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Title:	Lar maintains the homeostasis of the hematopoietic organ in Drosophila by regulating insulin signaling in the niche
Authors:	Kaur, Harleen (/jspui/browse?type=author&value=Kaur%2C+Harleen) Sharma, Shiv Kumar (/jspui/browse?type=author&value=Sharma%2C+Shiv+Kumar) Mandal, S. (/jspui/browse?type=author&value=Mandal%2C+S.) Mandal, L. (/jspui/browse?type=author&value=Mandal%2C+L.)
Keywords:	Hematopoietic niche Systemic signal Drosophila
Issue Date:	2019
Publisher:	The Company of Biologists
Citation:	Development (Cambridge).146(24).
Abstract:	Stem cell compartments in metazoa get regulated by systemic factors as well as local stem cell niche derived factors. However, mechanisms by which systemic signal integrate with local factors in maintaining tissue homeostasis remains enigmatic. Employing the Drosophila lymph gland, which harbors differentiated blood cells, stem-like progenitor cells, and their niche, we demonstrate how a systemic signal interacts and harmonizes with local factor/s to achieve cell-type-specific tissue homeostasis. Our genetic analyses uncovered a novel function of Lar (Leukocyte Antigen Related like), a Receptor Protein Tyrosine Phosphatase. Niche-specific loss of Lar leads to up-regulated insulin signaling, causing increased niche cell proliferation and ectopic progenitor differentiation. Insulin signaling assayed by PI3K activation is down-regulated post-second instar larval stage, a time point that coincides with the appearance of Lar in the hematopoietic niche. We further demonstrate that Lar physically associates with InR and serves as a negative regulator for insulin signaling in Drosophila larval hematopoietic niche. Whether Lar serves as a localized invariable negative regulator of systemic signals like insulin in other stem cell niches remains to be explored.
URI:	https://dev.biologists.org/content/early/2019/11/25/dev.178202.supplemental?versioned=true (https://dev.biologists.org/content/early/2019/11/25/dev.178202.supplemental?versioned=true) http://hdl.handle.net/123456789/2343 (http://hdl.handle.net/123456789/2343)
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