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The NO-Age and NO-AD Seminar Series 021

Monday, 8th Feb. 2021 (14:00 GMT+1)

14:00-15:15 (CET): 'Anatomical Biology as a Key into Alzheimer's Disease and Cognitive Aging'**, Prof. Scott A. Small**, MD, Alzheimer's Disease Research Center, Columbia University, USA

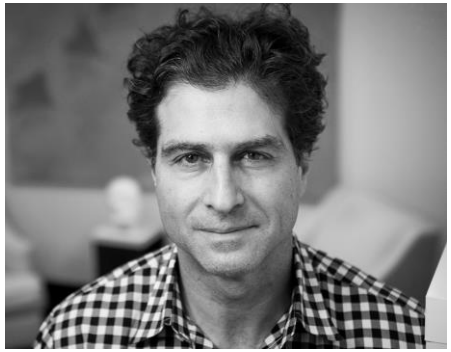
15:15-16:30 (CET): 'Impact of tau on vascular function in Alzheimer's disease', Dr. **Rachel Bennett,** Massachusetts General Hospital and Harvard Medical School, USA

Register in advance for this webinar:
https://uio.zoom.us/webinar/register/WN_hzVfZebNTHKR6ZOz2s_j_w

Organizers:
Evandro F. Fang (UiO), Menno P. Witter (NTNU), Jon Storm-Mathisen (UiO),
Lene Juel Rasmussen (KU), W.Y. Chan (CUHK)

Queries: e.f.fang@medisin.uio.no

Previous recorded talks are available here: https://noad100.com/videos-previous-events/



Name: Scott A. Small, MD
Institute: Alzheimer's Disease Research Center, Columbia University, USA
Email: sas68@cumc.columbia.edu
Photo: provided by the speaker

Speaker: Scott A. Small, MD

Title: Anatomical Biology as a Key into Alzheimer's Disease and Cognitive Aging

Abstract:
To be updated

Biography:
Scott Small is the Director of the Alzheimer's Disease Research Center at Columbia University, where he is the Boris and Rose Katz Professor of Neurology. He is appointed in the Departments of Neurology, Radiology, and Psychiatry.

With an expertise in Alzheimer's disease and cognitive aging, Dr. Small's research focuses on the hippocampus, a circuit in the brain targeted by these and other disorders, notably schizophrenia. He has pioneered the development and application of high-resolution functional MRI techniques that can pinpoint parts of the hippocampus most affected by aging and disease. His lab then uses this information to try to identify causes of these disorders. Over the years, his lab has used this 'top-down' approach to isolate pathogenic mechanisms related to Alzheimer's disease, cognitive aging, and schizophrenia. More recently, his lab has used this insight for drug discovery and to develop novel therapeutic interventions, some of which are currently being tested in patients.

Name: Rachel Bennett
Institute: Harvard Medical School
Email: REBENNETT@PARTNERS.ORG
Photo: from the speaker

Speaker: Rachel Bennett

Title: Impact of tau on vascular function in Alzheimer's disease

Abstract:
Changes to cerebral microvasculature that impair blood flow and blood-brain barrier function are increasingly recognized as a key feature of Alzheimer's disease and cognitive impairment. Vascular dysfunction may be due, in part, to tau-related transcriptional alterations in endothelial cells that lead to remodeling, pathological cell-cell interactions, and reduced blood flow. To explore vascular contributions of tau to disease, we used a mouse model that expresses human tau under a tetracycline repressible promoter. We visualized blood flow and functional hyperemia by two-photon in vivo microscopy in aged mice and observed impaired dilation of arterioles and increased obstruction of small diameter vessels by leukocytes. Vessels isolated from aged mice had increased pathological tau accumulation, elevated expression of inflammatory genes, and evidence of blood brain barrier leakage. Similar changes were observed in blood vessels isolated from post-mortem human Alzheimer's tissue. In aged mice, turning off tau expression did not prevent or reverse vascular dysfunction. These data have clear implications for tau reducing therapies in Alzheimer's disease and suggest that treatments directly targeting vascular changes should be investigated.

Biography:
Rachel Bennett is an Instructor of Neurology at Massachusetts General Hospital and Harvard Medical School. She received her Bachelors of Science in molecular biology from Arizona State University in 2007 and her doctoral degree in neuroscience from Washington University in St. Louis in 2014. During her graduate studies, she worked with Dr. David Brody to study concussive traumatic brain injury, focusing on the role that inflammation and microglia play in modifying axon degeneration. For her postdoctoral research, she joined the lab of Dr. Bradley Hyman at the MassGeneral Institute for Neurodegenerative Disease, where she applied *in vivo* imaging methods including two-photon microscopy to visualizing neuronal and vascular function in Alzheimer's disease models. Her work exploring blood vessel alterations in the setting of tau pathology earned her recognition as an Outstanding Emerging Scientist by the BrightFocus Foundation in 2018 and in 2019 she was awarded a K99 Career Development Award from the National Institute on Aging (NIH) to continue investigations into tau-related blood vessel interactions.