

# **Developmental Neuroscience: A Concise Introduction**

By Susan E. Fahrbach



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This textbook offers a concise introduction to the exciting field of developmental neuroscience, a discipline concerned with the mechanisms by which complex nervous systems emerge during embryonic growth. Bridging the divide between basic and clinical research, it captures the extraordinary progress that has been achieved in the field. It provides an opportunity for students to apply and extend what they have learned in their introductory biology courses while also directing them to the primary literature.

This accessible textbook is unique in that it takes an in-depth look at a small number of key model systems and signaling pathways. The book's chapters logically follow the sequence of human brain development and explain how information obtained from models such as *Drosophila* and zebrafish addresses topics relevant to this area. Beginning with a brief presentation of methods for studying neural development, the book provides an overview of human development, followed by an introduction to animal models. Subsequent chapters consider the molecular mechanisms of selected earlier and later events, neurogenesis, and formation of synapses. Glial cells and postembryonic maturation of the nervous system round out later chapters. The book concludes by discussing the brain basis of human intellectual disabilities viewed from a developmental perspective.

Focusing on the mechanistic and functional, this textbook will be invaluable to biology majors, neuroscience students, and premedical and pre-health-professions students.

- An accessible introduction to nervous system development
- Suitable for one-semester developmental neuroscience course
- Thorough review of key model systems
- Selective coverage of topics allows professors to personalize courses
- Investigative reading exercises at the end of each chapter
- An online illustration package is available to professors

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#### **Editorial Review**

From the Back Cover

"Written with a rare lucidity and grace, Susan Fahrbach's *Developmental Neuroscience* offers a systematic and logical account of the development of nerve cells and nervous systems, human and otherwise. The book is lecture friendly and the supplementary reading questions are ideal for college courses. It will be of surpassing interest to professors seeking a current treatment of developmental neuroscience."--Donald Pfaff, Rockefeller University and editor of *Neuroscience in the 21st Century* 

"The words 'delightful textbook' do not often occur together but they describe *Developmental Neuroscience* to a tee. Susan Fahrbach has an exceptional voice and, coupled with a deep scholarly bent, a keen ability for explaining the importance of developmental phenomena and how we come to understand them. There is much that is new here even for longtime instructors of the subject. This is a truly valuable addition to the field."--Darcy Kelley, Columbia University

"Developmental Neuroscience is an elegantly written take on a subject rooted in classical embryology but now yielding to the contemporary tools of molecular genetics and neuroimaging. Fahrbach's approach is patient and steady, surveying the current state of understanding through humans and different model organisms, with a sensitive ear to the cultural issues and contexts that will inform and motivate students."-- David Clayton, Queen Mary, University of London

"This is the ideal textbook for students who want to think about particular big-picture topics and engage with the primary literature. With simple language, good points, interesting anecdotes, big ideas, and nice tie-in questions, the book provides broad brushstrokes on important issues, which then allows students, through guided discussion, to delve into specific developmental processes or signaling pathways."--Christopher Korey, College of Charleston

About the Author

Susan E. Fahrbach is the Reynolds Professor of Developmental Neuroscience in the Department of Biology at Wake Forest University.

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