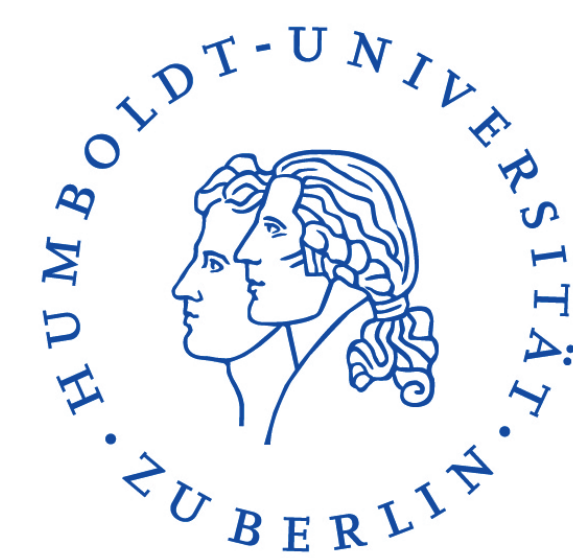


IMPACT OF SNPS FOR SOMATIC CELL SCORE ON THE PRESENCE OF MASTITIS SPECIFIC PATHOGENS IN MILK

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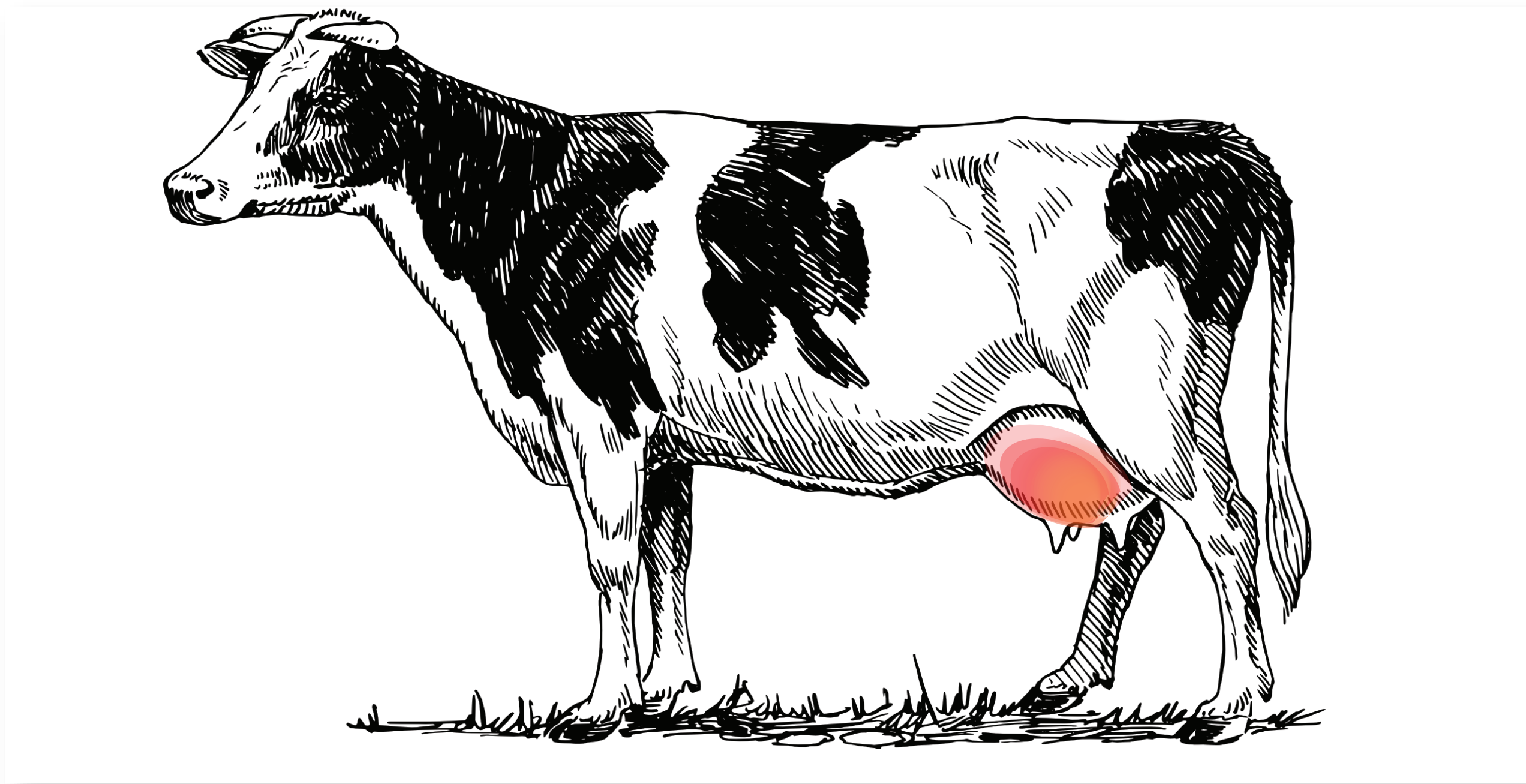
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INTRODUCTION

Mastitis in cattle is often caused by microorganism infections in the udder. The **three most common pathogens** are:

- esculin-positive streptococci (SC+)
- coagulase-negative staphylococci (CNS)
- *Escherichia coli* (*E.coli*)

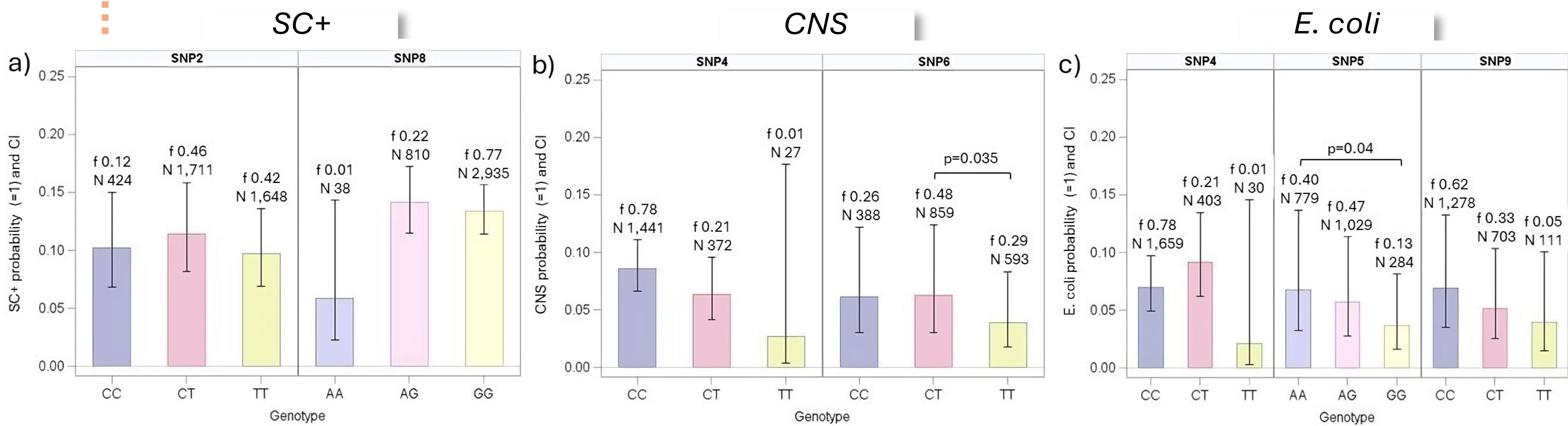


QUESTION

ARE SNPS LINKED TO **SOMATIC CELL SCORE** SUITABLE MARKERS FOR THE SUSCEPTIBILITY TO SPECIFIC **MASTITIS PATHOGENS**?

MATERIALS AND METHODS

- Milk and pathogen samples of **3,076 Holstein cows** were collected from four farms
- **1,129 pathogen positive samples**; 3,567 controls
- **10 known SNPs** previously associated with SCS (Abdel-Shafy et al. 2014)
- The **lasso, backward, and forward** methods were used to narrow down SNPs
- **ROC-curves** were used to separate cases and controls based on pathogens
- The **Cochran-Armitage** and the **Jonckheere-Terpstra** tests evaluated the influence of SNPs on pathogen presence
- A **generalized linear mixed model (GLMM)** including fixed environmental effects and a random sire effect was fitted to the binary trait of pathogen presence to test for association



RESULTS

Six SNPs showed associations to pathogen presence. The selected SNPs had only small effects on the presence of specific pathogens, but as a sum explained more than half of the effect size compared to the ten originally selected SNPs together.