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NEW FOSSIL MONKEYS FROM THE LA VENTA FORMATION, COLOMBIA, SOUTH AMERICA. Takeshi Setoguchi, Kyoto University Primate Research Institute, Inuyama Japan and A.L. Rosenberger, Dept. of Anthropology, University of Illinois at Chicago, IL USA.

Several new taxa pertaining to ateline platyrrhines have recently been discovered. One is diagnosed as a new genus having affinities with the living spider monkey, Ateles. Others are closely related to the Stirtonia-Alouatta clade; one is possibly related to the eastern Brazilian Brachyteles. These interpretations, though tentative, dispute the splitting times proposed by molecular clock advocates. The comparative dental anatomy of these fossils and the living atelines is illustarted, as are a variety of phylogenetic schemes treating the large-bodied New World monkeys.

IJP 5:379.

ON THE MIOCENE PLATYRRHINE CEBUPITHECIA, AND SAKI-UAKARI INTERRELATIONSHIPS. A.L. ROSENBERGER AND D.K. MILLS. Department of Anthropology and Department of Oral Anatomy, University of Illinois at Chicago, Chicago, IL 60680.

The holotype of Cebupithecia sarmientoi, from the La Venta beds of Colombia, S. America, includes parts of the skull, dentition and most of the postcranial skeleton, making Cebupithecia the best preserved platyrrhine known. An examination of the holotype reveals that it is a composite of juvenile and adult individuals and therefore, of questionable taxonomic identity. The petrosal bones and dentition suggest an animal of juvenile age, whereas the postcranial skeleton represents an adult. Our comparison of the two associated petrosal bones with relevant modern platyrrhines reveals a marked similarity with saki-uakaris (Pithecia, Cacajao, Chiropotes), including the presence of a synapomorphically enlarged paraoccipital process. Derived basicranial features seen in other pitheciines, Callicebus and Aotus, namely a laterally positioned postglenoid process and a densely cellular diverticulm of the bulla, are not found in the above genera. Analysis of the re-described dental remains indicates that Cebupithecia generally exhibits primitive saki-uakari characteristics, some of which resemble Callicebus. We conclude that the craniodental material supports the hypothesis of a close affinity between the fossil and living saki-uakaris although its precise phyletic position remains unclear. Further, scenarios of saki-uakari evolution based upon the femur should be reconsidered since the shaft is missing, the specimen's identity is moot, and more information is available from the rest of the postcranium.

AMERICAN JOURNAL OF PRIMATOLOGY 6. 421.

Fossils, Genes and Time

Eric Delson

New World Monkey Lineage Divergence, Based on Paleontology and Morphology. A.L. ROSENBERGER (University of Illinois at Chicago).

Because they are poorly known paleontologically, but anatomically diverse, of ancient origin and better sampled immunologically than most major primate groups - and perhaps more neglected until recently - the Neotropical monkeys present a pointed test of neontological phyletic studies. My integration of a cladistic analysis of the morphology of modern platyrrhines with the available fossils has lead to a phylogenetic hypothesis that is incompatible with both the cladistics and chronology generated by albumin-transferrin comparisons at each of three critical hierarchical levels, for generic lineages and for principle and secondary radiations. Oligocene Dolichocebus and Tremacebus fix a minimal age for the two monophyletic families, Cebidae and Atelidae, and establish a nearly 25 my duration for the immediate lineages leading to the living squirrel and owl monkeys, respectively; the molecules predict a common origin for all the Tertiary survivors at slightly earlier than 15 mya. Middle Miocene species imply a 5-10 my discrepency concerning the differentiation of the atelines. In all, six fossils are assignable to five of fifteen generic lineages and suggest that the 'clock' may be off by roughly a factor or two. Caution should be taken in applying simplistic rate models to heterogeneous, large, ancient radiations, especially without correcting for anatomically unparsimonious branching sequences.

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LITTLE-KNOWN PATAGONIAN FOSSIL PLATYRRHINES. Alfred L. Rosenberger, Dept. of Anthropology, University of Illinois at Chicago, IL, USA 60680.

Three crania of the Oligocene-Miocene Patagonian primates have been much discussed: Homunculus, Dolichocebus and Tremacebus. The latter pair are close relatives of Saimiri and Aotus, respectively, and I here argue that Homunculus is similarly related to Callicebus. Mandibulae are less well known. One recently assigned to Homunculus sp. by Hershkovitz is not congeneric with the 'classic' material attributed to that taxon. Of the older Ameghino series, the Anthropops perfectus symphysis is referable to Homunculus but a posterior jaw fragment containing a fine M_2 pertains elsewhere, possibly with Dolichocebus. Pitheculus australis appears to be generically distinct from all of the aforementioned, and bears unusual ectocingular elements of dubious phylogenetic significance. Potential homologies are with a derived pattern shared mainly with certain Cebidae, sensu Rosenberger, or with a greatly primitive pattern evident in Fayum anthropoids and omomyids. The mandibular evidence thus expands the morphologic and taxonomic boundaries of Tertiary Patagonian platyrrhines and reinforces the idea that the modern lineages appeared early in platyrrhine history.

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NEW DATA ON BRANISELLA AND HOMUNCULUS

A.L. Rosenberger, CUNY, N.Y.

A newly recognized lower jaw of Branisella bolivana, from the Deseadan early Oligocene of La Salla, Bolivia, provides important morphological details of this species, heretofore known by a fragmentary maxilla from the same site. The Princeton mandible preserves parts of the left dentition, most notably, a partial alveolus and root of P_2, a heavily worn M_2 crown and roots of an elongate, narrow M_3. The apparently much reduced P2/2 is diagnostic of this genus and bony features also indicate a foreshortened face. Preparation and reconstruction of the Homunculus patagonicus skull fragment, from the Santacrucian Miocene of Argentina, reveals the left orbit virtually intact, a well preserved face and a partial palate, but little of the upper teeth. Several surprising facts regarding the lower dentition have emerged! While lower teeth are relatively primitive in aspect, the enlargement of the posterior mandibular corpus and angle is a derived character complex shared with several living cebids. Homunculus seems clearly aligned with this phyletically distinct group and may prove to be closely related to pithecines in particular. The familial affiliation of Branisella, however, remains in doubt although there is little cause to question its platyrrhine status at this time.

(1978) A.J.P.A. 48:431

(1983) Anonymous (ed.) Resumos. X Congresso de Zoologia. Imprensa Universitaria, Belo Horizonte. Universitaria Federal de Minas Gerais, Belo Horizonte, Brazil. pp. 309-401.

AFINIDADES CLADÍSTICAS DE BRACHYTELES ARACHNOIDES

ROSENBERGER, A.L. - Universidade de Illinois (Chicago)
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Poucos são os conhecimentos de anatomia, ecologia e comportamento de *B. arachnoides*, menores ainda são os de sua história evolutiva. Vários estudos tem mostrado semelhanças morfológicas com *Ateles* e *Alouatta* e alguns sugerem que *Brachyteles* preserva características que são primitivas para Atelinae (*Alouatta*, *Lagothrix*, *Ateles* e *Brachyteles*). Na ausência de fósseis relevantes de Platyrrhini e que possam esclarecer a ancestralidade de *Brachyteles*, este presente trabalho deseja contribuir com dados neontológicos, para o estudo das afinidades cladísticas e evolução dos Platyrrhini. Os resultados sugerem que *Brachyteles* e *Ateles* pertencem a grupos-irmãos e possivelmente a história zoogeográfica deles seja similar a de *Leontopithecus*, também endêmico para o sudeste do Brasil.

Foram utilizados neste estudo, dados a respeito de todos os gêneros de Platyrrhini viventes e fósseis e comparados com crânios e esqueletos de várias coleções.

A análise cladística envolve o isolamento de partes homologamente derivadas que são os "taxa-elo" dentro dos sucessivos grupos-irmãos, generalizando, num cladograma a sequência de ramos, relativamente, reflete uma recente ancestralidade comum. Os nódulos simbolizam os ancestrais comuns hipotéticos e morfotípicos. As características primitivas distinguem-se de estados derivados quando:

- Estão comumente distribuídas próximas de grupos monofiléticos em estudo (Atelinae);
- Aparecem frequentemente em outras subfamílias monofiléticas;
- Ocorreram antes dos registros fósseis;
- Quando a análise adaptacional implica que um estado deve funcionalmente preceder a evolução de outro.

Os caracteres analisados sugerem:

- Semelhanças superficiais nos crânios de *Brachyteles* e *Lagothrix* são resquícios de um ancestral morfotípico de Atelinae e a partir dele *Ateles* e *Alouatta* divergiram acentuadamente;
- Caracteres dentários sugerem que *Lagothrix* é semelhante ao seu ancestral que possuía um molar de grandes cúspides. Em *Brachyteles* esse caráter também é preservado;
- Semelhanças nos molares de *Brachyteles* e *Alouatta* refletem uma adaptação folívora convergente. O crescimento das cristas dentárias cortantes estão localizadas na face bucal em *Alouatta* e lingual em *Brachyteles*;
- *Brachyteles* e *Ateles* provavelmente apresentam, em parte, derivação homóloga: pré-molar e molar protolofido reduzido, pré-molar metacônico reduzidos e um pequeno P_2;
- No postcranium, um grande número de caracteres relativos ao estilo de locomoção por "braquiação" são exclusivos de *Ateles* e *Brachyteles*, incluindo: pequena região lombar, membros anteriores alongados, ombros giratórios altos e flexíveis, cauda muito longa e polegar vestigial;
- *Lagothrix* apresenta características semelhantes, porém menos especializadas. Em *Alouatta* são menos especializadas ainda.

Genealogicamente, Atelinae é sem dúvida um grupo monofilético tão semelhante entre si quanto a Tribu Atelini (*Lagothrix*, *Ateles* e *Brachyteles*) possa ser. O ancestral comum de *Ateles* e *Brachyteles* apresentava um sistema de locomoção altamente especializado e provavelmente teve uma dentição do tipo de *Lagothrix*. As duas linhagens então divergiram-se adaptativamente para incluir mais folhas (*Brachyteles*) e frutos maduros (*Ateles*) a sua alimentação, como é claramente refletido nas morfologias autapomórficas de seus crânios e dentes.

Quando e como isso ocorreu não podemos saber sem as evidências fósseis. Talvez a preferência mútua, por florestas tropicais indique que a dispersão para as regiões áridas através de matas-galerias não era um mecanismo apreciado. Isto sugere que um isolamento do "protobrachyteles" no sudeste do Brasil, devido as condições xéricas, restringiram a área de ação nas florestas da população de seus ancestrais comuns.

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pp. 325-236

H. Rothe et al.

Biology and Behavior of Marmosets

Eigenverlag Rothe, Göttingen 1978
X + 300 pp., DM 52.-
ISBN 3-9800202-0-7

This volume suffers from many of the shortcomings typical of conference-related anthologies. Many of the published papers are very brief and sparingly referenced (three give no citations at all), appearing as they might have been read. The quality of papers is conspicuously uneven and together do not offer a cohesive body of information. Other difficulties can only be attributed to poor editing. The chapters are not organized thematically, there is no index, the list of author-participants is incomplete and is arranged semi-alphabetically. Seven abstracts are published on the coattails of 27 full chapters. And the physical design of the book is, I think, unpleasing at best.

This book is the proceedings of a 'marmoset workshop' held at Göttingen, West Germany in September, 1977. The participants were almost entirely laboratory marmosetologists coming from Europe and the United States and representing a diversity of disciplines. The published papers cover such topics as olfactory communication, vocalizations, grooming behavior, social organization, parental care, veterinary care, reproduction, endocrinology, colony histories, etc., the usual catholic fare deriving from conferences of this sort. Also included are a number of reports on subjects that I consider outside the reading realm of the average primatologist, i.e., studies on gustation, binocular depth perception, cortical mapping of aggressive behaviors and the absolute chronology of dental eruption in *Callithrix jacchus [?jacchus]*. I doubt that these will have enduring value for most of us. The nearest thing to natural history is a pair of papers on conservation by *Coimbra-Filho and Mittermeier*, seemingly out of context here but with a message worthy of indefinite repetition lest we forget the impending disaster of Amazonia and its environs. There are no papers dealing with morphology. Among these reports are several good ones, notably those from the *Kleiman* laboratory in Washington and the *Abbott/Hearn* group (then) at Edinburgh. They might be called the vanguard of laboratory marmosetology, the one taking natural history and sociobiological theory back into the laboratory and the other investigating the endocrinology of reproduction and its nuances, now becoming broadly recognized as a profound variable in the equation of social organization.

It is almost impossible to avoid comparing *The Biology and Behavior of Marmosets* with *Devra Kleiman's* edited book, *The Biology and Conservation of the Callitrichidae*, also published in 1977-1978. The latter is an effective, engaging account dealing with many of the same topics. At least twelve authors were involved in both projects. Together, these books offer a broad sweep of the work currently being done in marmoset laboratories and in the field. But much of the information of immediate interest to the general primatologist appears in the *Kleiman* work (and elsewhere) rather than in *Rothe* et al. Given the rather high cost of the latter, which may partially reflect its physical layout – simply wasteful of space, unless you're an aggressive marginaliac – I cannot recommend that you rush to purchase a copy. On the other hand, you may not find it easy to center this ungainly book's pages on the glass platen of your local copying machine, which is another reason for my unfavorable review.

Alfred L. Rosenberger, Long Island, N.Y.

ON THE DISTICTIVENESS OF XENOTHRIX

Alfred L. Rosenberger
City University of New York

Xenothrix mcgregori is an enigmatic, subfossil Jamaican primate known from a single damaged mandible containing two left molar teeth and partial postcranials of doubtful association. Originally designated a member of Cebidae by Williams and Koopman ('52), *Xenothrix* was placed in a new family, Xenothricidae, by Hershkovitz ('70). Examination of the dental evidence reveals that *Xenothrix* is a member of a presumed monophyletic group composed of all living Cebidae other than *Cebus* and *Saimiri*. A more precise delimitation of its relationships is difficult due to retention in *Xenothrix* of many characters also found in the ancestral morphotype of this group. Analysis of molar occlusion in *Xenothrix* clarifies the functional significance of its unique molar form. At this point, rather than obscuring the adaptively diverse and systematically confused Ceboidea, it seems wise to retain the original allocation of *X. mcgregori* (Primates, Cebidae, subfamily *incertae sedis*).

(1975) A.J.P.A. 42:326

Phyletic perspectives and platyrrhine classification. A. L. ROSENBERGER, CUNY.

Classifications of New World monkeys are generally oversplit. The use of numerous subfamilial taxa obscures generic interrelationships and tends to exaggerate their diversity. Theories of ceboid phylogeny, and classifications derived therefrom, have focused upon superficial differences between clawed marmosets (and tamarins) and the nailed cebines, atelines, etc., and debated whether marmosets represent a primitive or derived stem of the major ceboid stock. Cladistic analysis of cranial, dental, postcranial and some soft tissue anatomy suggests considering marmosets as "specialized" best explains the taxonomic distribution of derived characters. Nevertheless, indirect fossil evidence shows that marmosets had a pre-Late Oligocene origin. Living (and most fossil) ceboids may be classified into four probably monophyletic subfamilies: Callitrichinae (Callithrix, Leontopithecus, Saguinus, Callimico) Cebinae (Cebus, Saimiri); Atelinae (Ateles, Brachyteles, Lagothrix, Alouatta); Pitheciinae (Pithecia, Cacajao, Chiropotes, Callicebus, Aotus). Cebines prove to be more closely related to callitrichines, and atelines to pithecines, requiring reinterpretation and renaming of families: Cebidae (Cebinae, Callitrichinae); Atelidae (Atelinae, Pitheciinae) This phyletic split reflects alternate adaptive strategies centering on feeding habits. Cebids are frugivore-insectivores and, secondarily, omnivores and gumivores. Atelids are frugivore-folivores, secondarily specializing on either of these staples.

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