ABSTRACT

Autopolyploidy, genome duplication *per se*, is a severe mutation which presents both great challenge and great opportunity for the species which has undergone it. First, a whole series of initial challenges has to be overcome, e.g., establishment within diploid parental population, proper functioning of the cell with doubled genetic information and restoration of proper mitosis and meiosis. The population genetic changes can become beneficial afterwards as the two times higher effective population size and polysomic inheritance increase heterozygosity and genetic variability within the new polyploid lineage. It also reduces negative impacts of genetic drift and inbreeding depression. In evolutionary context, having two genomes allows selection to be more relaxed, thus genes can quickly diversify into alleles with new function or sub-function. To better understand the molecular mechanisms of selection on a population level, I choose example of meiosis genes evolution in a polyploid *Arabidopsis arenosa* (Brassicaceae) species complex. This only diploid-autotetraploid member of the plant leading model genus *Arabidopsis* provides an ideal system for addressing general questions on the triggers and consequences of genome duplication in plants. In contrast to other members of the genus, *A. arenosa* remained almost completely neglected by evolutionary biologists for a long time and only recently first studies emerged showing strong evidence of selective sweeps in genes connected with meiotic stability. They suggest that even generally highly conserved processes as the meiosis is are able to evolve quickly, when necessary. Understanding all that, the principal question still remains: does consequences of autopolyploidization in model *A. arenosa* species presents more challenge or benefits?