Aging in Nonhuman Primates
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Aging in Nonhuman Primates

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Preface

The study of normal aging, age-related disorders, and enhanced longevity is taking on new urgency as the number and percentage of elderly people in human populations increases. Especially notable are the populations that have experienced fluctuations in birth rate, such as the post-World War II ‘baby boom’ in America. Those in the population ‘bubble’ are nearing retirement age and are witnessing advanced age and its consequences in their parents. In some cases they see remarkable vitality and a good quality of life beyond the age of 90, but in most cases, they witness progression into frailty, forgetfulness, and failing health. At a time when they are planning their own leisure years, they are faced with difficult personal and social loss, along with overwhelming economic burdens associated with end of life care for their loved ones. These problems require solutions, and the solutions depend on increased knowledge and understanding of the biological bases of aging and its associated disorders.

From fundamental research will come means of preventing or effectively treating the most debilitating and distressing aspects of advanced age. Life extension without continuation or enhancement of life quality is not the goal of such research. While we are interested in understanding aging and its consequences, we are not really trying to find a ‘cure’ for aging in the sense of immortalizing individuals. Consideration of aging in nonhuman life forms has the prospect of increasing appreciation for, and acceptance of, the biological role of the aging process in populations, in addition to developing a more comprehensive understanding of the mechanisms of aging.

This volume focuses on primate aging. Humans are but 1 of about 320 species classified by systematists and taxonomists as members of the mammalian
order Primates. From an evolutionary biological and genomics perspective, it is important to note that every living primate is literally more like a human than it is like any other living nonprimate animal. While humans share many conserved characteristics with nonprimates, human characteristics that were derived during their evolution are homologous only with those of other primates. Comparative biologists distinguish between homologous and analogous comparisons because the scientific questions that can be addressed by them differ. To the extent that we are seeking to understand derived characteristics, we need to study humans or other primate species that exhibit the characteristics of interest. When we are studying conserved characteristics or simply want an analogous animal model, studying nonprimates can be enormously productive.

Our purpose in producing this volume was to provide a sample of the kinds of work in progress intended to increase understanding of normal and pathological aging and life-span enhancement in a variety of nonhuman primate species. The topics include brain aging and neurodegenerative diseases, social behavior, cognition and aging, skeletal aging in natural and captive conditions (including laboratories and zoological gardens), and the consequences of caloric restriction for life and health extension. This collection is clearly not exhaustive in terms of the range of possible topics or species. Fortunately, more scientists are turning their attention to the study of problems related to aging. We are especially pleased that some of these studies seek to identify major adaptive trends across many living primate taxa and that some of these efforts also provide data relevant to life-span development and the evolution of life histories. Much remains to be learned about the population dynamics, survival, and aging of many nonhuman primate species in natural and artificial environments. We hope this volume will stimulate others to fill in gaps of knowledge and to apply data from field studies and zoological gardens, as well as laboratories, to the understanding of aging.

We are grateful to the authors for providing excellent manuscripts in a timely manner. With this volume we renew our commitment to promoting the scientific study of aging and primates, and to fostering healthy aging among all primates.

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