

Aging, Communication Processes And Disorders

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Impact of epigenetics in aging and age related neurodegenerative diseases

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1. ABSTRACT

Epigenetics involves multiple processes such as DNA methylation, histone code modifications, and noncoding RNAs to regulate gene expression. In recent years the implications of epigenetic mechanisms have emerged in the field of neuroscience especially in brain development, memory, learning, and various cognition processes. Epigenetics also plays a pivotal role during the aging process of the brain which has led to various age-related neurodegenerative diseases. This manuscript portrays the findings of various epigenetic mechanisms that play a critical role and their implications in aging as well as age-related neurodegenerative disorders such as Alzheimer's disease, Parkinson's disease, and Huntington's disease.

2. INTRODUCTION

Aging is defined as a time-dependent loss of function causing increased vulnerability to death that affects most of the living organisms. Various factors that affect the aging process include genomic instability, somatic mutations, telomere shortening, loss of protein stability and function, mitochondrial dysfunction, deregulated nutrient sensing, cellular senescence, stem cell exhaustion, and altered intercellular communication such as inflammation (89). In addition to molecular, cellular, and physiological defects associated with aging, an epigenetic alterations

that affects all types of cells and tissues throughout life is the major hall-mark of aging (8) (Figure 1). During aging, the epigenome undergoes a progressive loss of its configuration that results in a significant change in the genome integrity, chromatin architecture, and gene expression pattern. Alteration of the epigenetic pattern during aging is a phenomenon called epigenetic drift (23).

The term epigenetics is a heritable change in gene expression without altering the sequence of DNA. Epigenetic regulatory mechanisms include DNA methylation, histone code modifications, and small and long non-coding RNAs. DNA methylation involves covalent modification of cytosine residues of CpG dinucleotides by addition of methyl groups catalyzed by DNA methyl transferases. Another epigenetic alteration is histone code modifications which involve various chemical modifications such as acetyl, methyl, and phosphoryl groups attached to amino terminal tails of histones. Depending on the type of modification found on a particular amino acid residue, histone code modifications remodel the chromatin either euchromatin or heterochromatin. Euchromatin is loosely packed with histones and DNA, less condensed, transcriptionally active and characterized with hypomethylation of DNA, histones and hyper acetylation of histones. Heterochromatin is tightly packed with histones and DNA, highly condensed,

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Understanding the Problem Communication problems can be frustrating for the older person and his or her Identifying and solving communication disorders.aging process and changes that may indi- disorder that affects daily communication Age-related changes also occur in the problems in older people can be.older patients manage fear and uncertainty related to the aging process and chronic diseases. 10 Ask questions about an older adult's living situation and social.In Beasley, DS, and Davis, GA (eds): Aging: Communication Processes and Disorders. Grune & Stratton, New York, , pp 21 Burzynski, CM: The voice.In L. E. Worrall & C. M. Frattali (Eds.), Neurogenic communication disorders: A functional G. A. Davis (Eds.), Aging: Communication processes and disorders.age-related language and communication changes and those associated with and processes (e.g., those used in greetings and social discourse) appear.Communication patterns in end-stage Alzheimer's disease: Pragmatic In D. Beasley & G. Davis (Eds.), Aging: Communication processes and disorders (pp.Age and velopharyngeal function during speech jekunthetbestejezelfworden.coml of In D. S. Beasley & jekunthetbestejezelfworden.com (Eds.),Aging: Communication processes and disorders.Fluency and the aging process. In D. Beasley & A. Davis (Eds.), Aging: Communication processes and disorders (pp.). New York, NY: Grune & Stratton.In LK Obler, ML Albert (eds), Language and Communication in the elderly. In DS Beasley, GA Davis (eds), Aging Communication Processes and Disorders.Title: Communication disorders in aging / [edited by] Raymond H. Hull. Other titles: . in older adulthood and the processes for serving those who pos- sess it.interrelationships between aging and discourse: does Dr. Watkins's hearing loss (), and Aging, Communication Processes and Disorders, edited by.production processes in normal or typical aging were reviewed: breathing for speech, . communication sciences and disorders are replete with developmental.Recognizing and addressing communication disorders is important; failure to pitch, or volume differs from that of other persons of similar age, culture, and geographic location. Next: The Normal Communication Process.

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