

SINGAPORE NATIONAL ACADEMY OF SCIENCE YOUNG SCIENTIST AWARDS 2020

BIOLOGICAL & BIOMEDICAL SCIENCES CATEGORY

Dr Tan Si Hui

Director, Biology, Cargene Therapeutics
(Formerly from Agency for Science, Technology and Research)

“For her research on cancer and stem cells for intervention opportunities”

Solid tissue cancers like gastric cancer remain highly prevalent and a leading cause of death, despite recent advances in cancer treatment. Efforts for more tailored diagnoses will enable the practice of precision medicine at the bedside.

Dr Tan’s core research interests are in cancer, stem cells and signalling pathways. More specifically, she applies signalling pathways to the understanding of the behaviours of cancers, cancer stem cells and normal stem cells. Together with her teammates and collaborators, she has identified novel molecular markers to isolate and track normal and cancer stem cells in the stomach. She is also tapping into quantum computing to power an innovative method of personalised cancer diagnosis based on signalling pathways.

Trained as a cancer biologist, Dr Tan studied stem cells and signalling pathways in multiple organs, eventually homing into gastric stem cells and cancer. Here, she established Aquaporin-5 (AQP5) as a novel stem cell marker which can be used to isolate human gastric stem cells for the first time, opening up the potential for stomach therapies and in-depth studies of these human stem cells. AQP5 may also be a marker of gastric cancer stem cells, which fuel tumour growth, an exciting prospect that would pave the way for specific therapeutic targeting of gastric cancer stem cells. She is also co-developing a proprietary AI platform that diagnoses patients’ cancers based on a suite of signalling pathway statuses with a local quantum computing start-up, Entropica Labs.

Dr Tan’s work has been published in Nature, Science, Nature Cell Biology, as well as a chapter in the book, Progress in Molecular Biology and Translational Science. She is also a recipient of the Young Individual Research Grant (Principal Investigator), the Individual Research Grant and Target Translation Consortium (co-Investigator), and the National Science Scholarship. Dr Tan is enthusiastic about mentoring and working with biotech startups, having volunteered at Biotech Connection Singapore. Formerly a research scientist in Prof Nick Barker’s lab at A*STAR’s Institute of Molecular and Cell Biology, Dr Tan is now leading a research team in a local biotech start-up, Cargene Therapeutics, to deliver impactful treatments from bench to the bedside.