

SPECIATION IN THE HOUSE MOUSE, *MUS MUSCULUS* – MECHANISMS OF ISOLATION

Summary

Speciation, the formation of species, is a central problem in evolutionary biology. The genetic basis and evolution of reproductive isolation between taxa is a key for understanding speciation. The house mouse *Mus musculus* is an excellent model for the study of reproductive isolation. Two subspecies, *M. m. musculus* and *M. m. domesticus* that diverged from each other approximately between 1,000,000-350,000 years ago, form a narrow hybrid zone that extends across Europe. The standard chromosome complement of this species consists of 40 acrocentric chromosomes. However, in *M. m. domesticus* there are many local karyotypic races that are characterised by different sets of acrocentrics and meta-

centrics. Accumulation of chromosomal rearrangements may lead to reproductive isolation between populations. The first theoretical model of this process was postulated by Dobzhansky (1937) and Muller (1942). They expressed the idea that speciation is a by-product of independent divergence between populations. The hybrid zone between sister mouse taxa can be used to identify genomic regions underlying reproductive isolation. Variation in the degree of gene flow across the hybrid zone is measured using molecular markers. Thus, mice offer a unique opportunity to study relationships between genotype and phenotype.