

# Cytogenetical Variability of *Chironomus balatonicus* Devai, Wülker, Scholl (Diptera, Chironomidae) from Different Water Basins in Bulgaria

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**Abstract:** The cytogenetical variability of *Chironomus balatonicus* from artificial and natural localities in Bulgaria was analyzed. Sixteen different types of inversion sequences in heterozygous and homozygous state were established totally. Inversions detected in arms A and C formed polymorphous systems. The comparative cytogenetical analysis of larvae from the fish pools with those from the Burgas Lake showed statistically significant differences in heterozygous inversions in four chromosome arms (A, B, C, G). The heterozygous inversions in the arms A, B, C occurred significantly more often in the larvae from Burgas Lake, while the heterozygous inversions in arm G occurred more often in the fish pools. The specimens from the studied fish pools differed by the frequency of heterozygous inversions in arm D only.

Seasonal and yearly fluctuations of chromosome variability in *C. balatonicus* from Burgas Lake were investigated. Statistically significant correlation between seasonal fluctuations of the temperature and frequency of specimens with the heterozygous inversion A12 was established. The chromosome polymorphism features - frequency of all larvae with heterozygous inversions and heterozygous inversion per larva showed also seasonal dependence: increased in spring and summer and decreased in winter.

Besides alterations in the polytene chromosome structure high functional activity was found: appearance of new puffs, ectopic pairing between the chromosomes, decondensation of the telomeres and heterozygous state in BR<sub>2</sub>. These structural and functional chromosome aberrations are discussed in the light of the impact of abiotic factors over the chironomid karyotype.

**Key words:** Chironomidae, *Chironomus balatonicus*, polytene chromosomes, aberrations