Mouse and rat genomes uncover the chromosome restructuring in *Peromyscus eremicus* (Cricetidae, Rodentia)—Chromosomes 1 and 5 in focus

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Rodentia are characterized by the occurrence of high rates of chromosomal rearrangements during evolution, when compared to other mammals. This fact is evidenced in the great karyotypic divergence found between rodent genomes, making the reconstruction of the rodent’s ancestral karyotype a challenging task. The Cricetidae genus *Peromyscus* is revealing to be an interesting model for studying chromosome evolution and speciation in Rodentia, acting as an outgroup to the murid genomes (where both index species, *Mus musculus* and *Rattus norvegicus* are integrated), assisting in the reconstruction of a more accurate ancestral rodent karyotype. Moreover, some *Peromyscus* species also revealed to constitute an important model for biomedical research. The cactus mouse, *Peromyscus eremicus* (PER), presents a karyotype of 48 submetacentric chromosomes. Regarding constitutive heterochromatin (CH), large amounts are found in this genome, being the p-arms of some chromosomes entirely heterochromatic. Throughout Comparative Chromosome Painting chromosomes from PER were analysed using painting probes from *Mus musculus* and *Rattus norvegicus*. In this work we present the results for PER1 and PER5. The comparison of the chromosome homologies of these genomes highlighted interesting syntenic associations, being some of them specific for Cricetidae. This preliminary approach revealed some interesting aspects regarding the genome architecture of this Peromiscine species, shedding some light on its evolutionary history.