

13<sup>th</sup> International Conference on

# Alzheimers Disease and Dementia

November 25-26, 2019 | Frankfurt, Germany



## *Hans von Holst*

*Royal Institute of Technology, Sweden*


### **Protein unfolding as a basic denominator to Traumatic Brain Injury, Stroke and Alzheimer disease – Presentation of a new etiology**

Protein unfolding is a new aspect in the cause of cytotoxic brain tissue edema. This is found in both grey and white matter cells as a complicated secondary consequence to ischemic injury following traumatic brain injury (TBI) and stroke. In this aspect it may have some similarities to Alzheimer disease. To some extent the pathophysiological mechanisms are known, however far from complete. The new aspect is that the internal energy of semi-static mechanical forces following stroke and external energy of dynamic impact due to TBI result in the disruption of non-covalent and covalent bonds in protein and nucleotide structures. Our studies using computer models show that the kinetic energy following an impact to the head has the potential to break the chemical bonds in the protein and nucleotide structures resulting in cytotoxic brain tissue edema. Since folding of mature proteins is very much dependent on normal energy supply, the protein synthesis cannot continue during the ischemic process. By using a folded protein in laboratory investigation the

present hypothesis has the potential to be confirmed and, hence, develop new drugs for therapeutic use. The results may give new insights to the clinical treatment of moderate and severe TBI, stroke and Alzheimers disease.

#### **Biography**

Hans von Holst received his Medical Doctor's degree in 1976 at Karolinska Institutet and completed his specialist training in Neurosurgery 1982 at Karolinska University Hospital. In 1985 he earned his PhD when he also became Associate Professor in Neurosurgery, Clinical Neuroscience at Karolinska Institutet. Since 1988 he holds a position as Senior Physician in Neurosurgery at Karolinska University Hospital. During 1991-1996 he was appointed as Chairman of the Dept of Neurosurgery and Division Manager of the Neuroclinics at Karolinska University Hospital, respectively. From 1992 to 2006 he was appointed as chairman of the World Health Organization collaborating center for neurotrauma at Karolinska Institutet. Since 2003 he is Professor in Neuroengineering and Head of the Division of Neuroengineering at the Royal Institute of Technology in Stockholm. He has over 120 original research publications, book chapters and books.

e: [hvh@cenesy.com](mailto:hvh@cenesy.com) Notes: