Department of Molecular and Cellular Biology

Graduate Seminar MCB*6500

Friday, Jan. 13, 2017 in SSC 1511 @ 12 noon

presented by:

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Investigating the role of heterogeneous nuclear ribonucleoprotein Q (hnRNP Q) on postmitotic neuronal morphology in the cerebral cortex

RNA-binding proteins (RBPs) are critical for the appropriate spatial and temporal translation of mRNA in the developing cortex and in mature neurons. These proteins bind mRNA and facilitate their localization, metabolism, and alternative splicing. Recently, mutations within the RBP heterogeneous nuclear ribonucleoprotein Q (hnRNP Q) were implicated as a possible cause of human intellectual disorders (ID). As ID are often caused by erroneous cortical development, hnRNP Q may be a mediator of mammalian neurodevelopment. I hypothesize that hnRNP Q expression influences post-mitotic neural morphology, neuronal communication, and cortical development. I will introduce a knockdown construct into murine *in vitro* cortical cultures to reduce hnRNP Q protein levels, thereby allowing me to assess the effects of hnRNP Q on cortex and neuronal development. By quantifying the relative proportions of neural subtypes cells found within these cultures, a relationship between hnRNP Q and cell fate determination can be established. Alterations to dendritic arborisation as a consequence of reduced hnRNP Q protein expression will be measured as an indicator hnRNP Q's influence on postmitotic morphology. As diminishing hnRNP Q protein expression may also influence connectivity between neurons, the role of hnRNP Q in coordinating neural networks will be assessed by quantifying synaptic puncta characteristics in control and knockdown conditions. Analyzing these facets of cortical and neural development may give some indication as to how hnRNP Q is associated with human ID.