Abstract

Genomic imprinting is a process whereby expression of an allele differs depending upon its parent of origin. It can be found on autosomes and also on sex chromosomes. Basic hypothesis for the evolution of genomic imprinting is the hypothesis based on the existence of sexual conflict. It can be classified into interlocus sexual conflict and intralocus sexual conflict hypotheses. Under interlocus sexual conflict hypothesis we can diffferentiate parental conflict hypothesis and parent-offspring conflict hypothesis. These theories were historically proposed for the first two taxonomical groups, where genomic imprinting was discovered, namely for angiosperms and placental mammals. Theory of parental conflict proposes that genomic imprinting evolved because the paternally inherited alleles are more selfish to mothers than are the maternally inherited alleles. Parent-offspring conflict hypothesis proposes that genomic imprinting evolved because maternal genes try to regulate demands of paternally inherited alleles in embryos. More recently, genomic imprinting has been found also in other taxons and in alleles, which do not bring any advantage during embryonic development. The intralocus sexual conflict hypothesis is applicable for every trait under sexually-specific selection. It provides potential mechanism for its resolution of intersexual conflict over trait expression and thus also a new model for the evolution of sexual dimorphism.