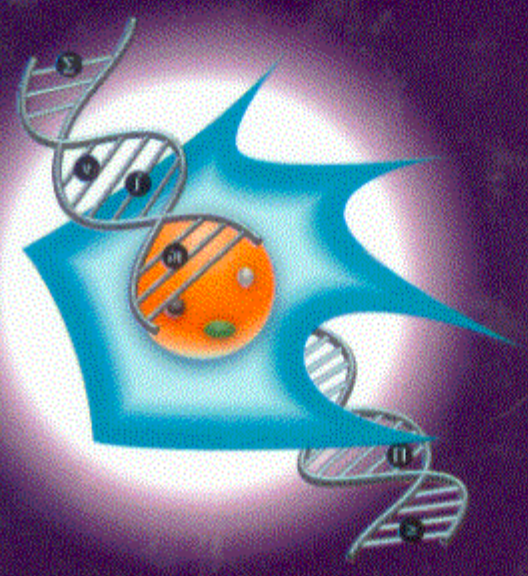

An Invitation to Biomathematics

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"I was impressed with the excellent job done by the authors…particularly, how the biology is explained first and then the math necessary to solve the problem is developed."
—Phil Ryan, Truman State University

"An exciting and inspiring book. It shows young biologists how their existing mathematical skills can be put to powerful use in modern biology."
—Martin Steward, University of Manchester

Today, advances in the life sciences are dependent upon the successful application of the tools of mathematics and computer science. This ability to apply quantitative methods has emerged as a critical tool for life scientists, who are increasingly challenged with modeling biological phenomena, understanding patterns, and making sense of large data sets, such as those generated by the human genome project. ***An Invitation to Biomathematics*** provides a comprehensive, yet easily digested entry into the diverse world of mathematical biology—the union of biology, mathematics, and computer science.

This textbook, expertly written by a team of experienced educators, is divided into two parts. The first section presents core principles as elucidated by classical problems such as population growth, predator-prey interactions, epidemic models, and population genetics. The second section applies these principles to modern biomedical research.

- Provides a complete guide for development of quantification skills crucial for applying mathematical methods to biological problems.
- Includes well-known examples from across disciplines in the life sciences including modern biomedical research.
- Explains how to use data sets or dynamical processes to build mathematical models.
- Offers extensive illustrative materials.
- Written in clear and easy-to-follow language assuming only minimal background in math and biology.
- A laboratory manual is available for hands-on, computer-assisted projects based on material covered in the text.

An Invitation to Biomathematics is intended for use in mathematical biology courses, as well as in general mathematics and biology courses that cover the application of math and statistics to biological problems. The reader is not assumed to have an extensive background in either math or biology.

Lab Manual

Laboratory Manual of Biomathematics is designed to enable hands-on exploration of model development, model validation, and model refinement. It applies the principles presented in the main text, but will also prove useful as a standalone supplement for basic biology and mathematics courses in which students need to learn how to solve biological problems using the tools of math and computer science.

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An imprint of Elsevier
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ISBN 978-0-12-088771-2