CANCER SCIENCE INSTITUTE OF SINGAPORE

IN THE SPOTLIGHT

Issue 106 | NOV - DEC 2024

What's New?

The conclusion of FCS 2024..

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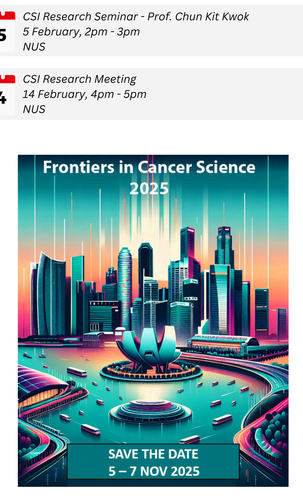
Looking to pursue your PhD in Cancer Biology...?

Applications extended till 20 Jan 2025!

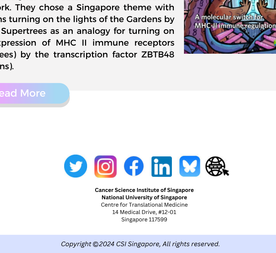


Upcoming Events

17 *CSI Research Meeting*
17 January, 4pm - 5pm
NUS

05 *CSI Research Seminar - Prof. Chun Kit Kwok*
5 February, 2pm - 3pm
NUS

14 *CSI Research Meeting*
14 February, 4pm - 5pm
NUS



Research Highlights

Transcriptional Regulatory Program Controlled by MYB in T-cell Acute Lymphoblastic Leukemia (Nature Leukemia, Nov 2024)

MYB, a transcription factor, is often overactive in T-cell acute lymphoblastic leukemia (T-ALL), a type of cancer originating from T-cell precursors. A team of scientists, including two Principal Investigators from the Cancer Science Institute of Singapore (CSI Singapore), **Associate Professor Polly Leilei Chen** and **Assistant Professor Dennis Kappei**, found that MYB was essential for T-ALL progression by regulating genes crucial for the disease. The analysis identified a long version of MYB (ENST00000367814.8) that was highly expressed and helped T-ALL cells proliferate faster. Depletion of MYB impacted many genes critical for T-all progression including early and late response genes. Early response genes (like TAL1, RUNX1, GATA3, IKZF2, and CXCR4) involved in blood cell development could be switched back on, unlike late response genes. This suggested the presence of a negative feedback loop. Late response genes (involved in cell growth and including TAL1 targets) could not be recovered after MYB depletion.

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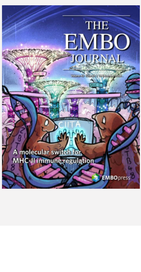
ZBTB48 is a Priming Factor Regulating B-cell-specific CIITA Expression (Cover story, The EMBO Journal, Dec 2024)

Principal Investigator, **Assistant Professor Dennis Kappei**, from the Cancer Science Institute of Singapore (CSI Singapore), and his team, identified how ZBTB48, bound to two distinct binding sites at the B-cell-specific promoter of CIITA, the master regulator of the MHC-II immune gene expression program, to activate the CIITA "switchboard" and initiate CIITA expression. This in turn caused expression of MHC-II molecules, antigen presenting complexes at the cell surface. The team collaborated with a graphic designer to create a novel illustration of their work. They chose a Singapore theme with pangolins turning on the lights of the Gardens by the Bay Supertrees as an analogy for turning on gene expression of MHC II immune receptors (Supertrees) by the transcription factor ZBTB48 (pangolins).



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Cancer Science Institute of Singapore
National University of Singapore
Centre for Translational Medicine
14 Medical Drive, #12-01
Singapore 117599