

Satellite DNAs as potential taxonomic markers for Squirrel Monkeys, genus *Saimiri*

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Abstract/Resumo

The number of squirrel monkey species (genus *Saimiri*, Platyrrhini) and their phylogenetic relationships are still uncertain. All squirrel monkeys analyzed to date presented a diploid number of $2n=44$ with variable fundamental numbers. The repetitive DNA fraction of *Saimiri* genomes, as for most eukaryotes, is still poorly explored. Herein, we took advantage of the genome sequence of *Saimiri boliviensis* to explore the satellite DNAs (satDNAs) of the genus. After clustering Illumina reads of *S. boliviensis* (NCBI SRA access: SRR317821) by similarity using the Repeat Explorer pipeline, we identified two abundant satDNAs. The first represents nearly 1% of the *S. boliviensis* genome and is homologous to the alpha satDNA, known to have a centromeric location in primates. PCR and sequence analysis confirmed the ~340 bp monomer size in *S. boliviensis*, *S. vanzolinii*, *S. sciureus* and *S. ustus*. This result agrees with that found in most New World monkeys, which is a duplication-derivative of the 170 bp monomer found in Old World primates. In addition to the alpha satDNA, we identified a large satDNA (~1500 bp monomers) that comprises 2.2% of the genome and displays similarity with the CapA satDNA first described in *Cebus appella*. Using fluorescent in situ hybridization, we verified that CapA chromosome location varies among *Saimiri* species and is mainly located in subtelomeric regions of the short arms and in the interstitial heterochromatin of some chromosome pairs. In *S. sciureus* CapA was mapped to the interstitial heterochromatin of both arms of chromosome 2 and in the subtelomeric regions of chromosomes 4, 8, 10 and 14. In *S. vanzolinii*, CapA was located in the subtelomeric regions of chromosomes 4, 5, 8, 10 and 11. *S. ustus* is the species in which CapA is more ubiquitous, being present in the subtelomeric regions of chromosomes 4, 5, 7, 8, 10, 11 and 15. The CapA signal on pair 2 of *S. vanzolinii* and *S. ustus* displayed a much weaker intensity than that found in *S. sciureus*. The differences in CapA distribution and abundance within *Saimiri* species may provide valuable insights into the chromosome evolution and phylogenetic relationships within the genus.

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