



Biology of the Sauropod Dinosaurs: Understanding the Life of Giants (Life of the Past)

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Sauropods, those huge plant-eating dinosaurs, possessed bodies that seem to defy every natural law. What were these creatures like as living animals and how could they reach such uniquely gigantic sizes? A dedicated group of researchers in Germany in disciplines ranging from engineering and materials science to animal nutrition and paleontology went in search of the answers to these questions. *Biology of the Sauropod Dinosaurs* reports on the latest results from this seemingly disparate group of research fields and integrates them into a coherent theory regarding sauropod gigantism. Covering nutrition, physiology, growth, and skeletal structure and body plans, this volume presents the most up-to-date knowledge about the biology of these enormous dinosaurs.

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Editorial Review

Review

"Biology of the Sauropod Dinosaurs... is full of new hypotheses and will enliven debates on sauropods for many years to come." ?Geological Magazine

"The 18 articles in this collection are the fruit of seven years of collaborative effort, and shed much light on sauropod anatomy and physiology.... A valuable acquisition for college libraries.... Highly recommended." ?Choice, September 2011

Few dinosaurs are more iconic than the long-necked sauropods. Their enormous size has intrigued dinosaur lovers of all ages. But how could they reach such gigantic proportions? What were the advantages and disadvantages of gigantism? An interdisciplinary research consortium of German and Swiss scientists set out to address this topic. The 18 articles in this collection are the fruit of seven years of collaborative effort, and shed much light on sauropod anatomy and physiology. The contributions are arranged under four broad categories: 'Nutrition,' 'Physiology,' 'Construction,' and 'Growth.' The book considers probable diets and models of herbivory based on digestive morphology and the energy content of contemporary vegetation. The respiratory and circulatory systems receive close attention, especially the implications of recent evidence for avian-type air sacs, and the discussion of thermoregulation makes an important contribution to the long-running debate over endothermy in dinosaurs. Contributors also provide an in-depth examination of the structure, development, and evolution of skeletal anatomy. The volume includes several color plates and a lengthy subject index. A valuable acquisition for college libraries. Summing Up: Highly recommended. Upper-division undergraduates through researchers/faculty. --ChoiceB. E. Fleury, Tulane University, September 2011

In an effort to explain why and how the largest of the sauropod dinosaurs achieved their gargantuan size, a group of German and Swiss researchers worked together to explore dinosaur gigantism. The 38 authors included here are not just paleontologists but also specialists in zoology, animal nutrition, bone histology, computer modeling, and geochemistry, to list only some of the areas of expertise involved. Approaching the biology of the sauropods from four different perspectives-those of physiology, nutrition, growth, and construction-the researchers offer readers an integrated view representing the highlights of their seven years of multidisciplinary examination. Filled with 183 illustrations, including detailed diagrams, graphs, and schematics, this is a unique reference work.

Verdict While the book appears to be dauntingly scientific, it is actually remarkably accessible, even for the nonscientific reader. Dinosaur lovers will find it very interesting, while scientists will be deeply impressed by the research and results of the multidisciplinary approach.-Gloria Maxwell, Metropolitan Community Coll.-Penn Valley, Kansas City, MOLIBRARY JOURNAL, August 5, 2011

"While the book appears to be dauntingly scientific, it is actually remarkably accessible, even for the nonscientific reader. Dinosaur lovers will find it very interesting, while scientists will be deeply impressed by the research and results of the multidisciplinary approach." ?Library Journal, August 5, 2011

"Comprehensive." ?New York Times

"Provide[s] much new information on the biology of Sauropod dinosaurs; information extrapolated from studies of extant animals and from unique, new methodologies for examining fossil material." ?Virginia Tidwell, Denver Museum of Nature and Science

"This is a beautifully produced volume that will prove invaluable to anyone interested in the biology of Mesozoic vertebrates." ?Qtly Review of Biology

"This book is highly recommended for any library with natural history collections. It is a superb compendium of the latest sauropod research at a reasonable price." ?American Reference Books

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About the Author

Nicole Klein is a vertebrate paleontologist at the University of Bonn who specializes in saurodromorph dinosaur bone histology and marine reptiles from the Middle Triassic Muschelkalk deposits of Central Europe. She has done extensive fieldwork in many parts of the world, including Alaska and Nevada in the

United States, and Ethiopia.

Kristian Remes has studied sauropodomorph anatomy, functional morphology, and phylogeny. He played a major role in the remounting of the famous Brachiosaurus skeleton in the newly renovated Dinosaur Hall at the Museum für Naturkunde in Berlin. He is now a program director at the German Research Foundation (DFG).

Carole T. Gee, a senior research scientist at the University of Bonn, has worked on the Mesozoic flora for the last 25 years. She is the Research Unit's paleobotanist and answers questions on sauropod herbivory and the Mesozoic vegetation. Her research applies the knowledge of living plants and their ecological preferences to the interpretation of fossil plants and their habitats, and also includes studies on Eocene mangroves, Tertiary fruits and seeds, and plant taphonomy.

P. Martin Sander is a professor of vertebrate paleontology at the University of Bonn and head of the DFG Research Unit 533 "Biology of the Sauropod Dinosaurs: The Evolution of Gigantism." His research interests are the major events in the evolution of tetrapod vertebrates and how the fossil record helps us to understand them. His core expertise is the microstructure of dinosaur bone and the diversity and evolution of marine reptiles.

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