



**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

AFREEDA MAHESANIYA, on Tuesday, September 12, 2017 at 9 a.m. in SSC 2315
(Advisor: Dr. N. Jones)

Thesis Title: Investigating the role of soy (phyto)estrogens on the Akt podocyte survival signaling pathway

Examination Committee:

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

Dr. N. Jones, Dept. of Molecular and Cellular Biology

Dr. R. Moorehead, Dept. of Biomedical Science

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

Abstract: Chronic kidney disease (CKD) is increasing in frequency as a consequence of the diabetes epidemic, and disease progression is more rapid in males. Evidence suggests that a soy-based diet, consisting of phytoestrogens, is beneficial in CKD patients, though the underlying mechanisms are poorly understood. Podocyte loss is a hallmark of CKD, and reduced expression of nephrin, a specialized podocyte protein, compromises cell survival through decreased recruitment and activation of the survival kinase Akt. Here, we show that nephrin/Akt signaling is enhanced in both male and female mice following dietary soy supplementation. Intriguingly, the effect is more pronounced in females, which may reflect a lower threshold for activation of estrogen receptor signaling. We further show that females have a higher baseline expression of Akt in podocytes. Lastly, using cultured podocytes, we demonstrate that treatment with phytoestrogen daidzein promotes podocyte protection following high glucose exposure. Altogether, this work provides mechanistic insight to support the renoprotective effects of soy.

Curriculum Vitae: After completing her B.Sc. (Hons) in Biomedical Science at the University of Guelph, Afreeda began her M.Sc. studies in the lab of Dr. Nina Jones in September 2015.