



**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*

ARSHIA LEEKHA

On Tuesday, November 15, 2022 at 1:30 p.m. (SSC 2315)

Thesis Title: The regulation of dynactin by palmitoylation

Examination Committee:

Dr. Matthew Kimber, Dept. of Molecular and Cellular Biology (Exam Chair)
Dr. Shaun Sanders, Dept. of Molecular and Cellular Biology
Dr. Scott Ryan, Dept. of Molecular and Cellular Biology
Dr. Marc Copolino, Dept. of Molecular and Cellular Biology

Advisory Committee:

Dr. Shaun Sanders (Advisor)
Dr. Scott Ryan

Abstract: Neurons are large, complex cells that use a microtubule motor protein-based system for the fast transport of proteins and organelle cargo throughout long, complex projections. In output projections known as axons, cytoplasmic dynein transports cargo in the retrograde direction towards the cell body. Dynein requires the activating complex dynactin, including the subunit DCTN1 (p150^{glued}). DCTN1 is post-translationally modified with the lipid palmitate in a process known as palmitoylation at cysteines 617 and 1255, likely by ZDHHC12. Additionally, DCTN1 is preferentially palmitoylated in the nervous system. In neurons, when wild type (wt) or palmitoylation resistant (C617,1255A; CCAA) are ectopically expressed, there may be more wtDCTN1-GFP in distal axons than DCTN1-CCAA-GFP. The results of this study provide a greater understanding of the regulation of transport in neurons with implications for synaptic function and neurodegeneration.

Curriculum Vitae: Arshia completed her B.Sc. (Hons) at Western University in May 2020 with a specialization in Biology. She then began her M.Sc. in Molecular and Cellular Biology and Neurology in September 2020 under the supervision of Dr. Shaun Sanders.