

Marcela Souza

Allelic- and parental-specific expression of the *KCNJ11* gene in cattle

Souza, Marcela; Niciura, Simone Cristina (Embrapa Southeast Livestock, São Carlos); Tizioto, Polyana; Ibelli, Adriana Mercia (Embrapa Swine and Poultry, Concórdia); Gasparin, Gustavo (University of São Paulo, Piracicaba); Malagó, Wilson (Embrapa Southeast Livestock); Mudado, Maurício; Barioni, Waldomiro (Embrapa Southeast Livestock); Coutinho, Luiz (University of São Paulo); Regitano, Luciana Correia (Embrapa Southeast Livestock)
Federal University of São Carlos

Allelic variation and allelic parental origin effects on expression of genes of commercial interest in cattle can be caused by genetic and epigenetic mechanisms. The knowledge of these mechanisms may contribute to infer about gene effects on the next generation in animal selection programs. Considering this scope, we analysed the expression mechanism of *KCNJ11* (potassium inwardly-rectifying channel, subfamily J, member 11; Gene Bank ID 532060), a candidate gene for meat tenderness identified previously by our research group. The two SNPs c.1526C>T (Gene Bank ID ss# 537718973) and c.2342T>C (ss# 537718995) in the *KCNJ11* gene were used to investigate allelic-specific and parental origin expression in Nelore muscle tissue. Differential allelic expression for the SNP c.2342T>C was found and it was influenced by parental origin and genotypes of the SNP c.1526C>T. *KCNJ11* total mRNA abundance showed different patterns according to parental origin of alleles. Eight miRNA target sites were found for the SNP c.2342T>C, two of them being specific for the sequence of allele C and two for the allele T. It was evidenced that bovine *KCNJ11* gene shows differential allelic and parent-of-origin expression. This knowledge may contribute to marker assisted selection, since it will allow for more precise prediction of additive effects on quantitative traits. Further studies are needed to identify the mechanisms that control its differential and parental allelic expression identified in this study.