**THE SEQUENCING AND MOLECULAR ANALYSIS OF COXI GENE FRAGMENTS OF WILD PERENNIAL CROP ELYMUS SIBIRICUS L..**

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Mitochondrial DNA of the wild cereal crop *Elymus sibiricus* L. was studied by means PCR and direct sequencing. Two fragments of gene coxI with sizes 168 and 165 bp were obtained and analyzed. The percent of nucleotide sequences homology of obtained fragments as compared with *Triticum aestivum* is 99.4%, *Triticum timopheevi* - 99.4%, *Oryza sativa* - 98.2%, Zea mays - 98.2%, *Sorghum bicolor* - 98.8%, *Oenothera berteriana* - 93.1%, *Lycopersicon esculentum* 87.1%. The attempt was undertaken to define the phylogenetic relations of *Elymus sibiricus* L. to a range cultural and wild species of plants using the special computer programs of nucleotide sequences analysis. Phylogenetic analysis was carried out by means of the PHYLIP program package (version 3.5c). *Elymus sibiricus* L. is more related to *T. timopheevi* and *O. berteriana* and forms with them the separate branch of evolution in accordance with derived phylogenetic tree. The possibility of the using of nucleotide sequences of wild cereal mitochondrial genes in molecular systematic of family Poaceae and, in particular, a trib Triticeae are discussed.