National Neuroscience Institute
SingHealth

SingHealth DukeNUS ACADEMIC MEDICAL CENTRE
National Neuroscience Research Institute Singapore

NEUROSCIENCE & BEHAVIOURAL DISORDERS

NNRIS Bench to Bedside Seminar Series

Date: 11 December 2020 (Friday)

Time: 12:00pm – 1:00pm

Zoom Details: https://ihis.zoom.us/j/92394954526?pwd=VUNCQ05QREluUDFhNjQ3SUd2TnpBZz09
Meeting ID: 923 9495 4526
Passcode: 025882
Note: Please rename your login name to include your institute to facilitate admission

Moderator: **Assoc Prof LIAO Ping**
National Neuroscience Institute

REGULATION OF PRODUCTION AND DEGRADATION OF BETA-AMYLOID PEPTIDES IN ALZHEIMER'S DISEASE LINKED TO TRISOMY 21

Ms Yeap Yee Jie
Research Associate
PhD Candidate
Lee Kong Chian School of Medicine
Nanyang Technological University

Abstract:
70% of individuals with Down Syndrome (DS, Trisomy 21) develop Alzheimer's Disease (AD) due to an extra copy of the Amyloid Precursor Protein (APP) gene. The fact that 30% of individuals with DS do not develop AD by the age of 60 suggests the existence of other genes on Chromosome 21 that may have a protective effect. One of these genes is *BACE2*, which is a homolog of *BACE1* – a gene that encodes for beta-secretase 1 which cleaves APP to generate toxic β-amyloid implicated in AD.

This talk will discuss how the Nizetic lab demonstrated that *BACE2* is a dose-sensitive AD suppressor in the human brain by using cerebral organoids as a model. AD-like pathology (Aβ deposits, hyperphosphorylated tau, and neuronal loss) was observed in 71% of cerebral organoids from DS donors. CRISPR/Cas9 elimination of the extra copy of *BACE2* triggered pathology in previously pathology-negative T21 organoids, while β and Y-secretase inhibitors prevented the development of pathology (Mol Psych, 2020).

Based on the foundation provided by these findings, Yee Jie will briefly introduce her PhD project which seeks to provide further insight into the role of *BACE2* in AD via cerebral organoids generated from an early-onset AD patient with a de novo 12kb intronic deletion in *BACE2*.

Biography:
Yee Jie completed her undergraduate studies in Pharmacology and Toxicology at The State University of New York at Buffalo and master's degree in Pharmacology at King's College London. Upon graduation, she was a research associate and PhD student of Prof. Dean Nizetic at LKCMedicine and recently joined Prof. Lim Kah Leong's lab. She continues to be supervised by both professors and her research focuses on using induced pluripotent stem cells and cerebral organoids to understand the role of BACE2 in Alzheimer's Disease.

BIG DATA SHOW THAT MORNING CLASSES ARE BAD FOR CLASS ATTENDANCE, SLEEP, AND LEARNING AT NUS

Mr Sing Chen Yeo
PhD Student
Duke-NUS PhD Program in
Integrated Biology and Medicine
Duke-NUS Medical School

Abstract:
In this project, we take advantage of passively collected data from NUS students to test the impact of morning classes on class attendance, sleep behaviour, and academic performance. Wi-Fi connection data show that students are less likely to show up for lectures at 08:00 am. Login data on the learning management system reveal that students have a smaller window of opportunity for sleep on nights preceding morning classes.

We validate these findings using actigraphy devices for tracking sleep behaviour.

Lastly, we show that students with morning classes on more days per week have lower grades. These results show that morning classes negatively impact students' performance.

Biography:
Sing Chen Yeo is in the final year of his PhD candidacy. His research focuses on developing scalable methods for schools and universities to evaluate the impact of their practices and policies on students' sleep, well-being, and learning.

All are welcome. No registration is required.