manitoba neuroscience network

New Mechanisms of Extracellular Matrix Remodeling

SEMINAR & VISITING SPEAKER SERIES

WORLD WIDE NEURO PLATFORM

DATE

Monday, January 31, 2022
10:00 AM CST

WORLD WIDE NEURO LINK

https://www.crowdcast.io/e/mnn-seminar_31Jan2022_SR

MEETING ID & PASSCODE

None required

SPEAKER

Dr. Silvio Rizzoli, PhD

Professor and Department Chair, University of Goettingen School of Medicine, Goettingen, Germany

BIO

Dr. Silvio Rizzoli studied at the University of Bucharest, Romania, from 1996 to 2000, for a Bachelor in Biochemistry degree. He followed this up with a PhD at the University of Colorado School of Medicine, in 2004, on synaptic vesicle recycling mechanisms, in the group of William Betz. After a post-doc training period at the Max Planck Institute in Goettingen, Germany, in the neurobiology group of Reinhard Jahn, he became an independent group leader at the European Neuroscience Institute (ENI) in 2007. Later, he was recruited as a research professor (2012) and eventually as department chair (2014) at the University of Goettingen School of Medicine, in the Department of Neuro- and Sensory Physiology.

RESEARCH

In the adult brain, synapses are tightly enwrapped by lattices of extracellular matrix that consist of extremely long-lived molecules. These lattices are deemed to stabilize synapses, restrict the reorganization of their transmission machinery, and prevent them from undergoing structural or morphological changes. At the same time, they are expected to retain some degree of flexibility to permit occasional events of synaptic plasticity. The recent understanding that structural changes to synapses are significantly more frequent than previously assumed (occurring even on a timescale of minutes) has called for a mechanism that allows continual and energy-efficient remodeling of the ECM at synapses. I review in the talk our recent work showcasing such a process, based on the constitutive recycling of synaptic ECM molecules. I discuss the key characteristics of this mechanism, focusing on its roles in mediating synaptic transmission and plasticity, and speculate on additional potential functions in neuronal signaling.

OBJECTIVES

1. Obtain ultra-resolution in optical imaging of conventional biological samples (down to 1 nm)

2. Understand the turnover dynamics of proteins and synapses

3. Understand the plasticity of the extracellular matrix

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