

Preface

Developmental biology investigates and describes, in the broadest sense, changes in organisms from their origins to birth, and on into adulthood, or even to death. Developmental changes are characterized by increasing complexity and specialization of cells and organs. Research in developmental biology has always been a combination of experiment and description. Although mostly morphologically oriented in its beginnings, developmental biology has experienced exponential growth in the 20th century following its fruitful merger with molecular biology and genetics during the 1980s and 1990s.

What we are currently witnessing is the integration of molecular cell biology into developmental biology, with the goal of eventually understanding all developmental events at the level of and as the result of cell biological events. Following this trend, we may ultimately expect to understand development at the resolutional level of molecular machines, individual molecules, and even atoms. The elucidation of signaling between developing cells and the analysis of intracellular signaling networks represent an intermediate but important and indispensable step in the attainment of this goal.

This book addresses representative examples of inter- and intracellular signaling in development involving growth and transcription factors. The various chapters cover general aspects of development such as e.g. stem cells, implantation and placentation, generation of cell diversity, cell migration, cell death, anterior-posterior and dorso-ventral patterning. Chapters concerning the development of specific structures and organs address, *inter alia*, the nervous system, gastrointestinal, respiratory, and reproductive tracts, cardiovascular and excretory systems, sense organs, and limb, skeletal and muscle development.

We thank all the authors for having taken on the burden of writing these extensive reviews and sharing with the community their profound knowledge of their specialist subjects. We are particularly grateful to those authors who submitted their chapters early and who have shown great patience in awaiting the completed volumes.

We also thank all the reviewers, who through their critically assessments have helped the authors to maximize the quality of their chapters.

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Klaus Unsicker and Kerstin Krieglstein