

José Marín-García

Mitochondria and Their Role in Cardiovascular Disease

Mitochondria And Their Role In Cardiovascular Disease

T. Hagen



Mitochondria And Their Role In Cardiovascular Disease:

Mitochondria and Their Role in Cardiovascular Disease José Marín-García, 2012-11-19 Over the past two decades due to dramatic advances in molecular and cell biology biochemistry and genetics our view on mitochondria as a relatively static cellular powerhouse has changed radically We now know that these organelles play a critical role in the normal and in the damaged heart Written by Dr Jos Mar n Garc a Director of the Molecular Cardiology and Neuromuscular Institute *Mitochondria and Their Role in Cardiovascular Disease* brings readers up to date on the many significant advances in the field of mitochondrial cardiovascular medicine The book begins with a general introduction to mitochondria followed by laboratory methods to study the structure and function of the organelle regulation of replication and biogenesis and the mechanisms and functional consequences of mitophagia and mitochondrial dynamics Subsequent chapters deal with mitochondrial oxidative stress and the role that the organelle plays in cell signaling and cell death Discussions will be undertaken on the biochemistry of mitochondrial cell signaling including the nature of the proteins engaged in these processes many of them only recently discovered Later chapters examine the role of mitochondria and mitochondrial abnormalities in cardiovascular diseases including their diagnosis therapeutic options currently available animal models of mitochondrial disease and new frontiers in mitochondria cardiovascular medicine including areas of research that are relatively new or developing such as proteomics next generation sequencing and systems biology

Mitochondria and the Heart José Marín-García, 2005-12-17 Mitochondria have been pivotal in the development of some of the most important ideas in modern biology Since the discovery that the organelle has its own DNA and specific mutations were found in association with neuromuscular and cardiovascular diseases and with aging an extraordinary number of publications have followed and the term mitochondrial medicine was coined Furthermore our understanding of the multiple roles that mitochondria play in cardiac cell homeostasis opened the door for intensive experimentation to understand the pathogenesis and to find new treatments for cardiovascular diseases Besides its role in adenosine triphosphate generation mitochondria regulate a complex network of cellular interactions involving 1 generation and detoxification of reactive oxygen species including superoxide anion hydrogen peroxide and hydroxyl radical 2 maintenance of the antioxidant glutathione in a reduced state and adequate level of mitochondrial matrix superoxide dismutase 3 cytoplasmic calcium homeostasis particularly under conditions of cellular calcium loading 4 transport of metabolites between cytoplasm and matrix 5 both programmed apoptosis and necrotic cell death and 6 cell growth and development It is therefore not surprising that this organelle has come to be the center stage in many current investigations of cardiovascular diseases aging and age related disease Concomitant with these advances an impressive effort is under way for the development of new tools and methodologies to study mitochondrial structure and function including powerful ways to visualize monitor and alter the organelle function to assess the genetic consequences of these perturbations

Mitochondrial Dynamics in Cardiovascular Medicine Gaetano Santulli, 2017-05-25

This text covers the basic principles of mitochondrial dynamics in cardiovascular medicine with particular emphasis on their functional roles in physiology and disease. The book will include articles pertaining to mitochondrial fitness on a global basis providing therefore an update on the progress made in several aspects in the field. Thus it will assist scientists and clinicians alike in furthering basic and translational research. Organized in sections focusing on basic science, mitochondrial dysfunction in cardiac disorders, in vascular disorders, in metabolic disorders, in kidney disease, therapeutic challenges and options, this essential volume fills imperative gaps in understanding and potentially treating several cardiovascular disorders. **Fuster**

and Hurst's The Heart, 15th Edition Valentin Fuster, Jagat Narula, Prashant Vaishnava, Martin B. Leon, David J. Callans, John S. Rumsfeld, Athena Poppas, 2022-04-29. The landmark text that belongs in the hands of every cardiologist, fully updated and reorganized to make it more patient-centric than ever. A Doody's Core Title for 2023. World famous for its authority and clinical relevance, Fuster and Hurst's The Heart is cardiology's longest continuously published reference book. Written to meet the ever-changing needs of cardiologists, fellows, and interns, this trusted classic offers a solid foundation in cardiovascular medicine and complete coverage of all major cardiovascular topics. This fifteenth edition presents a greater focus on the practicalities of patient care. Additionally, the content is ordered in a more methodical pattern from mechanism to management. Reflecting the latest technical, therapeutic, and clinical advances, Fuster and Hurst's The Heart provides invaluable, concise summaries of major new trials and guidelines. **Authoritative Coverage and Unmatched Utility.** Central Illustrations. New section on cardiovascular critical care. New chapter: Cardiovascular Disease and COVID-19. Chapter summaries. ACC/AHA/ESC guidelines in all chapters. 1,200 photos and illustrations. Sections include: Risk Factors for Cardiovascular Disease; Atherosclerosis and Coronary Heart Disease; Diseases of the Great Vessels and Peripheral Vessels; Valvular Heart Disease; Rhythm and Conduction Abnormalities; Heart Failure; Diseases of the Pericardium; Cardiopulmonary Disease; Critical Cardiovascular Care; Adult Congenital Heart Disease; Special Populations and Topics in Cardiovascular Disease. **Mechanisms of Cardiovascular Aging** T. Hagen, 2002-11-19. This volume of *Advances in Cell Aging and Gerontology* provides a timely review on the molecular and cellular basis of cardiovascular diseases. CVD, age itself, is the leading risk factor for cardiovascular diseases, which include loss of vasomotor function, athero- and arterio-sclerosis, hypertension, congestive heart failure, and stroke. Together, these pathologies comprise the leading causes of permanent disability, hospitalization, and death for individuals over the age of 65. Thus, there is a critical need to assess both the age-associated causes leading to CVD as well as the current state of knowledge on preventive regimens designed to slow or modulate disease progression. This book concisely summarizes the current knowledge related to the major aspects contributing to cardiovascular dysfunction in the elderly as well as potential ways of maintaining or improving human cardiovascular healthspan. **Molecular Basis of Cardiovascular Disease** Kenneth R. Chien, Eugene Braunwald, 1999. Covering the molecular basis of heart disease, this text evaluates topics such as genetic mapping approaches in inherited

cardiovascular disorders and driving mechanisms in the transition from cardiac hypertrophy to heart failure

Mitochondrial Biology Novartis Foundation,2007-11-19 The field of mitochondrial research has experienced a renaissance encompassing a re evaluation of mitochondrial biochemistry and biology It is clear that mitochondria are not only involved in the business of ATP synthesis but are also intimately involved in cell signaling and particularly in cell death

Assessment of Energy Metabolism in Health and Disease Ross Laboratories,1980 Journal of the American Medical Association ,1925 Chemical Abstracts ,1926 Mitochondrial Research in Translational Medicine, Volume 1201 Asian Society for Mitochondrial Research and Medicine. Scientific Meeting,Yau-Huei Wei,Chii-Ruey Tzeng,2010-08-16 This volume presents manuscripts stemming from the 6th Conference of the Asian Society for Mitochondrial Research and Medicine entitled Mitochondrial Research in Translational Medicine held on October 30 to November 1 2009 at Taipei Medical University Taipei Taiwan Contents Mitochondria and the Heart José Marín-García,2008-11-01 Mitochondria have been pivotal in the development of some of the most important ideas in modern biology Since the discovery that the organelle has its own DNA and specific mutations were found in association with neuromuscular and cardiovascular diseases and with aging an extraordinary number of publications have followed and the term mitochondrial medicine was coined Furthermore our understanding of the multiple roles that mitochondria play in cardiac cell homeostasis opened the door for intensive experimentation to understand the pathogenesis and to find new treatments for cardiovascular diseases Besides its role in adenosine triphosphate generation mitochondria regulate a complex network of cellular interactions involving 1 generation and detoxification of reactive oxygen species including superoxide anion hydrogen peroxide and hydroxyl radical 2 maintenance of the antioxidant glutathione in a reduced state and adequate level of mitochondrial matrix superoxide dismutase 3 cytoplasmic calcium homeostasis particularly under conditions of cellular calcium loading 4 transport of metabolites between cytoplasm and matrix 5 both programmed apoptosis and necrotic cell death and 6 cell growth and development It is therefore not surprising that this organelle has come to be the center stage in many current investigations of cardiovascular diseases aging and age related disease Concomitant with these advances an impressive effort is under way for the development of new tools and methodologies to study mitochondrial structure and function including powerful ways to visualize monitor and alter the organelle function to assess the genetic consequences of these perturbations

Monoclonal Antibodies in Cardiovascular Diseases Ban-An Khaw,Jagat Narula,Harry William Strauss,1994 **The Indian Medical Gazette** ,1927 U.S. Government Research & Development Reports ,1970 **The Role of Cardiac Mitochondria in Myocardial Ischemia/reperfusion Injury** Chad R. Frasier,2012 Cardiovascular disease CVD exerts economic and humanitarian costs that are unparalleled by any other disease Of the many etiologies of CVD myocardial infarction accounts for over 50% of the associated mortality and anything that can decrease the extent of infarction could drastically impact the burden of CVD The purpose of this work was to further our understanding of the role of cardiac

mitochondria in ischemia reperfusion injury Herein I found that physiologic exercise and pharmacologic Bendavia interventions that lessen the oxidative burden during ischemia reperfusion have the potential to limit myocardial infarction Under conditions of oxidative stress animals who received short term exercise Ex were better able to maintain the glutathione couple in a reduced state likely through an increase in glutathione reductase GR activity This phenotypic change was associated with decreased reactive oxygen species ROS accumulation and a lower incidence of fatal ventricular arrhythmias Furthermore I found that ROS generated within the cytosol and not the mitochondria during bouts of Ex are important signaling molecules that increase GR activity and this increased activity may be responsible for the cardioprotective effects observed with Ex Finally I found that treatment with the mitochondrially targeted peptide Bendavia was successful at lowering infarct size in isolated guinea pig hearts due to an ability to decrease ROS accumulation and maintain mitochondrial energetics Taken together these studies suggest that therapies aimed at decreasing mitochondrial ROS and or maintaining mitochondrial energetics during ischemia reperfusion may have significant clinical impact

Harrison's Principles of Internal Medicine, 18th Edition Dan Longo,Anthony Fauci,Dennis Kasper,Stephen Hauser,J. Jameson,Joseph Loscalzo,2011-07-22 The most widely read textbook in the history of medicine made more essential to practice and education by an unmatched array of multi media content Through six decades no resource has matched the encyclopedic scope esteemed scholarship and scientific rigor of Harrison s Principles of Internal Medicine both as a textbook and as a clinical reference It remains the most universally respected textbook in all of medical publishing and the pinnacle of current medical knowledge The eighteenth edition of Harrison s features expanded and more in depth coverage of key issues in clinical medicine pathophysiology and medical education The acclaimed Harrison s DVD has been updated to include 53 chapters not found in the text 14 all new how to videos commissioned specifically for Harrison s PowerPoint presentations on essential topics in medical education and hundreds of bonus illustrations Presented in two volumes NEW text design greatly enhances readability NEW chapters on cutting edge topics in clinical medicine Expanded focus on global considerations of health and disease Editor in Chief Dan Longo MD Boston MA is Professor of Medicine Brigham and Women s Hospital Harvard Medical School *Special Cytology, the Form and Functions of the Cell in Health and Disease* Edmund Vincent Cowdry,1928 *Journal of the American Medical Association* American Medical Association,1920 **Hurst's the Heart, 13th Edition: Two Volume Set** Valentin Fuster,Richard Walsh,Robert Harrington,2010-12-27 The trusted landmark cardiology resource thoroughly updated to reflect the latest clinical perspectives Includes DVD with image bank A Doody s Core Title ESSENTIAL PURCHASE for 2011 5 STAR DOODY S REVIEW This is an outstanding choice for those who strive for a firm foundation in cardiovascular medicine as well as an up to date and user friendly source that addresses every discipline in the field The updates and enhancements to this edition have made the book easier to use Doody s Review Service Through thirteen editions Hurst s the Heart has always represented the cornerstone of current scholarship in the discipline

Cardiologists cardiology fellows and internists from across the globe have relied on its unmatched authority breadth of coverage and clinical relevance to help optimize patient outcomes The thirteenth edition of Hurst's the Heart continues this standard setting tradition with 19 new chapters and 59 new authors each of whom are internationally recognized as experts in their respective content areas Featuring an enhanced reader friendly design the new edition covers need to know clinical advances as well as issues that are becoming increasingly vital to cardiologists worldwide As in previous editions you will find the most complete overview of cardiology topics available plus a timely new focus on evidence based medicine health outcomes and health quality New Features 1548 full color illustrations and 578 tables Companion DVD with image bank includes key figures and tables from the text The Cardiovascular Disease Past Present and Future section includes a new chapter on assessing and improving quality of care in cardiovascular medicine The section on the scientific foundations of cardiovascular medicine has been thoroughly revised 2 new chapters in the section on the evaluation of the patient detail the process of effective diagnostic decision making based on technology clinical trials and practice guidelines A new chapter in the section on heart failure details cardiac transplantation The sections on primary heart disease include new chapters on topics such as preventive strategies for coronary artery disease and updated pharmacologic strategies for acute coronary syndromes The section on cardiopulmonary disease features new chapters on chronic cor pulmonale and sleep disorder breathing and its relationship to cardiovascular disease The section on valvular heart disease has four of the six chapter completely rewritten by new authors who are authorities in the field The final six sections feature new chapters on the environment and heart disease surgical treatment of carotid and peripheral vascular disease and cost effective strategies in cardiology

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