CHORDATE ORIGINS AND EVOLUTION

The Molecular Evolutionary Road to Vertebrates

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Chordate Origins and Evolution: The Molecular Evolutionary Road to Vertebrates addresses this topic from various points of view, based on recent advances in paleontology, molecular phylogeny, comparative genomics, and evolutionary developmental biology. The origin and evolution of chordates is one of the most mysterious and intriguing phenomena in evolutionary developmental biology, and since Charles Darwin proposed the concept of organismal evolution in 1859, chordate evolution and origins have been studied, discussed, and debated vigorously for more than 150 years. Although understanding advanced relatively little through the late 1980s, since the early 1990s molecular developmental biological techniques have allowed these questions to be addressed by evo-devo investigations. Many previous opinions, hypotheses, or theories have been re-examined, and/or new hypotheses proposed for the evolutionary scenarios of deuterostome and chordate origins. The expansion of our understanding of chordate evolution has elevated evo-devo research to one of the most exciting topics in biology.

This fascinating work focuses on echinoderms (starfish, sea urchins, and others), hemichordates (acorn worms, etc.), cephalochordates (lancelets), urochordates or tunicates (ascidians, larvaceans and others), and vertebrates. Evolution of these groups is generally covered independently, on a larger scale: ambulacrarians (echi+hemi) and chordates (cephlo+uro+vert); and until now, discussion of these topics has been somewhat fragmented. This volume provides a unified presentation of the essential information that will be useful to a variety of readers, including general biologists, zoologists, evolutionary developmental biologists, evolutionary biologists, paleontologists, molecular phylogenists, and comparative genomics researchers, among others.

Key Features

- Provides valuable information regarding each phylum and an integrative understanding of molecular mechanisms involved in the origin and evolution of chordates
- Covers the most significant advances in this field to give readers an understanding of the thought-provoking biological issues involved
- Discusses the evolutionary scenario of chordates based on two major characteristic features of animals—feeding (energy sources) and reproduction—as the two main forces driving animal evolution, benefiting dialogue for future studies

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