Dr. Elaine Wan

Abstract

Congestive heart failure (HF) is one of the leading diagnoses of hospital admissions today. It is a clinical syndrome resulting from decreased cardiac function and hence decrease perfusion to vital organs, causing concomitant vascular dysfunction, namely vasoconstriction and increased resistance to endothelial mediated relaxation. This is a result of abnormalities in the vascular smooth muscle cells, which hinders cardiac output and results in further adverse cardiac remodeling. This project focuses on understanding the role of vascular smooth muscle ion channels in controlling blood vessel contractility. By creating mouse models of heart failure, I will be able to carry out vessel and cellular studies to determine the role of vascular ion channels in congestive heart failure after myocardial infarction. Preliminary data demonstrates that the imbalance of ion channel currents may contribute to vascular dysfunction, and that rectifying this electrophysiological dysregulation is an innovative paradigm that will lead to novel therapeutic approaches to treat HF and vascular dysfunction after myocardial infarction.