

PREFACE

There are a number of excellent books on molecular biology, single-channel electrophysiology, animal experimentation, and clinical electrophysiology. However, the past decade has seen an explosion of knowledge and radical changes in our understanding of ventricular repolarization as an integral part of the cardiac electrophysiologic matrix; a topic which, until now, has not been covered in depth. *Cardiac Repolarization: Bridging Basic and Clinical Science* presents comprehensively the latest developments in the field of cardiac electrophysiology with a focus on the clinical and experimental aspects of ventricular repolarization, newly discovered clinical repolarization syndromes, electrocardiographic phenomena, and their correlation with the most recent advances in basic science.

Repolarization has distinct adaptive mechanisms that are responsible for maintenance of electrophysiological equilibrium and electrical stability of the heart under normal and pathophysiological conditions. Both congenital and acquired abnormalities of ventricular repolarization have recently received significant recognition because these are major contributors of life-threatening cardiac arrhythmias and are an important target for antiarrhythmic drugs and interventions. We have aimed to provide unique prospective views on ventricular repolarization by emphasizing the clinical and basic aspects of physiology and pathophysiology in conjunction with new clinical findings and research discoveries. The authors have provided a thought-provoking and enlightening review of the latest research and clinical accomplishments in their areas of expertise. Each chapter is outlined with objectives, key points, current perspectives, and recommendations for future investigations. Each chapter includes established and evidence-based knowledge, the authors' personal opinions, areas of controversy, and future trends. We aimed to provide a contemporary and succinct distillation of the current status of cardiac repolarization. Although some of the areas are highly subspecialized, this book has been designed for a broad audience ranging from medical and graduate students to clinicians and scientists.

Cardiac Repolarization: Bridging Basic and Clinical Science is organized so as to make the large volume of rapidly evolving information understandable and easy to assimilate, with each section focusing on a theme of cardiac repolarization. The spectrum of ventricular repolarization, historical milestones of electrical signal recording, and their relevance to clinical arrhythmias and sudden cardiac death syndromes are presented as an introduction. Part II focuses on the theme of basic mechanisms underlying ventricular repolarization. In addition to an overview of electrophysiology, pharmacology, and molecular biology underlying ventricular repolarization, basic mechanisms have been integrated with specific disease conditions, including heart failure, ischemia, long QT syndrome, and Brugada syndrome. The theme of Part III includes clinical physiology and pathophysiology of ventricular repolarization; state-of-the-art information on human cardiac repolarization with an emphasis on clinical application; challenges and clinical relevance of the dynamic interactions of neurohumoral and pharmacological factors; and

a peek into the future of antiarrhythmic drug development based on molecular and electrophysiological properties. Part IV of the book provides a comprehensive review of the clinical presentation and management of specific cardiac repolarization conditions, including early repolarization and short QT interval, Brugada syndrome, long QT syndrome, and sudden infant death syndrome.

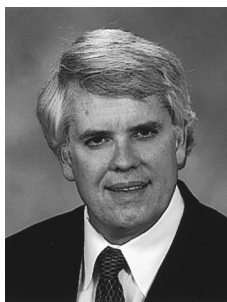
The editors of *Cardiac Repolarization: Bridging Basic and Clinical Science* wish to recognize the significant contribution made by all of the authors. The book is the result of a collaboration that has brought together the skills and perspectives of researchers, scientists, and clinicians. We also wish to thank all of our mentors, without whom the work presented in the book would not have been realized. Finally, we are grateful to our colleagues, trainees, and students for stimulating interactions that have served as the basis for many innovative ideas and investigations.



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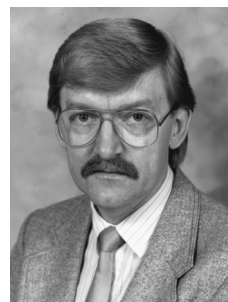
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Cardiac Repolarization

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