
PREFACE

This text presents biology as an autonomous science from the perspective of fundamental modeling techniques. It is designed as a desk reference for practitioners of diverse fields of life sciences, as well as for these intellectually mature individuals who would, themselves, like to practice the art of systems biology in the future.

Albeit systems biology exists for well over two millennia, it has enjoyed a spectacular rejuvenation in the recent years. The computer has indeed been a major tool for systems scientists, including systems biologists, since at least the 1960s. This is probably a reason why most conceptual foundations of today's systems biology appear to be expressed with the help of terminology borrowed from logic (Chapters 1, 7, and 8), linguistic (Chapters 1, 7, and 8), theory of knowledge (Chapters 1, 2, 4, 5, 7, and 8), computer science (Chapter 1, 2, and 8), general systems theory (Chapters 1, 6, and 7), and dynamical systems (Chapters 2, 3, 5, 6, and 9). Because of the diversity of flavors of possible applications, the general modeling methods are presented from several different perspectives such as for instance biochemistry (Chapter 2), thermodynamics (Chapters 3 and 9), engineering (Chapters 7 and 8), and ecology (Chapter 5).

Each chapter has been carefully reviewed and edited such that it will most likely provide the reader with a factually and methodologically rigorous state-of-the-art tutorial, survey, and review of modeling convoluted (complex) organic systems. Of course it would be naïve to guarantee that all mistakes or misstatements are eliminated by the editing (most probably are). If any errors are left, I will certainly feel responsible for them and therefore I would greatly appreciate it if the readers could point them out to me by writing an e-mail or a "snail" mail.

At this point, I would like to extend my most sincere thanks to Jean-Loup Risler (University of Evry) and Laurie F. Fleischman (BioLingua™ Research, Inc.) for multiple reading, reviewing, and help with editing the scientific content of the chapters of this handbook. The task of meritoriously revising the final drafts of this book would have simply been impossible without their selfless contribution. I would also like to thank our outstanding acquisition editor Anita Lekhwani who not only initiated this project but also relentlessly motivated it until its fruition, with her enthusiasm and spectacular resolve. Finally, I also owe thanks to my organization, BioLingua™ Research, Inc., and its board of directors for their enthusiastic support of my involvement in this project, as well as for releasing me from the fund-raising duties and teaching assignments during almost the whole of 2005.

Andrzej K. Konopka
Gaithersburg, MD