



Methodology

Molecular cytogenetic characterization of the *Aegilops biuncialis* karyotype

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ABSTRACT. *Aegilops biuncialis* can be hybridized with wheat (*Triticum* spp) and has been used for wheat breeding and genetic studies. The *A. biuncialis* karyotype ($U^b U^b M^b M^b$) was investigated based on three *A. biuncialis* accessions grown in China. Two pairs of SAT chromosomes were identified as $1U^b$ and $5U^b$, with a karyotype formula of $2n = 4x = 28 = 14m + 10sm + 4st$. Fluorescence *in situ* hybridization (FISH) and C-banding approaches were used to analyze the *A. biuncialis* accession chromosomes at the mitotic stage. Based on the C-banding and FISH patterns, all U^b and M^b chromosomes could be discriminated simultaneously; the three *A. biuncialis* accessions exhibited similar patterns, suggesting a common origin. The U^b genome from *A. biuncialis* resembled the U genome in the diploid species *A. umbellulata*, and it may be related to the tetraploid species containing the U genome. The M^b genome had some differences compared to the M genome in the diploid species

A. comosa, and it may be related to the tetraploid species possessing the M genome. A generalized ideogram was proposed for the *A. biuncialis* genome, which could be useful for standardized and accurate identification of the *A. biuncialis* karyotype and chromosomes.

Key words: *Aegilops biuncialis*; Chromosome; Karyotype; C-banding; Fluorescence *in situ* hybridization