

# Meiotic behavior of a complex hexavalent in heterozygous mice for Robertsonian translocations: insights for synapsis dynamics

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Natural populations of the house mouse *Mus musculus domesticus* show great diversity in chromosomal number due to the presence of chromosomal rearrangements, mainly Robertsonian translocations. Breeding between two populations with different chromosomal configurations generates subfertile or sterile hybrid individuals due to impaired meiotic development. In this study, we have analyzed prophase-I spermatocytes of hybrids formed by crossing mice from Vulcano and Lipari island populations. Both populations have a  $2n = 26$  karyotype but different combinations of Robertsonian translocations. We studied the progress of synapsis, recombination, and meiotic silencing of unsynapsed chromosomes during prophase-I through the immunolocalization of the proteins SYCP3, SYCP1,  $\gamma$ H2AX, RAD51, and MLH1. In these hybrids, a hexavalent is formed that, depending on the degree of synapsis between chromosomes, can adopt an open chain, a ring, or a