Propositions belonging to the thesis:

Potential Determinants in Malignancy Growth, Angiogenesis and Metastasis

- 1. CREPT promotes tumorigenesis-related biological processes, suggesting that it is a driving factor in the progression of melanoma. (This thesis)
- 2. Activation of RhoA is correlated with CREPT- induced melanoma cell migration and actin filament/focal adhesion formation, which reveals a potential CREPT- RhoA signaling leading to melanoma metastasis. (This thesis)
- 3. Using microcarriers to make spheroids is a powerful model in three-dimensional matrices to study cell invasion *in vitro*. (This thesis)
- 4. Melanoma cells promote pericyte survival under restricted conditions and accelerate pericyte migration. This indicates that pericytes can be directly activated by tumour cells during angiogenesis. (This thesis)
- 5. Upregulation of HOXA9 in colorectal adenoma shows characteristics of promoting cell growth but inhibiting cell migration, indicating its pro-oncogenic function at the early stage of the colorectal cancer process. (This thesis)
- Novel imaging techniques (both in vitro and in vivo), together with re-evaluation of histopathological pattern formation in tumours, have provided a detailed view of cellular and molecular migration dynamics in cancer cells. (Friedl & Wolf, *Nat Rev Cancer*, 2003)
- RhoA is activated in membrane ruffling and lamellae formation, indicating an important role in the protrusive events at the leading edge that drive cell motility. (Spiering & Hodgson, *Cell Adh Migr*, 2011; Pertz et al., *Nature*, 2006)
- 8. There are two possible outcomes: if the result confirms the hypothesis, then you've made a measurement. If the result is contrary to the hypothesis, then you've made a discovery. (Attributed to Enrico Fermi, as quoted in *Nuclear Principles in Engineering*, 2005)
- 9. Precision medicine allows doctors and researchers to work together closely for accurate disease treatment and prevention. This is also one of the benefits from the rapid development of the big data era.
- 10. A good researcher should keep creative in science. However, the "publish or perish" pressure may kill the creativity.
- 11. There is always a way. Go find it!

Hui Liu July 9, 2020