University of Victoria | Graduate Studies

Notice of the Final Oral Examination for the Degree of Master of Science

of

WEI LI

BSc (Jilin University, 1998)

"Two Supramolecular Methods for Detecting a Cancer Metabolite with Cucurbituril"

Department of Chemistry

Tuesday, April 12, 2016
12:30 P.M.
Engineering and Computer Science Building
Room 130

Supervisory Committee:
Dr. Fraser Hof, Department of Chemistry, University of Victoria (Supervisor)
Dr. Alexandre Brolo, Department of Chemistry, UVic (Member)
Dr. Reuven Gordon, Department of Electrical and Computer Engineering, UVic (Outside Member)

External Examiner:
Dr. Peter Wan, Department of Chemistry, University of Victoria

Chair of Oral Examination:
Dr. Kieka Mynhardt, Department of Math, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies

Abstract

Enzyme spermidine/spermine N1-acetyltransferase (SSAT) is a candidate biomarker for various cancer as its activity in cancerous tissues is significantly increased. An artificial molecule, amantadine, is exclusively acetylated by SSAT to acetylamantadine (AcAm), which levels in urine can serve as a proxy biomarker for malignancy. Current method of AcAm detection is laborious, time-consuming, and lacks the possibility of transforming to a point of care device. In this thesis, two different approaches were applied to detect AcAm in deionized water and in human urine using optical methods. The first one was fluorescence based indicator displacement assay using cucurbit[7]uril as the receptor molecule. The second was programmed gold nanoparticle disaggregation with cucurbit[7]uril as a molecular linker.