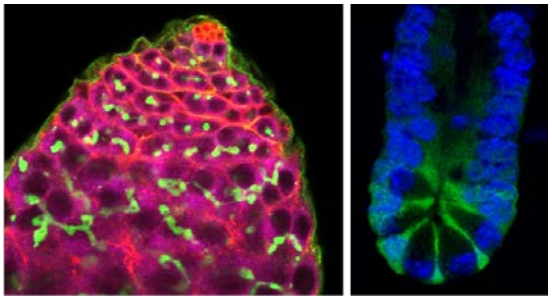
GUEST SPEAKER SEMINAR

Molecular Genetics
UNIVERSITY OF TORONTO

Snail proteins regulate maintenance and size of the stem cell compartment in diverse tissues: from the *Drosophila* testis to the mouse intestinal epithelium



The Snail family of zinc-finger DNA-binding proteins play key, conserved roles in triggering epithelial to mesenchymal transitions in both physiological and pathological situations. Snail proteins also have important roles in various stem cell populations in both *Drosophila* and vertebrates. They are required in *Drosophila* for maintenance of both germline stem cells in the adult testis and intestinal stem cells in the adult midgut. Three paralogs are present in *Drosophila* (Snail, Escargot & Worniu) and mouse/human (Snai1, Snai2 & Snai3). Escargot is highly expressed in undifferentiated spermatogonia and somatic stem cells in the *Drosophila* testis but loss of Escargot function specifically affects the somatic component, while Snail is required for maintenance of germline stem cells. In the *Drosophila* intestine, Escargot is required to prevent differentiation of epithelial stem cells. In the mouse intestine, Snai1 is present in intestinal crypts and knockout of Snai1 results in apoptosis of crypt base columnar stem cells. In contrast, ectopic expression of Snai1 in the intestinal epithelium results in expansion of the stem cell pool. SNAI1 is also upregulated in human colorectal tumours. Our results indicate that Snail proteins have conserved roles in regulating the maintenance and size of the stem cell compartment in multiple tissues and may contribute to both the genesis and metastasis of colorectal cancer.

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Host: Dr. Julie Brill

Date: Monday March 9th, 2015
Time: 4PM
Place: 1 King's College Circle, Medical Sciences Building, Room 4279