

## Book review

Michael J. Gibney, Ian A. Macdonald and Helen M. Roche (editors). *Nutrition and Metabolism*. Oxford: Blackwell Publishing 2003. £25.95 (paperback). ISBN 0 63205625 8

The title of *Nutrition and Metabolism* might lead the reader to expect a text packed with metabolic pathways and theories of metabolic regulation. In fact, this book has a much wider remit and strikes an interesting balance between the molecular science of metabolism and the health-related physiological consequences of nutritional imbalance. In doing so it forms a comprehensive textbook describing the current state of nutritional science. This very broad approach moves beyond metabolic pathways and their regulation to tackle the complex interactions between the constituent parts of the whole body. Whilst there is a wide-ranging discussion of metabolism and gene–nutrient interactions, there is also an emphasis on endocrine signalling pathways and the inter-organ regulation of metabolism. The book also covers more diverse but nutritionally important metabolic functions such as chemosensory mechanisms and the protective roles of phytochemicals. Thanks to its integrated discussion of the mechanisms of metabolic homeostasis in health and disease, this textbook will be of use for nutritionists at all levels.

In the first chapter there is a description of the fundamental concepts of nutritional balance. With its clear explanation of a subject often meshed in complex terms this chapter provides a central introduction to metabolism. The second chapter, discussing molecular aspects of gene expression, complements this and provides an introduction to the emerging science of nutrigenomics. These introductory chapters highlight the systems biology approach that is evolving to account for the interactions between nutrients and the genome. This sets the tone for the next section which discusses the integration of metabolism with a chapter devoted to each of the macronutrients. This section describes the nutrient flows between the major organs and the basic mechanisms that regulate the metabolism of energy, protein, carbohydrate and fat through the whole animal. The reader is given an essential grounding in the nutritional principles and these are then discussed in relation to each of the major phases in life. The first of the chapters that follow discusses nutrition in pregnancy and lactation, followed by a chapter on postnatal growth and ageing. This section of the book gives an overview of the changing requirements in different stages of life and the impact of the nutrient supply on development and function.

The next section of the book describes the nutrition and metabolism of individual organ systems. The chapter dealing with nutrition and the brain describes the metabolism of this critical organ

and its role in orchestrating other physiological processes. The chapter on chemosensory mechanisms is particularly interesting and reflects an important and emerging area in the control of nutrient metabolism in its widest sense. The following chapters cover the function and metabolism of other key organ systems including the gastrointestinal tract, cardiovascular system, skeletal system and immune system. In addition to considerations of nutrient metabolism, these chapters also place an emphasis on the endocrine regulation of these systems. The discussion of nutrition in relation to major diseases will be particularly helpful to the biochemist or molecular biologist wishing to gain a health-related overview of the current thinking in these fields.

The final chapters deal with much broader areas of nutrition in relation to health and disease. There is a chapter devoted to the metabolism of the phytochemicals, highlighting the continuing interest in these molecules and their importance in human health. The chapter concerning regulation of appetite considers both the neurochemical and psychological factors involved. This leads to two chapters discussing over- and undernutrition and their physiological consequences. The section on over-nutrition is important in view of both the ever-increasing incidence of obesity and the increasing availability of food fortified with micronutrients, whilst sadly the section on undernutrition will still be essential reading for many. The book concludes with a chapter devoted to nutrition and metabolism in exercise performance.

This comprehensive textbook of nutrition and metabolism will be especially valuable to teachers, students and researchers of nutrition at all levels. The book is well illustrated with many clear and informative diagrams and each chapter is preceded by a summary of the key points. By drawing on the expertise of leaders in many of the nutritional specialities this book provides a comprehensive guide to current thinking as we enter the post-genomic era. Thanks to emerging technologies it is now possible to measure a range of factors simultaneously, making integrated metabolic measurements a possibility. By developing this theme of integration between nutrition metabolism and health, this textbook is a part of this process and a valuable addition to the bookshelf.

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