

## Modeling Biology: Structures, Behaviors, Evolution (Vienna Series in Theoretical Biology)

Manfred D. Laubichler, Gerd B. Müller

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Abstract and conceptual models have become an indispensable tool for analyzing the flood of highly detailed empirical data generated in recent years by advanced techniques in the biosciences. Scientists are developing new modeling strategies for analyzing data, integrating results into the conceptual framework of theoretical biology, and formulating new hypotheses. In Modeling Biology, leading scholars investigate new modeling strategies in the domains of morphology, development, behavior, and evolution. The emphasis on models in the biological sciences has been accompanied by a new focus on conceptual issues and a more complex understanding of epistemological concepts. Contributors to Modeling Biology discuss models and modeling strategies from the perspectives of philosophy, history, and applied mathematics. Individual chapters discuss specific approaches to modeling in such domains as biological form, development, and behavior. Finally, the book addresses the modeling of these properties in the context of evolution, with a particular emphasis on the emerging field of evolutionary developmental biology (or evo-devo). Contributors Giorgio A. Ascoli, Chandrajit Bajaj, James P. Collins,, Luciano da Fontoura Costa, Kerstin Dautenhahn, Nigel R. Franks, Scott Gilbert, Marta Ibañes Miguez, Juan Carlos Izpisúa-Belmonte, Alexander S. Klyubin, Thomas J. Koehnle, Manfred D. Laubichler, Sabina Leonelli, James A. R. Marshall, George R. McGhee Jr., Gerd B. Müller, Chrystopher L. Nehaniv, Karl J. Niklas, Lars Olsson, Eirikur Palsson, Daniel Polani, Diego Rasskin Gutman, Hans-Jörg Rheinberger, Alexei V. Samsonovich, Jeffrey C. Schank, Harry B. M. Uylings, Jaap van Pelt, Iain Werry Manfred D. Laubichler is Assistant Professor in the School of Life Sciences at Arizona State University. He is the coeditor of From Embryology to Evo-Devo (MIT Press, 2007). Gerd B. Müller is Professor and Head of the Department of Theoretical Biology at the University of Vienna. He is a coeditor of Origination of Organismal Form (MIT Press, 2003) and Environment, Development, Evolution (MIT Press, 2003).



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