

Announcement: The Department of Molecular and Cellular Biology, in the College of Biological Science, invites all interested members of the university community to attend the Final Oral Examination for the degree of **Master of Science** of

Nicole Kelly, on Tuesday, July 11, 2017 at 9:00 a.m. in SSC 2315

(Advisor: Dr. Jim Uniacke)

Thesis Title: Hypoxia activates cadherin-22 synthesis via eIF4E2 to drive the migration, invasion and adhesion of breast cancer and glioma cells

Examination Committee:

Dr. K. Yankulov, Dept. of Molecular and Cellular Biology (Chair)

Dr. J. Uniacke, Dept. of Molecular and Cellular Biology

Dr. B. Coomber, Dept. of Biomedical Science

Dr. M. Coppolino, Dept. of Molecular and Cellular Biology

Abstract: Hypoxia is a common characteristic among cancers that plays a critical role in malignant progression and resistance to therapy. Hypoxia induces changes in gene expression through mechanisms such as the hypoxia inducible factor transcription program and a switch in translation initiation machinery. Hypoxic cells switch from the canonical eukaryotic initiation factor (eIF) 4E to eIF4E2-directed cap-dependent translation. Cancer cells exploit this mechanism to promote many cancer-driven processes, including migration, invasion and cell-cell adhesion. In this study, we demonstrate that the cell-cell adhesion molecule, cadherin-22, is upregulated in hypoxia in an eIF4E2-dependent manner. We highlight cadherin-22 as a hypoxia specific driver of cell migration, invasion and adhesion. We also demonstrate that cadherin-22 colocalizes with hypoxia in an *in vitro* tumor model and in human glioma and invasive ductal breast carcinoma specimens. By characterizing the role of eIF4E2 and cadherin-22 in cancer, this project will enhance our understanding of tumor biology and offer compelling targets for future therapeutic interventions.

Curriculum Vitae: Nicole obtained her Bachelor of Science (Honours) in Molecular Biology and Genetics at the University of Guelph in 2015, and then began her M.Sc. in the lab of Dr. Jim Uniacke in the fall of 2015.

Awards: In the spring of 2017, Nicole received the “Class of OAC'60 Outstanding Teaching Assistant Award”.