



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

ROJINA SAMIFANNI

On Friday, December 17, 2021 at 9:30 a.m. (online)

Thesis Title: Locating transcription activation activity in *Dlx5* and *Dlx6* proteins

Examination Committee:

Dr. Ray Lu, Dept. of Molecular and Cellular Biology (Exam Chair)
Dr. Andrew Bendall, Dept. of Molecular and Cellular Biology
Dr. Steffen Graether, Dept. of Molecular and Cellular Biology
Dr. Joseph Colasanti, Dept. of Molecular and Cellular Biology

Advisory Committee:

Dr. Andrew Bendall (Advisor)
Dr. Steffen Graether

Abstract: *Dlx* genes are important for vertebrate embryogenesis, encoding transcription factors that typically activate downstream targets. *Dlx5* and *Dlx6* mutants have defects in the mandible. However, *Dlx5* and *Dlx6* double knockout mutants show complete transformation of the mandibular arch, supporting the claim that *Dlx5* and *Dlx6* are functionally redundant. The amino- and carboxy-terminal domains of *Dlx* proteins are predicted to be intrinsically disordered; short linear motifs, that are critical for transcription activity, have been identified in the disordered regions of transcription factors. Such motifs within *Dlx* proteins that are important for transcription activity remain to be discovered. A truncation strategy was used to locate important residues in *Dlx5* and *Dlx6* proteins for transcription function. The data indicate that both *Dlx5* and *Dlx6* contain functionally redundant activation activities, and that the strength of the activation function is proportional to the length of each domain, rather than being located in a specific motif.

Curriculum Vitae: Rojina completed her Bachelor of Science (Honours) in Neuroscience with a minor in Food Studies at the University of Toronto in April of 2019. In the Fall of that same year, she began her M.Sc. in Molecular and Cellular Biology at the University of Guelph in the lab of Dr. Andrew Bendall.

Publications: Samifanni, R., Zhao, M., Cruz-Sanchez, A., Satheesh, A., Mumtaz, U., & Arruda-Carvalho, M. (2021). Developmental emergence of persistent memory for contextual and auditory fear in mice. *Learning & Memory*, 28(11), 414-421.