

CS Masters' Thesis Defense

Title: *Interactive Graphical Interface for Printed Glycan Array Data Analysis*
Speaker: William King
Date: Monday, November 14, 2011
Time: 1:00 p.m.
Location: GMCS 408
Thesis advisor: Dr Marko Vuskovic

Abstract:

This thesis presents a specification, implementation, and description of the GlycoAnalyzer application; a Bioinformatics graphical user interface-based tool which is particularly tuned for analyzing glycan-based data obtained from printed glycan arrays (PGA). PGAs are micro arrays based on new high-throughput technology, similar to protein and DNA arrays, but contain a library of glycans covalently attached to the array glass instead of proteins or DNAs. Such arrays are used to measure activity of the immune system in order to perform screening of the general population, early detection of cancerous and viral diseases, and diagnosis and prognosis of these diseases by observing the level of anti-glycan antibodies present in human blood.

The GlycoAnalyzer performs preprocessing of raw data obtained from PGAs and performs downstream analysis, which includes feature selection, classification, and visualization of data. All aspects of the PGAs and processing of PGA data, as well as implementation of the GlycoAnalyzer are described and a working example is presented which contains a mesothelioma assay that consists of a control group of 65 subjects exposed to asbestos and 50 patients with malignant mesothelioma. Future plans for a mobile version of the GlycoAnalyzer are also discussed.