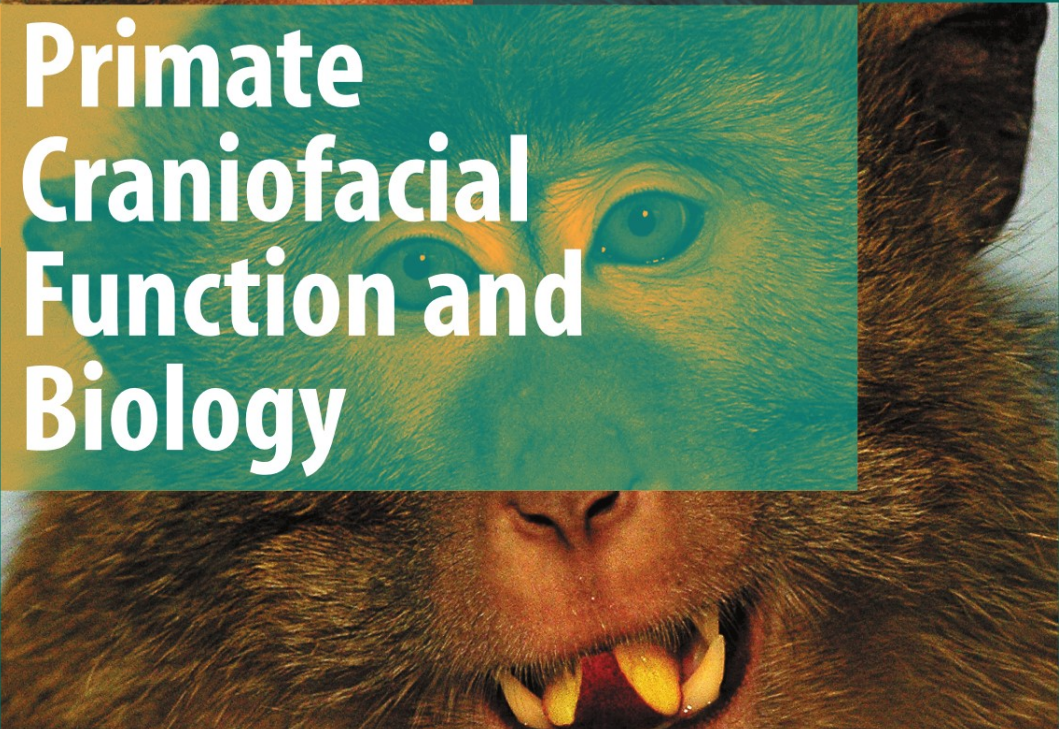




DEVELOPMENTS IN PRIMATOLOGY:
PROGRESS AND PROSPECTS

Series Editor: Russell H. Tuttle,
University of Chicago, Chicago, IL



Primate Craniofacial Function and Biology

Christopher J. Vinyard
Matthew J. Ravosa
Christine E. Wall
Editors

 Springer

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Preface

William Hylander is synonymous with primate craniofacial function. For the first three-quarters of the 20th century, studies of the primate masticatory apparatus typically inferred function by examining form. William Hylander revolutionized studies of the primate masticatory apparatus through his use of *in vivo* techniques to quantify bone strain, jaw-muscle activity, and jaw movements in living primates while they chewed. His direct measures of jaw, tooth, and jaw-muscle function during chewing are the empirical cornerstone that many biological anthropologists build upon today. We dedicate this volume surveying recent developments in primate craniofacial function and biology to William Hylander and his lifelong contribution to biological anthropology.

Today, the amount of craniofacial research on primates is immense. Functional studies alone range from *in vivo* analyses of living animals to morphological and finite element explorations of extinct primate cranial remains. The results of these research efforts have been fundamental in developing our understanding of primate biology and evolution. The sheer magnitude of craniofacial studies affirm that furthering our knowledge of primate craniofacial biology is one of the most important research agendas in modern biological anthropology.

Outside of primatology, many mammalian biologists have provided key insights into primate form and function through their comparative analyses of mammalian clades. Some biological anthropologists have continued a tradition of studying non-primate mammals as model taxa, as alternative functional designs, or as comparative radiations for exploring form–function associations observed in primates. We make a concerted effort to include this broader mammalian perspective to build on its fundamental contribution to our understanding of primate craniofacial biology.

It is impossible to adequately incorporate current research on primate craniofacial function and biology into a single volume. Our strategy was to put together a volume in honor of William Hylander, which will give readers an overview of what is current in a number of different research areas. Because several of the contributors worked closely with Hylander throughout his career, we have the deepest coverage in topics focusing on craniofacial function during feeding. This having been said, we attempted to provide a wide range of current research. We hope that readers will be able to capitalize on this approach to integrate otherwise disparate ideas and methodologies for their own work. The cost of our approach is that good scientists

and good science were left out. If by bringing together this wide range of researchers we can help catalyze future work on primate craniofacial biology and function, then we feel this cost will have been worth it.

Several of the chapters in this volume were initially presented at a 2005 symposium entitled: “Primate Craniofacial Function and Biology: A Symposium in Honor of William L. Hylander” during the American Association of Physical Anthropology Meetings in Milwaukee, WI. Building from this initial group of presentations, we had the good fortune of adding several chapters to the current volume. In the end, we were able to include twenty chapters in five sections that broadly explore different approaches to studying the skulls of primates and other mammals.

This volume would not have been possible without the advice and assistance of numerous individuals. Specifically, thanks to Andrea Macaluso, Tom Brazda, Lisa Tenaglia, Krista Zimmer, Melanie Wilichinsky, and Russell Tuttle for guiding us through the editorial process. Diana Dillon and Marie Dockery provided invaluable administrative assistance. Several external reviewers provided insightful comments that advanced the scholarship of these contributions. We thank the American Association of Physical Anthropologists for hosting and supporting the 2005 symposium in honor of William Hylander, which was the catalyst for this volume. Kirk Johnson has made one of the biggest contributions to the studies of primate feeding. Throughout his more than 25 years of work in the field, each of us became indebted to Kirk for his guidance and friendship – thank you.

Finally, we wanted to express our utmost thanks to Bill Hylander. There is no end to our appreciation of your friendship, advice, and commitment to biological anthropology and experimental biology.

Rootstown, OH, USA
Columbus, MO, USA
Durham, NC, USA

Christopher J. Vinyard
Matthew J. Ravosa
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