

1. Record Nr.	UNISA996385279003316
Autore	Deageant Guichard <d. 1645.>
Titolo	The memoires of Monsieur Deageant [[electronic resource] ] : containing the most secret transactions and affairs of France, from the death of Henry IV till the beginning of the ministry of the Cardinal de Richelieu : to which is added a particular relation of the Arch-Bishop of Embrun's voyage into England, and of his negotiation for the advancement of the Roman Catholick religion here : together with the Duke of Buckingham's letters to the said Arch-Bishop about the progress of that affair, which happened the last years of King James I, his reign / / faithfully translated out of the French original
Pubbl/distr/stampa	London, : Printed for Richard Baldwin ..., 1690
Descrizione fisica	[8], 275 p
Altri autori (Persone)	BuckinghamGeorge Villiers, Duke of, <1592-1628.>
Soggetti	France History Louis XIII, 1610-1643
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Translation of: Memoires de M. Deageant. Reproduction of original in British Library.
Sommario/riassunto	eebo-0018

2. Record Nr.	UNINA9910830080803321
Autore	Sakellarios Antonis I.
Titolo	Multiscale Modelling in Biomedical Engineering // Antonis I. Sakellarios, Vassiliki T. Potsika, and Dimitrios I. Fotiadis
Pubbl/distr/stampa	Hoboken, New Jersey : , : John Wiley & Sons, Inc., , [2023] ©2023
ISBN	1-119-81902-4 1-119-51730-3
Descrizione fisica	1 online resource (402 pages)
Collana	IEEE Press Series on Biomedical Engineering Series
Disciplina	610.28
Soggetti	Biomedical engineering - Mathematical models Biomedical engineering - Computer simulation Biomedical engineering - Mathematics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cover -- Title Page -- Copyright Page -- Contents -- Author Biographies -- Preface -- List of Abbreviations -- List of Terms -- Chapter 1 Systems Biology and Multiscale Modeling -- 1.1 Introduction -- 1.2 Systems Biology -- 1.3 Systems Biology Modeling Goals -- 1.4 Systems Biology Modeling Approach -- 1.5 Application of Multiscale Methods in Systems Biology -- 1.5.1 Introduction -- 1.6 The Use of Systems Biology and Multiscale Modeling in Biomedical and Medical Science -- 1.7 Application of Computational Methods in Biomedical Engineering -- 1.7.1 Fundamental Principles -- 1.7.2 Finite Element Method -- 1.7.3 Boundary Element Method -- 1.7.4 Finite Differences Method -- 1.8 Challenges -- References -- Chapter 2 Biomedical Imaging -- 2.1 Introduction -- 2.2 X-ray Radiography -- 2.2.1 X-ray Interaction with Tissues -- 2.2.2 Medical Applications of X-rays -- 2.3 Computed Tomography -- 2.3.1 The Principle of CT Imaging -- 2.3.2 The Evolution of CT Scanners -- 2.3.3 Medical Applications of CT Imaging -- 2.3.3.1 Application of CT Imaging in Cancer -- 2.3.3.2 Application of CT Imaging in Lungs -- 2.3.3.3 Application of CT Imaging in Cardiovascular Disease -- 2.3.3.4 Application of CT Imaging in Other Fields -- 2.3.4 Radiation of CT Imaging -- 2.4 Diagnostic

Ultrasound -- 2.4.1 The Principle of US -- 2.4.2 Medical Applications of US -- 2.5 Magnetic Resonance Imaging -- 2.5.1 MRI Principle -- 2.5.2 Medical Applications of MRI -- 2.6 Positron Emission Tomography (PET) -- 2.6.1 The Principle of PET -- 2.6.2 Medical Applications of PET -- 2.7 Single Photon Emission Computed Tomography -- 2.7.1 The Principle of SPECT -- 2.7.2 Medical Applications of SPECT -- 2.8 Endoscopy -- 2.8.1 Medical Applications of Endoscopy -- 2.9 Elastography -- 2.9.1 Elastographic Techniques -- 2.9.2 Elastographic Medical Applications -- 2.10 Conclusions and Future Trends.

References -- Chapter 3 Computational Modeling at Molecular Level -- 3.1 Introduction -- 3.2 Introduction to Molecular Mechanics -- 3.2.1 Chemical Formulas -- 3.2.2 Molecular Structure and Polarity -- 3.2.2.1 Mathematical Modeling of Polarizing Biochemical Systems -- 3.3 Molecular Bioengineering in Areas Critical to Human Health -- 3.3.1 Cell Biology -- 3.3.1.1 Biology of Growth Factor Systems -- 3.3.2 Diagnostic Medicine -- 3.3.2.1 Lab-on-a-Chip Devices -- 3.3.2.2 Biosensors -- 3.3.3 Preventive Medicine -- 3.3.4 Therapeutic Medicine -- 3.3.4.1 Drug Delivery -- 3.3.4.2 Tissue Engineering -- References -- Chapter 4 Computational Modeling at Cell Level -- 4.1 Introduction -- 4.2 Introduction to Cell Mechanics -- 4.2.1 Cell Material Properties -- 4.2.2 Cell Composition and Structure -- 4.3 Cellular Bioengineering in Areas Critical to Human Health -- 4.3.1 Biology -- 4.3.2 Diagnostic Medicine -- 4.3.2.1 Organ Chip Technology -- 4.3.2.2 Mechanosensors -- 4.3.3 Therapeutic Medicine -- 4.3.3.1 Drug Delivery -- 4.3.3.2 Tissue Engineering -- 4.3.4 P4 Medicine -- References -- Chapter 5 Computational Modeling at Tissue Level -- 5.1 Introduction -- 5.2 Epithelial Tissue -- 5.2.1 Composition and Properties of Epithelial Tissue -- 5.2.2 Computational Modeling of Epithelial Tissue -- 5.3 Connective Tissue -- 5.3.1 Composition and Properties of Connective Tissue -- 5.3.2 Computational Modeling of Connective Tissue -- 5.4 Muscle Tissue -- 5.4.1 Composition and Properties of Muscle Tissue -- 5.4.2 Computational Modeling of Muscle Tissue -- 5.4.2.1 Computational Modeling of Skeletal Muscle Tissue -- 5.4.2.2 Computational Modeling of Smooth Muscle Tissue -- 5.4.2.3 Computational Modeling of Cardiac Muscle Tissue -- 5.4.2.4 Musculotendon Models -- 5.5 Nervous Tissue -- 5.5.1 Computational Modeling of Brain Tissue -- 5.5.2 Computational Modeling of the Spinal Cord Tissue. 5.5.3 Computational Modeling of Peripheral Nerves -- 5.6 Conclusion -- References -- Chapter 6 Macroscale Modeling at the Organ Level -- 6.1 Introduction -- 6.2 The Respiratory System -- 6.2.1 Computational Modeling of the Respiratory System -- 6.3 The Digestive System -- 6.3.1 Computational Modeling of the Digestive System -- 6.4 The Cardiovascular System -- 6.4.1 Computational Modeling of the Cardiovascular System -- 6.5 The Urinary System -- 6.5.1 Computational Modeling of the Urinary System -- 6.6 The Integumentary System -- 6.6.1 Computational Modeling of the Integumentary System -- 6.7 The Musculoskeletal System -- 6.7.1 Introduction to the Skeletal System -- 6.7.2 Introduction to the Muscular System -- 6.7.3 Computational Modeling of the Muscular-Skeletal System -- 6.8 The Endocrine System -- 6.8.1 Computational Modeling of the Endocrine System -- 6.9 The Lymphatic System -- 6.9.1 Computational Modeling of the Lymphatic System -- 6.10 The Nervous System -- 6.10.1 Computational Modeling of the Nervous System -- 6.11 The Reproductive System -- 6.11.1 Computational Modeling of the Reproductive System -- 6.12 Conclusion -- References -- Chapter 7 Mechanotransduction Perspective, Recent Progress and

Future Challenges -- 7.1 Introduction -- 7.2 Methods for Studying Mechanotransduction -- 7.2.1 How Mechanical Forces Are Detected -- 7.2.2 Transmission of Mechanical Forces -- 7.2.3 Conversion of Mechanical Forces to Signals -- 7.3 Mathematical Models of Mechanotransduction -- 7.3.1 ODE Based Computational Model -- 7.3.2 PDE Based Computational Model -- 7.3.2.1 Mechanical Factors that Affect Cell Differentiation and Proliferation -- 7.3.2.2 A Case Example of Multi-Scale Modeling Cell Differentiation and Proliferation -- 7.3.3 Methodology of a Hybrid Multi-Scale Approach -- 7.3.3.1 The Agent-Based Model (ABM) -- 7.3.3.2 Mechanical Model -- 7.4 Challenges.

References -- Chapter 8 Multiscale Modeling of the Musculoskeletal System -- 8.1 Introduction -- 8.2 Structure of the Musculoskeletal System -- 8.2.1 Structure of the Skeletal System Components -- 8.2.2 Structure of the Muscular System Components -- 8.3 Elasticity -- 8.4 Mechanical Characteristics of Muscles -- 8.5 Multiscale Modeling Approaches of the Musculoskeletal System -- 8.5.1 Multiscale Modeling of Bones -- 8.5.2 Multiscale Modeling of Articular Cartilage -- 8.5.3 Multiscale Modeling of Tendons and Ligaments -- 8.5.3.1 Advances in Multiscale Modeling of Tendons -- 8.5.3.2 Advances in Multiscale Modeling of Ligaments -- 8.5.4 Multiscale Modeling of the Skeletal Muscle -- 8.5.5 Multiscale Modeling of the Smooth Muscle -- 8.6 Conclusion -- References -- Chapter 9 Multiscale Modeling of Cardiovascular System -- 9.1 Introduction -- 9.2 Cardiovascular Mechanics -- 9.2.1 Visualization of the Cardiovascular System and 3D Arterial Reconstruction -- 9.2.2 Blood Flow Modeling -- 9.2.2.1 Steady and Pulsatile Flow of Blood -- 9.2.2.2 Computational Fluid Dynamics Modeling -- 9.2.2.3 Newtonian and Non-Newtonian Behavior of Blood -- 9.2.3 Plaque Growth Modeling -- 9.2.4 Agent-Based Modeling -- 9.2.4.1 Key Components of Agent-Based Modelling -- 9.2.4.2 Agent-Based Modelling and Simulation Approach -- 9.2.4.3 Problem Definition -- 9.2.4.4 ABM Applications in Cardiovascular Systems -- 9.2.5 Discrete Particle Dynamics -- 9.2.6 Multiscale Model of Drug Delivery/Restenosis -- 9.2.6.1 Benefits of Multiscale Model of Drug Delivery/Restenosis -- 9.3 Conclusions -- References -- Chapter 10 Risk Prediction -- 10.1 Introduction -- 10.2 Medical Data Preprocessing -- 10.2.1 Data Sharing -- 10.2.2 Data Harmonization -- 10.3 Machine Learning and Data Mining -- 10.3.1 Supervised Learning Algorithms -- 10.3.1.1 Regression Analysis -- 10.3.1.2 Support Vector Machines.

10.3.1.3 Naïve Bayes -- 10.3.1.4 Decision Trees -- 10.3.1.5 Ensemble Classifiers -- 10.3.1.6 Artificial Neural Networks -- 10.3.1.7 K-Means -- 10.3.1.8 Spectral Clustering -- 10.3.1.9 Hierarchical Clustering -- 10.4 Explainable Machine Learning -- 10.4.1 Transparency -- 10.4.2 Evaluation and Types of Explanation -- 10.5 Example of Predictive Models in Cardiovascular Disease -- 10.6 Conclusion -- References -- Chapter 11 Future Trends -- 11.1 Virtual Populations -- 11.1.1 Methods for Virtual Population Generation -- 11.1.2 A Methodological Approach for a Virtual Population -- 11.1.2.1 Multivariate Log-Normal Distribution (log-MVND) -- 11.1.2.2 Supervised Tree Ensembles -- 11.1.2.3 Unsupervised Tree Ensembles -- 11.1.2.4 Radial Basis Function-Based Artificial Neural Networks -- 11.1.2.5 Bayesian Networks -- 11.1.2.6 Performance Evaluation of the Quality of the Generated Virtual Patient Data -- 11.1.3 A Novel Approach for a Virtual Population Combining Multiscale Modeling -- 11.2 Digital Twins -- 11.2.1 Ecosystem of the Digital Twin for Health -- 11.2.2 An Example Workflow of a Digital Twin -- 11.3 Integrating Multiscale Modeling and Machine Learning -- 11.3.1 Physics-Informed NN (PINN) -- 11.3.2

Sommario/riassunto

"The book begins with a description of the relationship between multiscale modeling and systems biology before moving on to proceed systematically upwards in hierarchical levels from the molecular to the cellular, tissue, and organ level. It then examines multiscale modeling applications in specific functional areas, like mechanotransduction, musculoskeletal, and cardiovascular systems."

---