

Phylogenetic Relationships of Tetraploid AB-Genome *Avena* Species Evaluated by Means of Cytogenetic (C-Banding and FISH) and RAPD Analyses

E. D. Badaeva,^{1,2} *O. Yu. Shelukhina*,² *S. V. Goryunova*,² *I. G. Loskutov*,³ and *V. A. Pukhalskiy*²

Journal of Botany, Vol. 2010, Article ID 742307, 13 pp.

Tetraploid oat species *Avena abyssinica*, *A. vaviloviana*, *A. barbata*, and *A. agadiriana* were studied using C-banding technique, in situ hybridization with the 45S and 5S rDNA probes, and RAPD analysis in comparison with the diploid species carrying different types of the A-genome (*A. wiestii*, As; *A. longiglumis*, Al; *A. canariensis*, Ac; *A. damascena*, Ad, *A. prostrata*, Ap). The investigation confirmed that all four tetraploids belong to the same AB-genome group; however *A. agadiriana* occupies distinct position among others. The C-banding, FISH, and RAPD analyses showed that *Avena abyssinica*, *A. vaviloviana*, and *A. barbata* are very similar; most probably they originated from a common tetraploid ancestor as a result of minor translocations and alterations of C-banding polymorphism system. AB-genome species are closely related with the A-genome diploids, and an As-genome species may be regarded as the most probable donor of their A-genome. Although their second diploid progenitor has not been identified, it seems unlikely that it belongs to the As-genome group. The exact diploid progenitors of *A. agadiriana* have not been determined; however our results suggest that at least one of them could be related to *A. damascena*.

<http://www.hindawi.com/journals/jb/2010/742307.html>