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Gerontological Aspects of Genome Peptide Regulation

Vladimir Kh. Khavinson

Vladimir V. Malinin

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Preface

This monograph is the first work dedicated to the study of the interrelation between life span and peptide regulation of gene activity. We have developed a new concept which comprehensively reflects the evolutionary and biological role of peptides in the organism. Different chapters contain information on the effect of small peptides on the expression of the genes responsible for the regulation of metabolic processes, cell differentiation and proliferation, which provide for the maintenance of the main physiological functions and lead to a decelerated organism aging process. A wide range of physiologic effects of peptides, which is realized through the regulation of the expression of certain genes and through restoration of their structure is aimed at homeostasis support and delaying the realization of the aging genetic program. The mechanisms of the geroprotective effect of peptides, which are connected with chromatin activation, as well as with the increased enzymatic activity of telomerase and telomere elongation in different cells, have been discovered. Data reflecting the interaction between small peptides and DNA – the key point in the initiation of the biological activity of peptides – have been presented. Modern views reflecting the biological role of small peptides in the organism in humans and animals have been described, which consists of the genetic stability support aimed at increasing life span up to the specific limit.

A new approach to the study of aging mechanisms will resolve many controversial issues in anti-aging medicine. Further study of the molecular-genetic mechanisms of the effect of peptides may cause a reconsideration of the traditional views on aging, the creation of geroprotective means, as well as of accelerated aging and age-related pathology prevention methods.

This monograph may be of interest to gerontologists, specialists in genetics, molecular biologists, biochemists, pharmacologists, as well as clinicians.

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