CANCER SCIENCE
INSTITUTE OF SINGAPORE

RESEARCH MEETINGS

21 July 2017, Friday I 12pm – 1pm

LT36, Level 3, Centre for Translational Medicine (MD6)
14 Medical Drive, Singapore 117599

Serena Seah I Research Fellow, Dr Lee Soo Chin's Group (L11)

A Distinct Role of RhoB in Simvastatin-Induced Cytotoxicity in Breast Cancer Cells

Statins, a class of 3-hydroxy-3-methylglutaryl coenzyme A (HMG-CoA) reductase inhibitors, are initially developed as cholesterol-lowering drugs by inhibiting the mevalonate pathway. They have recently gained attention for their potential anticancer properties, but the mechanisms of their anticancer effects remain elusive. Here, we are interested in studying the antiproliferative effects of statins in breast cancer cell lines. We screened a panel of breast cancer (estrogen receptor positive (ER+) and triple negative (TNBC)) cell lines and assessed the sensitivity of these cells to simvastatin in relation to their hormone receptor status using cell proliferation assay. We found TNBC cell lines to be more susceptible to simvastatin compared to ER+ cell lines. Here, we identified RhoB to be a key player in simvastatin-mediated cytotoxicity. RhoB showed an increase in mRNA and protein levels with simvastatin treatment in the TNBC cells but the increased expression does not correlate with increased activity. Our findings suggest that RhoB could play an important role in regulating the anticancer activity of simvastatin, which appears to be exclusive to TNBC cells. This study demonstrates that HMG-CoA reductase inhibitors may provide new therapeutic strategies for TNBC treatment.

Desi I PhD Student, Dr Yvonne Tay's Group (L12)

Post-Transcriptional Regulation of the Proto-Oncogene c-Myc by RNA Binding Proteins in Colon Cancer

Background: c-Myc is a critical proto-oncogene which is frequently activated in multiple human cancers. In addition to changes at the genomic or transcriptional level, aberrant changes in the post-transcriptional regulation of c-Myc may also contribute to cancer initiation and progression. Besides RNA:RNA interactions mediated by microRNAs, RNA:protein interactions involving RNA binding proteins (RBPs) represent an established mechanism of post-transcriptional regulation which regulates diverse processes including RNA splicing, stability, transport and translation.

Methods: We have utilized in vitro pulldowns coupled with proteomics analysis to comprehensively identify RBPs that are associated with the c-Myc 3'UTR in colon cancer cells.

Result: We have demonstrated that several candidate RBPs regulate c-Myc expression, modulate cell proliferation, anchorage-independent growth of colon cancer cell lines, and are significantly dysregulated in colon cancer patients.

Conclusion: These data suggest that these RBPs may be novel post-transcriptional regulators of MYC expression and provide insights into the mechanisms of c-Myc dysregulation in colon cancer.

Lee Puay Ling I Research Officer, Dr Tam Wai Leong's Group

Role of Tumor-Microenvironmental Interactions in Pancreatic Cancer

Pancreatic cancer is a deadly disease- it ranks as the 12th most common cancer, and is the 5th most common cancer-related death in the world. A current lack of understanding on this disease is reflected by the lack of biomarker for early detection and lack of effective therapeutic drugs to stop disease progression. Recent studies reported that pancreatic tumours are protected by stellate cells in the microenvironment that contribute to drug resistance. Here, we study the how interactions between tumor and microenvironmental cells promote stemness and resistance.