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Nota di contenuto	Annelids in Modern Biology; Contents; Preface; Contributors; Part I Annelids as Model Systems in Biology; 1. Developing Models for Lophotrochozoan and Annelid Biology; 1.1 Introduction; 1.2 Phylogenetic Considerations; 1.3 Genetic and Developmental Tools; 1.4 Annelid Model Organisms; 1.5 Other Potential Annelid Models; 2. Annelid Phylogeny-Molecular Analysis with an Emphasis on Model Annelids; 2.1 Introduction; 2.2 Genes; 2.3 Molecular Annelid Phylogeny; 2.4 Choosing Model Organisms; 2.5 Branch Lengths; 2.6 Problems in Inferring Annelid Phylogeny; 2.7 Conclusions 3. Cryptic Speciation in Clitellate Model Organisms3.1 Introduction; 3.2 Sources and Kinds of Variation; 3.3 Examples of Clitellate Model Organisms; 3.4 Cryptic Speciation; 3.5 Conclusions and Recommendations; 4. Annelid Life Cycle Cultures; 4.1 Introduction; 4.2 Criteria for the Selection of Species; 4.3 Summary of Culture Techniques; 4.4 Life Cycle Cultures of Polychaeta; 4.5 Life Cycle Cultures of Oligochaeta; 4.6 Life Cycle Cultures of Hirudinea (Leeches); Part II Evolution and Development; 5. Annelids in Evolutionary Developmental Biology; 5.1 Introduction; 5.2 Evo-Devo Today

5.3 Evo-Devo as Comparative Biology; 5.4 Why Annelid Development Is Interesting for Metazoan Evo-Devo Biologists; 5.5 Case Study 1: Segmentation; 5.6 Case Study 2: Spiral Cleavage and Axis Specification; 5.7 Tools for Analyzing Molecular Mechanisms of Development; 5.8 The Future of the Annelid Model Systems for Evo-Devo; 6. Evolution, Development and Ecology of *Capitella* sp. I: A Waxing Model for Polychaete Studies; 6.1 Introduction; 6.2 Speciation Studies; 6.3 *Capitella* Sp. 1 Morphology; 6.4 Replacement of Lost Segments and Reproductive Trade-Offs; 6.5 Metatrochophores, Ciliary Bands and Musculature; 6.6 Gene Expression during the Specification and Differentiation of Germ Layers; 6.7 Sex among the Vermes; 6.8 Annelids and the Segmentation Debate; 6.9 A-P Polarity-Hox and ParaHox Genes; 6.10 Annelid Genomics: Draft Genome Sequence; 6.11 The Future-Where Is This Going?; 7. Stem Cell Genesis and Differentiation in Leech; 7.1 Introduction; 7.2 Stem Cell Genesis and Development; 7.3 Factors Affecting Stem Cell Genesis; 7.4 Stem Cell Differentiation; 7.5 Gene Expression; 7.6 Conclusion; Part III Neurobiology and Regeneration; 8. Cellular and Behavioral Properties of Learning in Leech and Other Annelids; 8.1 Introduction; 8.2 Learning in the Leech Whole-Body Shortening Reflex and Role of the S Interneuron; 8.3 Role of the S Interneuron: Modulation of Excitability; 8.4 Learning in the Leech Swim Circuit; 8.5 Using the Leech to Study Intrinsic Forms of Sensitization; 8.6 Synaptic Plasticity in Leech CNS; 8.7 Conclusions; 9. Development, Regeneration and Immune Responses of the Leech Nervous System; 9.1 Introduction; 9.2 Background; 9.3 Recent Work on the Development of the Nervous System; 9.4 Neuronal Regeneration and Repair

## Sommario/riassunto

Annelids offer a diversity of experimentally accessible features making them a rich experimental subject across the biological sciences, including evolutionary development, neurosciences and stem cell research. This volume introduces the Annelids and their utility in evolutionary developmental biology, neurobiology, and environmental/ecological studies, including extreme environments. The book demonstrates the variety of fields in which Annelids are already proving to be a useful experimental system. Describing the utility of Annelids as a research model, this book is an invaluable resource