

1. Record Nr.	UNINA9910300133003321
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Titolo	Mathematical Modeling of Mitochondrial Swelling // by Messoud Efendiev
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2018
ISBN	3-319-99100-0
Edizione	[1st ed. 2018.]
Descrizione fisica	1 online resource (230 pages)
Disciplina	616.042
Soggetti	Biomathematics Dynamics Ergodic theory Cell physiology Physiological, Cellular and Medical Topics Dynamical Systems and Ergodic Theory Cell Physiology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Functional Spaces -- Biological Background -- Model Description -- Mathematical Analysis of Vitro Models -- The Swelling of Mitochondria: In Vivo -- The Swelling of Mitochondria: Degenerate Diffusion -- The Spatial Evolution of Mitochondria: PDE-PDE Systems.
Sommario/riassunto	The mathematical models considered in this book can help to understand the swelling of mitochondria. For the first time, it presents new mathematical models of mitochondrial swelling that take into account, in particular, spatial effects. The results presented here could make it possible to predict properties of the underlying biological mechanisms. Taking into account that mitochondria could move within a cell, lead to a PDE-PDE model. The book discusses the well-posedness and long-term dynamics of solutions, depending on boundary conditions reflecting the in vitro and in vivo cases. These analytical and numerical results have inspired colleagues from the Institute of Pharmacology and Toxicology of the Helmholtz Center Munich to design new experiments justifying the theoretical and

numerical results that are obtained. The book is intended for graduates students and researchers with a solid mathematical background and an interest in cell biology.

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