



Library Indian Institute of Science Education and Research Mohali



DSpace@IISERMohali / Thesis & Dissertation / Master of Science / MS-15

Please use this identifier to cite or link to this item: <http://hdl.handle.net/123456789/1512>

Title:	Studying the Effects of Type1 and Type2 Diabetes Mellitus in Zebrafish Retina Regeneration
Authors:	Ziyaurrehman, M.S.
Keywords:	Effects of Type1 Effects of Type 2 Diabetes Mellitus Zebrafish Retina
Issue Date:	Apr-2020
Publisher:	IISER Mohali
Abstract:	Diabetes Mellitus (DM) has a profound impact on wound healing/ regeneration capacity of an individual. Considering the facts that zebrafish has extensive regeneration capacity of almost all organs and it is a good model for diabetic studies, we investigated the effect of Diabetes Mellitus on regeneration/ wound healing capacity of zebrafish retina. The genetic and molecular players behind zebrafish retina regeneration is a well-studied field. For our study, We developed Type1 and Type2 Diabetes Mellitus zebrafish models through two different methods which are common in zebrafish to induce diabetes. We induced Type1 DM through periodic intraperitoneal injection of diabetogenic drug Streptozocin and we performed immersion of zebrafish in 2% glucose solution to induce Type2 DM. Our results demonstrate the development of hyperglycemia, reduced lower limb (caudal fin) regeneration and reduced retina regeneration in both Type1 and Type2 DM fishes. We were able to reverse the blood glucose level of Type2 DM fish through metformin treatment. Our investigation of genetic and molecular mechanisms behind reduced retina regeneration in Type2 DM fish retina showed significant perturbation in the levels of regeneration-associated genes and signalling cascades regulating retina regeneration. We found a reduction in normal expression levels of proliferation-inducing genes in uninjured Type2 DM fish retina. Also, the pattern of expression of regeneration-associated genes, at different time points after retina injury, was perturbed in Type2 DM fishes.
URI:	http://hdl.handle.net/123456789/1512
Appears in Collections:	MS-15

Files in This Item:

File	Size	Format	
MS15014.pdf	1.55 MB	Adobe PDF	View/Open

Show full item record



Items in DSpace are protected by copyright, with all rights reserved, unless otherwise indicated.