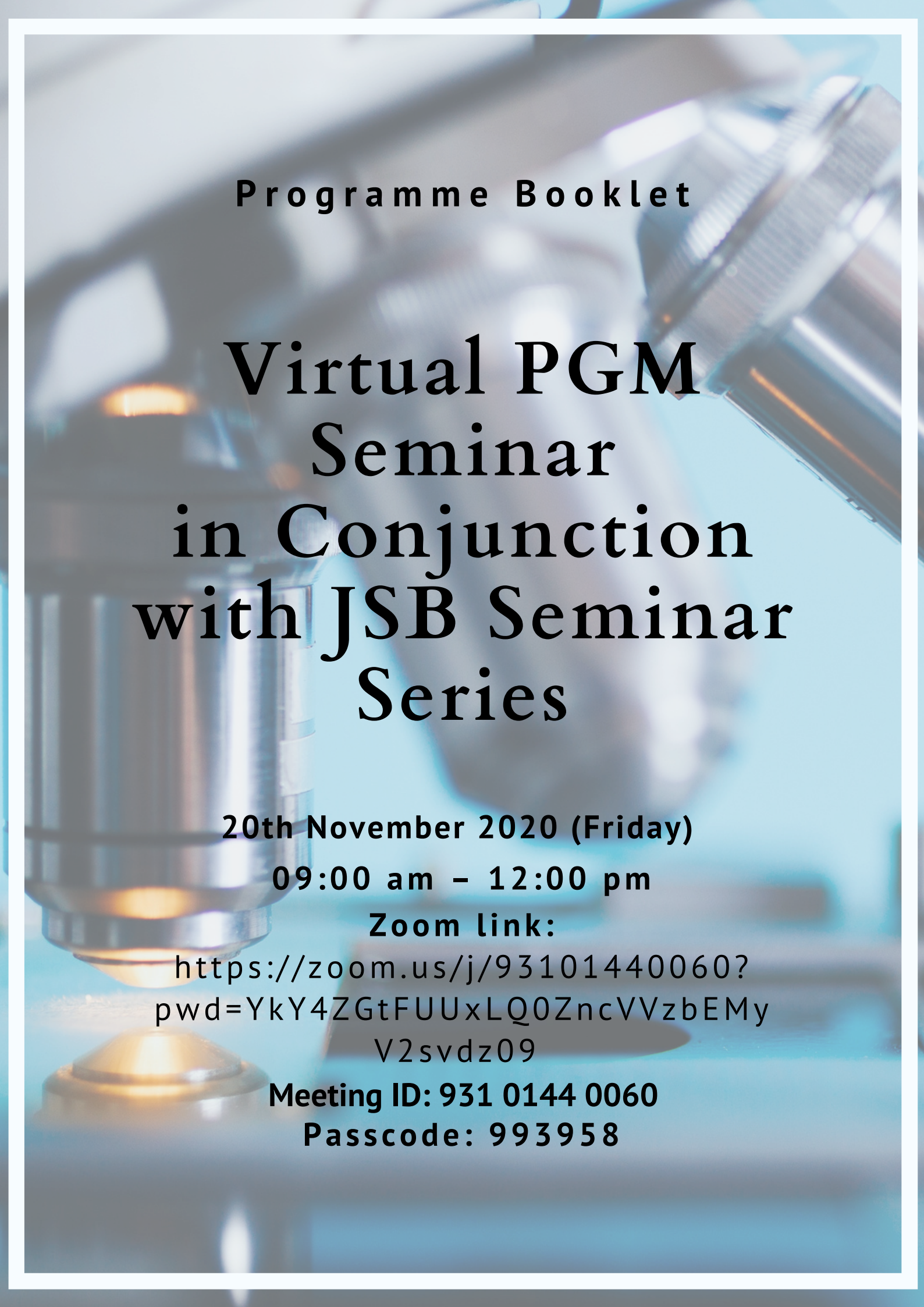

Programme Booklet

Virtual PGM Seminar in Conjunction with JSB Seminar Series

20th November 2020 (Friday)

09:00 am – 12:00 pm

Zoom link:

https://zoom.us/j/93101440060?pwd=YkY4ZGtFUUxLQ0ZncVVzbEMyV2svdz09

Meeting ID: 931 0144 0060

Passcode: 993958

Virtual PGM Seminar in Conjunction with JSB Seminar Series

Tentative

Emcee: Prof. Madya Dr. Thilakavathy Karuppiah
Moderator : Dr. Chau De Ming

09:00 am **Welcoming remarks**
Associate Prof. Dr. Mohd Nasir Mohd Desa
Head, Department of Biomedical Science Department, Faculty of Medicine & Health Sciences, UPM

Professor Dr. Abd Rahman Milan
President, Genetics Society of Malaysia (Persatuan Genetik Malaysia, PGM)

09:15 am **Associate Prof. Dr Cheah Pike See (UPM)**
(Visiting Scientist, Harvard Medical School, USA)
AAV-mediated Gene Therapy for Tuberous Sclerosis Complex

10:00 am **Dr Marshall Feterl**
(Nanostring, USA)
Studying the Host Response During Infection from COVID-19 & Other Diseases

10:45 am **Associate Prof. Dr Michael Ling King Hwa (UPM)**
(IBRO/ISN Research Fellow in Genetics, Harvard Medical School, USA)
REST-less in Alzheimer's Disease models

11:30 am **Closing remarks by Associate Prof. Dr. Norshariza Nordin**
(Chair, Virtual PGM Seminar in conjunction with JSB Seminar Series)

Moderator's Profile

Dr. Chau De Ming
Senior lecturer, Universiti Putra Malaysia

Dr. Chau De Ming is a senior lecturer in the Department of Biomedical Sciences of the Faculty of Medicine and Health Science at UPM. He is trained as a molecular biologist in the area of cancer research. Dr. Chau is an Exco member of the Young Scientists Network-Academy of Sciences Malaysia and he chairs the Working Group that promotes Responsible Conduct of Research (RCR).

Virtual PGM Seminar in Conjunction with JSB Seminar Series

Speakers' Profile and Abstract

Associate Prof. Dr Cheah Pike See (UPM)
(Visiting Scientist, Harvard Medical School, USA)

Biography

Dr. Cheah is an Anatomist and Neuroscientist with her research focus to identify and to understand the function of causative genes for neurodevelopmental disorders and neuropsychiatric diseases. Her sabbatical training in Massachusetts General Hospital / Harvard Medical School, USA has broadened her research experience in various fields including stroke, cancer biology, gene therapy, and extracellular vesicles. As an active member of Malaysian Society of Neurosciences (MSN), Asian Pacific Society for Neurochemistry (APSN) and as the incoming (year 2021) Chair of the International Brain Research Organization-Asia Pacific Research Committee (IBRO-APRC), she helps to promote collaborative networks between clinical and non-clinical neuroscientists as well as to improve the quality of the neuroscience research in Malaysia and internationally. Dr. Cheah also wishes to materialise the dream of effective translation from bench to bedside and ultimately, to extend her role by reaching out to the society to disseminate knowledge on the relevance of her research for better management and treatment of neurological disorder.

Abstract

AAV-mediated gene therapy for tuberous sclerosis complex

Tuberous sclerosis complex (TSC) is a tumor suppressor syndrome due to mutations in TSC1 or TSC2, encoding hamartin and tuberin, respectively. These proteins act as a complex that inhibits mTOR-mediated cell growth and proliferation. Loss of either protein leads to overgrowth in many organs including subependymal nodules, subependymal giant cell astrocytomas and cortical tubers forming in human brain. Neurologic manifestations in TSC include intellectual disability, autism and epilepsy. Stochastic mouse models of TSC1 and TSC2 were generated with complete loss of Tsc1 or Tsc2 is achieved in homozygous Tsc1-floxed or Tsc2-floxed mice in multiple cell types in the brain by intracerebroventricular (ICV) injection at birth with an adeno-associated virus (AAV) vector encoding Cre recombinase. This results in reduced median survival and brain pathology, including enlargement of multiple cell types. When these ICV-Cre mice were injected intravenously (IV) on day 21 with an AAV9 vector encoding hamartin and tuberin, respectively, they have extended survival period. Increased in survival was accompanied by normalization of sizes of ventricle and neural cell bodies in the brain , and reduced pS6 expression And proliferative markers. This preclinical study of gene replacement therapy, a single IV administration of an AAV vector encoding tumor suppressor gene was able to cross the blood-brain-barrier, and was sufficient to restore protein function in the brain leading to an extended lifespan in the TSC mouse models.

Virtual PGM Seminar in Conjunction with JSB Seminar Series

Speakers' Profile and Abstract

Dr Marshall Feterl
(Nanostring, USA)

Biography

Marshall Feterl is the Technical Sales Specialist for the GeoMx Digital Spatial profiler at Nanostring Technologies in the APAC region. During his PhD research he studied Toll-like Receptor activation and the innate immune response in host macrophages challenged with Burkholderia pseudomallei. His post-doctoral research focused on the molecular characterization of drug resistance mechanisms in Mycobacterium tuberculosis in patients from the Western Province of Papua New Guinea. He transitioned to the commercial side of Life Sciences 4 years ago with the majority of his career spent in Australia, with an emphasis on technologies related to immunology and genomics research.

Abstract

Studying the Host Response During Infection from Cancer to COVID-19

Spatial characterization of the immune contexture in the tumor microenvironment (TME) is essential for understanding the relationship between immune and tumor cells. However, it has proven difficult to perform such studies in a highly multiplexed manner using limited samples. To address this unmet need, we have developed an imaging and tissue-sampling platform designed to simultaneously analyze up to hundreds of tumor and immune proteins in distinct locations on a single FFPE tissue section. To supplement this capacity, we have recently developed an RNA detection chemistry that can profile up to 18,000 transcripts using NGS sequencing platforms on the same FFPE sample types. Using this novel technology, called Digital Spatial Profiling (DSP), we demonstrate multiplexed protein and RNA analysis of defined regions of interest within a tumor enabling systematic interrogation of the immune status in the tumor microenvironment.

Understanding the complex interplay between a pathogen and the host response is important to developing effective vaccines and therapeutics. NanoString's nCounter® Analysis System and GeoMx® Digital Spatial Profiler (DSP) enable researchers to rapidly perform high-plex experiments in key areas of biology that answer questions related to the effect of pathogen infection at the molecular, cellular, tissue, and individual level. Here we discuss the latest publication on COVID19 infected patients using DSP technology.

Virtual PGM Seminar in Conjunction with JSB Seminar Series

Speakers' Profile and Abstract

Associate Prof. Dr Michael Ling King Hwa (UPM)
(IBRO/ISN Research Fellow in Genetics, Harvard Medical School, USA)

Biography

Dr Michael KH Ling is a developmental neurogeneticist and an Associate Professor in the Faculty of Medicine and Health Sciences, Universiti Putra Malaysia. He has an interest in the field of neurogenetics, genomics, and bioinformatics. He pursued his PhD in Neurogenetics at Professor Hamish Scott's laboratory, University of Adelaide, Australia. He won a Dean's Commendation for An Outstanding Thesis Award and the CCB Award for his doctoral dissertation entitled, "Identification of transcripts involved in differentiation, proliferation and developmental networks of the mouse cerebral cortex". He has published various articles in peer-reviewed journals of high impact factors such as Genome Research, Genome Biology, Cell Reports and Cerebral Cortex. He has also won various research (UPM R&D Silver Medal, best poster and oral presentations and travel grants) and academic (NSF, MIFRS, AFSI, UPMSTS, ASM-Lindau Foundation, IBRO/ISN Research Fellowship) awards throughout his early career as a neuroscientist. He spent about 4-year as the IBRO/ISN Research Fellow in Professor Bruce Yankner's laboratory at Harvard Medical School, Boston, USA. Dr Ling is an active member of the Malaysian Society of Neurosciences and was the past Vice President and Honorary Treasurer of the society. He was also the Malaysian representative to the Governing Council of International Brain Research Organization (IBRO) (2012-2019) and Federation of Asia-Oceania Neuroscience Societies (FAONS) (2012-2017), two sister organizations that oversee the development of neuroscience discipline in the world and Asia Pacific regions, respectively. Currently, he is the elected council member of Asia Pacific Neurochemistry Society (APSN) (2020-2024).

Abstract

REST-less in Alzheimer's Disease models

The molecular basis of the earliest neuronal changes that lead to Alzheimer's disease (AD) is unclear. We employed induced pluripotent stem cells (iPSCs) from sporadic AD (SAD), apolipoprotein E4 (APOE4) gene-edited and control subjects to derive and investigate the molecular signature of neural cells. We observe a common neural transcriptome between the SAD- and APOE4-derived neural cells, especially in gene networks related to neuronal differentiation, neurogenesis, and synaptic transmission. Neural progenitors from both groups exhibited accelerated differentiation and reduced progenitor cell renewal. The phenotypic changes were recapitulated in cerebral organoids derived from APOE4 iPSCs when compared to the isogenic APOE3 counterpart. The loss of the transcriptional repressor REST is strongly implicated in the altered transcriptome and differentiation state of both SAD- and APOE4-derived neural cells/cerebral organoids. We observed reduced REST nuclear translocation and chromatin binding, and disruption of the nuclear lamina in these models. Thus, REST-related dysregulation of neural gene networks may set in motion the pathologic cascade that leads to AD.

Virtual PGM Seminar in Conjunction with JSB Seminar Series

Organising Committee Member

Patron:	Professor Dr. Zamberi Sekawi
Advisor:	Associate Professor Dr. Mohd Nasir Mohd Desa (UPM)
	Professor Dr. Abd Rahman Milan (PGM)
Chairman:	Associate Professor Dr. Norshariza Nordin
Secretariat:	Associate Professor Dr. Thilakavathy Karuppiah
	Mrs. Fariza Zainul Abidin
	Mrs. Puspaleela Kaliapan
Emcee:	Associate Professor Dr. Thilakavathy Karuppiah
Moderator:	Dr. Chau De Ming
Technical:	Mr. Mohd Azli Che Kob
	Mr. Izarul Hakim Rahmad
	Miss Siti Nur Qistina Nor Aznan
	Mr. Khairul Akmal Abdul Rahman
Scientific:	Associate Professor Dr. Syahrilnizam Abdullah

PGM Council Members 2019/2021

President:	Professor Dr. Abd Rahman Milan (PGM)
Vice President:	Associate Professor Dr. Norshariza Nordin
Honorary Secretary:	Dr. Nor'Aishah Hasan (UiTM)
Assistant Secretary:	Dr. Azzreena Mohamad Azzeme (UPM)
Honorary Treasurer:	Ms. Sharifah Azween Syed Omar (HUKM)
Members:	Professor Dr. Zilfalil Alwi (USM)
	Professor Dr. Thong Meow Keong (UM)
	Professor Dr. Zarina Abdul Latiff (HUKM)
	Associate Professor Dr. Chan Soon Choy (PU)
	Associate Professor Dr. Shamsiah Abdullah (UiTM)
	Associate Professor Dr. Zarina Zainuddin (UIA)
	Dr. Mohd Din Amiruddin (MPOB)
	Dr. Norwati Muhammad (FRIM)