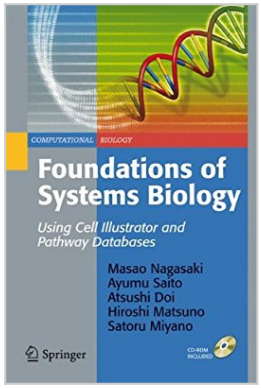

Foundations of Systems Biology: Using Cell Illustrator and Pathway Databases (Computational Biology)

By Masao Nagasaki, Ayumu Saito, Atsushi Doi, Hiroshi Matsuno, Satoru Miyano

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Today, as hundreds of genomes have been sequenced and thousands of proteins and more than ten thousand metabolites have been identi?ed, navigating safely through this wealth of information without getting completely lost has become crucial for research in, and teaching of, molecular biology. Consequently, a considerable number of tools have been developed and put on the market in the last two decades that describe the multitude of potential/putative interactions between genes, proteins, metabolites, and other biologically relevant compounds in terms of metabolic, genetic, signaling, and other networks, their aim being to support all sorts of explorations through bio-data bases currently called Systems Biology. As a result, navigating safely through this wealth of information-processing tools has become equally crucial for successful work in molecular biology. To help perform such navigation tasks successfully, this book starts by providing an extremely useful overview of existing tools for ?nding (or designing) and inv- tigating metabolic, genetic, signaling, and other network databases, addressing also user-relevant practical questions like • Is the database viewable through a web browser? • Is there a licensing fee? • What is the data type (metabolic, gene regulatory, signaling, etc.)? • Is the database developed/maintained by a curator or a computer? • Is there any software for editing pathways? • Is it possible to simulate the pathway? It then goes on to introduce a speci?c such tool, that is, the fabulous “Cell - lustrator 3. 0” tool developed by the authors.

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Editorial Review

From the Back Cover

Navigating safely through a wealth of genome, protein and metabolite information, as well as a host of information processing tools, without getting lost is crucial for successful research in – and teaching of - molecular biology.
This concise, easy-to-follow textbook/guide serves as a valuable introduction to contemporary cell biology for readers and offers insight into the key research directions in the field. It begins with an overview of existing tools for finding, designing and investigating metabolic, genetic, signalling and other network databases. This practical guide then introduces Cell Illustrator®, a software tool for biological pathway modelling and simulation, developed by the authors. In-depth discussion reveals how this tool can be used for creating, analyzing and simulating biological models, thereby explicating and testing current understanding of basic biological processes. Readers do not require prior knowledge of differential equations or programming.
Features:
• Provides many helpful learning aids, such as detailed examples throughout, and exercises and solutions
• Designed and structured to be part of a semester-long course
• Discusses the computational functionalities required for Systems Biology
• Addresses practical issues surrounding software tools
• Introduces the current big bio-databases such as TRANSPATH® by Biobase, and explains why and how they can be used to develop and support systems biology research
• Explains important pathway databases and software tools, together with their related concepts
• Guides the reader to model pathways in a step-by-step and clear manner
• Contains a Foreword written by Professor Andreas Dress, Director CAS-MPG Partner Institute for Computational Biology, Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences
Written for undergraduates, this reader-friendly introduction to the field of Systems Biology offers insight and teaches sound expertise in the subject. It will also prove valuable to graduate students and professionals wishing to develop and support their systems-biology research.

Users Review

From reader reviews:

Bobbie Wallace:

Nowadays reading books are more than want or need but also get a life style. This reading habit give you lot of advantages. Advantages you got of course the knowledge the actual information inside the book which improve your knowledge and information. The knowledge you get based on what kind of publication you read, if you want attract knowledge just go with knowledge books but if you want really feel happy read one together with theme for entertaining for instance comic or novel. The actual Foundations of Systems Biology: Using Cell Illustrator and Pathway Databases (Computational Biology) is kind of guide which is giving the reader capricious experience.

Shanon Stephens:

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