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# NEUROLOGY AND NEUROIMMUNOLOGY

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### Similarities between severe tinnitus and chronic pain

Chronic neuropathic pain and severe tinnitus have many similarities. Activation of maladaptive neuroplasticity plays important roles in the creation of the symptoms of both diseases and they are both plasticity diseases. The symptoms are generated in the central nervous system. Acute pain that is caused by tissue injury is often a precursor to chronic neuropathic pain with stress as a co-factor. While less severe tinnitus may be generated in the ear, it is believed that severe tinnitus is caused by changes in the nervous system that occurs as a result of activation of neuroplasticity. The changes in the nervous system that produce the symptoms of these two diseases are altered synaptic efficacy causing a change in the excitability and functional connections in many related neural circuits of the brain. These components of the pathology cannot be detected by the methods currently available for diagnostic purposes.

deficits in neurosurgical operations. His work has helped establish UT Dallas as a leader in tinnitus-related research. His lengthy research career has focused on four primary areas: The basic function of the ear, sound transmission in the middle ear and cochlea, the neural code of complex sounds and neural plasticity. He eventually moved on to research in humans aimed at studying disorders of the ear and the nervous system, such as tinnitus. He began his research career at the famed Karolinska Institut in Sweden. In 1978, he was invited to join the University of Pittsburgh. There he did innovative research in the area of neurosurgery and intraoperative neurophysiology; he developed methods for reducing the risks of serious neurological deficits after neurosurgical operations. He was one of the founders of a new specialty; intraoperative neurophysiological monitoring and he did innovative research that led to better understanding of several neurological diseases. When he joined UT Dallas in 1997, he became interested in abnormalities in the nervous system function among individuals with autism. He developed teaching programs in the biology of pain; sensory systems, neuroplasticity and he established the first university program in teaching IONM in a graduate program. During his time at UT Dallas, he was named the university's "President's Teaching Excellence Award," won Teacher of the Year for the School of Behavioral and Brain Sciences, and was named distinguished Lecturer in Cognition and Neuroscience. He earned his PhD in Medical Science at the Karolinska Institut in Stockholm, Sweden.

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### Speaker Biography

Aage R Møller is known internationally for his innovative research on sensory systems and neural plasticity and for developing methods for reducing the risk of neurological

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