Research Theme: inflammation and cancer biology

Research Project Title: Role of inflammation in estrogen regulation of breast cancer

Principal Investigator/Supervisor: A/Prof Valerie Lin

Co-supervisor/ Collaborator(s) (if any): Asst/Prof Su I-Hsin

Project Description

Although full-term pregnancy in young women reduces the lifetime risk of breast cancer, epidemiological studies have also firmly established that there is a significant increase of breast cancer risks within 10 years following childbirth. The risk of such parity-associated breast cancer increases with age at delivery. There are currently estimated 180,000 new cases of parity-associated breast cancer per year worldwide. As more women are delaying their childbearing, the number is set to rise. The etiology of the parity-associated breast cancer is not clear. Knowledge of the risk factors and the molecular mechanisms for parity-associated are essential for the prevention and treatment of parity-associated breast cancers. We have been interested in the involvement of estrogen in parity-associated breast cancer. Our study has shown that estrogen treatment aggravates mammary inflammation and malignant transformation during mammary involution. This effect was not seen in age-matched nulliparous controls. This project is to investigate if the inflammatory microenvironment during involution is a primer for the pro-inflammatory and pro-tumoral effect of estrogen. It is also to understand how the immune system is involved in estrogen signaling for mammary malignant transformation. The study will identify immunological factors that are upstream and downstream of estrogen signaling. Knowledge gained from the study will be useful for the development of therapeutic and preventative strategies for parity-associated breast cancer.

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
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