



## Association between single-nucleotide polymorphisms and milk production traits in buffalo

G.C. Venturini<sup>1</sup>, D.F. Cardoso<sup>1</sup>, F. Baldi<sup>1</sup>, A.C. Freitas<sup>1</sup>,  
R.R. Aspilcueta-Borquis<sup>1</sup>, D.J.A. Santos<sup>1</sup>, G.M.F. Camargo<sup>1</sup>,  
N.B. Stafuzza<sup>2</sup>, L.G. Albuquerque<sup>1</sup> and H. Tonhati<sup>1</sup>

<sup>1</sup>Faculdade de Ciências Agrárias e Veterinárias, Universidade Estadual Paulista, Jaboticabal, SP, Brasil

<sup>2</sup>Instituto de Biociências, Letras e Ciências Exatas, Universidade Estadual Paulista, São José do Rio Preto, SP, Brasil

Corresponding author: G.C. Venturini  
E-mail: venturinigc@gmail.com

Genet. Mol. Res. 13 (4): 10256-10268 (2014)

Received January 15, 2014

Accepted September 23, 2014

Published December 4, 2014

DOI <http://dx.doi.org/10.4238/2014.December.4.20>

**ABSTRACT.** The aim of this study was to identify single-nucleotide polymorphisms (SNPs) in buffaloes associated with milk yield and content, in addition to somatic cell scores based on the cross-species transferability of SNPs from cattle to buffalo. A total of 15,745 SNPs were analyzed, of which 1562 showed 1% significance and 4742 with 5% significance, which were associated for all traits studied. After application of Bonferroni's correction for multiple tests of the traits analyzed, we found 2 significant SNPs placed on cattle chromosomes BTA15 and BTA20, which are homologous to buffalo chromosomes BBU16 and BBU19, respectively. In this genome association study, we found several significant SNPs affecting buffalo milk production and quality. Furthermore, the use of the high-density bovine BeadChip was suitable for genomic analysis in buffaloes. Although extensive chromosome arm homology was described between cattle and buffalo, the exact chromosomal position of SNP

markers associated with these economically important traits in buffalo can be determined only through buffalo genome sequencing.

**Key words:** Cross-species transferability; Fat; Protein