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Metabolic vulnerabilities in cancer stem cells

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Tumors are highly heterogeneous. One of the grand challenges for cancer treatment is that current therapeutic strategies to treat tumors are ineffective due to therapy resistance and tumor recurrence that are caused by cancer stem cells (CSCs). We address this important challenge by integrating the fields of cancer, CSC, targeted therapy, and disease modeling, to translate biological findings about CSCs into innovative, targeted cancer therapies. Advanced multidisciplinary approaches are employed to uncover and interrogate emerging paradigms in CSC biology that include their metabolic dependencies, differentiation capabilities and heterogeneous nature. This will reveal facets of CSCs that are amendable to rationally designed targeted therapies. In the long-term, the development of these agents will provide novel therapeutic modalities which can be employed as neoadjuvants for cancer treatment.

Biography

Wai Leong TAM received his Bachelor's degree from the NUS in 2003. He performed his graduate studies in the laboratory of Bing Lim at the Genome Institute of Singapore, where he worked on uncovering the bases for the pluripotency of embryonic stem cells and induced pluripotent stem cells. In 2009, Wai Leong began his postdoctoral training under the mentorship of Robert Weinberg at the Whitehead Institute in MIT, where he concentrated on understanding breast cancer stem cell biology and cancer metastasis. He joined the Genome Institute of Singapore (A*STAR) and the Cancer Science Institute of Singapore (NUS) as a Principal Investigator in 2014. He is an adjunct faculty member at the Yong Loo Lin School of Medicine, NUS. His lab currently focuses on uncovering and interrogating the emerging paradigms of cancer stem cells, and designing rational strategies to specifically target cancer stem cells as a part of cancer therapy.

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