

## Haematology

C. J. Pallister, M. S. Watson eds. *Banbury: Scion*, 2010: 2nd edn.  
ISBN 978-1-904842-39-2. 398 pp. £25.99.

*Haematology* is the long-awaited, revised and updated version of the original edition first published in 1999 as part of the highly respected 'Biomedical Sciences Explained' series. This time we have a new editor as Chris Pallister has been joined by Malcolm Watson, and the book has grown by over 130 pages. Initial impression is of a very nicely presented text with a clear, uniform style throughout and numerous boxes containing mainly historical and some explanatory annotations, which add a nice touch. All illustrations are greyscale but they work well.

All of the major headings that one would expect in a book of this kind are represented, with 20 chapters in total, starting with an initial introduction to blood and haemopoiesis, followed by substantial chapters covering red cells, a chapter covering non-malignant leucocyte disorders, seven chapters covering all major areas of haematological malignancy, and finally three chapters devoted to coagulation. Each chapter begins with clearly stated learning objectives.

Chapter 3 introduces us to the concepts of anaemia and the description of red cells. On page 43 we are told that the term 'hyperchromic' is not used, but in practice it sometimes is – spherocytes do lose their area of central pallor because they are no longer biconcave, but they are often smaller than normal red cells and have an increased haemoglobin concentration, and they do look darker upon microscopic examination. Even the suggested further reading (Bain) supports careful use of this term.

Chapter 4 provides sound coverage of the disorders of iron metabolism and the relationship between hepcidin and ferroportin that would not have been found in any book published in 1999.

There is still no mention of functional iron deficiency, however, which was a criticism of the first edition. Biomedical scientists working in a haematology laboratory that serves a renal unit will come across this phenomenon and should have some understanding of the underlying principles.

But these are minor details and the general sweep of the red cell section is comprehensive and very well written.

Moving on to haematological malignancies, Chapter 10 introduces the subject followed by six chapters that deal with specific types. First up are the acute leukaemias with thorough coverage and a detailed description of the current World Health Organization (WHO) classification system. My only disappointment is that the older FAB classification scheme is covered only very briefly and the summary table still contains a number of errors and omissions; M0 AML is

given no alternative name while the others are (it should be AML, minimally differentiated), M5b (acute monocytic leukaemia) is not clearly identified in the table and its definition is incorrect (<80% monoblasts, not >80% as printed). The FAB classification primarily is a morphological system and that is what the biomedical scientist and clinician are usually presented with after an abnormal full blood count, and sometimes decisions have to be made upon this, as in the case of M3 acute promyelocytic leukaemia (APL), before molecular and cytogenetic results are available. The learning objective of being able to describe the FAB classification system in detail falls a little short I feel. The further reading suggested at the end of the chapter includes only textbooks – no mention, for example, of the excellent paper describing the rationale behind the current WHO classification of acute leukaemias published in *Blood* in 2009.

Chapter 12 covers the chronic lymphoid leukaemias, starting with CLL. There is only the briefest description of the mutational status of the variable region of the immunoglobulin heavy chain gene and its prognostic importance, and no mention at all of surrogate markers such as CD38 and ZAP-70. We are introduced to immunophenotyping but not the CLL scoring system that is in common use. The criteria for the definition of lymphocytosis changed in the current 2008 guidelines from  $5 \times 10^9/L$  lymphocytes to  $5 \times 10^8/L$  B lymphocytes. The reasoning behind this requires some understanding of monoclonal B-cell lymphocytosis (MBL), which is similar in its natural history to MGUS (discussed in Chapter 16). None of this is mentioned and the current CLL guidelines are not suggested for further reading. Again, the reader is directed towards four hefty textbooks, which is a shame when there are many recent excellent review papers available.

The chapters on haemostasis are generally well presented. Chapter 19 touches on TTP briefly but informs the reader that the trigger is unknown when in fact it is now known to be due to deficiency of the metalloprotease ADAMTS13. Also, antithrombin III recently was renamed simply as antithrombin. Chapters 18 and 20 use the two terms interchangeably, even within the same chapter, which might prove misleading to students as it implies two different entities when in fact they are one.

So, overall, a mixed bag. Revised and updated in the most part and probably sufficient for undergraduates, but there are gaps for those undertaking postgraduate and other higher professional qualifications.

**G J Gibbs**

## Haematology

*Fundamentals of Biomedical Science*. G. Moore, G. Knight, A. Blann eds.

Oxford: Oxford University Press, 2010. ISBN 978-0-19-956883-3 Paperback). 643 pp. £31.99.

*Haematology* forms part of the new 'Fundamentals of Biomedical Science' series published by Oxford University Press in collaboration with the Institute of Biomedical Science. The back cover promises "essential theory, experimental skills, preparation for professional practice", so how does it shape up?

First, it is clear that the book has been produced to a very high standard on high-quality paper with colour images throughout. Even with the extensive glossary and index, there are still over 600 pages of text. Divided into four broad categories – Haematology and Haemopoiesis, Peripheral Blood Cells in Health and Disease, Haematological Malignancies and Haemostasis in Health and Disease – each section is further subdivided with a total of 16 chapters overall.

Each chapter is very thorough with learning objectives stated clearly at the beginning and a chapter summary at the end. Some, but not all, chapters also have a number of discussion questions at the end. There is an online resource centre with answers to these questions and a wealth of additional material. Finally, the chapters concluded with a small but select list of papers and textbooks for further reading. Apart from a few key older texts that are rightly included, the majority of these are very recent publications.

Interestingly, at the end of Chapter 13 (and partly for Chapters 14 and 15), each of the titles suggested for further reading is accompanied by a short description of its relevance provided by the author(s) of that chapter. This once fairly common approach has gone somewhat out of fashion, which is a shame because I like it and it would have been nice to see it applied uniformly throughout the book.

Chapter 1 sets the scene with an introduction to haematology and concludes with the role of the professional body – the IBMS, CPD, the HPC, Chartered Scientist status, and the British Society of Haematology all get a mention – a nice touch that grounds the book firmly within its target readership.

Looking in more detail at areas of particular interest to me I chose Chapter 4 first – 'The Physiology of the Red Blood Cell'. Our understanding of iron homeostasis has expanded greatly in recent years and the role, for example, of hepcidin and its interaction with ferroportin in the regulation of iron absorption isn't found in many older textbooks still in print, but it is all here. My only slight disappointment with the next chapter – 'The Pathology of the Red Blood Cell: Part 1' – was that functional iron deficiency was not discussed. This is of particular significance in patients who have chronic

renal failure and causes a suboptimal response to recombinant human erythropoietin despite apparently adequate iron levels. Modern haematology laboratories support renal units and the management of patients who have renal anaemia by monitoring a variety of new red cell parameters such as percentage hypochromic red cells, reticulocyte haemoglobin content (CHr) or reticulocyte haemoglobin equivalent (Ret He).

Chapters 11 and 12 introduce the reader to the classification systems applied to myeloid and lymphoid neoplasms, respectively. Our understanding of haematological malignancy, especially at the molecular level, has also increased enormously. Accurate classification is vital to ensure the appropriate use of increasingly targeted therapy, to provide prognostic information, and to highlight biological differences between different disease entities. Both chapters succeed admirably. The role of the recently discovered *JAK2* (V617F) mutation in myeloproliferative neoplasms (MPNs) is discussed clearly. If anything, the impact of this discovery – first reported in 2005 – and how it has revolutionised our understanding of MPNs could have been emphasised a little more. Variant forms of *JAK2* found in V617F-negative polycythaemia vera, such as the exon 12 mutation, are alluded to but not named in the text, although it can be found in the guidelines that are referred to in the reference section at the end of the book.

No haematology textbook is complete without a section devoted to haemostasis, and the four chapters that conclude the book are comprehensive and well written. I like the use of numerous case studies and worked examples of many of the calculations performed; these help to illustrate the work done by the haematology laboratory during the investigation of coagulation abnormalities.

A minor criticism of the format of the book is the use of coloured cross-reference and key-terms boxes throughout. For example, on pages 4 and 5 there are five cross-references and 17 key terms which can give the pages a 'busy', cluttered appearance. Not all of the words highlighted in the text have a corresponding key-terms box, but they are all collated in the glossary section so I'm not sure how this hit-and-miss approach adds value to the book. However, these are minor issues. *Haematology* is a superb textbook that delivers what it sets out to, providing essential reading for undergraduates studying haematology on biomedical science degree courses and for biomedical scientists looking to update their knowledge.

**G J Gibbs**

## Biomedical Science Practice

*Fundamentals of Biomedical Science. H. Glencross, N. Ahmed, Q. Wang eds.*

Oxford: Oxford University Press, 2010. ISBN 978-0-19-953329-9 (Paperback) 608 pp. £32.99.

This book is part of the 'Fundamentals of Biomedical Science' series and provides information about the more generic aspects of working as a biomedical scientist and in a laboratory. It comprises 552 pages, organised into 20 chapters with a helpful list of abbreviations at the beginning and a glossary of terms at the end of the book. A large team of authors with a wide variety of backgrounds within professional and academic practice contributed to this book, which means that the reader benefits from their expert knowledge and experience in particular fields.

The book is obviously intended for biomedical scientist students and trainees, although the scope of the information provided is broader than that. Some of the chapters are specifically about working as a biomedical scientist in clinical pathology, including information about the Institute of Biomedical Science, the Health Professions Council, automation and quality assurance in the clinical laboratory and point-of-care testing within the healthcare setting. There are chapters on communication and professional development which would be useful preparation for any professional setting, particularly within healthcare. Other chapters cover general areas of working in a laboratory such as health and safety, preparing reagents and data handling, which would be relevant to all science students. Then there are chapters on specific techniques such as centrifugation, electrophoresis and molecular biology techniques, as well as some on specialist areas like radioactivity and radiation. While the examples given in these are tailored towards clinical areas, they would also be of interest to biomedical science students thinking about a career in research rather than diagnostic pathology.

Each chapter provides quite a detailed account of a clearly defined topic, with cross references to relevant information in other chapters. Despite the depth of factual detail, the book is generally well written, in clear language, with technical terms explained. This is doubtless a reflection of the authors' experience of teaching and training in their different subject areas. The layout is attractive to the reader, with colour figures and 'key points', 'text boxes' and 'self check questions' in coloured sections running through the book. There are also lists of further reading and questions to help the reader test their understanding at the end of each chapter. The reading lists comprise a mixture of textbooks, journal articles and websites which is useful for students, but the format of this is quite variable, with some chapters having only journal articles and no websites. In others, the references quoted are not relevant to the chapter – for example, Chapter 1 (Biomedical Science and Biomedical Scientists) considers preregistration training and education and career pathways but does not mention laboratory accreditation, yet two of the three references are about accreditation of laboratories.

This is quite a long book and most of the information contained here is available in other books. An individual reader might not need all the chapters but should find benefit from the majority of them. Overall, this book provides a useful introduction to both the laboratory and technical aspects of the academic discipline of biomedical science, as well as being of value to those training to work as professional biomedical scientists in clinical pathology laboratories.

**S J Pitt**