

# PRINT AND MEDIA REVIEWS

Ian S. Grimm, M.D.

*Print and Media Review Editor*

Division of Gastroenterology and Hepatology

University of North Carolina at Chapel Hill

Chapel Hill, North Carolina

*Proteins of Iron Metabolism.* By Ugo Testa. 608 pp. \$209.95. CRC Press, LLC, Atlanta, Georgia, 2001. ISBN 0849386764. Web address for ordering: [www.crcpress.com](http://www.crcpress.com)

The field of iron metabolism is probably one the fastest moving areas in science. In the past few years, new genes, proteins, and diseases have been recognized, and genetic studies now foresee the discovery of other important iron-related genes. No doubt that such an intense scientific activity and the growing number of novel information justifies a review of the latest developments in the field. However, the rapidly changing scene of iron metabolism makes it difficult to structure a comprehensive description and interpretation of available scientific data. The actual function of most of the new proteins in vivo, their coordinated regulation in the context of body iron trafficking, and the way lack-of-function mutations may lead to hereditary diseases in humans, are still uncertain and a matter of intense debate. Dr. Testa has undertaken a courageous editorial challenge and has compiled a series of highly authoritative chapters on genetics, biochemistry, physiology, and cell biology of iron proteins.

Traditionally, until the 1970s, our understanding of the control of iron homeostasis in mammals and its deregulation in iron-loading disorders was based on the role of a few proteins, such as ferritins, serum transferrin, and the cellular receptor for transferrin, the transferrin receptor 1. Additional insights provided by a further 20 years of investigation led to the discovery of the iron-regulatory proteins, IRP-1 and IRP-2, at the same time sensors for cytoplasmic iron and controllers of ferritin and transferrin receptor expression. The IRP system still holds as best characterized example of posttranscriptional regulation of gene expression. In recent years, an unexpectedly fast progress in iron research has further changed the scene. New genes have been discovered including the hemochromatosis (HFE) gene, the metal transporters divalent-metal transporter 1 and ferroportin1/IREG1/MTP1 and their molecular reductase/oxidase partners (e.g., duodenal cytochrome b and hepcidin), a second transferrin receptor (transferrin receptor 2), the iron-hormone hepcidin. This has greatly complicated the simple picture of iron homeostasis depicted in the early literature. Most of these developments in iron metabolism have been covered in this review and the reader can certainly feel this new excitement throughout the book, particularly when reading the chapters on general aspects of iron metabolism and absorption.

The book is particularly strong when holding a mirror up to biochemistry and biology of "classical" iron proteins, such as transferrins, lactoferrin, transferrin receptors, iron-regulatory proteins, and ferritins. Specific sections are devoted to these

proteins where specialists may find up-to-date information, clear figures and illustrations, and valuable bibliographic resources. The author has put special care into describing results of most available reports on specific aspects of iron protein biology and expression. Obviously, due to the rapid progress of the field, the latest findings on new iron-proteins, could not be included in this book. Two chapters on specific physiological aspects of iron metabolism such as iron absorption and iron in cell proliferation have been also included.

A nonspecialized reader may find difficult to integrate the extensive basic description provided for each iron protein within the general context of iron trafficking or the pathogenesis of human iron disorders. Although the declared focus of the book is genetics, biochemistry, and biology of iron proteins, some expectation had been generated by the author when it comes to description of physiological aspects of iron metabolism or pathogenic effects of deregulated iron homeostasis. There is some difficulty in drawing a comprehensive picture and in integrating the traditional concepts of iron metabolism with the new acquisitions. Sometimes it is difficult to follow the logic because concepts are repeated in different chapters but with slightly different emphasis or interpretation, as in the case of pathophysiology of hemochromatosis and the function of the HFE protein. There has been an attempt toward a more comprehensive and choral description of iron metabolism and its derangements, but this has been confined to the introductory chapter. Here, the author appears more prone to include all available published information than to use his competence and knowledge to interpret and integrate it.

Despite these minor disappointments, the book is a well-written and tight collection of compelling and informative chapters on biochemistry and cell biology of iron proteins, each one clearly contributing to the development of the overall argument.

**Bottom Line:** A state-of-the-art review of research in iron metabolism.

ANTONELLO PIETRANGELO, M.D., Ph.D.

*Professor of Medicine*

*Center for Hemochromatosis and Hereditary Liver Diseases*

*Department of Internal Medicine, Policlinico  
Modena, Italy*

*Schuster Atlas of Gastrointestinal Motility in Health and Disease, Second Edition.* Edited by Marvin M. Schuster, Michael D. Crowell, and Kenneth L. Koch. 472 pp. \$149.00. B.C. Decker Inc, Hamilton, London, 2002. ISBN 1-55009-104-2. Web address for ordering: [www.bcdecker.com](http://www.bcdecker.com)

This is the second edition of the *Atlas of Gastrointestinal Motility*, first published in 1993. This revision provides updates on current concepts and understanding of GI motility, and on the available methodologies and techniques for motility testing. The cast of contributors is impressive, including many world-renowned leaders in the fields of GI physiology and motility.

The *Atlas* comprises 33 chapters, divided into 2 major parts. The first deals with the physiologic basis of gastrointestinal motility. It provides an excellent overview on myoelectrical, neural, and humoral mechanisms involved in gastrointestinal motor and sensory function. The information provided in this part is not essential for understanding the subsequent sections of the *Atlas*, nor does it necessarily have specific clinical implications. However, it is highly recommended for readers interested in understanding the basic concepts of gut physiology.

The second part of the *Atlas* is divided into 7 sections. The first 5 are organ-based (esophagus, small intestine, colon and rectum, and anorectum). The other 2 pertain to "other conditions related to motility dysfunction" and "surgical therapies." Each of the organ-specific sections begins with a brief description of the normal physiology. This is followed, in most cases, by detailed and comprehensive information about the currently available techniques pertinent to assessment of the specific GI organ. Most of the sections also provide clinical examples and some discussion of the pathophysiology of common GI motility disorders. The section on "other conditions related to motility dysfunction" concentrates on a variety of conditions affecting GI motility, including some excellent reviews on dysautonomia, postoperative disorders, and the effects of sleep, as well as on therapeutic options such as pharmacological therapies and biofeedback. The last section of the *Atlas* consists of 3 chapters focusing on "surgical therapies." An electronic version of the text is provided on CD, in PDF format, which allows one to store the book on a personal computer. It is not, however, accompanied by search engine and it does not allow for cutting and pasting of text or figure.

Overall, the *Atlas* is organized in a reasonable and logical order. The chapters are very informative and well written. The transitions from one section to the next and from chapter to chapter are somewhat awkward, however, making the work feel more like a gathering of independent monographs than a single text. Presumably a consequence of multiple authorship, each chapter differs in style and format, and each emphasizes different aspects of motility. Some chapters are loaded with manometric examples but provide very little informative text, whereas others offer detailed information about the techniques but have very few clinical examples. A significant shortfall is that not all of the chapters discuss clinical applications, and some do not reference important clinical publications regarding a specific test. This leaves the readers with a lack of perspective on the clinical relevance and possible clinical indications for the test under discussion. This is particularly important since some of the tests described in the *Atlas* (e.g., barostat, scintigraphy, electrogastrography, and various breath

tests) are not widely used in clinical settings, and are not available in many medical centers.

Although a few chapters focus on therapeutic options, the book does not provide comprehensive information and algorithms for the clinical approach and management of motility disorders. Thus, it should be seen primarily as an atlas for GI motility function and testing in health and disease. In this regard, the *Atlas* does not point out some interesting new and evolving techniques in the field of GI motility, examples of which include MRI defecography, tubeless esophageal pH monitoring, anti-reflux endoscopic techniques, electric gastric stimulation, among others.

As is expected, the text is well illustrated and contains numerous images (x-rays, ultrasound, and scintigraphy), actual recordings of manometry testing, pictures of commonly used devices, schematic figures, and diagrams. The illustrations are all in black and white, which I found somewhat disappointing. However, this shortcoming does not interfere with the quality of the information. The overall image quality is good and, in most cases, the examples are very informative and complimentary to the text.

**Bottom Line:** This is a worthwhile acquisition for any physician or researcher interested in GI physiology and motility, and a useful reference for clinical gastroenterologists who treat patients with these common disorders.

YEHUDA RINGEL, M.D.

*Department of Medicine*

*Division of Gastroenterology and Hepatology*

*University of North Carolina at Chapel Hill*

*Chapel Hill, North Carolina*

*Innervation of the Gastrointestinal Tract.* Edited by Simon Brookes and Marcello Costa. 560 pp. \$115.00. Taylor & Francis Group, Plc., London, United Kingdom, 2002. ISBN 0415283779. Web address for ordering: [www.tandf.co.uk](http://www.tandf.co.uk)

The enteric nervous system or "little" brain contains as many (i.e., 100 million) neurons as the spinal cord, and together with hormones and extrinsic nerves, orchestrates gastrointestinal motor and sensory function. Although these mechanisms have been studied for over a century, substantial progress has been made over the past decade, concurrent with the widespread recognition of the prevalence and impact of functional gastrointestinal disorders. This book is a remarkable and timely attempt to summarize current concepts of the neural circuitry in various parts of the gastrointestinal tract. Two editors and 27 contributors, recognized for their contributions to the field, have put together 11 chapters in 526 pages with extensive (i.e., up to 600) references in each given chapter. The editors have effectively brought the expertise of each set of authors, so that the text provides a relatively balanced perspective of concepts that apply to neural circuits in general (i.e., throughout the gut), and the specific functions of individual organs. Separate chapters cover enteric neuro-