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Physiology of Cell Aging

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Translated from the Russian by Alexander Lipinsky

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Drug Dosage
The authors and the publisher have exerted every effort to ensure that drug selection and dosage set forth in this text are in accord with current recommendations and practice at the time of
publication. However, in view of ongoing research, changes in government regulations, and the constant flow of information relating to drug therapy and drug reactions, the reader is urged to check the package insert for each drug for any change in indications and dosage and for added warnings and precautions. This is particularly important when the recommended agent is a new and/or infrequently employed drug.

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Paradoxes are said to be useful in attracting attention to ideas. Claude Bernard (1937) wrote: I am convinced that the time will come when the physiologist, the poet, and the philosopher will use the same language and will come to understand each other. However, paradoxical as it is, even nowadays specialists in the same field of knowledge, for instance gerontologists, do not always understand each other. At the same time there is one common thing that should unite us all. Although the mechanisms of aging are known to be extremely intricate, they eventually lead to disturbances in the functions of the organism. The impairment of the function of the cells is the root cause of all these changes in the aging organism. In view of the above, the exploration of physiological mechanisms of aging and establishment of the role of molecular mechanisms of aging in the alterations of cellular function should become one of the principal trends in gerontology.

The process of cellular aging has been discussed in hundreds of publications, numerous monographs, and at dozens of symposia. At the same time this book represents one of the first monographic generalizations that deals with special features of aging of cells with various functions. The authors demonstrate that there exists an indissoluble connection between the specificity of cell function and the fundamental mechanisms of aging. The authors made an attempt not only to elucidate the functional changes occurring in cells with aging, but also to analyze the molecular and structural mechanisms of function impairment. The authors show that age-dependent development at any level of biological organization, including a cellular one, results from an interaction of two processes - i.e. that of aging, being a destructive process, and the vitauct (vita = life, auctum = prolong) process - aimed at stabilizing the organism viability and at lengthening the
life span. Some chapters in this monograph are concerned with aging of the cells exhibiting various functions.