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Nota di contenuto	Part I. Somatic Cell Development from the Epiblast -- Chapter 1. The Epiblast and Pluripotent Stem Cell Lines -- Chapter 2. Different Types of Pluripotent Stem Cells Represent Different Developmental Stages -- Chapter 3. Gastrulation: Its Principles and Variations -- Chapter 4. How the Brain Develops from the Epiblast: The Node Is Not an Organizer -- Part II -- New Conceptions of Developmental Regulations -- Chapter 5. Multiple Cell Lineages Give Rise to a Cell Type -- Chapter 6. Organ Regeneration without Relying on Regeneration-Dedicated Stem Cells -- Chapter 7. Reciprocal Interactions Between the Epithelium and Mesenchyme in Oorganogenesis.-Chapter 8. The Significance of Repressive Processes in Developmental Regulation -- Part III. Transcriptional Regulation of Development -- Chapter 9. Enhancer

Arrays Regulating Developmental Genes: Sox2 Enhancers as a Paradigm -- Chapter 10. Enhancer Activation by Transcription Factors and Underlying Mechanisms -- Chapter 11. Molecular Basis of Cell Reprogramming into iPSCs with Exogenous Transcription Factors.

Sommario/riassunto

This book provides a comprehensive overview of the molecular basis of developmental and stem cell regulation. It revisits some of the classical models of developmental biology and puts them in context with the findings of modern stem cell research and developmental biology. Biomedical research is embarking on a new era due to new tools, which are exemplified by stem cell technologies, single-cell transcriptome analysis, and live imaging at a single-cell resolution. Publications based on cutting-edge technologies do often not provide the readers with deep biological backgrounds. This causes the risk that precious data are reduced to highly specific descriptions without sufficient biological contexts. Contemporary developmental biology on the other hand as written in many textbooks, is to a significant extent based on conceptions backdated many decades ago, and is not necessarily supported by recent findings. Yet, the prevailing classical notions tend to mislead modern biomedical researches. This book not only presents current models for developmental processes but also reinterprets and re-evaluates classic observations, thus linking classical and modern worlds of developmental biology. Spanning from molecular mechanisms to highly embryological matters it provides a bridge between these different disciplines. Written for advanced students of developmental and stem cell biology, researchers and teaching scholars, this book provides a new road map to modern developmental biology and stem cell biology.