

# **Protein-DNA Interactomes of Cardiac Transcription Factors GATA4, TBX5 and NKX2-5.**

Authors: Brenda I. César<sup>1</sup>, Emmanuel Carrasquillo<sup>1</sup>, José A. Rodríguez<sup>1</sup>.

Department of Biology, University of Puerto Rico – Río Piedras Campus<sup>1</sup>, San Juan, PR.

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Congenital Heart Disease (CHD) is a type of defect that affects over 150,000 persons every year. This type of sickness arises from abnormal structural formation of the heart since birth. It has been found that mutations in developmental transcription factors (TFs) are responsible for changes in their structure and function and are thus affecting the proper development of the heart. Some of these TFs include (but are not exclusive to) NKX, GATA4 and TBX-5. We hypothesize that some mutations are altering the coding sequence which affects the protein's properties along with their DNA binding and recognizing characteristics. We will study how the DNA-protein interactions occur and how they are affected by these mutations. To achieve our goal, we will apply molecular biology tools to clone, express and purify the cardiac TFs NKX, GATA4 and TBX-5 and their mutants. Then, we will study their DNA binding properties.