manitoba neuroscience network

Astrocyte-neuron interaction in health and disease

SEMINAR & VISITING SPEAKER SERIES

WORLD WIDE NEURO PLATFORM

DATE

Monday, June 6, 2022
12:00 PM CST

WORLD WIDE NEURO LINK

This talk willl be hosted on zoom:
https://umanitoba.zoom.us/j/69062518787?pwd=bFZNQmc3RmFYR2NTK2FNWXNmV1BLUT09

MEETING ID 690 6251 8787
PASSCODE 603212

SPEAKER

Dr. Nicola Allen, PhD

Associate Professor, Salk Institute

BIO

Nicola Allen is an Associate Professor at the Salk Institute for Biological Studies, USA. She received her PhD working with David Attwell at University College London studying neuronal responses to ischemia, and performed Postdoctoral research with Ben Barres at Stanford University where she identified how astrocytes regulate the formation of functional synapses between neurons. Current work in the Allen lab investigates how astrocytes regulate neuronal synapse number and synaptic function across the lifespan in health and disease. The goal is to use this knowledge of astrocytes to repair synapses when they are dysfunctional in diverse neurological disorders. Dr Allen has been recognized with a number of awards, including being named a Pew Scholar, Ellison New Scholar in Aging, and receiving a Career Accelerator Award from the CZI Neurodegeneration Network.

RESEARCH

Our work investigates how neuronal synapses are regulated throughout life: from the formation of synapses during development, to the remodeling of synapses in the adult in response to experience, to the loss of synapses in aging. We approach this by asking how non-neuronal glial cells, specifically astrocytes, regulate synapse number and synaptic function. This has led to identification of proteins secreted by developing astrocytes that are sufficient to induce immature synapses to form, and additional signals secreted by adult astrocytes that induce synapse maturation and limit synaptic plasticity. We have further identified altered protein secretion from astrocytes in genetic neurodevelopmental disorders, and determined which of these alterations is responsible for negatively impacting neuronal development. We are now asking if manipulation of synapse-regulating factors in astrocytes is sufficient to delay progression of synaptic dysfunction in aging and neurodegeneration.

OBJECTIVES

1. Define the role of astrocytes in synaptic development

2. Determine the signals that regulate astrocyte maturation

3. Determine how astrocytes contribute to neurological disorders

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