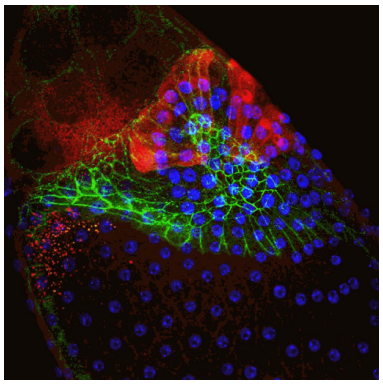
GUEST SPEAKER SEMINAR

Molecular Genetics
UNIVERSITY OF TORONTO

Tu be or Not To be: How do biological tubes develop?



Tube formation, the folding of flat epithelial sheets into curved structures, is a basic process in the development of organs such as the lungs, kidneys, heart, neural tube, and gut. To understand the mechanisms that control tube formation, we investigate a tube-forming process that occurs in developing egg chambers of the fruit fly, *Drosophila melanogaster*. In the fly ovary, groups of follicle cells within the epithelium that surrounds the oocyte reorganize from a curved sheet into a pair of elongated tubes. This process is remarkably similar to mammalian neural tube formation, which creates the spinal chord. Genetic studies show that signals originating from small populations of cells, both outside and within the tubes, regulate tube closure and elongation. Faulty signaling produces open or stunted tubes, similar to human defects that cause *spina bifida* or fetal death. Analyses of live and fixed tissue show that, within the epithelium, subsets of cells respond differently to the signals, inducing unique behaviors that shape the tubes. Microarray and proteomic approaches suggest candidates genes and implicate cytoskeletal regulators, a novel class of growth factors, and cell-type-specific transcription factor complexes in regulating tube-cell migration. Since tube formation is highly conserved between invertebrates and vertebrates, these studies give insight into human development and disease.

Dr. Celeste Berg
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Host: Dr. Julie Brill

Date: Tuesday October 22, 2013
Time: 10:00 a.m.
Place: Medical Sciences Building
1 King's College Circle
Room 4279