Abstract

Speciation, adaptation and hybridization are three concepts, each one referring to different process but having a common evolutionary context. Maternal line splits into two sister lines or only one line cleaves from maternal one during speciation. However it leads to formation of new species. Adaptation and hybridization can lead to formation of new species as well. New species arise by adapting to new conditions during adaptation. Within hybridization it is a descendent of two different lines mating amongst themselves. Most of this thesis is being addressed to these issues, the lesser part is addressed to specific examples. The chapter about next-generation sequencing methods is also included, as these methods have been used more frequently recently.

**Key words**: speciation, adaptation, hybridization, genomics, next-generation sequencing