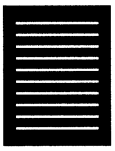
Preface



MODERN APHERESIS TECHnology began in the 1950s with development of the Cohn centrifuge bowl employed for plasma collection and subsequent return of red blood cells. Use in transfusable component donation was initially driven by the desire for granulocytes in the treatment of leukemia in the early 1960s. By the end of that decade, the role of dedicated single-donor platelets for transfusion of patients refractory to whole blood-derived pools was recognized. Cumbersome serial manual separation of platelets (and plasma for fractionation) was replaced by continuous flow centrifugation devices developed in the 1970s by companies based upon either the National Cancer Institute/International Business Machines separator designed for granulocyatapheresis (NCI-IBM 2990) or the Cohn ADL Blood Fractionator. The substantial effort involved in program maintenance and advantages of apheresis platelet and double red blood cell products have contributed to the widespread use of apheresis technology by blood collectors. Devices capable of multicomponent separation and component manufacture at the donation site are standard worldwide and remain a substantial source of many countries' blood supplies.

Previous editions of this text have combined, within a single book, reviews of apheresis technologies along with their applications in blood component collection, cellular therapy, extracorporeal treatment of blood, and the use of apheresis for therapeutic plasma exchange and cell depletion. The fourth edition of *Apheresis: Principle and Practice* has separated these into three distinct volumes designed to provide a comprehensive examination of the scientific, technical, and practical aspects of the uses of apheresis instruments in therapeutic apheresis (Volume 1), donor apheresis (Volume 2), and cellular therapy (Volume 3).

The editors believe this updated series will be of interest to readers with a specific focus, as well as serving as a comprehensive source of information regarding the use of apheresis in blood banking and as a therapeutic modality.

Volume 2 specifically focuses on collection of blood components by apheresis. The first chapter provides an overview of donor separator principles and function, along with the evolution of instruments in use. Subsequent chapters describe donor physiology and the short- and long-term effects of apheresis (Chapter 2); selection, education, and care of apheresis blood donors (Chapter 3); automated red cell donation (Chapter 4); and automated plasma donation (Chapter 5). Several chapters focus on plateletapheresis as a dominant driver of blood collector use of these instruments. Chapters describe platelet storage considerations (Chapter 6); the role of apheresis platelets in patient care (Chapter 7); the importance of platelet bacterial contamination of apheresis platelets (Chapter 8); platelet pathogen inactivation

(Chapter 9); and donor-patient platelet matching (Chapter 10). The final two chapters address granulocyte transfusion (Chapter 11) and quality management of apheresis programs (Chapter 12).

The authors of these chapters are technical experts and accomplished professionals in blood banking and transfusion medicine. This volume is intended for learners at every level in the health-care professions, blood collection industry, and instrument manufacture; that is, those who are involved in apheresis instrument development, blood donor and apheresis program management, blood component collection, the practice of blood banking/transfusion medicine, and individuals who administer blood products. These include physicians, scientists, technologists, trainees, students, administrators, and program support staff.

Each chapter has been fully updated since the release of the third edition over 10 years ago. The field of blood banking and transfusion medicine is ever-changing and the emergence of new technologies, novel therapeutics, and new clinical studies requires periodic updating for texts to remain current with modern apheresis blood donation and product use. We believe that this will be a valuable resource for years to come.

As editors, we would like to acknowledge the superb support of AABB staff and technical editors in bringing this fourth edition to press. We owe a significant debt of gratitude to previous chapter authors who have provided a superb foundation for this new edition, while its many new and returning authors have worked on often tight timelines to review the latest literature and provide updated content and valuable current sources for further reading. Some final thanks are due to you the reader, for providing a critical service to patients and maintaining proficiency in a rapidly-evolving field.

Ralph R. Vassallo, MD, FACP
Jeffrey L. Winters, MD
Editors