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Nuclear pore complex proteins in Alzheimer's disease

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The majority of enzymes and their substrates engaged in cells' proliferation, differentiation and other vital functions shuttle between intranuclear and cytosolic compartments through the nuclear pore complexes, aqueous channels formed by multicomponent protein complexes of the nuclear envelope, also called nucleoporins. The nuclear pore protein complexes regulate movement of cell components from cytosol to nucleus and vice versa. Defective nucleoporin function could lead to inappropriate localization of a large number of nuclear and cellular components. Nucleoporin composition and structure are significantly age-dependent and cells lose essential nucleopore proteins with age. Oxidative stress applied to cells in culture caused marked changes in phosphorylation and O-glycosylation of nucleoporin proteins, and altered their localization and interaction with other transport components. Such changes of the nuclear pore complex structure and function could lead to aberrant intracellular trafficking of cell cycle regulating proteins and signaling proteins. Currently, growing body of evidence reveals that disturbances of nucleoporin structure and function are regular feature of degenerating neurons and could be responsible, in a major part, for the pathomechanism of neurodegeneration.

Biography

Dr Jerzy Leszek is full professor of psychiatry at the Medical University in Wrocław, Poland and vice-director of the Psychiatry Department. He is author and co-author more than 210 papers (especially from old age psychiatry), some chapters to the books published in reputed Polish and international journals and serving as an editorial board member of several journals. He is Scientific Editor and co-author of first Polish academic handbook on Alzheimer's disease and five another academic handbooks from psychogeriatrics, member a lot of scientific associations eg founder and president of Lower Silesian Association of Alzheimer's Families, first of its kind in Poland and Former Member of Board of Directions of International Psychogeriatric Association

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