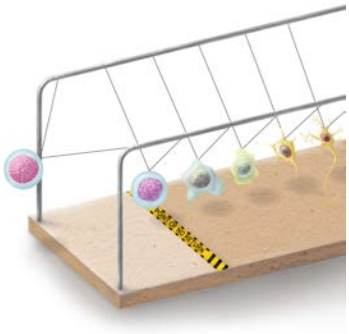
GUEST SPEAKER SEMINAR

Molecular Genetics
UNIVERSITY OF TORONTO

A Hdac1/Rpd3-poised circuit balances continual self-renewal and rapid restriction of developmental potential during asymmetric stem cell division



How the developmental potential of differentiating stem cell progeny becomes rapidly and stably restricted following asymmetric stem cell division is unclear. In the fly larval brain, earmuff (erm) uniquely functions to restrict the developmental potential of intermediate neural progenitors (INPs) generated by asymmetrically dividing neural stem cells (neuroblasts). Here we demonstrate that the histone deacetylase Hdac1/Rpd3 functions together with self-renewal transcriptional repressors to maintain the erm immature INP enhancer in an inactive but poised state in neuroblasts. Within two-hours of immature INP birth, down-regulation of repressor activities alleviates Rpd3-mediated repression on the erm enhancer, enabling acetylation of multiple histone proteins and activating Erm expression. Erm restricts the developmental potential in immature INPs by repressing genes encoding neuroblast transcriptional activators. We propose that poising the fast-activating enhancers of master regulators of differentiation through continual histone deacetylation in stem cells enables self-renewal and rapid restriction of developmental potential following asymmetric division

Dr. Cheng-Yu Lee

Associate Professor, Division of Molecular Medicine & Genetics, Department of Internal Medicine, UM Medical School
University of Michigan

Host: Dr. Bret Pearson

Date: Thursday February 16th, 2017
Time: 2PM
Place: Donnelly Centre Red Seminar Room, 160 College Street