Basic Structure And Evolution Of Vertebrates

The Pattern of Vertebrate EvolutionComplex Organismal FunctionsEvolution of the VertebratesOrigin And Evolution Of VertebratesMajor Events in Early Vertebrate EvolutionPatterns and Processes of Vertebrate EvolutionGreat Transformations in Vertebrate EvolutionThe Vertebrate IntegumentVolume 1Major Patterns in Vertebrate EvolutionColbert's Evolution of the VertebratesEvolution of the VertebratesVertebrate EvolutionVertebratesStructure and Habit in Vertebrate EvolutionEvolution of Vertebrate DesignVertebrate History: Problems in EvolutionThe Origin of VertebratesBrains Through TimeVertebrates: Comparative Anatomy, Function, EvolutionEbook: Vertebrates: Comparative Anatomy, Function, Evolution L. B. Halstead D. B. Wake Edwin Harris Colbert Richa Arora Per Erik Ahlberg Robert Lynn Carroll Kenneth P. Dial Theagarten Lingham-Soliar Max Hecht Edwin H. Colbert Edwin H. Colbert Donald R. Prothero Kenneth V. Kardong George Stuart Carter Leonard B. Radinsky Barbara J. Stahl Walter Holbrook Gaskell Georg F. Striedter Kenneth Kardong Kenneth Kardong

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complex organismal functions integration and evolution in vertebrates d b wake g roth editors the complexity of forms and functions of organisms studied in an evolutionary context prompts a fundamental question of modern biology how did complex functional systems apparently stabilized by high degrees of integration evolve to their present diversity this and related questions were discussed by 48 distinguished scientists from many fields of vertebrate biology including functional and comparative morphologists neurobiologists reproductive biologists and endocrinologists developmental biologists ecologists ethologists population geneticists and

theorists at a dahlem workshop this volume is a report of that meeting the major areas of discussion were evolutionary diversification of feeding mechanisms evolution of locomotor systems trends in reproductive biology especially the repeated evolution of vertebrate viviparity and alternative and complementary concepts of the production of evolutionary novelties and patterns these topics reflect the excitement and dynamism of current debate in evolutionary biology and constitute a cohesive point of departure for further research

vertebrates chordates have several diagnostic characters which re absolutely distinctive separating them sharply from all forms of life the main contrast between invertebrate and vertebrate animals seems to be that as a whole the former are static organisms with little or no power of locomotion while the latter are essentially dynamic this book presents a scientific story of origin and evolution of vertebrates the information is grouped under thirteen chapters contentsorigin of vertebrates origin of land vertebrates origin of reptiles origin of dinosaurs origin of birds origin of mammals proboscideans horses camels south american mammal radiation prosimians the evolution of man the gradual appearance of man etc

a multi author volume major events in early vertebrate evolution examines the origin and early evolution of the backboned animals vertebrates the group which comprises all fishes amphibians reptiles birds and mammals including ourselves this volume draws together evidence from fossils genes and developmental biology the study of how embry

the factors that influenced the evolution of the vertebrates are compared with the importance of variation and selection that darwin emphasised in this broad study of the patterns and forces of evolutionary change

how did flying birds evolve from running dinosaurs terrestrial trotting tetrapods from swimming fish and whales return to swim in the sea these are some of the great transformations in the history of life events that have captured the imagination of scientists and the general public alike at first glance these major evolutionary events seem utterly impossible the before and after look so fundamentally different that the great transformations of the history of life not only seem impossible but unknowable the 500 million year history of vertebrates is filled with change and as a consequence every living species contains within its structure dna and fossil record a narrative of them a battery of new techniques and approaches from diverse fields of inquiry are now being marshaled to explore classic questions of evolution these approaches span multiple levels of biological organization from dna sequences to organs to the physiology and ecology of whole organisms analysis of developmental systems reveals deep homologies of the mechanisms that pattern organs as different as bird wings and fish fins whales with legs are one of a number of creatures that tell us of the great transformations in the history of life expeditions have discovered worms with a kind of head fishes with elbows wrists and necks feathered dinosaurs and human precursors to name only a few indeed in the last 20 years paleontologists have discovered more creatures informative of evolutionary transitions than in the

previous millennium the great transformations captures the excitement of these new discoveries by bringing diverse teams of renowned scientists together to attack particular transformations and to do so in a contents organized by body part head neck fins limbs and then the entire bauplan it is a work that will transform evolutionary biology and paleontology

the vertebrate integument arose about 450 million years ago as an armour of dermal bony plates in small jawless fish like creatures informally known as the ostracoderms this book reviews the major changes that have occurred in the vertebrate integument from its beginnings to the present day critical questions concerning the origin structure and functional biology of the bony integument are discussed and intrinsically linked to major steps in vertebrate evolution and phylogeny the origin of jaws and the origin of teeth the discussions include the origins of mineralization of major vertebrate skeletal components such as the dermatocranium branchial arches and vertebral column the advances that led to the origin of modern fishes and their phylogenetic development are reviewed and include the evolution of fins and replacement of the bony plates with several types of dermal scales the evolution of reptiles saw a major transformation of the integument with the epidermis becoming the protective outermost layer from which the scales arose while the dermis lay below it the biological significance of the newly evolved β keratin in reptilian scales among the toughest natural materials known is discussed in the context of its major contribution to the great success of reptiles and to the evolution of feathers and avian flight the dermis in many vertebrates is strengthened by layers of oppositely oriented cross fibres now firmly entrenched as a design principle of biomechanics throughout the book conventional ideas are discussed and a number of new hypotheses are presented in light of the latest developments the long evolutionary history of vertebrates indicates that the significance of the darwinian concept of survival of the fittest may be overstated including in our own mammalian origins and that chance often plays a major role in evolutionary patterns extensive illustrations are included to support the verbal descriptions professor theagarten lingham soliar is in the department of life sciences at the university of kwazulu natal

this volume is the result of a nato advanced study institute held in england at kingswood hall of residence royal holloway college london university surrey during the last two weeks of july 1976 the asi was organized within the guide lines laid down by the scientific affairs division of the north atlantic treaty organization during the past two decades significant advances have been made in our understanding of vertebrate evolution the purpose of the institute was to present the current status of our know ledge of vertebrate evolution above the species level since the subject matter was obviously too broad to be covered adequately in the limited time available selected topics problems and areas which are applicable to vertebrate zoology as a whole were reviewed the program was divided into three areas 1 the theory and methodology of phyletic inference and approaches to the an alysis of macroevolutionary trends as applied to vertebrates 2 the application of these methodological principles and an alytical processes to different groups and structures particular ly in anatomy and paleontology 3 the application of these re sults to classification the basic principles considered in the first area were outlined in lectures covering the problems of character analysis functional morphology karyological evidence biochemical evidence morphogenesis and biogeography

vertebrate evolution is studied through comparative anatomy and functional morphology of existing vertebrates as well as fossil records since the publication of the previous edition of colbert s evolution of the vertebrates a history of the backboned animals through time there have been significant advances in the knowledge surrounding backboned animals this latest edition of the classic text is completely revised to offer the most recent discoveries in this continually evolving field of science covering the various aspects of vertebrate life from skeletal system to ecology behavior and physiology the fifth edition includes new sections on conodonts dinosaurs primates and the origin of birds and discusses analysis of morphological and molecular data early diversification of vertebrates the evolution of dinosaurs the origin of mammals early ruling reptiles basic adaptation of ungulates colbert s evolution of the vertebrates fifth edition carries on its legacy as an invaluable reference for professionals in evolutionary biology and paleontology as well as an ideal textbook for students in those fields

a comprehensive survey of vertebrate evolution based upon our knowledge of the fossil record new edition introduces concept of plate tectonics and is completely up to date contains many attractive illustrations presupposes no prior scientific background

the first vertebrate animals appear in the fossil record over 520 million years ago these lineages diversified and eventually crept ashore leading to further evolutionary divergence and the appearance of the familiar charismatic vertebrates of today from the tiniest fishes diminutive salamanders and miniaturized lizards to gargantuan dinosaurs enormous brontotheres and immense whales vertebrates have captured the imagination of the lay public as well as the most erudite academics they are the among the best studied organisms this book employs beautifully rendered illustrations of these diverse lineages along with informative text to document a rich evolutionary history the prolific and best selling author reveals much of the latest findings regarding the phylogenetic history of vertebrates without overwhelming the reader with pedantry and excessive jargon simultaneously comprehensive and authoritative while being approachable and lucid this book should appeal to both the scholar the student and the fossil enthusiast key features provides an up to date account of evolution of vertebrates includes numerous beautiful color reconstructions of prehistoric vertebrates describes extinct vertebrates and their evolutionary history discusses and illustrates the first vertebrates as well as familiar lineages of fishes amphibians reptiles birds and mammals reviews mass extinctions and other important events in the diversification of vertebrates related titles bard j evolution the origins and mechanisms of diversity isbn 9780367357016 böhmer c et al atlas of terrestrial mammal limbs isbn 9781138705906 diogo r et al muscles of chordates development homologies and evolution isbn 9781138571167 schweitzer m h et al dinosaurs how we know what we know isbn 9780367563813

aimed at undergraduate students vertebrates presents both the structure and its evolutionary development and significance the integration of function and anatomy enables the reader to grasp the comparative nature of anatomy

the evolution of vertebrate design is a solid introduction to vertebrate evolution paleontology vertebrate biology and functional comparative anatomy its lucid style also

makes it ideal for general readers intrigued by fossil history clearly drawn diagrams illustrate biomechanical explanations of the evolution of fins jaws joints and body shapes among vertebrates a glossary of terms is included a luminous text is matched by lucid drawings rationally placed a great teaching monograph the book will charm lay readers of fossil history for virtually every college public collection scitech book news

in the origin of vertebrates walter holbrook gaskell presents a meticulously researched examination of vertebrate evolution seamlessly integrating anatomical studies with embryological findings through a detailed exploration of fossil records and comparative morphology gaskell elucidates the complex relationships among various vertebrate groups his literary style is both analytical and descriptive reflecting the scientific rigor of the late 19th century while remaining accessible to educated readers this work stands as a pivotal contribution to the field of paleontology and evolutionary biology situated within the broader context of victorian scientific inquiry where the unveiling of natural history was at the forefront of intellectual discourse walter holbrook gaskell a prominent british zoologist and comparative anatomist was driven by a profound curiosity about the mechanisms of evolution and the interconnectedness of life forms his extensive fieldwork and scholarly communications illuminated the gaps in existing vertebrate studies prompting him to undertake this ambitious project gaskell s multidisciplinary approach is evident synthesizing insights from embryology paleontology and comparative anatomy to craft a holistic understanding of vertebrate lineage readers with an interest in evolutionary biology or the history of scientific thought will find the origin of vertebrates an essential addition to their libraries gaskell s work not only contributes to a critical period in scientific history but also provides a foundation for contemporary discussions on vertebrate evolution this book is highly recommended for those keen on understanding the intricate web of life s origins in this enriched edition we have carefully created added value for your reading experience a succinct introduction situates the work s timeless appeal and themes the synopsis outlines the central plot highlighting key developments without spoiling critical twists a detailed historical context immerses you in the era s events and influences that shaped the writing a thorough analysis dissects symbols motifs and character arcs to unearth underlying meanings reflection questions prompt you to engage personally with the work s messages connecting them to modern life hand picked memorable quotes shine a spotlight on moments of literary brilliance interactive footnotes clarify unusual references historical allusions and archaic phrases for an effortless more informed read

when did the first vertebrates emerge and how did they differ from their invertebrate ancestors when did vertebrates evolve jaws paired fins pattern vision or a neocortex how have evolutionary innovations such as these impacted vertebrate behavior and success georg striedter and glenn northcutt answer these fundamental questions about all major vertebrate lineages highlighting the key innovations of each major taxonomic group they review how evolutionary changes in vertebrate genetics anatomy and physiology are reflected in the nervous system this highly accessible book allows readers to explore a vast expanse of scientific knowledge ranging from paleoecology to comparative molecular biology sensory biology to neural circuit evolution and fossil anatomy to animal behavior brains through time examines how vertebrate nervous systems evolved in conjunction with other organ systems and the planet s ecology surveying an enormous range of information on genes and proteins sensory and motor systems central neural circuits physiology and animal behavior the authors reconstruct the major changes that occurred as vertebrates

emerged and then diversified in the process readers are transported back in time to key stages of vertebrate evolution notably the origin of vertebrates the evolution of paired fins and jaws the transition to life on land and the origins of warm blooded mammals and birds

this one semester text is designed for an upper level majors course vertebrates features a unique emphasis on function and evolution of vertebrates complete anatomical detail and excellent pedagogy vertebrate groups are organized phylogenetically and their systems discussed within such a context morphology is foremost but the author has developed and integrated an understanding of function and evolution into the discussion of anatomy of the various systems

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