Divergent selection for intramuscular fat in rabbits

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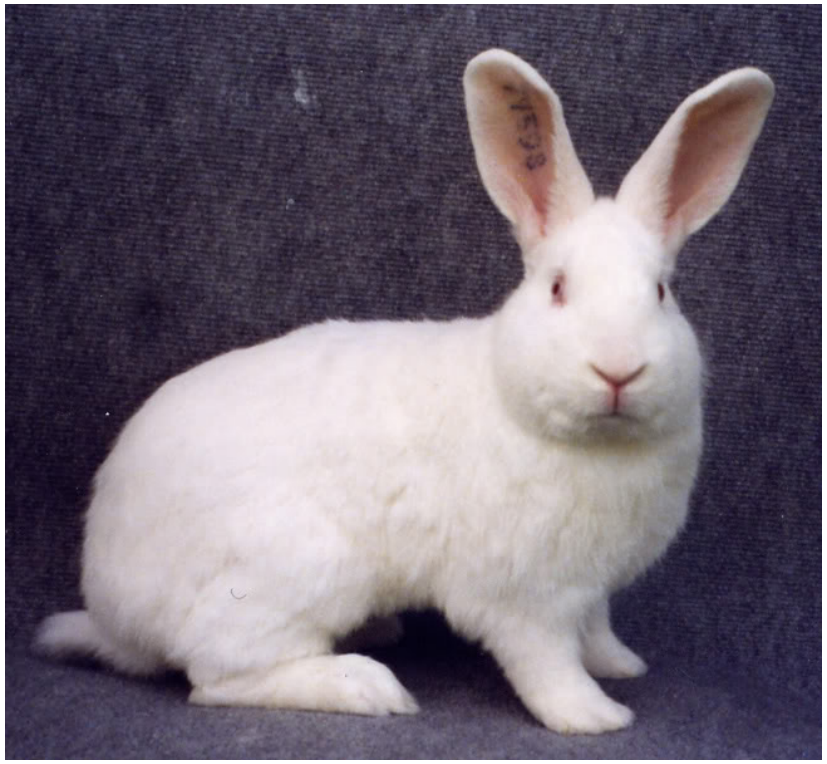
WHY INTRAMUSCULAR FAT?

WHY IN RABBITS?



ESTIMATION OF IMF GENETIC PARAMETERS

PROBLEM: Large amount of data required

In selection experiments, they can be CORROBORATED with responses to selection

OBJECTIVE

CALCULATE RESPONSES TO SELECTION

ESTIMATE GENETIC PARAMETERS

EXPERIMENTAL DESIGN

SELECTION CRITERION

Average IMF of 2 full sibs of the candidate

FIRST PARITY

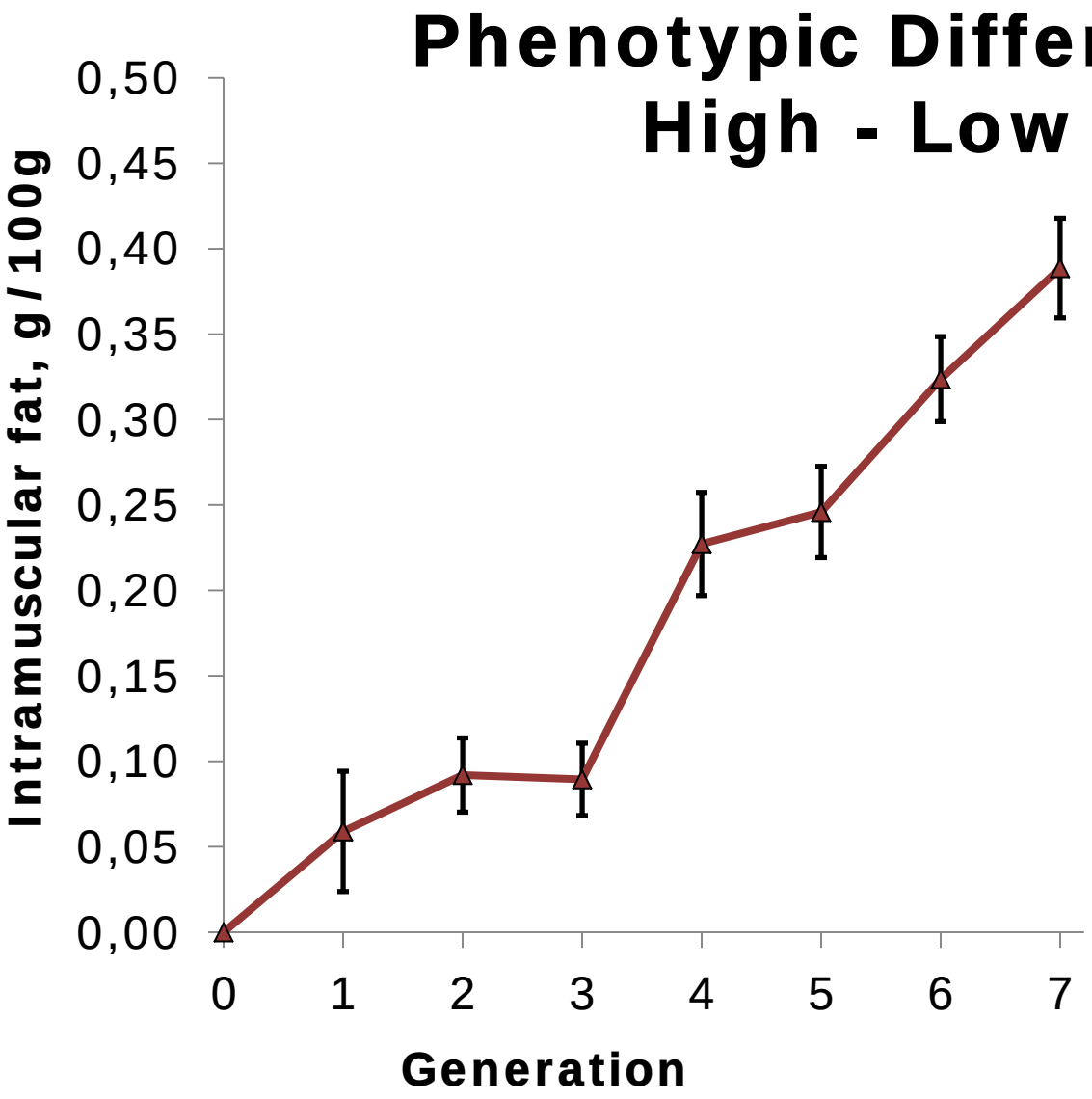
Intramuscular fat measurement

SECOND PARITY

Selection → **High IMF**

Selection → **Low IMF**

Direct response to selection



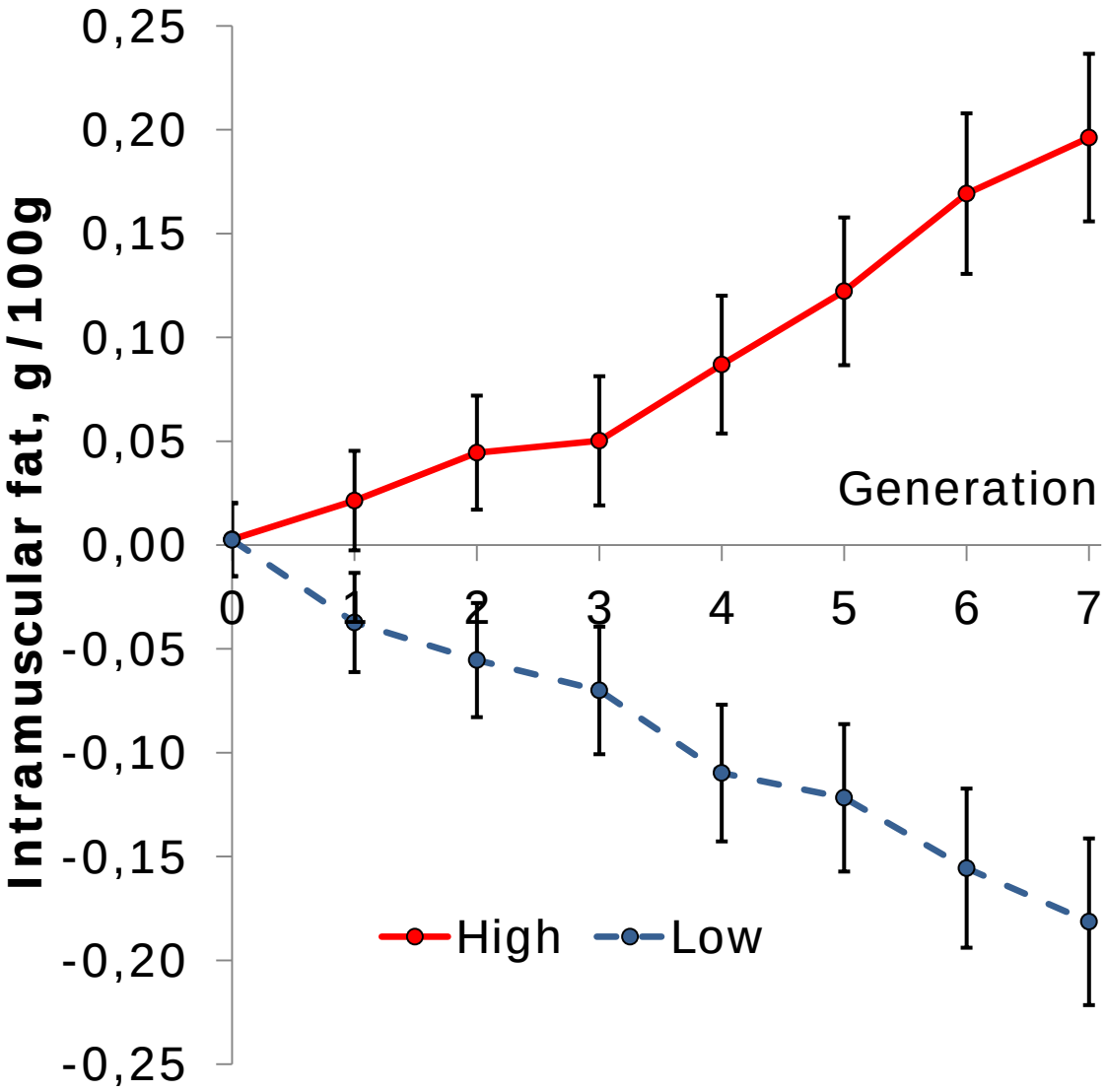
0.39 g/100g

2.6 SD

35% OF THE MEAN

n	Mean	SD
1337	1.09	0.15

Genetic trends for IMF



Difference between BV

0.38 g/100g

Genetic model

IMF Heritability

Median	$HPD_{95\%}$
0.54	0.37,0.71

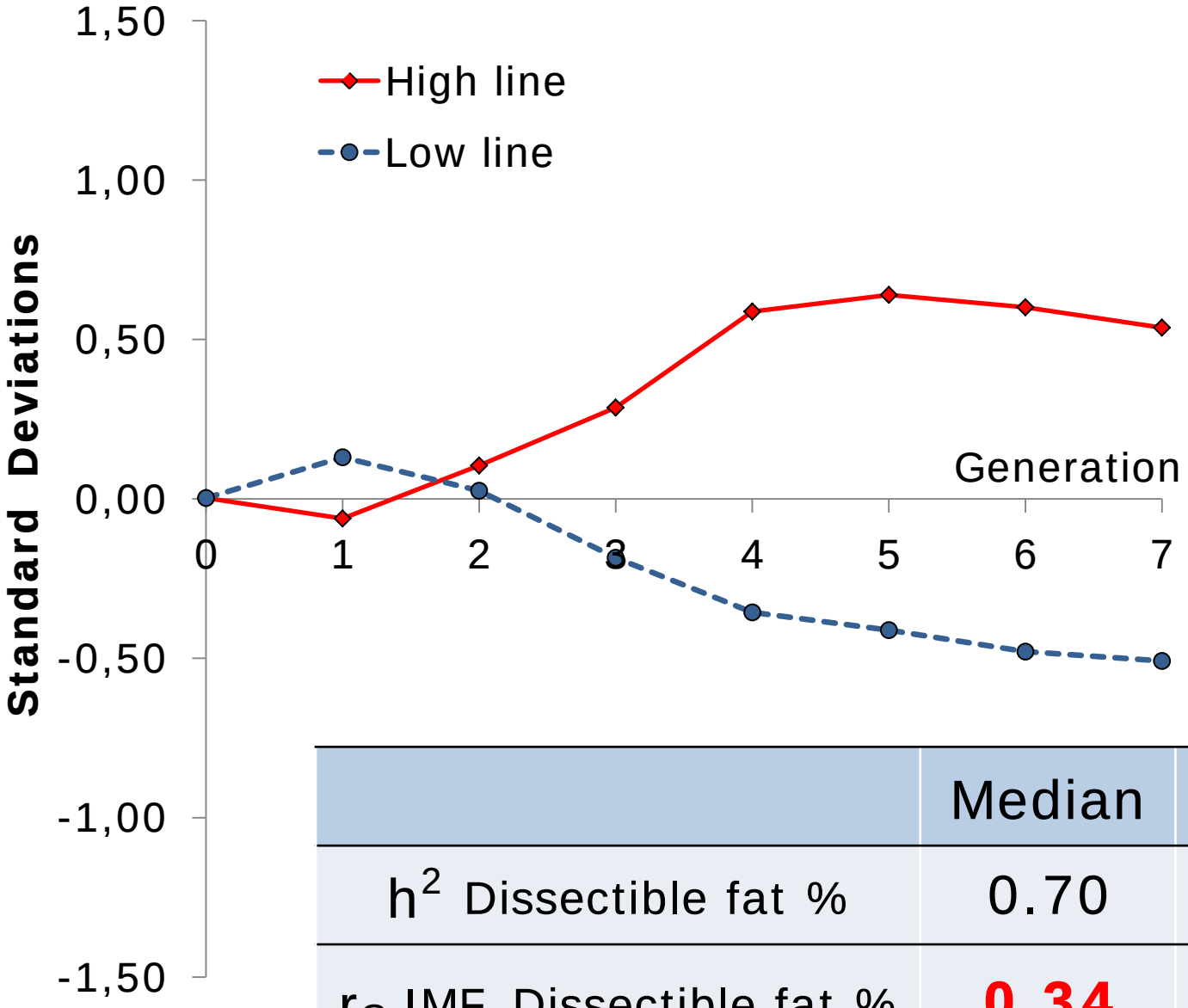
CORRELATED RESPONSES IN CARCASS FAT

Phenotypic Difference
High – Low in Generation 7

	High - Low	$HPD_{95\%}$
Dissectible fat %	0.43	0.31, 0.55

Mean	SD
1.57	0.39

Genetic trends for carcass fat



	Median	$HPD_{95\%}$
h^2 Dissectible fat %	0.70	0.51, 0.90
r_G IMF, Dissectible fat %	**0.34**	0.08, 0.60

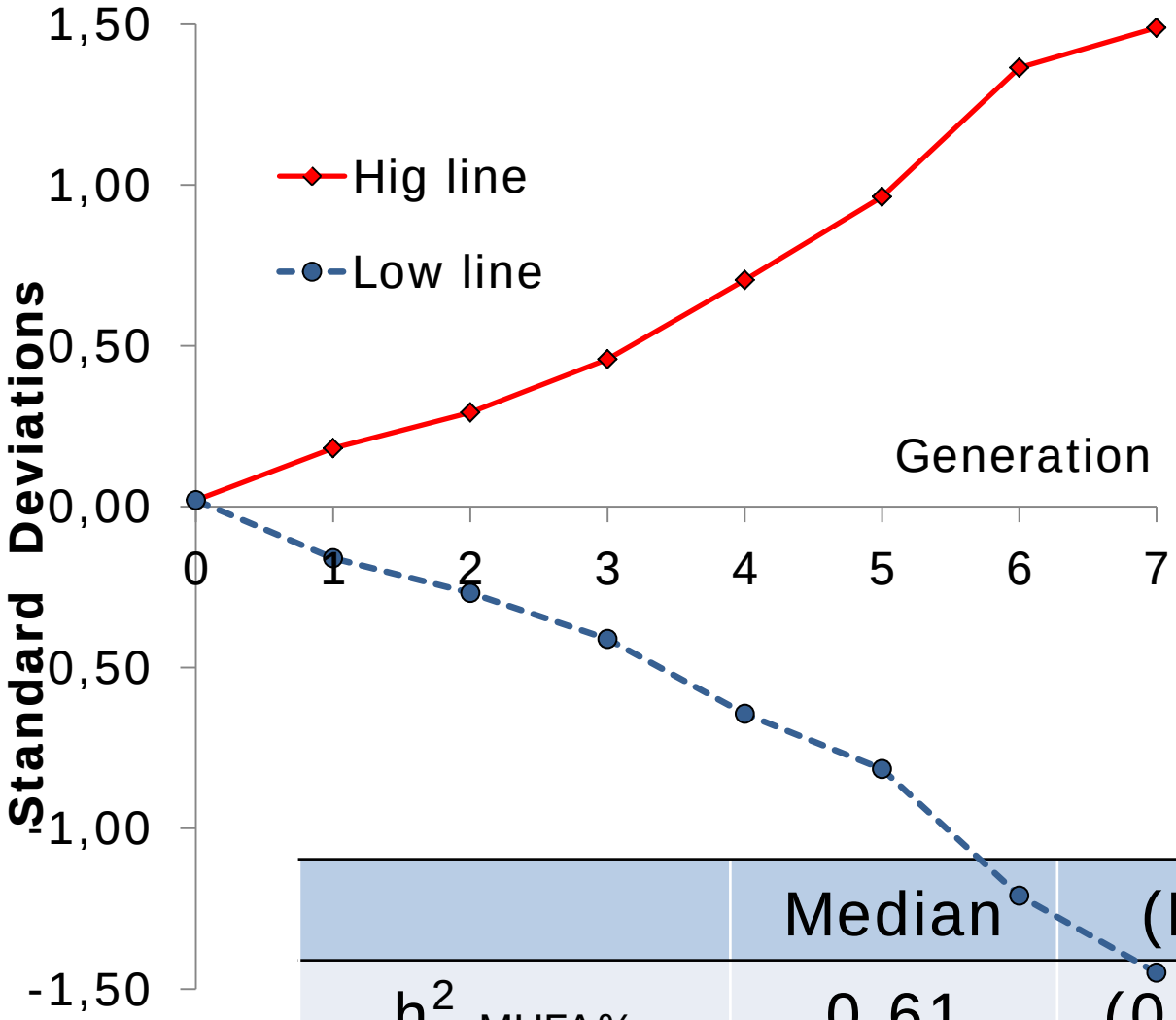
CORRELATED RESPONSES IN FATTY ACID COMPOSITION OF IMF

Phenotypic Difference
High – Low in Generation 7

	High-Low	$HPD_{95\%}$
MUFA %	7.49	6.56, 8.49
PUFA %	-10.1	-11.5, -8.61

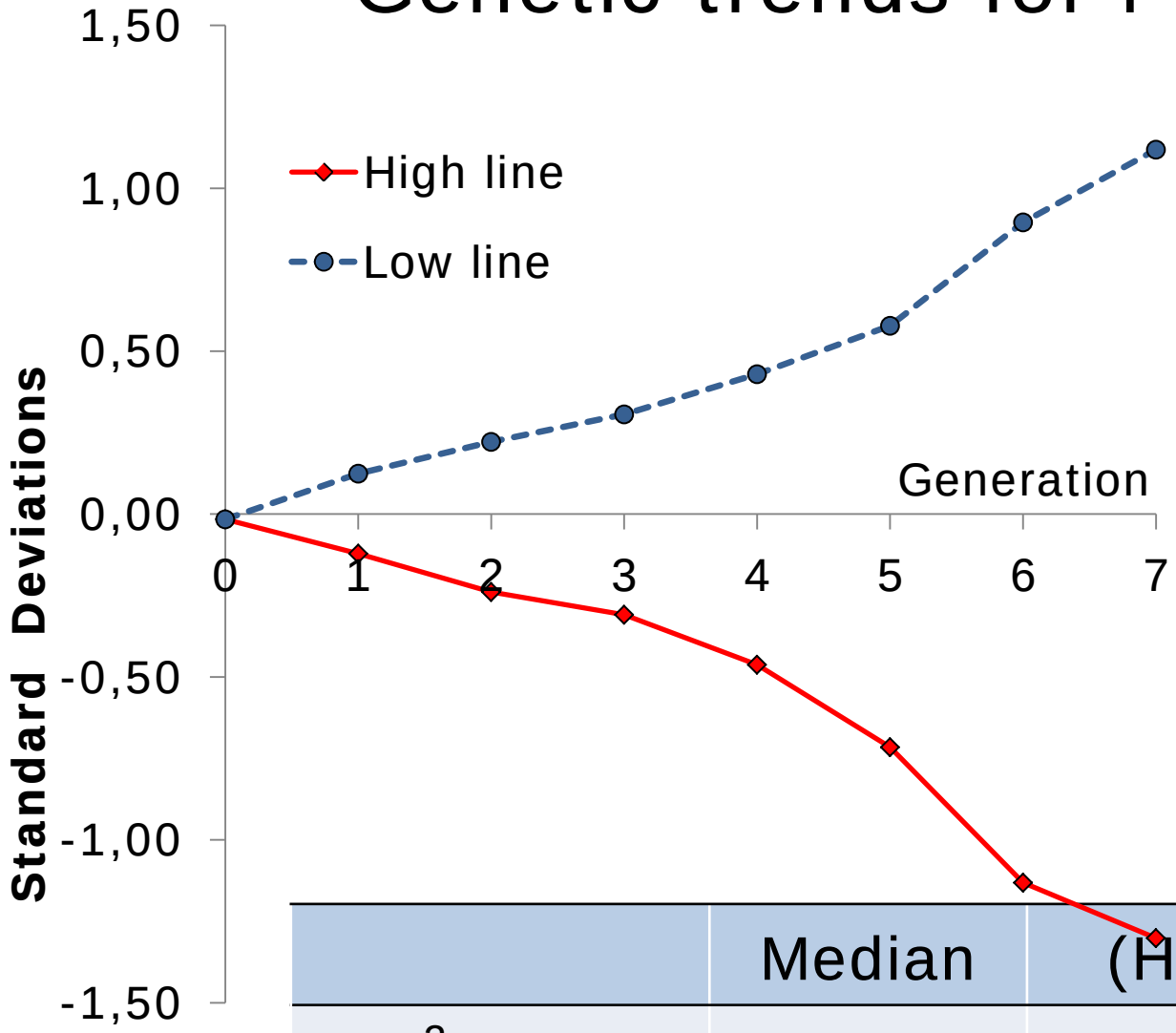
	Mean	SD
MUFA%	23.3	2.49
PUFA %	39.9	3.71

Genetic trends for MUFA%



	Median	($HPD_{95\%}$)
$h^2_{MUFA\%}$	0.61	(0.45,0.77)
$r_{G\ IMF,\ PUFA\%}$	0.95	(0.90,0.99)

Genetic trends for PUFA%



	Median	($HPD_{95\%}$)
$h^2_{PUFA\%}$	0.45	(0.31,0.63)
$r_{G\ IMF,\ PUFA\%}$	-0.89	(-0.98,-0.78)

Other traits

	High - Low	$HPD_{95\%}$
Protein content, g/100g of meat	0.38	0.24, 0.53

Mean	SD
22.0	0.43

	Median	($HPD_{95\%}$)
h^2 Protein	0.25	(0.12,0.42)
$r_{G\ IMF,\ Protein}$	0.43	(0.10,0.76)

Other traits

- Carcass weight
- Meat to bone ratio
- SFA %
- Color of carcass and meat
- pH

NOT AFFECTED BY SELECTION FOR IMF

CONCLUSIONS

Symmetric response to selection for IMF

Correlated response in carcass dissectible fat

However..
r_G (IMF, carcass fat) was moderate

Great correlated responses in MUFA and PUFA

.. And great r_G

High line > Low line for protein content

No responses in other meat and carcass quality traits

Thank you for your attention!

Questions???