Department of Molecular and Cellular Biology

Graduate Seminar MCB*6500

Friday, June 1, 2018 in SSC 1511 @ 12 noon

presented by:

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"Luman as a novel regulator of lipid and cholesterol metabolism"

Luman/CREB3 is an endoplasmic reticulum (ER)-transmembrane transcription factor. Luman-deficient mice have a lean phenotype and altered stress sensitivity. Luman is considered part of the Unfolded Protein Response (UPR) which functions to alleviate ER stress, and has been implicated in lipid metabolism. Luman Recruitment Factor (or CREBRF), a regulator of Luman, plays a role in lipid metabolism. In addition, Luman/CREB3-like protein 3 (or CREB3L3), has a well described role in regulation of lipid and energy metabolism, through nuclear receptor protein-interactions and transcriptional regulation. CREB3L3-deficient mice show a lean phenotype similar to that of Luman-deficient mice. Luman-deficiency is also known to cause high glucocorticoid receptor (GR) activity which is another major regulator of metabolic genes. Taking all this together, we propose that Luman is a novel lipid and cholesterol metabolism co-regulator, which acts through functional interactions with various nuclear receptors. To test this hypothesis, two main objectives are proposed: 1) to characterize the Luman-deficient mouse phenotypes on control and high-fat diet; and 2) to elucidate and the molecular role of Luman in lipid and cholesterol metabolism regulation by identifying its downstream targets. This research could potentially lead to novel therapeutic targets for treating obesity, and obesity related diseases such as diabetes, heart disease, stroke, or cancer.