

James & Esther King Biomedical Research Program

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*2011 Program
New Investigator Research
(3-year project)*

Project Title: CIP4 Scaffold Protein Regulation of Cardiac Myocyte Hypertrophy and Survival

Project Summary: Heart failure is a syndrome of major public health significance accountable for nearly 300,000 deaths each year. One of the leading causes of heart failure is coronary heart disease, and tobacco exacerbates coronary heart disease and atherosclerosis. Tobacco smoke contains many harmful chemicals, including high levels of carbon monoxide and nicotine. There is also evidence that chronic exposure to tobacco byproducts results in heart dysfunction and ultimately heart failure. Despite modern therapy, survival is very low after a heart failure diagnosis. A better understanding of the cellular and biochemical mechanisms that control how the heart responds to stress may yield better therapeutic regimens with decreased mortality. My laboratory is focused on how the muscle of the heart grows in response to increased demands for heart pumping. This process is also named by cardiac hypertrophy. We recently found that a new scaffold protein, CIP4, binds to the hypertrophic enzyme Calcineurin and affects myocytes hypertrophy and survival. In this grant, I will explore how CIP4 regulates those signals through specific protein-protein interaction in myocytes. By using a new genetically-modified mouse, I will test whether CIP4 may be a target for therapeutic intervention, preventing the onset of heart failure.