NANYANG TECHNOLOGICAL UNIVERSITY

School of Biological Sciences

Reg. No. 200604393R

Research Theme: Cancer Biology

Research Project Title: Caspase-independent cell death pathways in cancer

Principal Investigator/Supervisor: Assoc Professor Valerie Lin

Co-supervisor/ Collaborator(s) (if any):

Project Description

a) Background:

Cancer is a disease of uncontrolled cell growth. The goal of cancer therapy is to eliminate tumor masses through inducing cell death. Cytotoxic agents and targeted therapies induce apoptosis through activating pathways such as DNA damage and cellular stress. There are also non-apoptotic forms of cell death including necroptosis, pyroptosis, and autophagy-dependent cell death. Most forms of cell death converge on the activation of executioner caspases 3, 6 or 7 that drive the destruction of cellular structures such as the cytoskeleton, cell membrane and nucleus. Although there have also been a few reports of caspase-independent cell death, the mechanism is poorly understood. Knowledge of novel signaling pathways for caspase-independent cell death may shed light on new drug targets for cancer therapy.

b) Proposed work:

We have established a breast cancer cell model that responds to progesterone with massive cell death. Biochemical analysis indicated a caspase-independent mode of cell death. The objective of the project is to identify and characterize novel regulatory networks critical for cell death. Transcriptomic and proteomic analysis will be conducted to profile molecular changes associated with progesterone induced cell death. The involvement of specific candidate proteins will be evaluated using genetic tools and cell biology techniques. The long-term goal is to identify proteins and pathways that can be exploited in cancer treatment.

Supervisor contact:

If you have questions regarding this project, please email the Principal Investigator:

cllin@ntu.edu.sg

SBS contact and how to apply:

Associate Chair-Biological Sciences (Graduate Studies) : AC-SBS-GS@ntu.edu.sg

Please apply at the following: **Application portal:**

https://venus.wis.ntu.edu.sg/GOAL/OnlineApplicationModule/frmOnlineApplication.ASPX