1. Record Nr. UNINA9910444254303321

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Titolo	Quantitative physiology : systems approach / / Shangbin Chen, Alexey Zaikin
Pubbl/distr/stampa	Singapore : , : Springer, , [2020] Â©2020
ISBN	981-334-033-9
Edizione	[1st ed. 2020.]
Descrizione fisica	1 online resource (XXI, 237 p. 246 illus., 97 illus. in color.)
Disciplina	571.015118
Soggetti	Physiology - Mathematical models Fisiologia Models matemàtics Llibres electrònics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction of Quantitative Physiology -- Systems and Modelling -- Relevant Resources -- Modelling Gene Expression -- Bone and Body Mechanics -- Blood Dynamics -- Metabolic Network -- Systems pharmacology -- Calcium Signalling -- Modelling Neural Activity -- Cortical Spreading Depression (CSD) -- Heart Physiome -- Constructing genetic intelligence -- Brain Project.
Sommario/riassunto	Stephen Hawking says that the 21st century will be the century of complexity and indeed now systems biology or medicine means dealing with complexity. Both the genome and physiome have emerged in studying complex physiological systems. Computational and mathematical modeling has been regarded as an efficient tool to boost the understanding about living systems in normal or pathophysiological states. Covering applied methodology, basic case studies and complex applications, this volume provides researchers with an overview of modeling and computational studies of physiology (i.e. quantitative physiology), which is becoming an increasingly important branch of systems biology. This book aims to build multi-scale models to investigate functions in living systems and explain how biomolecules, cells, organs, organ systems and organisms carry out the chemical or

physical functions. Some of the models addressed are related to gene expression, calcium signalling, neural activity, blood dynamics and bone mechanics. Combining theory and practice, with extensive use of MATLAB, this book is designed to establish a paradigm for quantitative physiology by integrating biology, mathematics, physics and informatics etc. To benefit from this book, the readers are expected to have a background in general physiology and mathematics.