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Nota di contenuto	Chapter 1. "Explanation in Biology: An Introduction" -- PART I -- EXPLORING EXPLANATORY PLURALISM IN BIOLOGY -- Chapter 2. "Is There an Explanation for the Diversity of Explanations in Biological Sciences?" -- Chapter 3. "Explanation in Systems Biology: Is It All About Mechanisms?" -- Chapter 4. "Historical Contingency and the Explanation of Evolutionary Trends" -- Chapter 5. "Developmental Noise: Explaining the Specific Heterogeneity of Individual Organisms" -- PART II -- MECHANISTIC EXPLANATION: APPLICATIONS AND EMENDATIONS -- Chapter 6. "Explaining in Contemporary Molecular Biology: Beyond Mechanisms" -- Chapter 7. "Evolutionary Developmental Biology and the Limits of Philosophical Accounts of Mechanistic Explanation" -- Chapter 8. "The Relevance of Irrelevance: Explanation in Systems Biology" -- Chapter 9. "Graph-Theoretic Perspectives on Dynamic Mechanistic Explanation" -- PART III -- THE

ROLE OF MATHEMATICS IN BIOLOGICAL EXPLANATIONS -- Chapter 10. "Mathematical Explanation in Biology" -- Chapter 11. "Explanation and Organizing Principles in Systems Biology" -- Chapter 12. "Are dynamic mechanistic explanations still mechanistic?" -- PART IV – THE ROLE OF HEURISTICS IN BIOLOGICAL EXPLANATIONS -- Chapter 13. "Heuristics, Descriptions, and the Scope of Mechanistic Explanation" -- Chapter 14. "Prospect and Limits of Explaining Biological Systems in Engineering Terms" -- Chapter 15. "From Mechanisms to Mathematical Models and Back to Mechanisms: Quantitative Mechanistic Explanations" -- PART V – NEW THEORIES OF EXPLANATION IN BIOLOGY AND ELSEWHERE -- Chapter 16. "Biological Explanations as Cursors Covering Law Explanations" -- Chapter 17. "Explaining Cell Development: Stem Cells and Reprogramming" -- Chapter 18. "Explaining Causal Selection with Explanatory Causal Economy : Biology and Beyond".

Sommario/riassunto

Patterns of explanation in biology have long been recognized as different from those deployed in other scientific disciplines, especially physics. Celebrating the diversity of explanatory models found in biology, this volume details their varying types as well as their relationships to one another. It covers the key current debates in the philosophy of biology over the nature of explanation, and its apparent diversity that stems from a variety of historical, causal, mechanistic, or mathematical explanatory practices. Offering a wealth of fresh analyses on the nature of explanation in contemporary biology chapters examine aspects ranging from the role of mathematics in explaining cell development to the complexities thrown up by evolutionary-developmental biology, where explanation is altered by multidisciplinary itself. They cover major domains such as ecology and systems biology, as well as contemporary trends, such as the mechanistic explanations spawned by progress in molecular biology. With contributions from researchers of many different nationalities, the book provides a many-angled perspective on a revealing feature of the discipline of biology.
