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Association between *IGF2* and *CYP21* gene polymorphisms and characteristics of economic interest in Nellore cattle

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ABSTRACT. We analyzed two single nucleotide polymorphisms (SNPs) of the *IGF2* and *CYP21* genes in Nellore cattle participating in the Brazilian Animal Breeding Program. The SNPs were found in exon 6 of the *IGF2* (insulin-like growth factor 2) gene (RFLP/*Mbo*II) as well as in the promoter region of the *CYP21* (steroid 21-hydroxylase) gene (RFLP/*Hpa*II) of these animals. The TC heterozygotes were significantly more frequent than CC and TT homozygotes in the RFLP/*Mbo*II polymorphism. The T allele was significantly more frequent than the C allele in RFLP/*Hpa*II polymorphism. This population was found

to be in Hardy-Weinberg equilibrium for these SNPs. Association of these polymorphisms with expected progeny differences of reproductive and productive traits was investigated, but proved to be significant only for DP550 (expected progeny differenced for weight at 365 days - *IGF2* - RFLP/*Mbo*II) and DP450 (expected progeny differenced for weight at 450 days - *CYP21* - RFLP/*Hpa*II). This is the first study on the occurrence of these two polymorphisms in this Zebu breed of cattle. A total of 147 Nellore animals participating in the Breeding Program of the Nellore Breed (PMGRN) under the management of the National Association of Breeders and Researchers (ANCP) in the city of Ribeirão Preto were analyzed.

Key words: Genotype-phenotype association; SNPs; *IGF2*; *CYP21*; Cattle

