

Nuclear Envelope and Nuclear Pore Complex in Oxidative Stress, Aging and Neurodegeneration

Jerzy Leszek

Wroclaw Medical University, Poland

The majority of enzymes and their substrates engaged in cells' proliferation, differentiation and other vital functions shuttled 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 (and our seech) reveals that disturbances of nucleoporin structure and function are regular feature of degenerating neurons and could be responsible, in a major part, for the patho mechanism of neurodegeneration.

Biography:

Dr Jerzy Leszek is Professor of Psychiatry, Vice-Head of the Department of Psychiatry, Head of Alzheimer's Disease Lab at the Medical University in Wroclaw, and Scientific Director of Alzheimer's Disease Center in Scinawa near Wroclaw, Poland. He graduated at Medical University of Wroclaw in 1979, was awarded a doctorate in Wroclaw in 1981 and in 1999- examination for the degree of associate professor of psychiatry and since 2005 he is working as full professor of psychiatry at Wroclaw Medical University. He is author and co-author more than 250 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 Editor –in-Chief of *Journal of Yoga and Physical Activity*. He is Scientific Editor and co-author of first Polish academic handbook on Alzheimer's disease and ten another academic handbooks from old age psychiatry (Polish and internationals), member a lot of scientific associations eg. founder and president of Lower Silesian Association of Alzheimer's Families, first of its kind in Poland, President of the Scientific Council of Alzheimer's Disease Center in Scinawa, near Wroclaw, Former President and founder of Polish Psychogeriatric Association, Former Secretary (now member) of European Old Age Psychiatry and Former Member of Board of Directions of International Psychogeriatric Association.