Title:	Mechanistic basis of Wound healing in adult Drosophila melanogaster
Authors:	Bhattacharyya, Saswata
Keywords:	Drosophila melanogaster Hematopoiesis Hemocyte migration Genetic tools
Issue Date:	28-Jun-2021
Publisher:	IISERM
Abstract:	A wound triggers a number of local and systemic responses whose sole aim is closing the wound and eliminating the pathogens entered through the wound in order to maintain homeostasis. Drosophila melanogaster has been used extensively to study the wound healing process. In different stages of Drosophila, wounding experiments have shown to evoke a number of molecular players near the wound such as ROS (hydrogen peroxide) in embryo, larval and adult stages, JNK and Hippo in adult stages, VEGF (pvr/pvf) and insulin signals at larval stage. Hydrogen peroxide is known to initiate most of the processes, i.e; recruitment of hemocytes to the wounded area, activating the recruited hemocytes. Additionally, ROS is also known to activate JNK responses which inturn helps in the re-epithelization process. Hippo, insulin and pvr/pvf signals are important for proper wound closure and the re-epithelization process. A wound should also have systemic responses (depends upon size and extent of the wound). In murine models it has been seen that bone marrow participates actively in the wound healing process (which is a systemic response). The hematopoietic hubs located in the dorsal side of the adult Drosophila seems to be a simple version of the vertebrate bone marrow. Like bone marrow these hubs have been seen to participate actively when the body faces an immune challenge. In this thesis I show that the hematopoietic hubs also respond to sterile wounds. Since such changes should be signalled by the body and since the changes seen are in response to the wound, I tried to identify the signals evoked near the wound. JNK and Hippo were seen to be evoked at 9 and 8 hrs post wounding respectively, thus reconfirming the known data. Since the hemocytes are seen to leave the hubs at 3- 4 hrs post wounding we can rule out the possibility of JNK and Hippo of being the signals responsible for the phenotype seen. Further experiments are required to elucidate the signals responsible for the hemocyte migration from the hematopoietic hubs post wounding.
URI:	http://hdl.handle.net/123456789/3956
Appears in Collections:	MS Dissertation by MP-2018

Files in This Item:

There are no files associated with this item.

Show full item record