TEMASEK LIFESCIENCES LABORATORY

Qualifying Examination

All Are Welcome!

Ms Choo Ching Thong

Dr Ong Chin Tong Group

29 May 2024, Wed
3pm

The Auditorium (Level 1)
**Scan for address*

Investigate Intronic Retention in Alzheimer's Disease & Epigenetic Regulation of Aging in Fly model

As the global population ages, the incidence of Alzheimer's Disease (AD) is anticipated to surge, given that aging is a significant risk factor for the development of AD. This highlights the imperative need for greater understanding in both aging and AD. This study delves into two key facets associated with aging and AD: intron retention (IR) in AD and epigenetic modifications in aging.

The study of IR in AD employs multi-omics data analysis of the human dorsolateral prefrontal cortex to investigate potential gender disparities in IR patterns associated with AD. The hypothesis posits that differences in IR between genders may contribute to the heightened susceptibility of AD in women compared to men. To test this hypothesis, transcriptomics and proteomics data was studied in both genders in AD and control. Gender-specific IR analysis of 160 samples revealed a striking disparity with differential IR being seven times higher in female compared to male during AD progression. Interestingly, we have also found more proteins involved in splicing to be upregulated in male during AD progression. Gene and protein expression analysis were subsequently conducted to elucidate the relationship between IR and changes in gene and protein expression. The results revealed an inverse relationship, suggesting that genes affected by IR undergo nonsense-mediated decay. We plan to explore IR patterns in other regions of the brain affected by AD.

The study also investigates association of enhancer marks H3K4me1 and H3K27ac with aging in Drosophila model. We aim to understand the role of the marks in aging process and assess the conservation of enhancer mark distribution across species.