

1. Record Nr.	UNINA9910739442603321
Titolo	Biophysics of the failing heart : physics and biology of heart muscle // R. John Solaro, Jill C. Tardiff, editors
Pubbl/distr/stampa	New York, : Springer Science, 2013
ISBN	1-4614-7678-X
Edizione	[1st ed. 2013.]
Descrizione fisica	1 online resource (254 p.)
Collana	Biological and medical physics, biomedical engineering
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Disciplina	616.12 616/.014
Soggetti	Heart failure - Pathophysiology Heart - Physiology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Chapter 1 Introduction to the Biophysics of the Failing Heart -- Chapter 2 Sarcoplasmic reticulum Ca homeostasis and Heart Failure -- Chapter 3 Ca-homeostasis and Heart Failure: Focus on the Biophysics of Surface Membrane Ca-Fluxes -- Chapter 4 Biophysics of Membrane Currents in Heart Failure -- Chapter 5 Biophysical Mechanisms for the Metabolic Component of Impaired Heart Function -- Chapter 6 Cytoskeletal Nuclear Links in the Cardiomyocyte -- Chapter 7 Biophysical Forces Modulate the Costamere and Z-Disc -- Chapter 8 Heart failure- the final frontier for biophysics in cardiovascular medicine? -- Chapter 9 Arrhythmogenesis, Heart Failure, and the Biophysics of Z-band Protein Networks -- Chapter 10 Biophysics of Titin in Cardiac Health and Disease -- Chapter 11 Sarcomeres and the Biophysics of Heart Failure -- Index.
Sommario/riassunto	Biophysics of the Failing Heart considers major biophysical mechanisms for why hearts responding to stressors enter into maladaptive processes, eventually leading to an inability of the heart to respond efficiently to hemodynamic loads--especially during exercise. The book describes biophysical techniques that have been applied to determine the triggers for the heart failure process, as well as the mechanisms for sustaining the disorders. These techniques include measurements of

active and passive mechanical properties and hemodynamics at levels of organization ranging from molecules to hearts beating in situ. Biophysical concepts and approaches are also applied to determination of signaling and signal transduction, energetics, ionic currents, transport processes, electro-chemical and chemo-mechanical coupling. Modern research approaches and clinical understanding of heart failure demands integration of multiple aspects of the disorders. By its emphasis on biophysical aspects of a prevalent clinical condition, this monograph is unique in its perspective and focus, and will be of value to clinicians and researchers at all levels.

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