

# PREFACE

It is a pleasure to author the 5th edition of *Clinical Hematology*. Since the 1st edition was published in 1988, each edition has included exciting changes in clinical hematology and posed challenges to learn more and teach more in a fixed time frame. The 5th edition retains the pedagogy that set the standard for clinical laboratory science textbooks since it was introduced in the 1st edition. *Clinical Hematology* now features integrated four-color images, tables, and boxes throughout the book for ease of learning. New online ancillaries include PowerPoint presentations, a quiz bank for students, and more than 800 unique test questions for instructors (see Additional Resources, below, for more information).

Each chapter in this edition capitalizes on the strengths of previous editions; up-to-date information presented at conferences and published in the professional literature; and comments received from students, faculty, faculty reviewers, and working professionals from around the globe. *Clinical Hematology* has been classroom and laboratory “field tested” by medical laboratory technician (MLT) and medical laboratory science (MLS) students, instructors, and the author. Hands-on presentation of the information and techniques discussed in *Clinical Hematology* underscores the importance of clarity, conciseness, and continuity of information for the entry-level student. Sole authorship of this textbook ensures a smooth transition from chapter to chapter without unnecessary redundancy or changes in writing style.

## THE AUDIENCE

*Clinical Hematology*, 5th edition, is primarily intended to fulfill the needs of medical laboratory science (MLS) and medical laboratory technician (MLT) students and faculty as a time-tested book. MLT students may omit some portions of the book depending on the length of the curriculum. Other health professionals can use the book as an instructional or reference guide.

## WHAT IS NEW IN THIS EDITION

The 5th edition continues with the innovative expansion of exciting molecular discoveries that assumed importance in the 4th edition—for example, p53 function in DNA repair and mechanisms of apoptosis. The book includes knowledge recognized by the Nobel Prize in Physiology or Medicine in 2009 for discoveries of telomere structure and maintenance and covers other genetic irregularities relevant to the pathophysiology and treatment of hematologic disease—for example, genetic abnormalities leading to ribosome dysfunction in Diamond-Blackfan anemia and genetic abnormalities in Fanconi anemia. The expansion of

classifications found in the recent World Health Organization Classifications appears in this edition. The treatment of many hematology disorders, particularly effective therapy for chronic myelogenous leukemia and chronic lymphocytic leukemia, clearly focuses research on understanding the molecular aspects of diagnosis and treatment of many other blood disorders.

Numerous new discoveries associated with red blood cells have been reported since the 4th edition. New discoveries are related to diagnosis and treatment of hemoglobin defects—that is, hemoglobinopathies. This information has a direct application to the laboratory, where the importance of global population migration creates new or an increased number of patients with disorders that were not commonly seen in clinical hematology before. In addition, this book describes exciting discoveries in iron metabolism and the relationship of iron physiology to anemia of chronic disorders.

Beginning with the 1st edition of *Clinical Hematology*, safety has been an important consideration. The 5th edition covers the latest safety information associated with the importance of immune status—that is, screening and recommended vaccinations of employees, and proper removal of disposable gloves. ISO 15189, quality and preanalytical error management issues, and a Spanish-English Phlebotomy guide (see Appendix D) are also included. The newest specimen-related information in this edition includes additional types of evacuated tubes, environmental factors that influence evacuated tubes, order of draw of multiple evacuated tubes collection, and order of draw of capillary specimens.

Hematology instrumentation continues to expand the menu of available assays. This edition presents the latest comparative instrument product information for cell counting and identification, and blood coagulation testing. The manual procedures chapter (Chapter 26) has been streamlined, with older techniques moved to a web-based repository. The format of the procedures continues to comply with Clinical Laboratory Standards Institute (CLSI) standards. The 1st edition of this book was the first clinical laboratory science textbook to institute standardization of procedures using the CLSI protocol.

## ORGANIZATIONAL PHILOSOPHY

The six-part organization of *Clinical Hematology* follows the original profile for a logical combination of textbook, cellular morphology atlas, and procedure manual. Part 1, The Principles of Hematology, discusses the newest fundamental concepts including safety, quality assessment, and specimen collection. Chapter 3, Molecular Genetics and Cellular Morphology, continues to be of extreme importance in understanding the pathophysiology and diagnosis of many

blood disorders and related therapy. The last chapter in this part, Chapter 4, presents the normal development of blood cells in humans. This is essential basic information.

Parts 2 and 3 of *Clinical Hematology* focus on erythrocytes and leukocytes, respectively. The content of the chapters in each of these parts progresses from normal structure and function to specific abnormalities in each grouping.

In Part 4, Additional Groups of Clonal Disorders, is in focus. Each of the two chapters investigates multiple disorders that share a common clonal origin.

Part 5, Principles and Disorders of Hemostasis and Thrombosis, presents a distinct specialty in hematology: blood coagulation. An abundance of new knowledge about platelets and coagulation factors continues to emerge.

The final part, Part 6, focuses on hematological analysis. This section includes diversified types of analysis including body fluid analysis, manual procedures, and instrumentation. This part is conveniently located at the end of the book for easy reference when reading other parts of the book.

Handy appendices include answers to review questions, medical terminology basics, SI units, a list of English-Spanish medical phrases for the phlebotomist, the newest evacuated tube pictorial directory, and a sample Material Safety Data Sheet (MSDS). A glossary at the end of the book defines all the key words bolded throughout the text.

## CHAPTER STRUCTURE AND FEATURES

Each chapter of *Clinical Hematology* provides the following elements to enhance the usability of the text:

- **Learning objectives** provide a quick overview of the content to be covered.
- **Case studies** reinforce concepts with real-world applications.
- **Procedure boxes** provide step-by-step information for key processes.
- **Key terms** that emphasize important concepts are italicized and defined in the end-of-book glossary.
- **Review questions** reinforce the student's understanding of key concepts and aid in test preparation.
- **Chapter highlights** enable a quick review of material learned in each chapter.

## ADDITIONAL RESOURCES

*Clinical Hematology* includes additional resources for both instructors and students that are available on the book's companion Web site at <http://thePoint.lww.com/Turgeon5e>.

## Instructor Resources

Approved adopting instructors will be given access to the following additional resources:

- Two test banks—one contains more than 800 unique questions; the other contains all the review questions from the book
- PowerPoint slides for each chapter
- An image bank of all the figures and tables in the book

## Student Resources

Students who have purchased *Clinical Hematology*, 5<sup>th</sup> edition have access to the following additional resources:

- A quiz bank of 270 questions
- A lab manual of additional procedures

In addition, purchasers of the text can access the searchable Full Text On-line by going to the *Clinical Hematology* Web site at <http://thePoint.lww.com/Turgeon5e>.

## ACKNOWLEDGMENTS

My objective in writing *Clinical Hematology*, 5th edition, continues to be to share basic scientific concepts, procedural theory, and clinical applications with fellow teachers and students. Because the knowledge base and technology in hematology continues to expand, writing and revising a book that addresses the need of teachers and students at multiple levels in the clinical sciences continue to be a challenge. In addition, this book continues to provide me with the opportunity to learn and share my working and teaching experience, and insight as an educator, with others.

Special thanks to John Goucher for initiating the project and to Meredith Brittain for her organizational efforts in the process of turning the manuscript into a four-color book. An additional thank you is extended to Christine Selvan and her team at SPi for their excellent performance in the preparation of the manuscript for publication.

Comments from instructors and students are welcome at [m.turgeon@neu.edu](mailto:m.turgeon@neu.edu).

**Mary L. Turgeon**  
*Boston, Massachusetts*  
*St. Petersburg, Florida*