PREFACE

This book will be informative to those interested in obesity, stem cells, or the development and physiology of adipose tissues. Although white adipose tissue is often maligned due to societal pressures and the diseases associated with obesity, in reality these dynamic tissues have important but incompletely understood roles in regulation of whole-body metabolism and maintenance of health. Thus, this volume presents a wide array of state-of-the-art methods to facilitate further study of development, physiology, and pathophysiology of adipocytes in cultured cells, animal models, and humans. In addition, research on energy-consuming brown adipocytes has exploded over the past few years because of the potential for activation or expansion of brown adipose tissues in humans to help alleviate incidence of obesity. Consequently, a number of methods for visualization and investigation of brown adipose tissue are also detailed. Finally, white adipose depots are a source of readily available stem cells, whose multipotency and other properties have considerable potential to treat human diseases. Accordingly, methods for purification and study of these important precursors are also described.

The study of adipose tissues goes hand in hand with global efforts to understand and reverse the epidemic of obesity and associated medical complications. Thus, tremendous progress has recently been made in our ability to investigate aspects of white and brown adipose tissue biology. Contributors include those researchers that have made substantive contributions to our ability to explore adipose tissue biology at the biochemical, cellular, tissue, and/or organismal levels. Authors were recruited not only based on their contributions to the field but also on their ability to communicate their cutting-edge methodological advances in a cogent and unambiguous style. These investigators have documented their "lab protocol," including small but critical details for which there is often not space within a standard journal article. Where possible, they have also included general suggestions on how to optimize or modify protocols for the specific application of the reader.

The editor wants to express appreciation to the contributors for providing their contributions in a timely fashion; to the senior editors for guidance; and to the staff at Elsevier for helpful input.

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Cambridge, UK
October, 2013