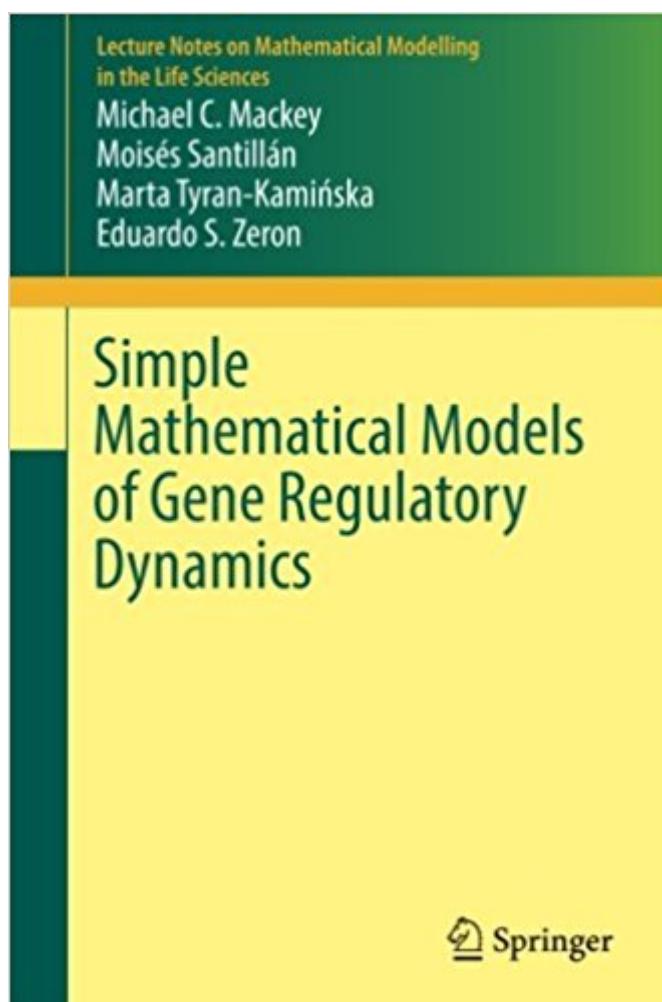


The book was found

Simple Mathematical Models Of Gene Regulatory Dynamics (Lecture Notes On Mathematical Modelling In The Life Sciences)



Synopsis

This is a short and self-contained introduction to the field of mathematical modeling of gene-networks in bacteria. As an entry point to the field, we focus on the analysis of simple gene-network dynamics. The notes commence with an introduction to the deterministic modeling of gene-networks, with extensive reference to applicable results coming from dynamical systems theory. The second part of the notes treats extensively several approaches to the study of gene-network dynamics in the presence of noise—either arising from low numbers of molecules involved, or due to noise external to the regulatory process. The third and final part of the notes gives a detailed treatment of three well studied and concrete examples of gene-network dynamics by considering the lactose operon, the tryptophan operon, and the lysis-lysogeny switch. The notes contain an index for easy location of particular topics as well as an extensive bibliography of the current literature. The target audience of these notes are mainly graduates students and young researchers with a solid mathematical background (calculus, ordinary differential equations, and probability theory at a minimum), as well as with basic notions of biochemistry, cell biology, and molecular biology. They are meant to serve as a readable and brief entry point into a field that is currently highly active, and will allow the reader to grasp the current state of research and so prepare them for defining and tackling new research problems.

Book Information

Series: Lecture Notes on Mathematical Modelling in the Life Sciences

Paperback: 124 pages

Publisher: Springer; 1st ed. 2016 edition (November 11, 2016)

Language: English

ISBN-10: 3319453173

ISBN-13: 978-3319453170

Product Dimensions: 6.1 x 0.3 x 9.2 inches

Shipping Weight: 8 ounces (View shipping rates and policies)

Average Customer Review: Be the first to review this item

Best Sellers Rank: #723,008 in Books (See Top 100 in Books) #148 in Books > Science & Math > Biological Sciences > Biophysics #200 in Books > Textbooks > Medicine & Health Sciences > Medicine > Basic Sciences > Genetics #414 in Books > Science & Math > Mathematics > Applied > Differential Equations

Customer Reviews

“The book represents a systematic overview of the field, however, its style makes it accessible mainly to post graduates and established researchers. Nevertheless, the thorough approach based on both definitions, theorems and practical examples makes the book a reliable, self-contained, and comprehensive study.” (Irina Ioana Mohorianu, zbMATH 1360.92002, 2017)

This is a short and self-contained introduction to the field of mathematical modeling of gene-networks in bacteria. As an entry point to the field, we focus on the analysis of simple gene-network dynamics. The notes commence with an introduction to the deterministic modeling of gene-networks, with extensive reference to applicable results coming from dynamical systems theory. The second part of the notes treats extensively several approaches to the study of gene-network dynamics in the presence of noise—either arising from low numbers of molecules involved, or due to noise external to the regulatory process. The third and final part of the notes gives a detailed treatment of three well studied and concrete examples of gene-network dynamics by considering the lactose operon, the tryptophan operon, and the lysis-lysogeny switch. The notes contain an index for easy location of particular topics as well as an extensive bibliography of the current literature. The target audience of these notes are mainly graduates students and young researchers with a solid mathematical background (calculus, ordinary differential equations, and probability theory at a minimum), as well as with basic notions of biochemistry, cell biology, and molecular biology. They are meant to serve as a readable and brief entry point into a field that is currently highly active, and will allow the reader to grasp the current state of research and so prepare them for defining and tackling new research problems.

[Download to continue reading...](#)

Simple Mathematical Models of Gene Regulatory Dynamics (Lecture Notes on Mathematical Modelling in the Life Sciences) Lecture Notes on Mathematical Olympiad Courses: For Junior Section Vol 1 (Mathematical Olympiad Series) Clay Modelling for Beginners: An Essential Guide to Getting Started in the Art of Sculpting Clay ~ (Clay Modelling | Clay Modeling | Clay Art) Models of the Stochastic Activity of Neurones (Lecture Notes in Biomathematics) Linear Mixed Models in Practice: A SAS-Oriented Approach (Lecture Notes in Statistics) Lattice Models of Polymers (Cambridge Lecture Notes in Physics) The Crisis in Telecommunications Carrier Liability: Historical Regulatory Flaws and Recommended Reform (Topics in Regulatory Economics and Policy) Tunneling Dynamics in Open Ultracold Bosonic Systems: Numerically Exact Dynamics & Analytical Models & Control Schemes (Springer Theses) Gene Simmons Coloring Book:

Glam Rock and Kiss Guitarist Facepaint Pioneer and Pyro Showman Inspired Adult Coloring Book (Gene Simmons Books) Lecture Notes on Mathematical Olympiad Courses: For Senior Section (in 2 Volumes) Lecture Notes on Mathematical Olympiad Courses: For Junior Section (2 Volume Set) Mathematical Theory of Nonequilibrium Steady States: On the Frontier of Probability and Dynamical Systems (Lecture Notes in Mathematics) Strategic Safety Stocks in Supply Chains (Lecture Notes in Economics and Mathematical Systems) Modelling and Control of Dynamic Systems Using Gaussian Process Models (Advances in Industrial Control) Lecture Ready Student Book 2, Second Edition (Lecture Ready Second Edition 2) Understanding Nonlinear Dynamics (Textbooks in Mathematical Sciences) Glencoe Biology: The Dynamics of Life, Reinforcement and Study Guide, Student Edition (BIOLOGY DYNAMICS OF LIFE) Credit Risk Management: Basic Concepts: Financial Risk Components, Rating Analysis, Models, Economic and Regulatory Capital Topics in Algebraic and Analytic Geometry. (MN-13), Volume 13: Notes From a Course of Phillip Griffiths (Mathematical Notes) Pharmacokinetics: Regulatory, Industrial, Academic Perspectives (Drugs and the Pharmaceutical Sciences)

[Contact Us](#)

[DMCA](#)

[Privacy](#)

[FAQ & Help](#)