Title:	Intrinsic and extrinsic regulation of hematopoietic niche development in drosophila melanogaster
Authors:	Kaur, Harleen
Keywords:	Intrinsic melanogaster hematopoietic extrinsic
Issue Date:	May-2021
Abstract:	Stem cells are unique cells of body that have the ability to self-renew as well as differentiate into diverse cell types. About 40 years ago, it was discovered that stem cells retain their peculiar characteristics only when they are in close association with the microenvironment named as stem cell niche. A stem cell niche thus houses the stem cells wherein they receive signals that can influence their behavior. Since the niche controls the state and fate of stem and progenitor cells, it thus is a strong candidate to be targeted for therapeutics and regenerative medicine. Therefore, it is extremely important that we understand the fundamentals of a stem cell niche. For our studies, we chose to understand stem cell niche biology using Drosophila hematopoiesis as the process. Starting from transcription factors, signalling molecules and two phases of hematopoiesis, there is a high level of conservation between Drosophila hematopoiesis to its vertebrate counterparts. The definitive wave of hematopoiesis in fruit-fly takes place in the larval organ called the lymph gland. The lymph gland in a mature third instar larvae is a kidney shaped organ with the outer region consisting of differentiated hemocytes called the cortical zone (CZ), the inner core, called as Medullary Zone (MZ) houses the progenitors. The balance between differentiated and progenitor population is orchestrated by a group of 45-50 cells called Posterior Signaling Centre (PSC) that lie posterior to progenitors. PSC serves as the hematopoietic niche of the lymph gland. The elegance of lymph gland lies in the fact that all three zones are proximal to each other making it an efficient tool to unravel distinct crosstalk happening in different types of cells of the same tissue.
URI:	http://hdl.handle.net/123456789/4007
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