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Title:	Understanding the role of mbd3b in Zebrafish Retina Regeneration
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Abstract:	Müller glia (MG) helps in regeneration of injured retina in Zebrafish, making it a valuable model system for studying retina regeneration. The exact mechanism of molecular interplay that orchestrates de-differentiation, proliferation and re-differentiation processes occurring during regeneration still remains elusive. These processes are believed to accompany an extensive rearrangement in the genetic and epigenetic landscape of the regenerating retinal cell. Although the roles of many genetic and epigenetic regulators have been studied in the light of regeneration, that of developmentally important gene Mbd3 remains unexplored. Mbd3 is an essential component of the Nucleosome remodeling and Histone Deacetylase complex, and thus exerts an epigenetic control over the cell expression. We investigated the role of Mbd3b, a methyl CpG binding domain containing protein, in different stages of zebrafish retina regeneration. We found that mbd3b levels are regulated during retina regeneration, with higher expression near the injury site at 6dpi. Overexpression of mbd3b has revealed its regulatory role in controlling the proliferation of Müller glia cells, and also suggested its regulation on several Regeneration-associated Genes. Moreover, we found reduction in the level of mbd3b on Verteporfin drug treatment, suggesting its regulation by Hippo signaling pathway. These results suggest that Mbd3b plays a crucial role in zebrafish retina regeneration and holds promise as a potential therapeutic target for retinal diseases like Diabetic Retinopathy.
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