



**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

WADOOD MALIK, on Thursday, August 17, 2017 at 2:00 p.m. in SSC 2315

(Advisor: Dr. A. Bendall)

Thesis Title: Novel tools for *Dlx5* and *Dlx6* knockdown in the chicken embryo

Examination Committee:

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

Dr. A. Bendall, Dept. of Molecular and Cellular Biology

Dr. T. Van Raay, Dept. of Molecular and Cellular Biology

Dr. D. Mosser, Dept. of Molecular and Cellular Biology

Abstract: The *Dlx5* and *Dlx6* homeobox genes encode transcription factors which exert their effects on the developing embryo through differentiation and patterning, most prominently in the limb and craniofacial skeleton. Functional redundancy has been observed in *Dlx5* and *Dlx6* mouse neonates such that only ablation of both genes results in the most severe dysmorphologies of the lower jaw, yet it is unclear what specific contribution each gene is making to jaw patterning. In order to gain better understanding of the extent of their overlap, microRNAs (miRs) were synthesized and multimerized to aid in the knockdown of *Dlx5* and *Dlx6* with the aim of delivering these miRs to targeted regions of the chicken embryo. The efficacy of the various miRs was tested *in vitro* through immunoblotting, wherein a noticeable knockdown of *Dlx5* and *Dlx6* protein levels was observed. Corresponding immunofluorescence of *Dlx5* in fixed cells also confirmed knockdown of *Dlx5*.

Curriculum Vitae: Wadood completed his Bachelor of Science (Honours) at York University in the summer of 2014. He began his M.Sc. graduate studies in the lab of Dr. Andrew Bendall in January 2015.