

Understanding Neural Development

Workshop Summary

Understanding the Basic Plan

Structure and Evolution of Invertebrate Nervous Systems

The Science of Early Childhood Development

This is the most comprehensive book to be written on the subject of fetal MRI. It provides a practical hands-on approach to the use of state-of-the-art MRI techniques and the optimization of sequences. Fetal pathological conditions and methods of prenatal MRI diagnosis are discussed by organ system, and the available literature is reviewed. Interpretation of findings and potential artifacts are thoroughly considered with the aid of numerous high-quality illustrations. In addition, the implications of fetal MRI are explored from the medico-legal and ethical points of view. This book will serve as a detailed resource for radiologists, obstetricians, neonatologists, geneticists, and any practitioner wanting to gain an in-depth understanding of fetal MRI technology and applications. In addition, it will provide a reference source for technologists, researchers, students, and those who are implementing a fetal MRI service in their own facility.

This 1999 edition of *The Neural Crest* contains comprehensive information about the neural crest, a structure unique to the vertebrate embryo, which has only a transient existence in early embryonic life. The ontogeny of the neural crest embodies the most important issues in developmental biology, as the neural crest is considered to have played a crucial role in evolution of the vertebrate phylum. Data that analyse neural crest ontogeny in murine and zebrafish embryos have been included in this revision. This revised edition also takes advantage of recent advances in our understanding of markers of neural crest cell subpopulations, and a full chapter is now devoted to cell lineage analysis. The major research breakthrough since the first edition has been the introduction of molecular biology to neural crest research, enabling an elucidation of many molecular mechanisms of neural crest development. This book is essential reading for students and researchers in developmental biology, cell biology, and neuroscience.

Comprehensive, up-to-date and authoritative, this volume covers all the recent advances in understanding the early events of neural development at the molecular and cellular levels. The authors detail the applications of molecular genetic methods to the study of neural induction, neuronal phenotypes and processes, and the formation of specific patterns of connections. They analyze the new information generated through modern techniques for identifying, cloning, deleting and introducing specific genes, for labeling neuronal or glial precursors, and for imaging individual neurons or parts of neurons. Other chapters focus on the increasing use of a variety of model organisms: fruit flies, nematode worms, zebra fish, xenopus frogs, chicks, and mice. The improved conservation of DNA and protein sequences, and the availability of gene and protein databases have made it possible to rapidly identify gene homologues in organisms sometimes separated by hundreds of millions of years of evolution. This volume features several chapters co-authored by investigators one of whom works on vertebrates and the other on invertebrates. They demonstrate clearly that although the nervous systems of a fruit fly and a mouse, for example, are quite different in appearance and organization, many of the same molecular players and cellular processes are involved in their assembly. *Molecular and Cellular Approaches to Neural Development* will be of great practical interest to researchers, graduate students and post-doctoral fellows in developmental, cell and molecular biology, genetics, and neuroscience.

An Introduction to Neural Development

Evolution of Nervous Systems

Conn's Translational Neuroscience