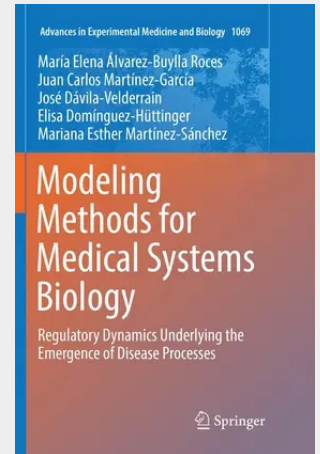


Modeling Methods for Medical Systems Biology

Regulatory Dynamics Underlying the Emergence of Disease Processes

This book contributes to better understand how lifestyle modulations can effectively halt the emergence and progression of human diseases. The book will allow the reader to gain a better understanding of the mechanisms by which the environment interferes with the bio-molecular regulatory processes underlying the emergence and progression of complex diseases, such as cancer. Focusing on key and early cellular bio-molecular events giving rise to the emergence of degenerative chronic disease, it builds on previous experience on the development of multi-cellular organisms, to propose a mathematical and computer based framework that allows the reader to analyze the complex interplay between bio-molecular processes and the (micro)-environment from an integrative, mechanistic, quantitative and dynamical perspective. Taking the wealth of empirical evidence that exists it will show how to build and analyze models of core regulatory networks involved in the emergence and progression of chronic degenerative diseases, using a bottom-up approach.

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