



# Heteropicnotic chromatin and nucleolar activity in meiosis and spermiogenesis of *Limnogonus aduncus* (Heteroptera, Gerridae): a stained nucleolar organizing region that can serve as a model for studying chromosome behavior

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**ABSTRACT.** Males of *Limnogonus aduncus* were found to have the sex chromosome system X0 and chromosome number  $2n = 23$  (22A + X0). Testis cells were stained with lacto-acetic orcein and silver nitrate so that changes in the morphology and degree of staining of the heteropicnotic chromatin and the nucleolar material could be observed during meiosis and spermiogenesis. These structures share the same nuclear position and could be seen until almost the end of spermiogenesis. A chromosome region stained with silver ni-

trate was indicative of a nucleolar organizing region (NOR), which is rarely detected in Heteroptera with this technique. The NOR is located at one end of a single member of an autosome pair. The finding of this stained region enabled us to observe that the telomeric association of sister chromatids that characterizes the Heteroptera does not include the chromosome ends, where NORs are located; we also observed in anaphase that the chromosome end through which it is pulled to the pole is the one containing the NOR. Another observation was that the single nucleolar body present in the cells at anaphase never goes to the cell pole that does not receive the NOR. We conclude that *L. aduncus* is a good model for cytogenetic studies involving nucleolar activity and also may be useful for studying the mechanisms of activation and inactivation of kinetic activity at the chromosome ends. Although the chromosomes of Heteroptera are known to be holocentric, whether kinetic activity is restricted to one or involves both chromosome ends is still not well understood.

**Key words:** Stained nucleolar organizing region; Aquatic insects; Telomeric association; Kinetic activity of the chromosome ends