

## *Review of Biological Research in Aging, Volume 2*

Edited by Morton Rothstein

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572 pages. £73.00

This edition follows from volume 1 published in 1983 and deliberately covers much the same ground as before in an attempt to give the reader both a summary of developments in ageing research and an account of the more important experiments. There are 8 sections – Theories, evolution and genetics of aging, Immunobiology of aging, Neurobiology of aging, Endocrinology of aging, Cell biology, Metabolism, Drug metabolism, and Mathematical modeling – containing between 1 and 8 chapters by experts in the appropriate fields. Overall, the impression gained is that there have been no spectacular advances in aging research but rather for example a gradual winnowing of the fanciful ageing theories as detailed analysis has increased. The use of simplified model systems such as protozoa, fungi and nematodes such as *Caenorhabditis elegans* has allowed elegant experiments upon the genetic determinants of ageing to be performed, and the detection of genetic dominance of senescence or short lifespan over normal or immortal states suggests reevaluation of those theories on the role of mutation in ageing that begin with the assumption of recessive mutations. As usual in any discussion of ageing it remains difficult to differentiate between cause and effect with respect to any phenomenon in question. For example, two widely distributed age-related observations are a slowing of the rate of protein biosynthesis and an increase in the amount of altered proteins; thus, does the slowing of protein synthesis decrease the rate of

production of those proteases which selectively degrade altered proteins, or do altered proteins themselves inhibit protein biosynthesis? The study of ageing in mammalian tissues and systems is still necessarily mostly at the descriptive level because of their complexity. The excellent chapter on female reproductive aging clearly demonstrates the physiological and molecular complexity of mammalian ageing; the authors clearly show how the process is mirrored by the multiplicity of further age-related changes and how the effects of one age change can create an endocrine-mediated cascade to effect deleterious changes in skeletal structure and the neuroendocrine system. An additional chapter that could prove useful might be a discussion of those insults to which cells are continuously exposed during their lifespan (e.g. the various forms of damage to DNA, membranes and proteins) and the intracellular homeostatic or maintenance systems which are present to keep these 'ravages of time' at bay: perhaps and the editors might consider this for a future volume.

The application of molecular biological techniques to ageing studies particularly in the so-called simple model systems may provide an insight into ageing in general despite the fact that there are many ways of 'getting dead'. It is to be hoped that future volumes will continue to demonstrate these developments; the term 'Molecular Gerontology' might not be too fanciful a term to describe these studies.

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