ism is the more probable.

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Reference

Nagamachi, C. Y. 1995. Relações Cromossômicas e Análises Filogenética e de Agrupamento na Família Callitrichidae (Platyrrhini, Primates). Unpublished Doctoral Thesis, Universidade Federal do Rio Grande do Sul, Porto Alegre. 181pp.

Cytogenetics, Chromosomal Evolution, Radiation and Speciation in Spider Monkeys

In 1994, Manuel Alfredo Araujo Medeiros completed his Master's thesis on cytogenetics, chromosomal evolution, radiation and speciation in *Ateles*, for the Postgraduate Course in Biological Sciences (specialization in Genetics) of the Federal University of Pará and the Emilio Goeldi Museum, Belém, Pará, Brazil. It was supervised by Dr. Regina Maria de Souza Barros, and supported by the Brazil Science Council (CNPq), the Brazilian Higher Education Authority (CAPES), and the Universidad Autonoma de Barcelona (UAB), Spain. The Emílio Goeldi Museum, Belém, The Center for Forest Warfare Instruction (CIGS), Manaus, the National Primate Center, Belém, the Teresina Zoo, Piauí, and the Barcelona Zoo, Spain, kindly provided material for the cytogenetic study of the spider monkeys. The following is a summary of the thesis.

The karyotypes were studied of 22 spider monkeys of four subspecies: *Ateles paniscus paniscus*, *A. p. chamek*, *A. belzebuth hybridus*, and *A. b. marginatus* (following the taxonomy of Kellogg and Goldman, 1944). Four cytogenetic techniques were used: conventional staining, G and C banding, and NOR staining. The data obtained concerning karyotype structure and chromosomal variation were compared to that available in the literature. The results of the analyses, and in particular the geographic variation in chromosomes 6, 7, and 4/12, indicate that *A. p. chamek* represents the most primitive form of the genus, which would have originated in the southwestern Amazon basin and spread eastwards, founding the ancestral population of *A. b. marginatus*, and northwest, giving rise to *A. b. belzebuth*. The taxa found to the west of the Andes would in this case have been derived from the ancestral populations of *A. b. belzebuth*. *A. p. paniscus* is almost certainly derived from the ancestral populations of *A. b. hybridus*.

The peripheral radiation of *Ateles* in the Amazon basin can be partially accounted for by a number of different models of biogeographic evolution, although the relative distribution of the northernmost taxa and the phylogenetic relationships between them, based on cytogenetic data, indicate that significant changes occurred in the distribution of forests during the Pleistocene.

It was not possible to define the taxonomic status of the *Ateles* forms studied here, although *A. p. paniscus* appears to be a monotypic and reproductively isolated from all other populations. The results of this study nevertheless confirm the need for a taxonomic revision of the genus, given that at least four karyotypically distinct groups were identified: 1) *A. geoffroyi* and *A. belzebuth hybridus*; 2) *A. fusciceps rufiventris* and possibly *A. f. fusciceps*; 3) *A. belzebuth belzebuth*, *A. paniscus chamek*, and *A. belzebuth marginatus*; and 4) *A. paniscus paniscus*.

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Kellogg, R. and Goldman, E. A. 1944. Review of the spider monkeys. *Proc. U. S. Nat. Mus.* 96: 1-45.

Medeiros, M. A. A. 1994. Citogenética, Evolução Cromossômica, Radiação e Especiação dos Macacos-Aranha (*Ateles*, Primates). Unpubl. Master's Thesis, Universidade Federal do Pará, Museu Paraense Emílio Goeldi, Belém, Pará. 137pp.

Putting Primates in the Classroom

The Primates, a four-part slide set that takes full advantage of young people's interest in monkeys, apes, and the environment, is available for teachers to use in their classrooms. Drawing on the library and resources of the Wisconsin Regional Primate Research Center, this set introduces the topics of primate behavior, primate conservation, primate taxonomy, and field work. Accurate and accessible, each part contains 72 slides with accompanying annotated script, suggestions for classroom activities, bibliographies and other supporting materials. *The Primates* has been tested in schools and revised at the suggestion of middle and high school teachers. The set is also easily adaptable for use in introductory classes at the