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	References; 5 Non-Controlled Ion Fluxes Between Cellular Compartments; 5.1 Introduction; 5.2 Modeling; 5.3 Discussion; 5.3.1 Intra-Cellular Calcium Re-Distribution 5.3.2 Possible Mechanisms and Pathways of the Fluxes not Considered HereReferences; 6 Controlled Ion Fluxes Between Cellular Compartments; 6.1 Introduction; 6.2 Modeling; 6.2.1 Choride Efflux via the Exchanger; 6.2.2 Calcium Extrusion from the Cytosol of Platelets; 6.3 Discussion; References; 7 Growth and Decline of Microbial Populations; 7.1 Introduction; 7.2 General Considerations and Simplest Models; 7.2.1 Analysis of the Rate of Change in Population Size; 7.2.2 Further Change in Population Size; 7.2.3 Mathematical Models and Model Comparing with Experimental Data 7.3 Discussion, Model Modifications and Further Fitting7.4 Conclusions; Appendix A; References; Part III Non-Temporal Dependences; 8 (Bio)Chemical Kinetics; 8.1 Introduction; 8.2 Modeling; 8.2.1 One Ligand (Model A); 8.2.2 Two Ligands; 8.3 Discussion; 8.3.1 Two Ligands: The Ternary Complex; 8.3.2 Two Ligands: Three-States Models of the Transitions; 8.4 Conclusions; References; 9 Non- Classical (Bio)Chemical Kinetics not Requiring Multitude of Structural Ligand-Binding Sites; 9.1 Introduction; 9.2 Modelling and Analysis; 9.2.1 Main Assumptions 9.2.2 No Restrictions Imposed on Ligand Concentration9.2.3 High Ligand Concentration; 9.2.3.1 Formal Model; 9.2.3.2 Model Based on Recovery; 9.3 Model Analysis; 9.3.1 Model A; 9.3.2 Models B and C; 9.3.2.1 Enzyme Kinetics; 9.3.2.2 Receptor Kinetics; 9.3.2.3 Ligand- Binding Site(s); 9.3.2.4 Implications of the Model; 9.4 Conclusions; References; 10 The Deviations from Classical Kinetics Determined by Multitude of Binding Sites; 10.1 Introduction; 10.2 General Considerations; 10.2.1 Conformational States of the (Macro)molecule, Transitions and Dose-response; 10.2.2 Main Assumptions 10.3 Modelling and Analysis
Sommario/riassunto	The main concern of the book is analysis of biological processes, the final stage of which is mathematical modeling, i.e. quantitative presentation of the processes in rigorous mathematical terms. It is designated for non-mathematicians. Mathematical models can be compared with experimental data thus verifying the validity of the models and finally of the initial assumptions and verbal descriptions of the processes. The models (usually in the form of mathematical equations) are achieved painlessly via the schemes summarising verbal description of what is known concerning the processes. To solve the equations computer software is used. The step-by-step analysis leads to quite sophisticated models some of them being original. The book helps the reader to develop more general approach to the problems. It may be useful for experienced readers as well.