

Contents

Introduction	1
--------------------	---

Part I Pattern Formation in Chemical Systems

Spiral Waves in Bounded Excitable Media by S.C. Müller, A. Warda and V.S. Zykov	7
Dynamics of Oscillatory Chemical Systems by Igor Schreiber and Miloš Marek	23
Localized Turing and Turing-Hopf Patterns by P. Borckmans, O. Jensen, V.O. Pannbacker, E. Mosekilde, G. Dewel, A. De Wit	48

Part II Biological Patterns

Domains and Patterns in Biological Membranes by Ole G. Mouritsen, Kent Jørgensen, John Hjort Ipsen and M. M. Sperotto	77
Modelling Pattern Formation on Primate Visual Cortex by J. R. Thomson, Wm Cowan, K. R. Elder, Ph. Daviet, G. Soga, Z. Zhang, Martin Grant and Martin J. Zuckermann	101

Part III Dynamics of Biological Macromolecules

Channel Function and Channel-Lipid Bilayer Interactions by Olaf S. Andersen, Jens A. Lundbæk and Jeffrey Girsham	131
Dynamics of Nucleic Acids and Nucleic Acid:Protein Complexes by Lennart Nilsson	156

Part IV Physiological Control Systems

Models of Renal Blood Flow Autoregulation by N.-H. Holstein-Rathlou, K.H. Chon, D.J. Marsh, and V.Z. Marmarelis	167
Dynamics of Bone Remodelling by Li. Mosekilde, J.S. Thomsen, and E. Mosekilde	186
Modelling Heart Rate Variability Due to Respiration and Baroreflex by Henrik Seidel and Hanspeter Herzel	205
A Dynamical Approach to Normal and Parkinsonian Tremor by Anne Beuter and Anne de Geoffroy	230

Part V Complex Ecologies and Evolution

Dynamics of Complex Ecologies by Jacqueline M. McGlade	251
A Self-Organized Critical Model for Evolution by H. Flyvbjerg, P. Bak, M. H. Jensen and K. Sneppen	269
Index	289