

# Association analyses for ketosis indicators - ketone bodies and fatty acid profiles in Holstein cows

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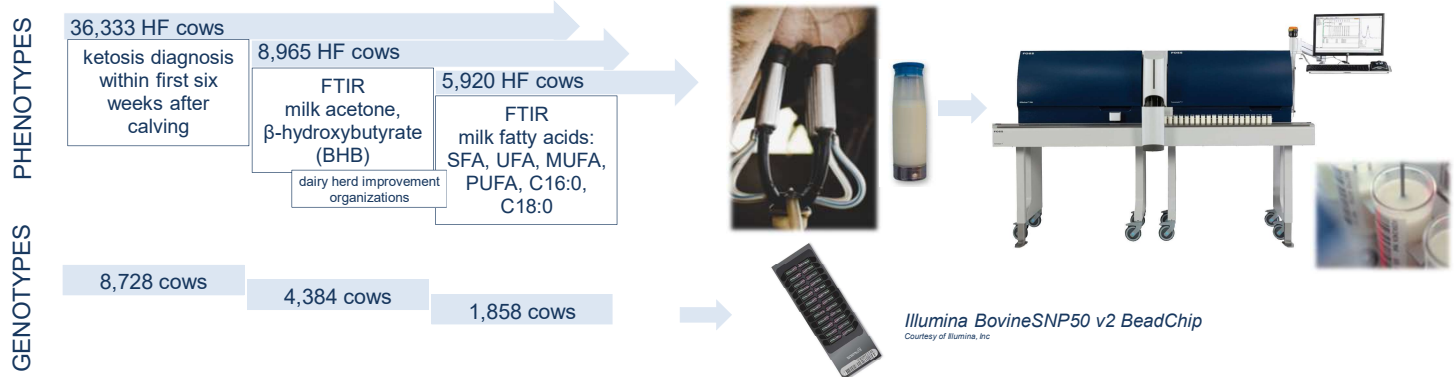


## SCIENTIFIC QUESTION

We do need practical ketosis indicators in milk!

What is the relationship between first test-day FTIR ketone body, fatty acid milk concentrations and ketosis on phenotypic, genetic and genomic scale?

## MATERIAL AND METHODS

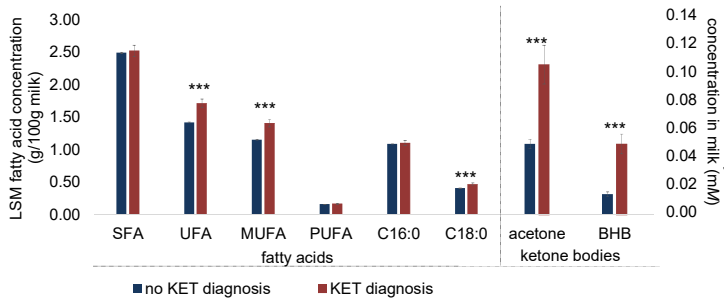


## CONCLUSIONS

- Phenotypically: strong positive associations between milk acetone, BHB, UFA, MUFA, C18:0 and ketosis
- High genetic correlations between ketosis and ketone body, UFA, MUFA, C18:0 concentrations
- Candidate genes surrounding SNPs that are significantly associated with acetone, BHB, C18:0 are involved in diabetes, lipid and energy metabolism

## RESULTS

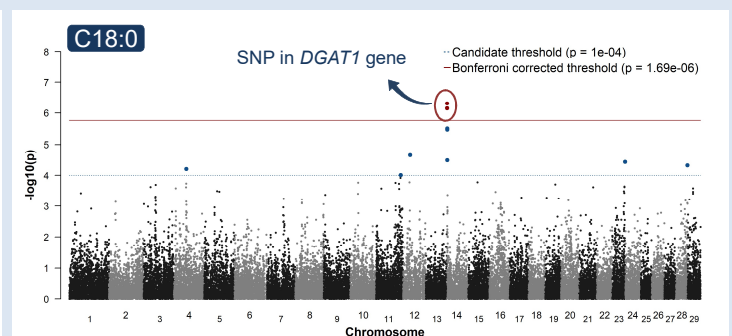
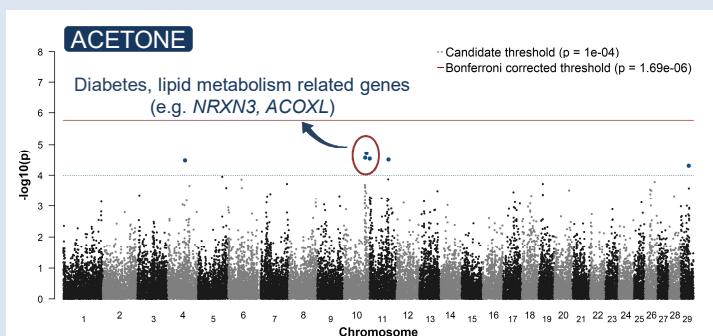
### PHENOTYPIC ASSOCIATIONS



### GENETIC ASSOCIATIONS

TRAIT	$h^2$ (SE)	$r_g$ (SE) with KET
acetone	0.07 (0.02)	0.82 (0.17)
BHB	0.04 (0.01)	0.71 (0.21)
SFA	0.22 (0.04)	0.31 (0.22)
UFA	0.19 (0.04)	0.92 (0.12)
MUFA	0.17 (0.03)	0.90 (0.14)
PUFA	0.11 (0.03)	0.32 (0.27)
C16:0	0.23 (0.04)	0.28 (0.22)
C18:0	0.17 (0.03)	0.84 (0.14)

### GENOMIC ASSOCIATIONS



### ACKNOWLEDGEMENTS

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