Record Nr. UNINA9910557463103321 Autore Volpert Vitaly Titolo Mathematical Modelling in Biomedicine Pubbl/distr/stampa Basel, Switzerland, : MDPI - Multidisciplinary Digital Publishing Institute, 2021 1 electronic resource (224 p.) Descrizione fisica Soggetti Research & information: general Mathematics & science Lingua di pubblicazione Inglese **Formato** Materiale a stampa Monografia Livello bibliografico Mathematical modelling in biomedicine is a rapidly developing scientific Sommario/riassunto discipline at the intersection of medicine, biology, mathematics, physics, and computer science. Its progress is stimulated by fundamental scientific questions and by the applications to public health. This book represents a collection of papers devoted to mathematical modelling of various physiological problems in normal and pathological conditions. It covers a broad range of topics including cardiovascular system and diseases, heart and brain modelling, tumor growth, viral infections, and immune response. Computational models of blood circulation are used to study the influence of heart arrhythmias on coronary blood flow and on operating modes for leftventricle-assisted devices. Wave propagation in the cardiac tissue is investigated in order to show the influence of tissue heterogeneity and fibrosis. The models of tumor growth are used to determine optimal protocols of antiangiogenic and radiotherapy. The models of viral hepatitis kinetics are considered for the parameter identification, and the evolution of viral quasi-species is investigated. The book presents

the state-of-the-art in mathematical modelling in biomedicine and opens new perspectives in this passionate field of research.