



SEMINAR

Wed, 23 Sept 2026 | 10 am | S3-05-02 Conference Room 1

Hosted by Assoc Prof Chew Fook Tim

Tackling cancer stem cells that drive recurrent gastric cancers



Grace Lim

*Senior Scientist, Institute of Molecular
and Cell Biology (IMCB), A*STAR*

Dr Grace Lim is a Senior Scientist and IMCB Fellow at the Institute of Molecular and Cell Biology, A*STAR. Grace received her BS in Biology from Duke University and PhD in Developmental Biology from the National University of Singapore, before joining Prof Nick Barker's lab in IMCB as a postdoctoral researcher to lead a flagship project on gastric cancer stem cells. Throughout her career as a stem cell biologist, Grace has made fundamental advances in our understanding of lineage determination in early embryogenesis (Nature, 2020) and the role of adult stem cells in gastrointestinal cancers (Science, 2025). Grace is also a recipient of the 2024 L'Oreal-UNESCO For Women in Science Award and multiple competitive grants including the NRF Competitive Research Programme, NMRC Open Fund Young Individual Research Grant, and A*STAR Career Development Fund.

Cancer stem cells are major drivers of tumour progression, metastasis, and recurrence. In gastric cancer, our understanding of cancer stem cell properties and the tools available to target them have been limited, owing to the scarcity of well-defined markers labelling these populations. Here, we establish Aquaporin-5 (AQP5) as a functional marker of gastric cancer stem cell populations both in mouse models and patient cancer samples. Isolated AQP5+ gastric cancer cells initiate long-lived organoids in culture and regenerate new tumours from scratch when transplanted into mice, while the same properties are diminished in their AQP5- counterparts, identifying AQP5+ cells as functional cancer stem cells. AQP5 also modulates WNT, PI3K and MAPK signaling to drive cancer cell proliferation and invasion, accelerating tumour progression. Importantly, continuous ablation of AQP5+ cancer stem cells is sufficient to eliminate gastric tumours in mice and block their long-term relapse. These findings now provide a renewed understanding of the cancer stem cell model in gastric cancers and give us a strong foundation to develop new AQP5-based therapeutic modalities to drive long-term cancer remission.