Foundations of Cardiac Arrhythmias: Basic Concepts and Clinical Approaches
Peter M. Spooner, Michael R. Rosen, eds.

In his series introduction, Samuel Goldhaber informs the reader of Foundations of Cardiac Arrhythmias that this text represents one in a series of “beautifully produced books in different branches of medicine.” The intention of the series is to facilitate the integration of new information for both the specialist and the researcher. Drs Spooner and Rosen were charged with editing a textbook to summarize what we have learned about electrophysiology that forms the basis for the clinical discipline. These 2 men are well known for their contributions to the field of basic electrophysiology, and they assembled an impressive cast of characters, well known to their peers on the international stage, and asked them to contribute a chapter that describes the basic principles of cardiac electrophysiology from several different perspectives. What emerges is an impressive textbook.

There are a number of notable chapters, including several that are dedicated to understanding the biophysics of membrane activation and how specific ion fluxes contribute not only to the action potential but to ECG manifestations of cardiac rhythm. The text is well illustrated. Many of the figures used in the text come from original work published by the various authors in other books and articles. They have managed to cull from their vast repertoire their most important observations and then organized them into a cohesive discussion. Each of the chapters is brief enough to be readable within a single session. All of the chapters are well referenced, and the references are, for the most part, current. The exceptions are understandable given the fact that some of the basic electrophysiology that forms the foundation for modern clinical practice actually came from observations made decades ago. These keystone contributions are appropriately referenced and acknowledged.

After an introduction in which ion channels and action potentials are adequately addressed, the authors move on to specific mechanisms of cardiac arrhythmia, including a basic discussion of automaticity and re-entry. Highly useful chapters regarding specific cardiac arrhythmias, most importantly atrial fibrillation and ventricular fibrillation, follow. The most valuable portions of these chapters are the extensive discussions of the pathophysiology grounded on basic principles of electrophysiology. Less important and impressive within the discussion are sections dealing with clinical aspects of these arrhythmias, especially pharmacological therapy. The final section dealing with therapeutic strategies and future directions is perhaps the weakest link in the textbook. Within this section, there are impressive chapters dealing with remodeling, transgenic electrophysiology, genetics, and molecular biology as it applies to arrhythmogenesis. These chapters are very much within the spirit of the textbook. However, there are several chapters that seem out of place because of their clinical bent. Of particular concern are chapters dealing with clinical aspects of cardiac ablation, cardiac pacemakers and other implantable devices, and a highly epidemiological discussion of sudden cardiac death and its prevention. Although small sections of these chapters contain important material having to do with basic aspects of arrhythmogenesis, for the most part, the discussions are clinical and clearly aimed at a different audience. The very first page of the textbook is a bit confusing in that a table of contents was provided for another textbook in this series entitled Fundamentals of Clinical Cardiology edited by Sam Goldhaber himself. This index should probably be placed at the end of the book.

This is a highly valuable textbook. It contains a large amount of contemporary information and, most importantly, synthesizes that information into cohesive chapters that are highly readable, understandable, and applicable to basic arrhythmia research. I think that this book belongs in the library of any electrophysiologist who has an interest in understanding the principles that are the foundation of our discipline. Because there is an increasing emphasis on understanding these concepts as a way of bringing forward novel therapy for patients with cardiac arrhythmia, it is highly likely that anyone who is in the field or plans to pursue a career in cardiac electrophysiology will need to make himself or herself familiar with the information provided in this textbook. This book is not intended for practitioners, in particular nonelectrophysiologists, who wish to review specific clinical entities or treatment modalities. The chapters dealing with clinical issues, although well written and referenced, provide a service to basic electrophysiologists who may use these chapters to better understand clinical information so as to adequately focus their research efforts. In essence, this textbook will be a wonderful edition to the library of select individuals who have a highly defined and specialized interest in cardiac arrhythmias approached from the point of view of the basic principles, the understanding of which is critically important for the development of new interventions.

Peter R. Kowey, MD
Lankenau Hospital and Main Line Health Heart Center
Wynnewood, Pa
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