



The Microstructure of Dinosaur Bone: Deciphering Biology with Fine-Scale Techniques

By Anusuya Chinsamy-Turan

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For millions of years, clues to the biology of dinosaurs lie locked within the microscopic structure of their bones. Here one of the world's leading experts on fossil bone microstructure synthesizes more than 150 years of research to expose the meaning of dinosaur bone microstructure.

In this first book dedicated to dinosaur bone microstructure, Anusuya Chinsamy-Turan begins with a general overview of living bone structure and composition and then explains how bone structure changes upon death and during fossilization. She meticulously unravels why the microscopic structure of fossil bone remains intact after millions of years of fossilization. She also provides a photographic atlas of the kinds of bone tissue found in dinosaurs and expounds on their biological significance. The final chapters offer insight into growth patterns of dinosaurs and the biology of Mesozoic birds. The book concludes with a reflective discussion on what bone microstructure can and cannot disclose about dinosaur physiology. Drawing from sources across the field of bone histology, Chinsamy-Turan paints a holistic view of the current state of the science and presents a fresh perspective on the relevance of the field to understanding the Dinosauria.

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Editorial Review

Review

At last! An entire book devoted to one of the most recently developed and hottest techniques for the study of dinosaurs and other ancient animals. The author has devoted her career to the study of the histology of fossil bone. She comprehensively surveys a body of literature that begins more than a century ago but is up-to-the-minute as well. She skillfully introduces the student to the basics of the subject but also presses toward the limit of what the technique can tell us about the fascinating topics of growth and physiology of extinct animals. She describes the work of others with fairness but leaves no doubt as to her opinions about the shortcomings of widely cited studies. She writes with clarity and vigor and has presented a book that will be widely read by paleontologists of all levels and leanings.

(Peter Dodson, University of Pennsylvania)

Chinsamy-Turan has provided an immense service to the field with the publication of this book.

(Kristina Curry Rogers *Trends in Ecology and Evolution*)

Of interest to a wide audience of biologists, the core readership [is] vertebrate paleontologists, each of whom should have a copy.

(Tim J. Fedak and Brian K. Hall *Quarterly Review of Biology*)

A must-read for anybody interested in the biology of one of the most fascinating animals in the history of our planet.

(Luis M. Chiappe *Nature*)

An irreplaceable manual for all students working in this field.

(Magdalena Borsuk-Bialynicka *Acta Palaeontologica Polonica*)

Chinsamy-Turan's accessible, engaging book contains enough personal reflections and professional opinions to keep readers enthralled.

(James R. Spotila *Bioscience*)

A valuable addition to the library of anyone who thirsts for every bit of knowledge available about these Mesozoic saurians.

(Lynne M. Clos *Fossil News: Journal of Avocational Paleontology*)

Provides a compelling, if not universal, view of dinosaur physiology that is certain to attract serious consideration and attention.

(Matthew F. Bonnan *Journal of Vertebrate Paleontology*)

Particularly strong on describing what bone is, how it is studied microscopically, and what it is capable of telling us.

(Kevin Padian *Progressive Palaeontology*)

About the Author

Anusuya Chinsamy-Turan is a professor of zoology and a fellow of the University of Cape Town, South Africa. She is president of South African Women in Science and Engineering and the former director of the Natural History Collections Division of Iziko Museums of Cape Town. She was named as South Africa's Woman Scientist of the Year for 2005.

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