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Genomics applied to beef quality traits

Beef is an important part of the diet in most countries. Improving beef quality is one of the aims to meet the raising standards of consumers. Beef quality represent a variety of attributes that include factors related to palatability, which are mostly subjective, as well as more objective factors, as the ratio fat/protein, fatty acids profile, and mineral content. Genetic variation for many of this attributes is expected and understanding this variation and its implication in other traits will pave the way to selection for beef quality. Genome wide association studies with Nelore cattle have shown that tenderness, fat content, rib eye muscle area, color of meat and fat, water-holding capacity, cooking loss, muscle pH and fatty acid profile are controlled by several genome regions with small effect each. The proportion of intramuscular fat observed in Nelore was lower than in other breeds, meaning a leaner beef, but sufficient genetic variation exists. Regarding mineral concentration in muscle, a large-effect genomic region that explained 6.5% of the additive genetic variance in iron content was detected. Variation in mineral content may have implications in other traits, since higher levels of K were related to lower meat tenderness. Mapping genomic regions that affect the mineral content of bovine muscle can contribute to the identification of genes controlling mineral balance, transportation, absorption and excretion. Besides the relevance for human nutrition, studying mechanisms underlying the genetic variation for mineral and fatty acids composition may provide a good model for metabolic diseases in other species.

Biography

Luciana Correia de Almeida Regitano graduated in Veterinary Medicine (UFPR, Brazil - 1985) and obtained her MSc (1991) and her PhD (1997) in Genetics and Breeding at the University of Sao Paulo. She joined Embrapa in December 1994 and is working in collaboration with the Genetics and Evolution Department of Federal University of São Carlos since 1998. She has a large experience in genomics and application to animal breeding, with special emphasis in genomic selection for product quality and for adaptation to tropical environments. She published approximately 70 scientific papers, 15 book chapters, edited two books and supervised many master and PhD students.

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