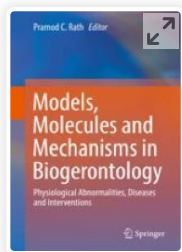


Pramod C. Rath *Editor*

Models, Molecules and Mechanisms in Biogerontology

Physiological Abnormalities, Diseases
and Interventions

 Springer



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Models, Molecules and Mechanisms in Biogerontology

Physiological Abnormalities, Diseases and Interventions

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Editors: [Pramod C. Rath](#)

Elaborates on the different cellular, biochemical and molecular changes that occur during aging

Highlights the implications of aging on the nervous system

Recommends important remedies like dietary restrictions and natural products as anti-aging methods to adopt

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This book examines the basic cellular and molecular mechanisms associated with aging. It comprehensively describes the genetic, epigenetic, biochemical and metabolic regulation of aging, as well as some important age-related diseases. Divided into two major sections, it takes readers through the various aspects of aging in a story-like manner and suggests various interventions for healthy aging, such as dietary restriction, regular exercise, nutrition and maintaining a balanced and a non-stressful lifestyle. It describes the implications of aging on the nervous system, metabolism, immunity and stem cells as well as care for the elderly. The book is an ideal companion for both new and established researchers in the field and is also useful for educators, clinicians and policy makers.

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Keywords

Aging **Epigenetics** **Geriatrics**

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About the editor

Pramod C. Rath is a Professor of Molecular Biology at the School of Life Sciences, Jawaharlal Nehru University, New Delhi. He received his Ph. D. in Zoology (Biochemistry) in 1988 from the Banaras Hindu University, Varanasi on the topic 'gene expression during aging' under the supervision of Prof. M. S. Kanungo, who started research on 'biology of aging' in India. He completed his post-doctoral research at the Institute for Molecular Biology I, University of Zurich, Switzerland with Prof. Charles Weissmann, a well-known molecular biologist.

He has 27 years of teaching and research experience, having mentored 18 Ph. D. and 4 M. Phil. students. He has published his research in respected international journals, such as Ageing Research Reviews, Molecular Neurobiology, Journal of Molecular Neuroscience, International Journal of Developmental Neuroscience, RNA Biology, PLoS ONE, International Journal of Biological Macromolecules, Molecular Biology Reports, Journal of Biosciences, Biochemical Biophysical Research Communications, Biochimica Biophysica Acta, FEBS Letters, Journal of Clinical Immunology etc. He has published a Springer book, titled 'Topics in Biomedical Gerontology'.

He teaches molecular biology, molecular genetics & genetic engineering and cell signaling to master's and Ph.D. students. Research in his laboratory is focused on cytokines; transcription factors; cell signaling and diseases; genomic biology of repetitive DNA and noncoding RNA; bone marrow stem cells and molecular aging in mammals. He has received numerous awards and fellowships and has been the Vice-President of the Association of Gerontology (India), Acting Dean at the School of Life Sciences. He is a member of several national academic and scientific committees.

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Molecular Marker and Therapeutic Regimen for Neurodegenerative Diseases

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Sharmistha Dey, Nitish Rai, Shashank Shekhar, Amrendra Pratap Singh, and Vertica Agnihotri

Abstract

The aging brain and nervous system go through changes by natural processes over time. The gradual loss of nerve cells takes place in normal aging process, while in some cases, collapsed old nerve cells lead to lots of accumulation of nerve cell's waste, eventually forming plaques and tangles. The plaques and tangles result in dementia (the memory loss) or movement disorder, which initiate different neurodegenerative diseases in aging. Disease-associated behavioral changes will start and become worse if it could not be detected in the early stage. It can be prevented by mental and physical exercise in normal aging process. Further, neurodegenerative disease in aging could be protected from promoting by early detection with potent molecular markers. The molecule which has direct or indirect role with the pathophysiology of the disease that reflects the insight for early diagnosis can distinguish disease accurately from normal. A molecular marker may simply refer to any biomolecule that can be estimated and utilized as a yardstick of a physiological or pathological state. In this chapter, the molecular markers have been described in context to the neuronal physiology and their potential diagnostic utility in neurodegeneration. This chapter presented the recently exploited biological molecules which have neuropathological role for the development of molecular markers in Alzheimer's disease and Parkinson's disease.

Keywords

Protein marker · Neurodegeneration · Alzheimer's disease · Parkinson's disease · Therapeutics

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