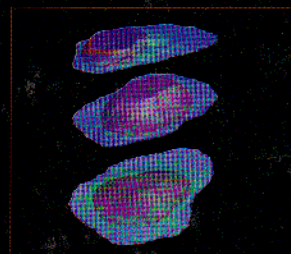


COMPUTATIONAL METHODS IN CELL BIOLOGY



Edited by

Anand R. Asthagiri

Department of Chemical Engineering, Northeastern University, Boston, MA, USA.

Adam P. Arkin

Department of Bioengineering, University of California, Berkeley, CA, USA.

Computation is an essential part of the cell biologist's toolbox. Computational models provide a framework not only to formally represent and simulate the mechanisms, but also to predict the response of an integrated system to new perturbations, thereby leading to testable hypotheses. In this way, computational modeling and analysis can suggest new experiments that challenge and help revise our mechanistic understanding of the cell system.

This volume of *Methods in Cell Biology* captures the broad integration of computation in experimental cell biology. Chapters cover the role of computation in the extraction of quantitative information from raw data; inference of mechanistic computable models from large, heterotypic datasets; and, prediction and hypothesis-generation to drive new experiments.

KEY FEATURES

- Each chapter provides high-level and in-depth tutorials of key computational methods
- Chapters are organized into three parts that focus on molecular regulatory networks, spatial and biophysical aspects of cell regulation, and multicellular systems
- Deal with the different applications of computation in cell biology: measurements and data extraction, model development and inference, and prediction and hypothesis generation

Cover image: Compilation of images of endosomes, lysosomes and mitochondria (from top to bottom).

See Chapter 7 for more details.

Credit: Robert F. Murphy

Volume 110 of **METHODS IN CELL BIOLOGY**
Series Editors: Leslie Wilson and Paul Matsudaira



ACADEMIC PRESS

An imprint of Elsevier
store.elsevier.com

ISBN 978-0-12-388403-9



9 780123 884039