



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

PIRITHTHIV DHAVARASA, on Wed. December 6, 2017 at 9:30 a.m. in SSC 2315
(Advisor: Dr. K. Yankulov)

Thesis Title: Mechanistic Understanding Of PCNA-based Interactions: The Interplay Between CAF-I and Rrm3p for the DNA Sliding Clamp PCNA

Examination Committee:

Dr. A. Bendall, Dept. of Molecular and Cellular Biology (Chair)

Dr. K. Yankulov, Dept. of Molecular and Cellular Biology

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

Dr. R. Lu, Dept. of Molecular and Cellular Biology

Abstract: The Proliferating Cell Nuclear Antigen (PCNA) is a homotrimeric ring that encircles DNA at the replication fork and acts as a docking hub for numerous replication related proteins. Chromatin Assembly Factor I (CAF-I) and rDNA Recombination Mutation 3 (RRM3) have been implicated in the conversions of the epigenetic state during DNA replication and interact with PCNA through a PCNA-Interacting Peptide (PIP) sequence. The exchange of these factors at the replication fork must play a key role in the coordination of successful replication and the maintenance of chromatin structure. I used a co-immunoprecipitation assay and a GST-based pulldown assay to determine the interaction profile of these proteins and observed that a co-operative tri-partite complex seems plausible. Furthermore, I investigated the significance of CDC7 and CDC28 phosphorylation on CAF-I's association with PCNA using a Yeast-Two Hybrid assay. My results show that eliminating putative phosphorylation sites reduced association to differing degrees.

Curriculum Vitae: Piriththiv obtained his Bachelor of Science at the University of Guelph in 2015. He then began his M.Sc. graduate studies in the lab of Dr. Joseph Yankulov in September of 2015.

Publications: Rowlands, H., Dhavarasa, P., Cheng, A., and Yankulov, K. (July 2017) Forks on the Run: Can the Stalling of DNA Replication Promote Epigenetic Changes? Front. Genet. Vol. 8, pp. 1-15.