

Department of Molecular and Cellular Biology
Graduate Seminar MCB*6500

Friday, Oct. 5, 2018 in SSC 1511 @ 12 noon

presented by:

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“Searching for binding partners of human glutathione transferase Theta 1 – a moonlighting protein?”

Human glutathione transferase Theta 1 (GSTT1) is a member of the GST superfamily. GST enzymes are found in almost all organisms; they protect cells from damage due to electrophilic (mutagenic/carcinogenic) compounds, catalyzing their conjugation with the non-protein thiol, glutathione.

Several properties of human GSTT1 are unusual. The enzyme has relatively low catalytic activity. A homozygous null *GSTT1* genotype is present in about one-third of the population. Although GSTs are regarded as enzymes of xenobiotic detoxication, GSTT1 expression is reported to be higher in thyroid and prostate than in liver or kidney.

My hypothesis is that GSTT1 has a “moonlighting” function independent of its catalytic activity. Recent studies have shown that several other GSTs, notably GST Pi, have binding interactions with signaling proteins (e.g., TRAF4, JNK, ASK1). I will search for binding partners (protein-protein interactions) of GSTT1, which could provide clues to a role in signaling or other processes.

Purified recombinant his-tagged GSTT1 will be used as bait in “pull-down” experiments with cell lysates prepared from (e.g.) cultured human prostate cells and erythrocytes obtained from volunteer donors. Potential GST binding partners will be identified by LC-MS proteomics and studied further by western blotting, co-immunoprecipitation, and other techniques. Discovering a significant interaction could shine a new light on the biological role of this enigmatic protein.