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0521652898 - Primate Dentition: An Introduction to the Teeth of Non-human Primates

Daris R. Swindler

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Primate Dentition: An Introduction to the Teeth of Non-human Primates

Primate dentitions vary widely both between genera and between species within a genus. This book is a comparative dental anatomy of the teeth of living non-human primates that brings together information from many disciplines to present the most useful and comprehensive database possible in one consolidated text. The core of the book consists of comparative morphological and metrical descriptions with analyses, reference tables and illustrations of the permanent dentitions of 85 living primate species to establish a baseline for future investigations. The book also includes information on dental microstructure and its importance in understanding taxonomic relationships between species, data on deciduous dentitions, prenatal dental development and ontogenetic processes, and material to aid age estimation and life history studies. *Primate Dentition* will be an important reference work for researchers in primatology, dental and physical anthropology, comparative anatomy and dentistry as well as vertebrate paleontology and veterinary science.

DARIS R. SWINDLER is Professor Emeritus of Anthropology at the University of Washington, Seattle. His main research interests are in primate anatomy and dental studies of early primate dental development, comparative dental morphology and odontometrics of living and fossil primates, and Pacific dental anthropology. He has written or edited seven previous books including *An Atlas of Primate Gross Anatomy: Baboon, Chimpanzee, and Man* (1973) with C. D. Wood, *The Dentition of Living Primates* (1976), *Systematics, Evolution and Anatomy: Comparative Primate Biology* Vol. 1 (1986) with J. Erwin, *Paleontologia Umana, Evoluzione, Addamento, Cultura* (1996) with A. Drusini, and *Introduction to the Primates* (1998).

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This book is dedicated to the memory of Linda E. Curtis

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Preface

Since 1976, when I published the *Dentition of Nonhuman Primates*, much has happened in the field of dental anthropology, creating a tremendous array of new information available to student and field researcher alike. This volume combines basic material available to me then with knowledge gleaned from more recent research in an attempt to gather the most useful and comprehensive data in one consolidated text.

The organization of the book is taxonomic, beginning with the prosimians and ending with the great apes. There is no temporal aspect to the data presented. It is solely heuristic, not evolutionary, nor does the taxonomic organization of the book intend to suggest in any way that the dentition of one group gave rise to that of another group.

Chapter 1 introduces the primates studied, organized in the Linnean system, i.e. a hierarchy of levels that group organisms into larger and larger units (see Table 1.1). This chapter continues with a discussion of dental anatomy and terminology as well as a section reporting recent information in the field of dental genetics. Several of the taxa presented have genera and species names, or even hierarchical positions, different from those that they did several years ago. I have attempted to follow the latest information regarding their rank and scientific names. However, primate classifications continue to change, particularly at the family and genus levels; for example, *Cercocebus albigena*, the gray-cheeked mangabey, is now considered to be *Lophocebus albigena* (Disotell, 1994, 1996). This chapter also details the extensive dental cast collection used for much of the study and illustrations. In addition, the origin and usefulness of mammalian dental terminology is discussed here.

Chapters 2, 3 and 4 present material not addressed in my earlier book. Chapter 2 contains recent information on the microstructure (histology) of non-human primate teeth and the importance of this information for better understanding taxonomic relationships among the taxa. Chapter 3 presents data on the prenatal development of non-human primate teeth in several taxa, from initial calcification to crown completion, and considers some of the ontogenetic processes that play such important roles in the growth and development of teeth as well as material for age estimations

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and life history investigations. Chapter 4 offers morphologic and metric descriptions of the deciduous teeth of several taxa with comparative discussions.

Morphological data were collected and measurements were made of the dental casts of each species. This material forms the core of the remaining chapters, which, in turn, offer expanded analyses and tables and hand-drawn illustrations of upper and lower dentitions of the various genera and species. One illustrator was employed, using actual specimens and the dental casts, so as to provide consistency of detail and style useful for comparative studies. In Chapters 7 and 9, illustrations and tables show the crown variables that occur on the lingual surface of the upper incisors as well as extra cusps on the premolars and molars, and these will enhance the reader's ability to see and appreciate the magnitude of dental variability among living non-human primates.

Odontometrics of both the deciduous and permanent teeth are presented in the odontometric appendix (Appendix 1). There is also a tooth eruption appendix (Appendix 2) to facilitate finding the eruption sequences of many non-human taxa. There is also a large amount of useful statistical data throughout this book on the incidence of various dental traits.

Many people have assiduously proofread the data several times, but mistakes are inevitable where so many morphological details and statistical tables must be read and reread. I take full responsibility for any mistakes and hopefully, no major error has found its way into the final publication.

*Daris R. Swindler
Seattle, Washington
April, 2001*

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In addition to the individuals that assisted me in so many ways in the publication of the earlier book, I have had the good fortune to have had the help and advice of M. Christopher Dean and David G. Gantt, who read earlier chapters of the manuscript and made many helpful comments and suggestions. I am particularly indebted to Mark Terry, who read drafts that resulted in many fruitful discussions. Mark's support has been invaluable to me, especially during those last important, and I might add hectic, weeks of the project.

Special acknowledgement goes to the illustrator, Robert M. George, for the quality of the original illustrations of the dental casts. Bob has been a colleague and friend for many years and without his time, effort, and support this project would probably never have been completed. Thanks also to Erik McArthur for scanning and print assistance.

My wife, Kathy Swindler, has assisted me greatly with the writing of this book. It was her fortitude and patience that helped me in so many different ways to get on with the job. Thank you.

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