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Title:	Understanding the Impact of High Sugar Diet on Intestinal Stem Cell Homeostasis in Drosophila melanogaster
Authors:	Ray, Koustav
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Abstract:	Last few decades have experienced an alarming increase in our consumption of sugar rich diets. Altered food habits have been linked to many metabolic disorders that include obesity and type II diabetes. Gut epithelial cells are the first cells that are exposed to dietary intervention. Any kind of damage to these cells needs to be replenished by a new set of cells. The intestinal stem cells (ISCs) housed within the gut epithelium are capable of self-renewal and can differentiate into other cell types of the epithelium. However, our understanding of the mechanism by which altered diet conditions like high sugar diet disrupts ISC homeostasis is very limited. In this study we employed Drosophila melanogaster posterior midgut as the model system to analyse the impact of high sugar diet (HSD) on ISC homeostasis. Our results revealed that a high sugar diet disrupts ISC homeostasis. In particular, the proliferative and differentiation potential of the ISCs into enteroblast cells (EBs), enteroendocrine (EE) cells and absorptive enterocytes (EC) were analyzed. The status of several other signaling pathways associated with ISC homeostasis were also studied. While some of these signaling pathways were perturbed, some remained unaltered. Together, our results provide a glimpse of the changes in the dynamics of ISC state and fate in the gut epithelium of flies fed on HSD. I would deeply appreciate it if you can do the needful.
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