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Nota di contenuto	Contents ; Preface ; Editorial Board of the BIOMAT Consortium ; Biological Modeling ; Modelling aspects of vascular cancer development ; 1. Introduction ; 2. Brief biological background ; 3. Cellular automaton model ; 4. Effects of hypoxia on cell cycle dynamics ; 5. The role of acidity ; 6. Discussion ; References ; Modelling cooperative phenomena in interacting cell systems with cellular automata ; 1. Introduction: roots of cellular automata ; 2. Cellular automaton definition ; 3. Cellular automaton models of cell interaction ; 4. An example: a cellular automaton model of a vascular tumor growth

5. Discussion ; References ; A mathematical analysis of cylindrical shaped aneurysms  
; 1. Introduction ; 2. The Mathematical Model  
; 3. The Dynamical Properties of the Model  
; 4. Discussion ; References  
On the origin of metazoans 1. Introduction  
; 2. Pattern Formation; 3. Coupling Pattern to Cell Shape  
; 4. On Urchinidaria ; 5. On Urbilateria ;  
Appendix A ; Appendix B ; References; A software tool to model genetic regulatory networks: Applications to segmental patterning in Drosophila  
1. Introduction 2. A model for the regulation of gene expression  
package ; 3. The GeNetSim  
; 4. Segmental patterning in Drosophila  
; References ; The mitochondrial Eve in an exponentially growing population and a critique to the out of Africa model for human evolution  
; 1. Introduction  
2. Percolation and mitochondrial DNA basics

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Sommario/riassunto

This volume contains the contributions of the keynote speakers to the BIOMAT 2005 symposium, as well as a collection of selected papers by pioneering researchers. It provides a comprehensive review of the mathematical modeling of cancer development, Alzheimer's disease, malaria, and aneurysm development. Various models for the immune system and epidemiological issues are analyzed and reviewed. The book also explores protein structure prediction by optimization and combinatorial techniques (Steiner trees). The coverage includes bioinformatics issues, regulation of gene expression, evolution, d

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