UNIVERSITAT POLITÈCNICA DE VALÈNCIA

Dissimilarities in the composition of breast milk in two lines of rabbits divergently selected for intramuscular fat

Hernández, P., Ibáñez, N., Heddi, I., Martínez-Álvaro, M., Zubiri-Gaitán, A.

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INTRAMUSCULAR FAT (IMF)

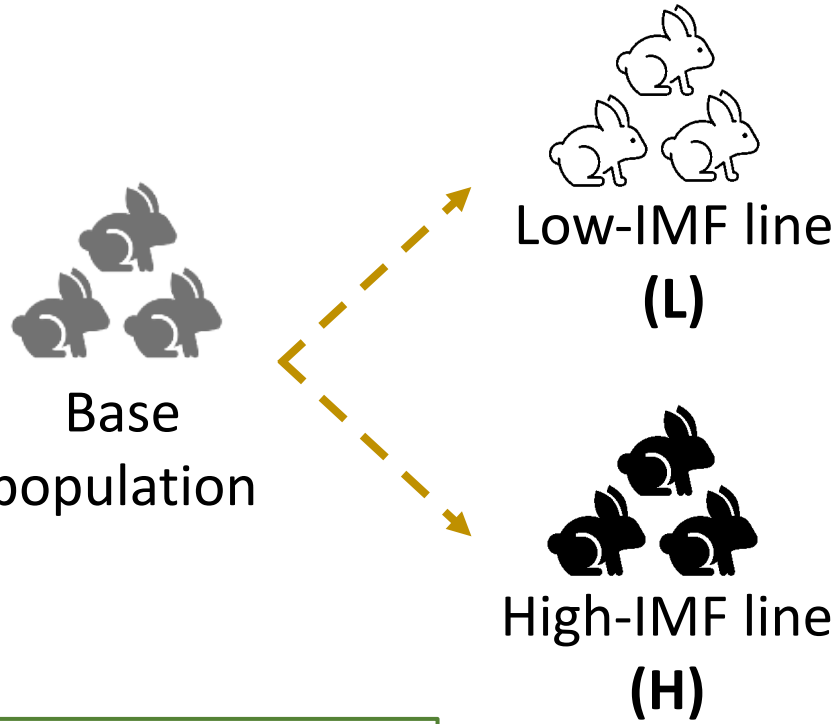
Meat quality

Juiciness

Tenderness

Flavour

Divergent selection for **IMF** in *Longissimus thoracis et lumborum (LTL)*



Response H-L = 3.8 SD

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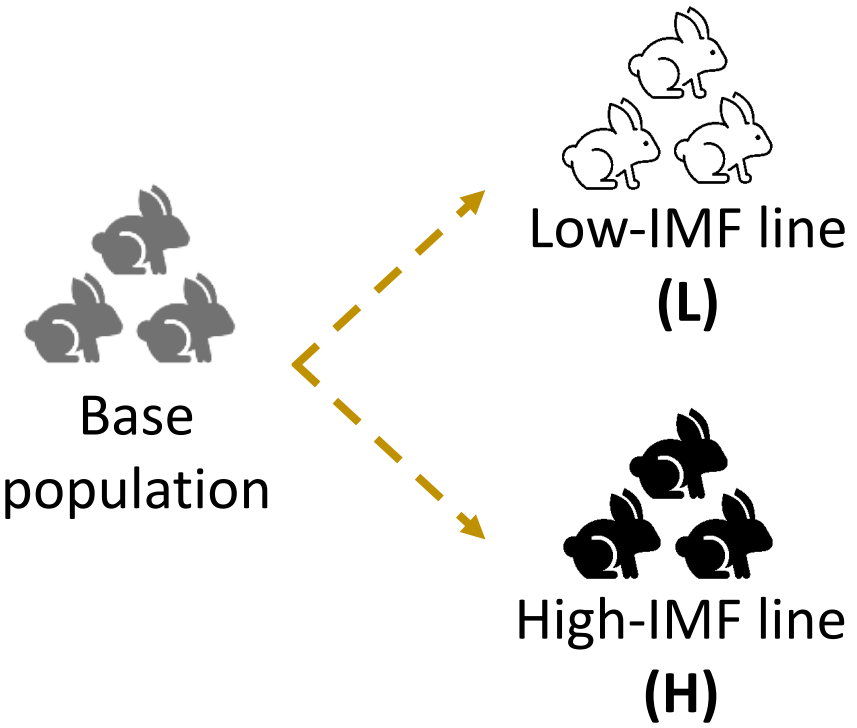
- Contemporaneous
- Same environmental conditions
- Same diet

DIFFERENCES ARE DUE TO GENETICS

Divergent selection for **IMF** in *Longissimus thoracis et lumborum (LTL)*



Selection led to a correlated response in the overall adiposity, making these lines a valuable animal material to study also the genetics of obesity

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Source: ASESCU

MATERNAL EFECCTS

Causal influence of the maternal phenotype on the offspring phenotype

Intrauterine environment, **dam's milk production** and the mothering ability

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Source: ASESCU

MATERNAL EFECCTS

- The **importance of maternal effects** for traits (**IMF**) recorded in the fattening period is a consequence of the **short interval** of time between weaning and slaughtering
- The proportion of phenotypic variance explained by the maternal genetic effect can be up to 22% for IMF

The aim of the study is to estimate the correlated response to selection for IMF on does' milk composition

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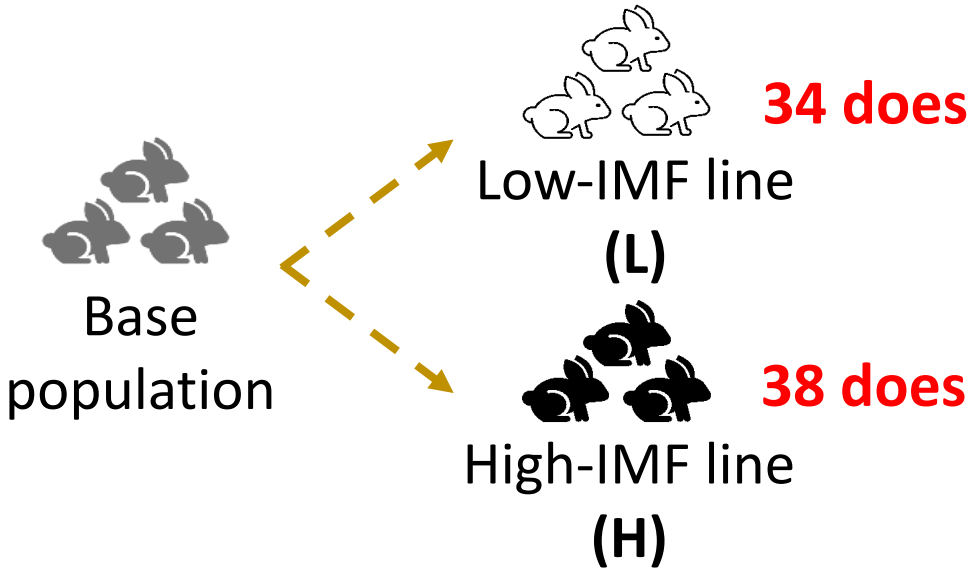
Milk samples were collected on day 15 of lactation



10th generation of selection for IMF

- Milk composition: **Fat, Protein, Lactose, Urea**
  Milko FT6000 (Foss)
- **Fatty acid** profile (GC)

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Statistical analysis

Differences between lines

$$y = Xb + b \cdot LK + e$$

- Line
- Sampling date (month)
- Parity order

number of lactating kits (LK)

- D_{H-L}
- $HPD_{95\%}$
- P_0

Rabbit program (https://github.com/VLabUPV/Rabbit)

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Milk composition

	Mean	SD
Fat (%)	12.96	1.97
Protein (%)	10.18	0.63
Lactose (%)	3.18	0.29
Urea (mg/l)	603	166

Rabbit milk is characterised by a high fat and protein content and a lower lactose content

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Differences between lines for milk composition

	D_{H-L}	P_0
Fat (%)	**0.897**	**0.98**
Lactose (%)	**-0.19**	**1**
Protein (%)	-0.05	0.63
Urea (mg/l)	11.55	0.62

⇨ H line showed greater fat and lower lactose than the L line

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Milk fatty acids

	Mean (%)	SD	D_{H-L}	P_0
SFA	65.5	0.363	0.802	0.87
MUFA	14.6	0.267	0.196	0.64
PUFA	19.9	0.159	-0.989	1

H line showed lower PUFA

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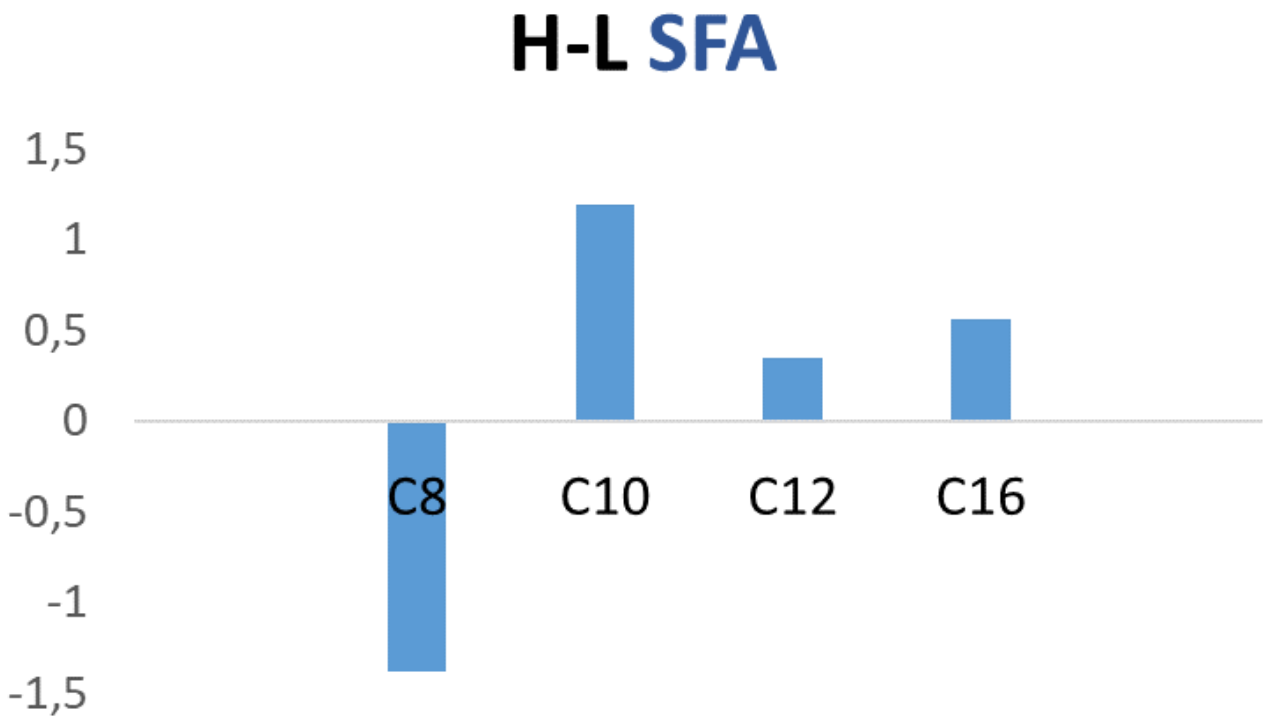

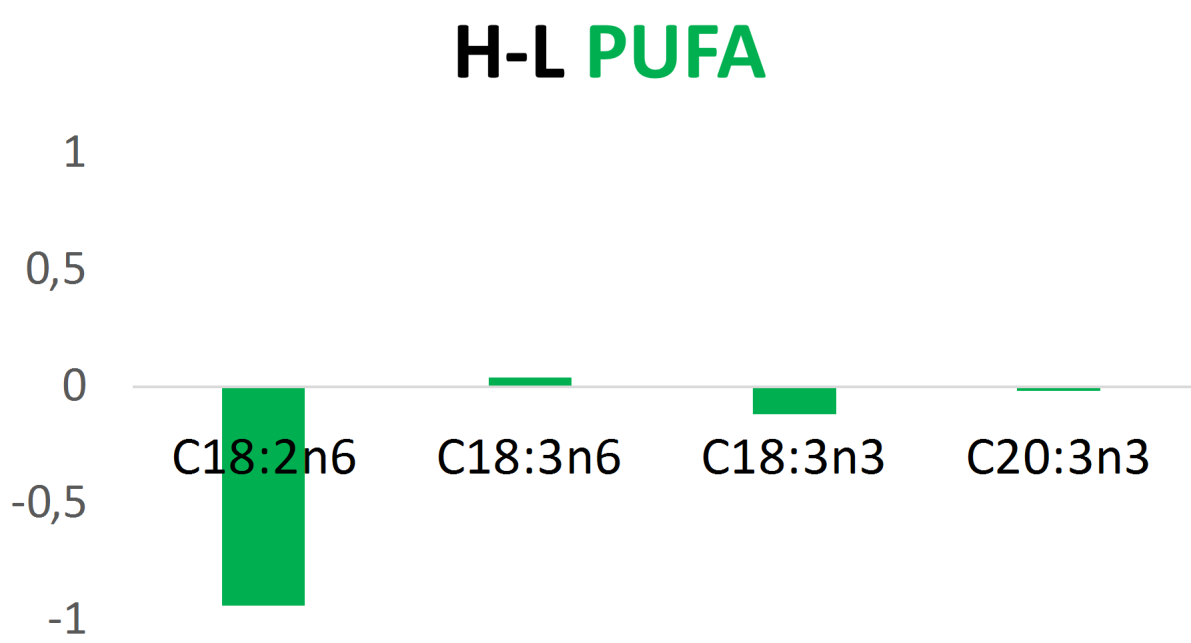

H-L MUFA	D_{H-L}	P_0
C14:1	0.021	0.97
C16:1	0.246	0.95

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The two lines divergently selected for IMF content presented substantial differences in breast milk composition confirming a correlated response to selection for IMF

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