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Book review

The Adipose Organ. Saverio Cinti. Milano, Italy: Editrice Kurtis. 2001. 94 plates. US$165. ISBN 88 85030 32 7

The Adipose Organ by Saverio Cinti is an atlas providing a comprehensive overview of adipose tissue morphology from gross anatomy through histology to ultrastructure. This is a very timely book, because interest in adipose tissue biology has steadily increased over recent years. Adipose tissue has been recognised to be actively involved not only in overall energy metabolism, but also in many physiological networks central to the channelling and partitioning of nutrients. Having too much fat ultimately results in dysregulation of carbohydrate and fat metabolism, leading to the pathophysiological problems associated with obesity. However, having too little fat, as encountered in lipodystrophy syndromes, also results in severe metabolic complications tending to resemble those of obesity. This implies that adipose tissue is indeed important for normal physiological functions and metabolism, and not only as an energy reservoir for emergency situations.

This book is called *The Adipose Organ*, a term which is not widely used. Cinti argues that the two main adipose tissue types, brown and white adipose tissue, collaborate in the partitioning of energy either towards storage (white fat) or thermogenesis (brown fat), thus fulfilling the definition of an organ. Although this can be debated, it is certain that adipose tissue is the organ with the greatest plasticity; it can increase in mass enormously, and in extreme obesity it can make up 50 % or more of total body weight. Furthermore, adipose tissue is known to secrete a number of factors such as leptin, tumour necrosis factor α, resistin and many others, with profound affects on other organs, tissues and overall metabolism. Thus, adipose tissue is sometimes even referred to as an 'endocrine organ'. In any case, I think that the adipose organ certainly deserves a book like this, exclusively dedicated to its morphology and structure.

Saverio Cinti is today one of, if not the, leading expert in adipose tissue morphology, and in this book he assembles over ninety images, ranging from the gross anatomy of the adipose organ in mice to histology and ultrastructure using light and electron microscopy (both transmission and scanning). The book consists of seven chapters; the first chapter is dedicated to white and brown adipose tissue, adipocytes in various stages of differentiation, and various cell organelles. Additionally, it covers vascularization and innervation as well as other cell types present in adipose tissue. Also, the expression of key proteins and enzymes such as uncoupling protein 1 for brown fat and leptin for white fat is depicted using immunohistochemistry. The other chapters deal with adipose tissues in different physiological situations such as cold and warm acclimation, in obesity, fasting and lactation. The last chapter finally illustrates the fetal adipose organ.

This atlas primarily provides images; the text is short and mainly explanatory of the images and details there. However, references to relevant publications are amply provided and, personally, I find the annotations quite sufficient for such an atlas. What is missing, however, is a list of the abbreviations. They are explained the first time they are used, but this is a book I would browse and consult for specific points rather than read through from beginning to end. Also, it should be noted that the book depicts exclusively rat and mouse adipose tissue, but within this scope it is truly exhaustive. This makes it a very valuable primary source for research, especially considering the growing number of transgenic mice displaying phenotypes of increased or reduced adiposity. Also, for teaching purposes this is a wonderful resource for the visualisation of important adipose features.

I find this atlas very well structured, state-of-the-art techniques are employed and the images are of excellent quality. It is apparent that they have been selected and assembled with much care and attention. This book is not only informative but also aesthetically very pleasing, something rarely encountered in scientific literature. I certainly agree with Paul Trayhurn who describes it as a true 'labour of love' in his foreword to this atlas. I therefore recommend this book to everybody who has taken an interest in adipose tissue development, structure or functions.

Nowadays, biomedical publications are rapidly outdated. However, I am sure that because of its uniqueness this book will remain a valuable resource for many years to come.

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