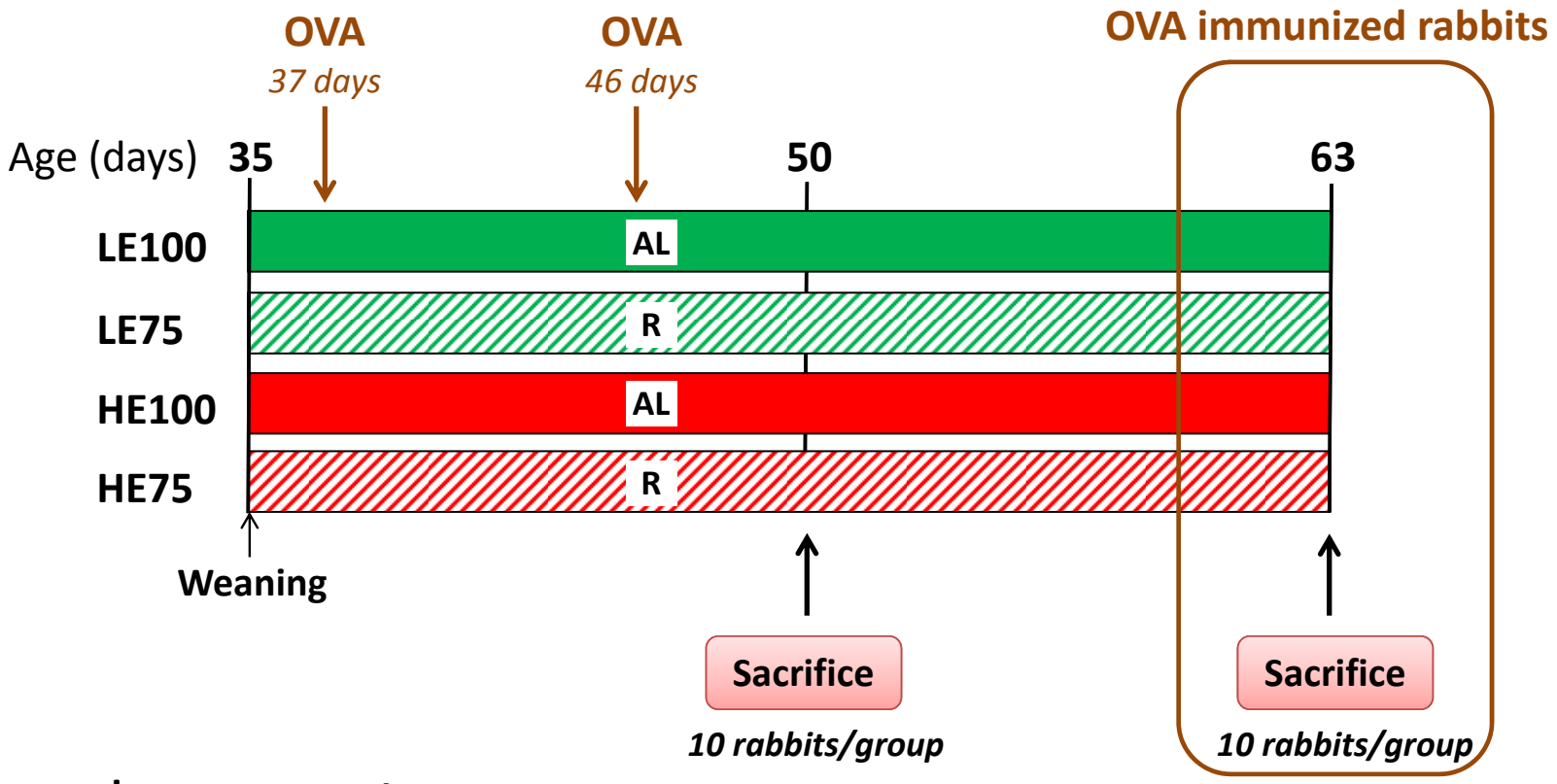
2 feeding levels: *Ad libitum* vs Restricted at 75% of the AL intake(FR)

2 levels of dietary digestible energy: 9.08MJ/kg vs 10.13MJ/kg

Energy	Feeding level: *Ad libitum* (100)	Feeding level: Restricted (75)
Low Energy (LE) (9.08MJ/kg)	LE100	LE75
High Energy (HE) (10.13MJ/kg)	HE100	HE75

Chemical composition (%)	Low Energy	High Energy
Crude protein (N X 6.25)	14.7	16.0
Starch	10.2	11.8
Crude fat	2.8	3.7
Crude fiber	17.6	17.1
Acid detergent fibre (ADF)	22.7	21.8
Digestible energy (MJ/Kg)	9.08	10.13

Our experimental design

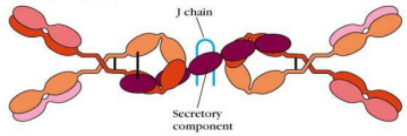


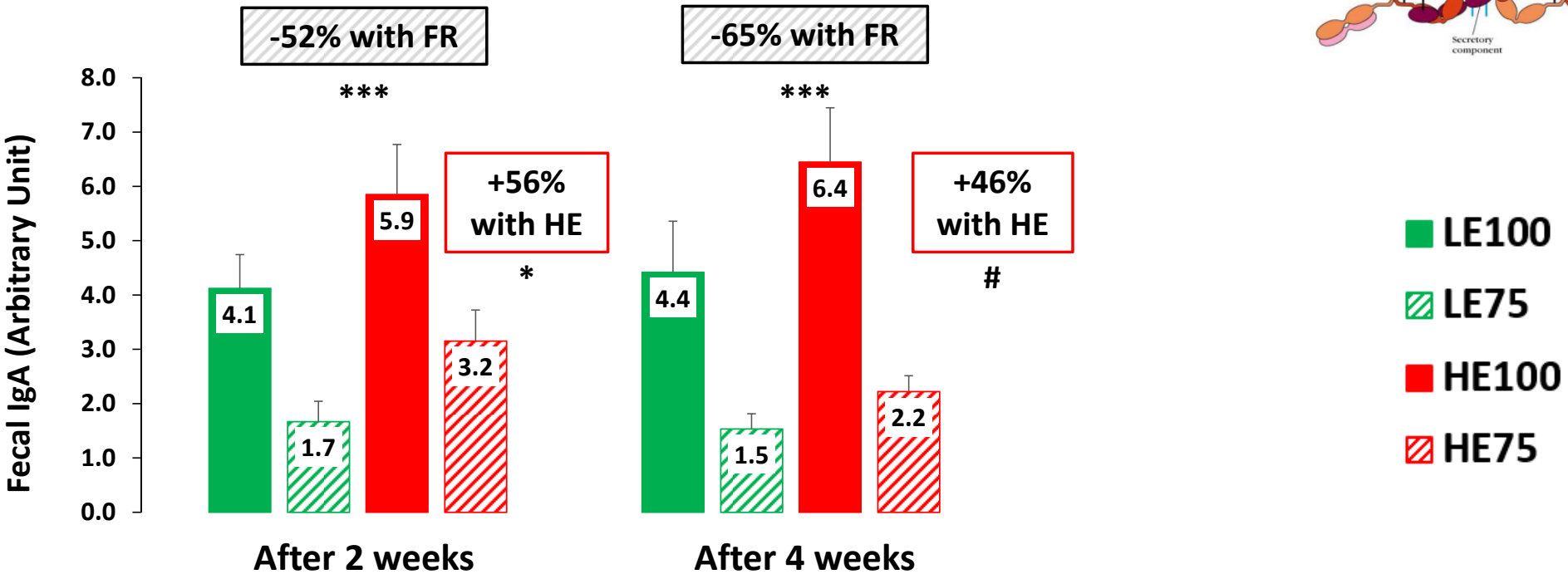
Samplings and measurements:

- **Feces → IgA levels**
- **Blood → IgA/IgG/anti-OVA IgG levels**
- **Ileal tissue → Cytokine expression**

→ Evaluation at local and systemic levels

Local immunity: Total fecal IgA levels

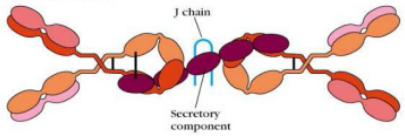


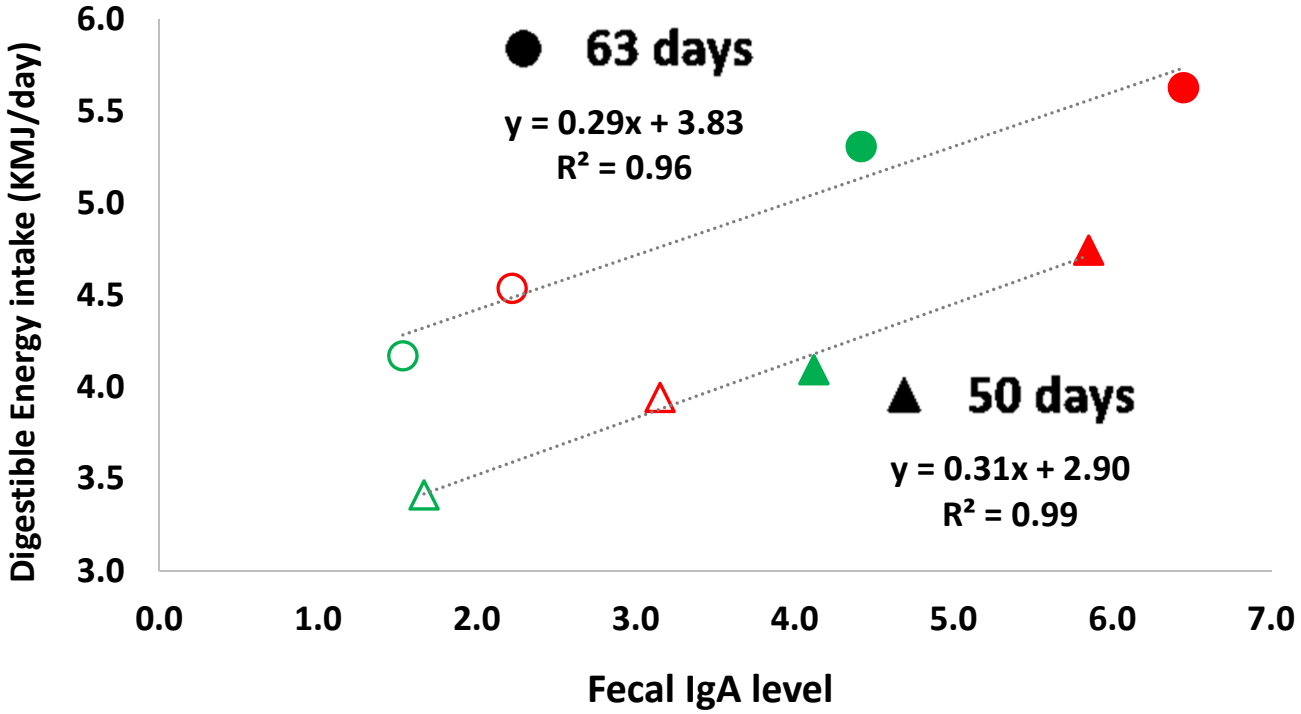


Feed restriction AND energy restriction penalize the secretion of fecal IgA

But which is most important? Quantity or quality of the diet?

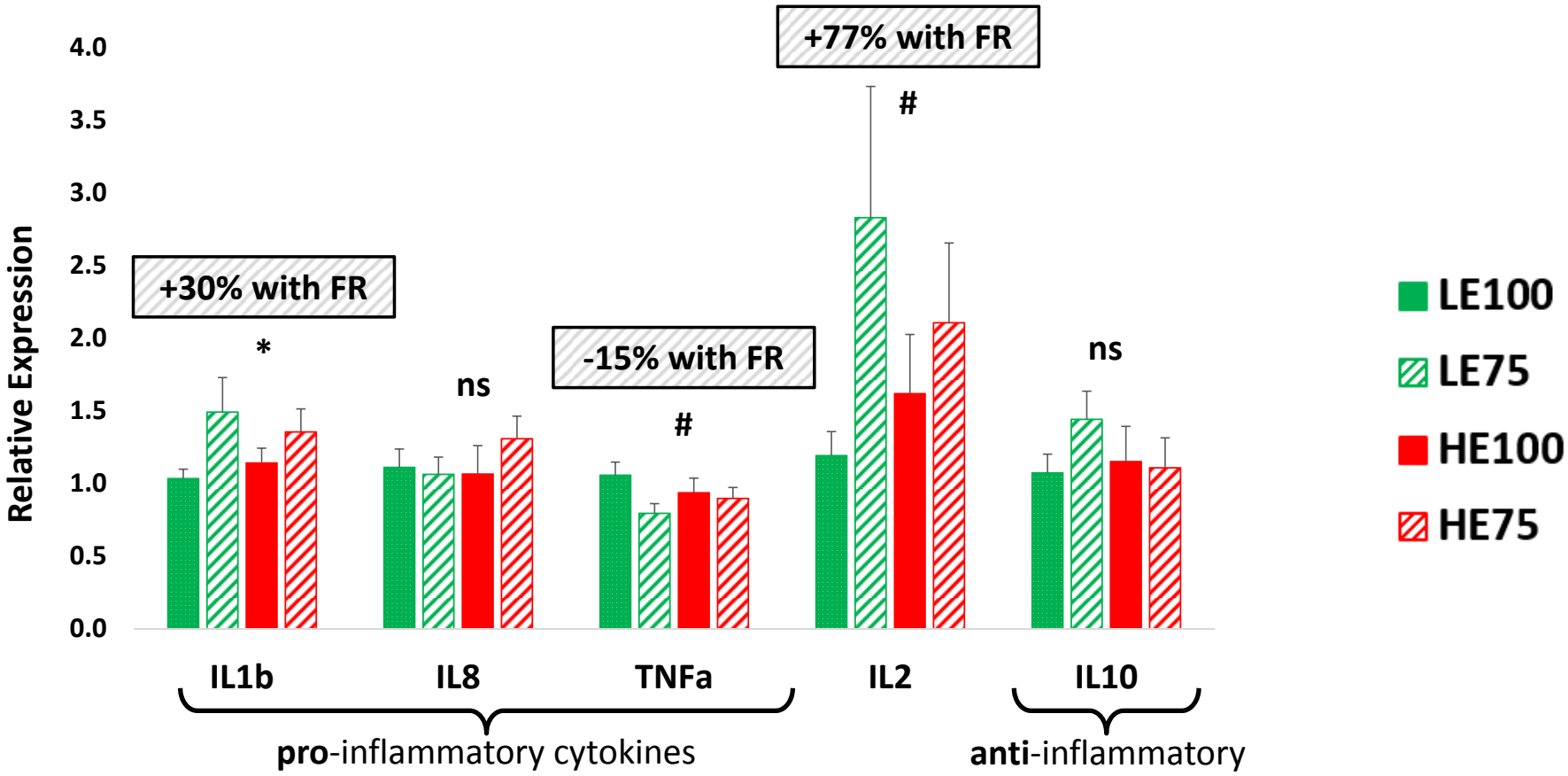
Local immunity: Total fecal IgA levels





→ The reduction in fecal IgA levels follows the reduction in digestible energy intake

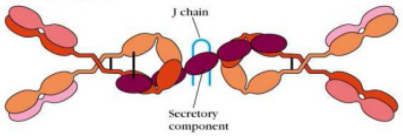
Cytokine expression in the ileum

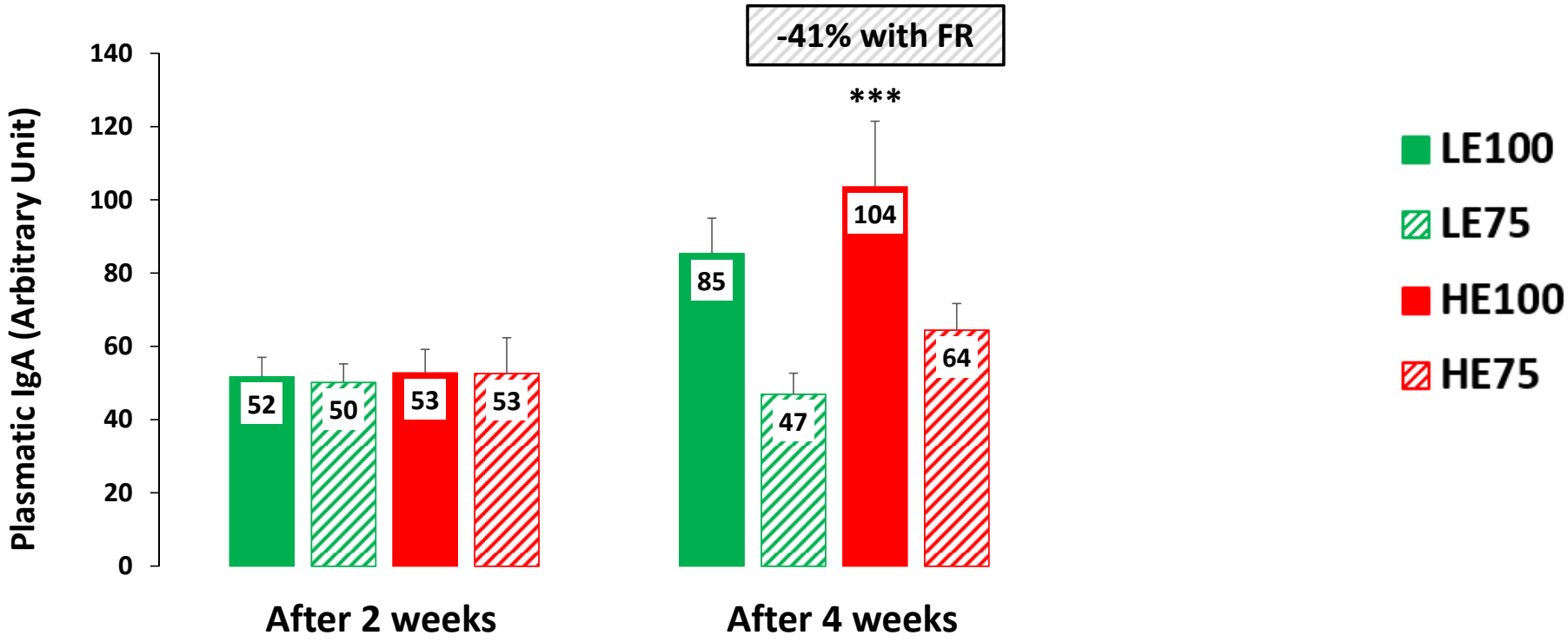


→ **Moderate effect of feed restriction on the ileal cytokine expressions**

And at the systemic level?

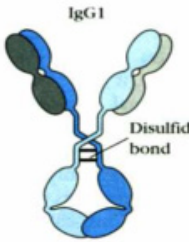
Total plasmatic IgA levels





→ Plasmatic response delayed in time compared to the gut immune response

And at the systemic level?

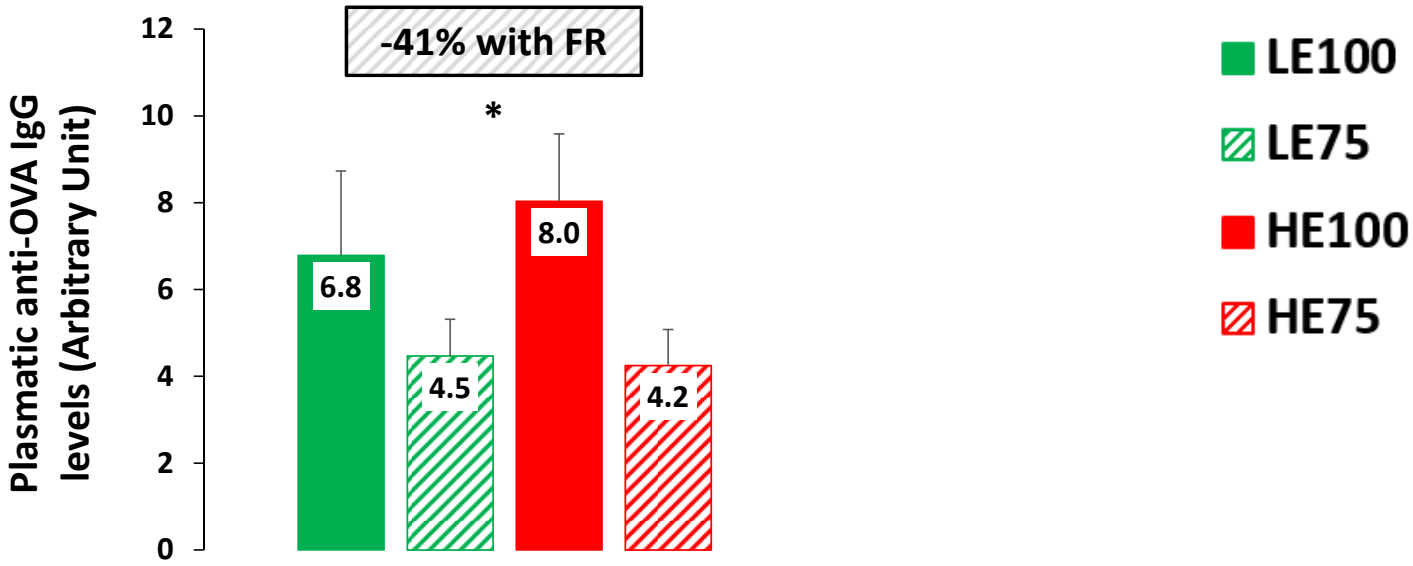


Plasmatic IgG levels

→ No effect of our treatments on the total plasmatic IgG levels

But…

Anti OVA IgG levels



→ Reduced vaccinal response with feed restriction

→ Immunological memory could be compromised by feed restriction

Conclusions and perspectives

1/ Fecal IgA levels are highly correlated to the digestible energy intake

2/ Plasmatic response to FR and dietary energy content is delayed in time compared to the gut immune response

3/ Immunological memory seems compromised by feed restriction

4/ Feed restriction only moderately modulates the inflammatory response

What's next?

- How can we correlate these apparent negative effects on the immune system with the beneficial effects of FR upon health?

- Can we link the changes in immune response to changed in gut flora?

Thank you for your attention

And thank you to my team and scientific partners

Particularly: Patrick AYMARD, Elodie BALMISSE, Jean-Marie BONNEMERE, Anne-Marie COSSALTER, Anne-Marie DEBRUSSE, David LABATUT, Jöelle LAFFITTE, Yannick LIPPI, Lilian LELOUTRE, Michel MOULIS, Alix PIERRON and François RICHARD.