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# Donnelly Seminar Series
# "Neuronal transcriptome profiling identifies a conserved ubiquitin ligase complex involved in serotonergic neuromodulation in *C. elegans*"


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## Abstract:

Neuromodulatory cells transduce environmental information into long-lasting behavioural responses. However, the molecular mechanisms governing how neuronal cells influence changes in behaviour remain difficult to characterize. We have adapted the Translating Ribosome Affinity Purification (TRAP) approach in *C. elegans* to profile ribosome-associated mRNAs from three major tissues and the neuromodulatory dopaminergic and serotonergic cells. Using this approach, we identified elc-2, an Elongin C ortholog, to be specifically expressed in a single pair of serotonergic sensory neurons, and we found that it plays a role in mediating a long-lasting change in serotonin-dependent feeding behaviour induced by heat stress. We have demonstrated that ELC-2 and the von Hippel-Lindau protein VHL-1, components of an Elongin-Cullin-SOCS box (ECS) E3 ubiquitin ligase, modulate this behaviour after experiencing stress. Finally, we have found that heat stress induces a transient redistribution of ELC-2, observing it to be enriched in the nucleus. Together, our results demonstrate dynamic regulation of an E3 ligase and a role for an ECS complex in neuromodulation and behavioural states. We also demonstrate that transcriptome profiling of distinct neuronal subtypes can be used as an entry point to uncover novel insights about the physiology of these cells.


## Thursday, March 8, 2018 | 11:00 am
## James D. Friesen | Cecil C. Yip Red Seminar Room
## Host: Peter J. Roy, PhD