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A framework radiation hybrid map of buffalo chromosome 1 ordering scaffolds from buffalo genome sequence assembly

N.B. Stafuzza[1], B.C.M. Naressi[1], E. Yang[2], J.J. Cai[2] and M.E.J. Amaral-Trusty[1]

[1]Departamento de Biologia, Instituto de Biociências, Letras e Ciências Exatas, Universidade Estadual Paulista Júlio de Mesquita Filho, São José do Rio Preto, SP, Brasil
[2]Department of Veterinary Integrative Biosciences, Texas A&M University, College Station, TX, USA

Corresponding author: M.E.J. Amaral-Trusty
E-mail: eamaral@ibilce.unesp.br

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ABSTRACT. River buffalo chromosome 1 (BBU1) is a sub-metacentric chromosome homologous to bovine chromosomes 1 and 27. In this study, we constructed a new framework radiation hybrid (RH) map from BBU1 using $BBURH_{5000}$ panel adding nine new genes (*ADRB3*, *ATP2C1*, *COPB2*, *CRYGS*, *P2RY1*, *SLC5A3*, *SLC20A2*, *SST*, and *ZDHHC2*) and one microsatellite (CSSM043) to the set of markers previously mapped on BBU1. The new framework RH map of BBU1 contained 141 markers (55 genes, 2 ESTs, 10 microsatellites, and 74 SNPs) distributed within one linkage group spanning 2832.62 centirays. Comparison of the RH map

to sequences from bovine chromosomes 1 and 27 revealed an inversion close to the telomeric region. In addition, we ordered a set of 34 scaffolds from the buffalo genome assembly UMD_CASPUR_WB_2.0. The RH map could provide a valuable tool to order scaffolds from the buffalo genome sequence, contributing to its annotation.

Key words: *Bubalus bubalis*; Chromosome 1; Comparative map; Radiation hybrid mapping

