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Title:	Transcriptional Adaptation: Therapeutic Aspects and Identification of New Models
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Abstract:	<p>Transcriptional adaptation is a recently described phenomenon by which a mutation in one gene leads to the transcriptional modulation of related genes, termed adapting genes. At the molecular level, it has been proposed that the mutant mRNA, activates this response. The emergence of new models can lead to the creation of databases of genes capable of transcriptional adaptation thus facilitating the following genetic experiments and arising new questions for personalized medicine. Considering the current limitations and future perspectives, it is important to find new models of transcriptional adaptation for deep analysis of this process. In this project I have compiled the list of criteria for a convenient transcriptional adaptation model. Following the same premise, in this study we tried to observe if the function of Beta globin (HBB) gene can be compensated by other globins such as HBG, HBZ, HBE, and HBD in the event of a mutation in the HBB gene, that results in the creation of PTC in one of its exons (3' end of exon 1 or 5' end of exon 2), in disorders such as thalassemia or sickle cell anemia. On the similar lines, we tried to explore Pannexin gene family as a suitable candidate that might display Transcriptional Adaptation. The project proceeded by preparing Pannexin 1 gene knockout, that will be used as a control. Following the experiments samples were sent for RNA seq to check expression of other genes. I propose to consider transcriptional adaptation in the context of epigenetic landscape where a PTC mutation launches the mechanisms of transcriptional adaptation and modulates the expression of multiple genes via up- and downregulation to help an organism to remain fitness after facing a mutation. Thus, I propose to consider transcriptional adaptation in the context of epigenetic landscape where a PTC mutation launches the mechanisms of transcriptional adaptation and modulates the expression of multiple genes via up- and downregulation to help an organism to remain fitness after facing a mutation.</p>
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