



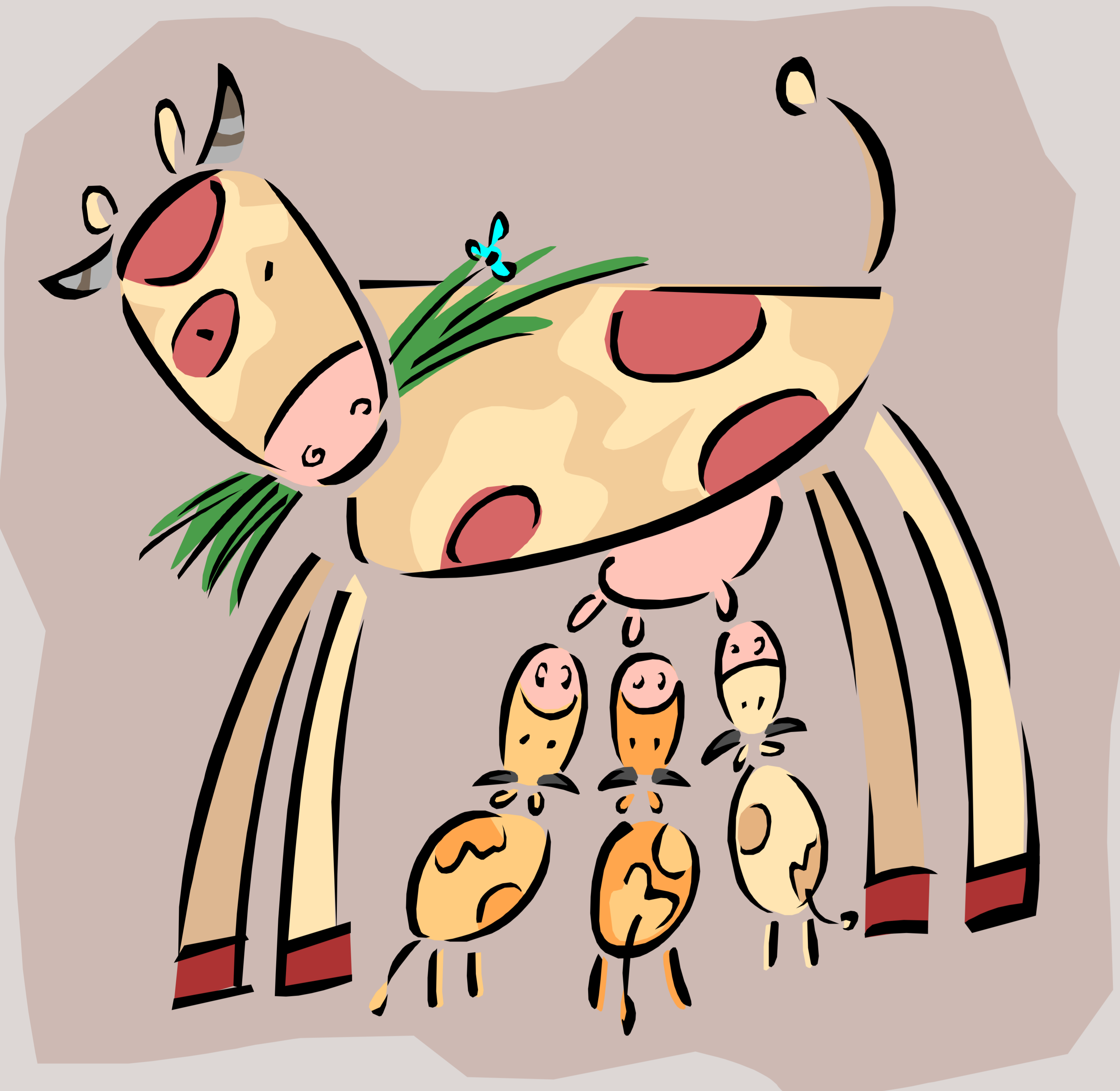
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Milk fat composition and milk quality

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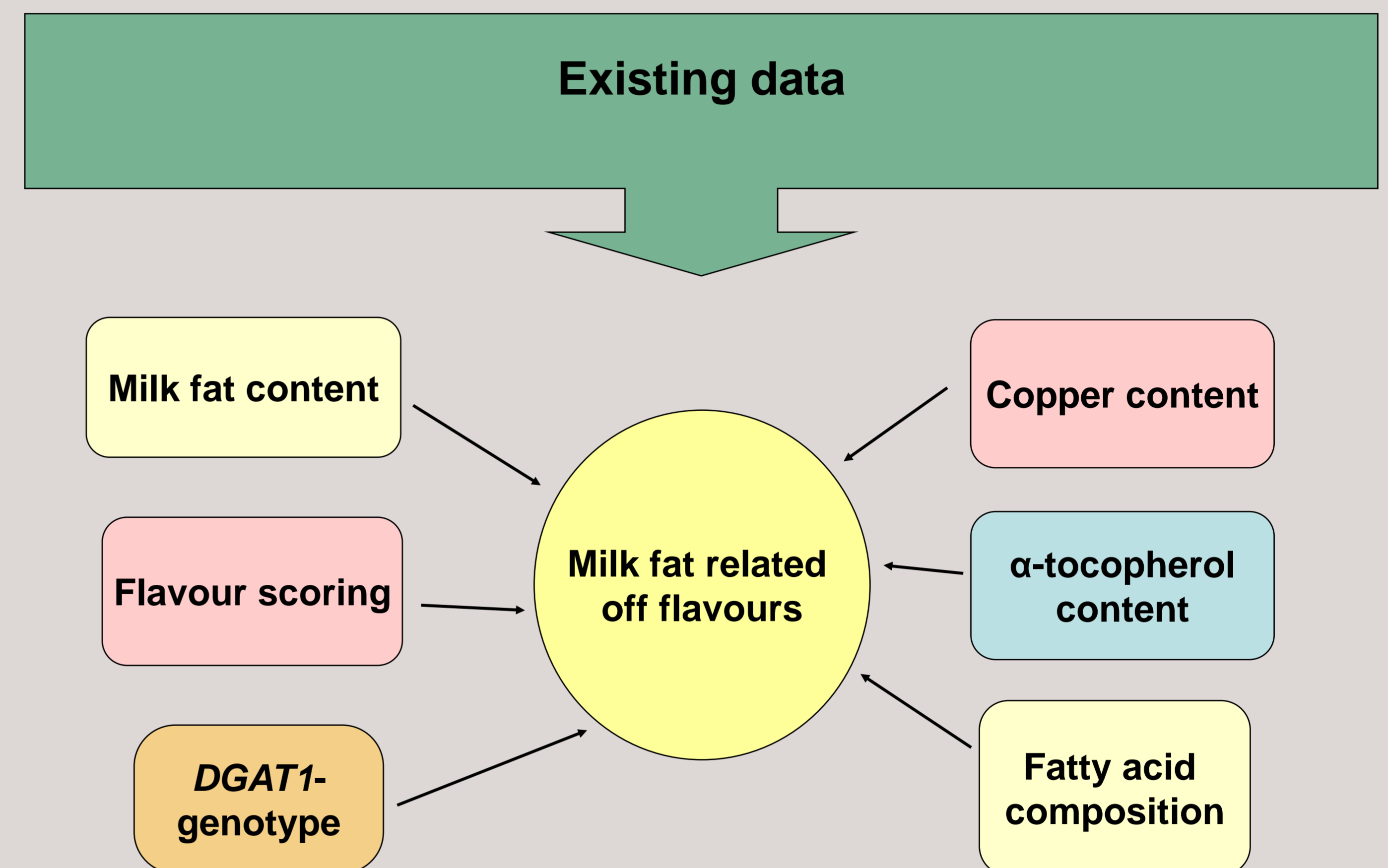
²Department of food science



Background

The shelf-life of milk products is partly dependent of the development of off-flavours, of which spontaneous oxidative flavour (SOF) is one of the most common. The occurrence of this off-flavour is controlled by the milk concentrations of pro-oxidants (e.g. copper) and anti-oxidants (e.g. α -tocopherol), and their substrate which is unsaturated fatty acids.

We speculate that the *DGAT1* gene, shown to have a major effect of milk fat content, also influences proportion of unsaturated fatty acids, and thereby the shelf-life of milk.



DGAT1 → milk composition

The Jälla herd includes Swedish Red (SRB) and Holstein (SLB) cows, of which the SRB cows have been selected for either high (HF) or low (LF) milk fat content.

The *DGAT1* effect differs between the three groups, as does the frequency of the two alleles (A and K).

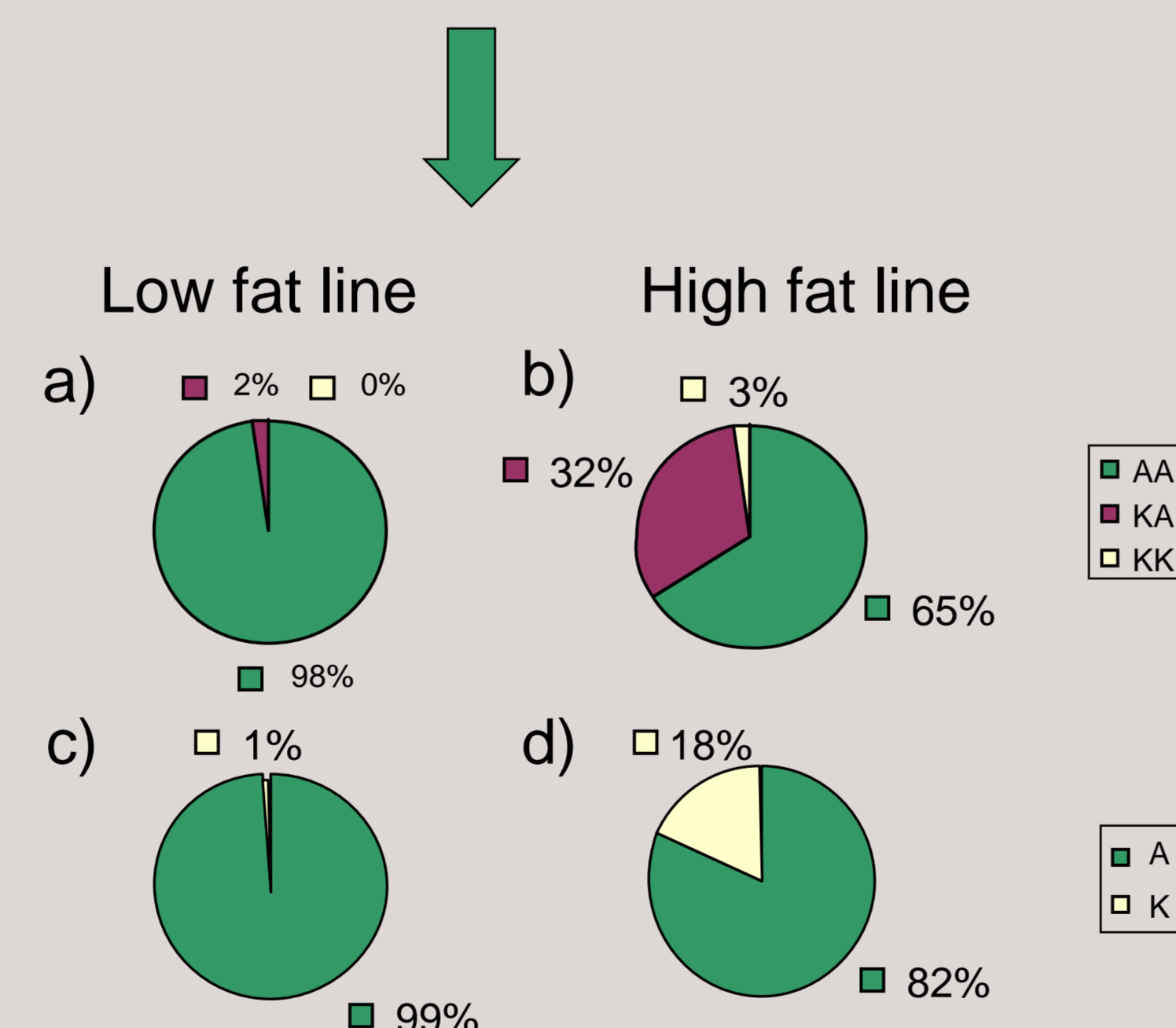
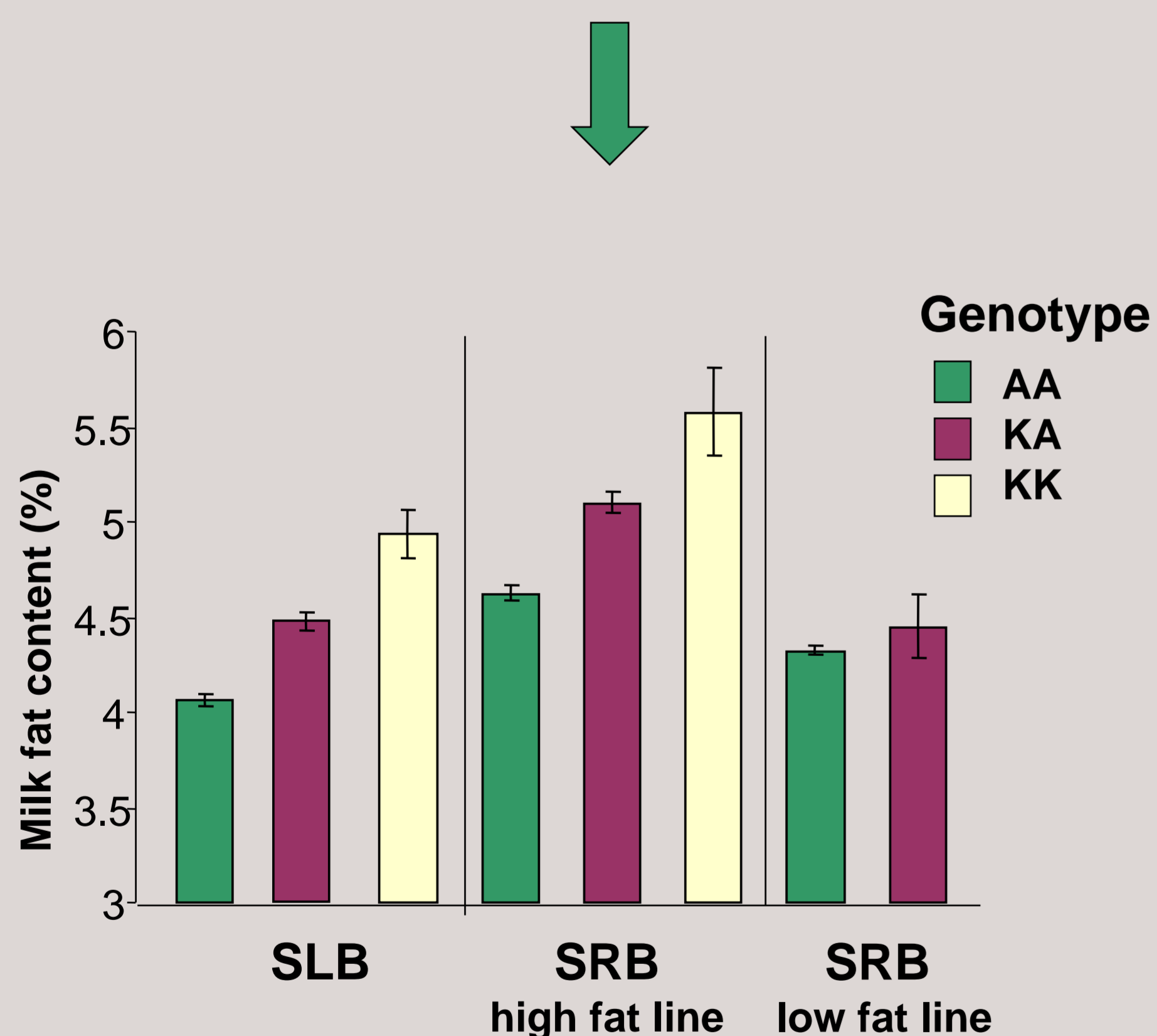
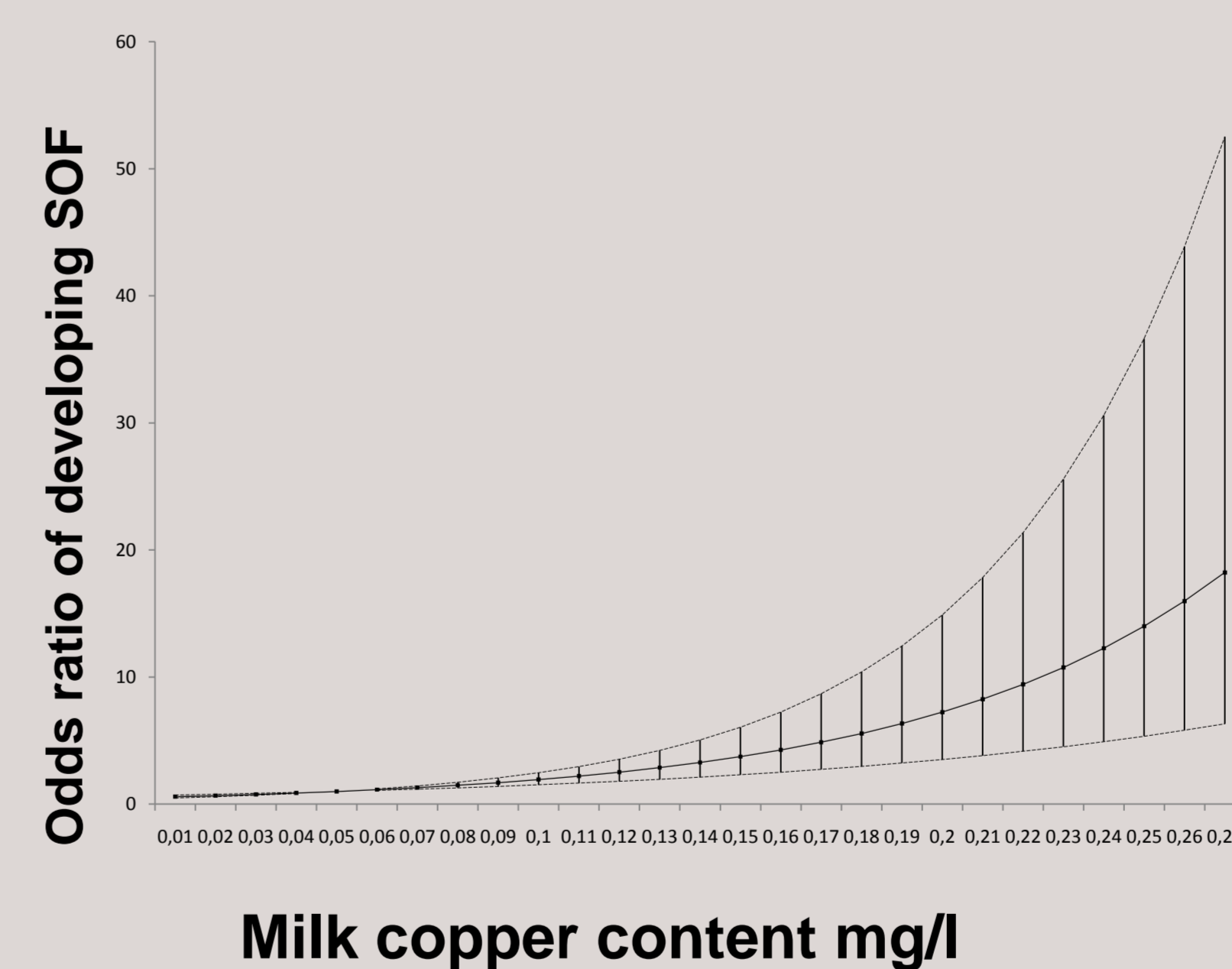


Figure 2. Distribution of *DGAT1* genotypes (a & b) and alleles (c & d) in two selection lines of Swedish Red (SRB) cows

Pro- and antioxidants → SOF

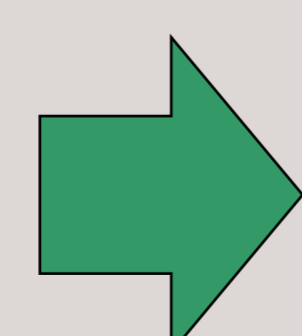
Milk copper is associated with occurrence of SOF

Milk α -tocopherol alone showed no association with oxidative flavour



Interesting! Selective breeding can actually affect my milk quality!

Results indicate that the *DGAT1* K-allele is associated with more saturated fat; a larger fraction of C16:0; and smaller fractions of unsaturated C18.



DGAT1 association with milk off-flavour remains to be analyzed.

