

**Imaging and Sequencing Analysis of Cellular Regulation and Communication within Spatial Context in Cancer Tissue**

Minh Tran

Master of Electronic Engineering

*A thesis submitted for the degree of Doctor of Philosophy at*

*The University of Queensland in 2023*

Institute for Molecular Bioscience

# Thesis abstract:

Cells in the multicellular organisms can perform the cross communication at molecular level to coordinate higher biology functions. Cellular interaction is a mechanism that one cells can influence the behaviour of itself of other cells through signalling molecule to coordinate biological processes. Immune cells response against pathogens or cancer cells is an example cell communication. By studying cell-cell interaction, we can systematically understand coordinated cellular behaviours and unravel complex extracellular response.

Most healthy cells are programmed with the built-in safety mechanisms which limit the number of cell growth and division cycle. However, a cell can acquire some mutations which allows

The body of a multicellular animal relies on the multicellular activities, which most of the