



Department of Anatomy & Cell Biology

**The silence within: MicroRNAs in worms,
mice, and tumours**

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The discovery in *C. elegans* that miRNAs control gene expression in the germline and in the somatic tissues of the adult animal is a paradigm shift in our understanding of gene regulation in multicellular organisms.

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My research program's objective is to identify the principles that govern the biogenesis and action of miRNAs, and to determine how cancer impinges and exploits those mechanisms. Two projects will be presented. Firstly, I will present our recent progress towards understanding how sub-types of lymphoma and lung cancer hijack the biogenesis of miRNAs to simultaneously up-regulate an oncogenic polycistron of miRNAs, and down-regulate the expression of tumor-suppressor miRNAs. Secondly, I will present evidence supporting the importance of cooperative functional interactions between miRNAs, and our recent success in deciphering how the associated protein complexes interact within 3'-un-translated regions of target mRNAs. Significance for target mRNA prediction and inferring of miRNA functions will be discussed. Both projects unravel novel aspects of miRNAs role in cancer biology, and illustrate yet again how findings made using model organisms can enlighten the logics underlying cancer gene regulation networks.

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11:30 am

**Strathcona Anatomy Building
3640 University Street
Room 2/36**

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