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To our wives

Carol and Nina

without whose forbearance this book (and so many of our other efforts)
would not have been possible.

Preface

All humans normally are delicately balanced between excessive coagulation and bleeding. This balance is maintained by two complementary and opposing systems—the coagulation and fibrinolytic systems. There is growing appreciation that many disease states result from an imbalance between these two systems, or, in the case of many instances of pathological thrombosis, from interaction between these systems and an abnormal vascular wall.

During the past decade enormous advances have been made in understanding of the molecular biology and biochemistry of both the coagulation and the fibrinolytic systems. With this knowledge has come the ability to produce large quantities of endogenous fibrinolytic agents that are either already widely used as therapeutic drugs or are in clinical trial. The power of molecular biology also allows us to look beyond the utilization of natural components to the examination of modified fibrinolytic agents or even completely novel proteins that may offer specific therapeutic advantages. Fibrinolytic agents are being subjected to detailed studies in *in vitro* systems, animal models, and clinical trials. In acute myocardial infarction and pulmonary thromboembolism, two common life-threatening conditions, the administration of thrombolytic agents has been shown to be beneficial. Despite its current popularity, thrombolytic therapy is still in its infancy; there is room for substantial improvement in currently available thrombolytic agents and in their judicious clinical application along with more effective antithrombotic and antiplatelet agents.

Since 1983 the National Heart, Lung and Blood Institute has conducted a series of symposia on “Frontiers in Basic Sciences that Relate to Heart, Lung, and Blood Diseases.” These symposia are designed to capitalize on the progress achieved in the basic sciences and to translate these advances as rapidly as possible into clinical research and patient care. Thrombolysis appeared to be an ideal subject for one of these symposia, involving as it does the interests of three of the Institute’s divisions—heart, lung, and blood. We served as chairmen of the NHLBI symposium on thrombolysis, which was held at the Clinical Center of the National Institutes of Health. The presentations proved to be of such high quality and the subject of such intense interest that we invited the participants to update and prepare their presentations for publication.

Further progress in this field will depend on a more detailed understanding of the fundamental principles underlying coagulation and fibrinolytic systems, coupled with the insightful clinical application of these principles. We hope that this book, with its dual emphasis on fundamental principles and clinical application, will contribute to this progress.

We are indebted to Dr. Claude Lenfant, Director of the National Heart, Lung, and Blood Institute, for his exemplary leadership in developing the "Frontiers" symposia, as well as in so many other activities of the Institute. We appreciate particularly the efforts of the authors who provided their contributions in a timely manner; of Stephanie Manning, of Mosby-Year Book, who ably shepherded this project; and of Tom McVarish and Kathryn Saxon, who provided enormous help in the preparation of this book.

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PART ONE

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