UNIVERSITY of GUELPH

COLLEGE of BIOLOGICAL SCIENCE

DEPARTMENT OF MOLECULAR AND CELLULAR BIOLOGY

Announcement:

All interested members of the university community are invited to attend the Final Oral Examination for the degree of ***Master of Science*** *of*

JENNA GOODBRAND

On Tuesday, August 15, 2023 at 9:30 a.m. (SSC 2315)

Thesis Title: **Investigating how the tumour microenvironment influences the alternative splicing of ribosomal protein S24 and the splicing machinery involved**

Examination Committee:

Dr. Yang Xu, Dept. of Molecular and Cellular Biology (Exam Chair)
Dr. Jim Uniacke, Dept. of Molecular and Cellular Biology
Dr. Andrew Bendall, Dept. of Molecular and Cellular Biology
Dr. Terry van Raay, Dept. of Molecular and Cellular Biology

Advisory Committee:

Dr. Jim Uniacke (Advisor)
Dr. Andrew Bendall
Dr. Jasmin Lalonde

Abstract: Hypoxia-induced alternative splicing has been coined the 11th hallmark of cancer. Previous research has revealed that an alternative splicing event occurs in ribosomal protein S24 (RPS24) in response to hypoxia, with further induction in three-dimensional tumour models, called spheroids, enabling enhanced survival under hypoxic conditions. Our findings indicate that increased cell-to-cell contact and apoptosis in spheroids play a significant role in the upregulation of the RPS24L to RPS24S isoform ratio. Further exploration of the splicing machinery unveiled the involvement of serine and arginine-rich splicing factor 1 (SRSF1). Knockdown or inhibition of SRSF1 resulted in decreased expression of both RPS24 isoforms. By investigating the induction of RPS24 alternative splicing, our objective is to contribute to the exploration of RPS24 splice variants as potential diagnostic markers for early-stage cancer detection. Ultimately, elucidating the splicing factors involved may shed light on their potential as therapeutic targets for cancer patients.

Curriculum Vitae: Jenna completed her Bachelor of Science (Hons.) in Molecular Biology and Genetics with a minor in Statistics at the University of Guelph in April 2021. She began her Master of Science program in Molecular and Cellular Biology in Dr. Uniacke's lab in September 2021.