

## BCHM 421/422 – 2021/2022

**Project Outline:** This project builds a recent finding from my lab identifying an unexpected expression pattern of microRNAs (miRNA) in cutaneous melanoma tumours. The Chromosome 19 miRNA cluster (C19MC) is normally expressed only in placenta and some stem cell populations. Our lab identified several melanoma cell models that express C19MC, and are preparing to study the function of C19MC miRNAs in the growth and invasion properties of these cell lines.

**Supervisor:** Andrew Craig

**Project Title:** A novel melanoma subtype defined by chromosome 19 miRNA cluster expression

**Project Goals:** 1) Test the effects of RNA-based C19MC inhibitors on melanoma cell growth and invasion, 2) Test for synergistic drug treatments to treat C19MC+ melanoma cells

**Experimental Approaches:** The student will learn how to culture melanoma cell lines, to safely prepare lentiviruses encoding a CRISPR/Cas9-based system to activate C19MC expression in melanoma cell lines. They will test the isogenic control and C19MC-expressing melanomas for altered cell growth and invasion into extracellular matrix using an IncuCyte Zoom system. The student will also identify differentially expressed mRNA targets of C19MC (RT-qPCR) and validate changes at the protein level using immunoblot assays. The isogenic cell lines will also be used to test effects of C19MC expression on growth and metastasis in tumour xenograft assays.

### References:

1. <https://www.ncbi.nlm.nih.gov/pubmed/29112174>
2. <https://www.ncbi.nlm.nih.gov/pubmed/31287992>
3. <https://www.ncbi.nlm.nih.gov/pubmed/29673952>
4. <https://www.ncbi.nlm.nih.gov/pubmed/29935234>
5. <https://pubmed.ncbi.nlm.nih.gov/32474365/>