

The complete mitochondrial genome of an anhydrobiotic midge *Polypedilum vanderplanki* (Chironomidae, Diptera)

Deviatliarov R., Kikawada T., Gusev O.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2015 Informa UK Limited, trading as Taylor & Francis Group. In this work, we describe a complete mitochondrial genome of chironomid *Polypedilum vanderplanki*. In spite of unique ecology of this species, the larvae are able to survive years of complete desiccation; the circular mitochondrial genome keeps basic structure and consists of 13 protein-coding genes, 2 rRNA, and 22 tRNA genes, and has a total length of 16 060 bp. Low GC level, small regulatory region, and unusually high number and length of non-coding spacers are the main determined features.

<http://dx.doi.org/10.3109/19401736.2015.1115849>

Keywords

Anhydrobiosis, desiccation resistance, mitochondrial genome, sleeping chironomid

References

- [1] Cornette R, Kanamori Y, Watanabe M, Nakahara Y, Gusev O, Mitsumasu K, Kadono-Okuda K, et al. (2010). Identification of anhydrobiosis-related genes from an expressed sequence tag database in the cryptobiotic midge *Polypedilum vanderplanki* (diptera; chironomidae). *J Biol Chem* 285:35889–99.
- [2] Cornette R, Kikawada T., (2011). The induction of anhydrobiosis in the sleeping chironomid: Current status of our knowledge. *IUBMB Life* 63:419–29.
- [3] Gusev O, Suetsugu Y, Cornette R, Kawashima T, Logacheva MD, Kondrashov AS, Penin AA, et al. (2014). Comparative genome sequencing reveals genomic signature of extreme desiccation tolerance in the anhydrobiotic midge. *Nat Commun* 5:4784
- [4] Hinton HE., (1951). A new Chironomid from Africa, the larva of which can be dehydrated without injury. *Proc Zool Soc Lond* 121:371–80.
- [5] Hinton HE., (1960). Cryptobiosis in the larva of *Polypedilum vanderplanki* Hint. (Chironomidae). *J Ins Phys* 5:286–300.
- [6] Watanabe M, Kikawada T, Fujita A, Forczek E, Adati T, Okuda T., (2004). Physiological traits of invertebrates entering cryptobiosis in a postembryonic stage. *Eur J Entomol* 101:439–44.
- [7] Wyman SK, Jansen RK, Boore JL, *Bioinformatics* 2004 20(17):3252–5.