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Title:	Characterization of previously unexplored progenitors in the posterior lobes of larval lymph gland in Drosophila melanogaster.
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Abstract:	<p>Drosophila melanogaster is used as a model organism for genetics since the last century. Various phenomenon have been studied using this model organism such as neurodegenerative disorders, metabolism, behavioural studies as well as immunity. In this thesis, we have analysed the process of developmental hematopoiesis or blood cell formation. Hematopoiesis of vertebrate and Drosophila are quite similar. In Drosophila, there are two waves of hematopoiesis. Larval lymph gland (larval hematopoietic organ) generates hemocytes in definite hematopoiesis. The lymph gland is a bilobed tissue that flanks the dorsal vessel. The primary lobes of the lymph gland are extensively studied, but posterior lobes(PL) that houses progenitor cells remain unexplored. In this study, we tried to understand PL hematopoiesis in detail. It has been reported that PL constitutes of a homogeneous population of progenitor cells distributed in secondary and tertiary lobes. However, when we tried bonafide blood progenitor markers such as TepIV or Knot (Kn), we found that both of them was not uniformly expressed in the reserve progenitor pool. Interestingly, the TepIV expressing domain and Kn expressing domain were mutually exclusive. Our characterization to date indicates that the Knot domain in the tertiary lobe is actually "prospective niche," which emanates maintenance signal for progenitors in PL, just like PSC/niche of the primary lobe. The development of the lymph gland is a dynamic process. Hence it was important to know, at what exact time point, this heterogeneity in the PL arises. For this purpose, we performed time-kinetics of the lymph gland at different developmental time points. Further, to understand the cell cycle status of the newly identified domains: TepIV domain and Kn domain, we employed fly FUCCI construct. The results reinforce our hypothesis that the blood progenitors of PL resembles the progenitors of the primary lobe and except that they are developmentally lagging in time. As the progenitors of primary lobe differentiate, the progenitors in the PL initiates their differentiation program .Thus, for differentiation, reserve progenitors of PL seem to "tailgate" the progenitors of the primary lobe during development.</p>
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