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| **Research Theme: Computational Biology; Functional Genomics** |
| **PhD Research Project Title:**  **Cancer Microenvironment and its Impact on the Biology of Cancer Cells** |
| **Principal Investigator/Supervisor: KOH Cheng Gee** |
| **Co-supervisor/ Collaborator(s) (if any):** |
| **Project Description**  The tumour microenvironment is complex and can influence the state of tumour proliferation and progression to metastasis. The tumours mass itself is affected by both biochemical and physical cues from its environment. We are interested to investigate the relationship and impact of the tumour microenvironment and cancer biology. The two main research topics are listed below.  **Project 1. Cancer microenvironment and mechanosensitive genes**  As the tumours grow in sizes, the tumour masses encounter external compressive forces and other stresses. In this project, we wish to investigate mechano-sensitive genes and their regulation when the tumour cells are subjected to compression and interaction with extracellular matrix of different stiffness. We also plan to study how the cancer microenvironment can impact cancer cell migration and invasion.  **Project 2. Tumours in 2D and 3D environment.**  We have long realized that the commonly used 2-dimensional (2D) cell culture could not represent the in vivo architecture and microenvironment of cancer cells. Using 3D cell culture system can better mimic the cancer microenvironment and signaling. In this project, we plan to investigate the genes and signaling pathways which regulate breast cancer cell morphology, cell polarity and proliferation in 2D and 3D culture systems. |
| **Supervisor contact:**  **If you have questions regarding this project, please email the Principal Investigator:**  [**cgkoh@ntu.edu.sg**](mailto:cgkoh@ntu.edu.sg) |
| **SBS contact and how to apply:**  Associate Chair-Biological Sciences (Graduate Studies) : [AC-SBS-GS@ntu.edu.sg](mailto:AC-SBS-GS@ntu.edu.sg)  Please apply at the following:  **Application portal:** <https://venus.wis.ntu.edu.sg/GOAL/OnlineApplicationModule/frmOnlineApplication.ASPX> |