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Preface

The present volume is a natural successor to a previous volume (vol. 35) in this series, ‘Mechanisms of dietary restriction in aging and disease’. In that volume, the role of body composition in mediating age-related impairments constituted a constant context, but was only addressed obliquely. Certainly, the obesity epidemic has made the role of body composition human health ever more salient, but there have been surprisingly few books surveying this subject, and none, to our knowledge, focusing on animal models examining the causes and consequences of age-related changes in body composition. Yet, as clearly described in the first chapter, increased adiposity with age may play a key role in determining lifespan. On the other hand, as described in the second chapter, the role of adiposity and mortality during aging is much more complex than it would appear, and in fact increased adiposity may play a paradoxically protective role to increase pathology yet decrease mortality in the elderly. Similarly, the third and fourth chapters describe the converse dangers of decreased body mass index secondary to reduced appetite during aging, which may be at least as deleterious as obesity. The next two chapters describe that the two salient changes in body composition during human aging, increased adiposity and decreased muscle mass, also characterize species as diverse as rats and Caenorhabditis elegans, suggesting that these changes may constitute an almost universal feature of aging in animals. This conclusion is supported by the following three chapters, which describe the robustness of sarcopenia with age and address several potential mechanisms addressing this apparently universal aspect of aging in animals. The next chapter addresses the key question of the efficacy of exercise in ameliorating age-related impairments, usefully contrasting these effects to those of dietary restriction. Finally, the causes and consequences of the third major age-related change in body composition, bone loss, are described. We are indebted to the outstanding investigators who have contributed their time and efforts in writing these reviews, and hope that our readers benefit as much from reading the articles as we did from editing them.

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