

## The Role Collagen VI Plays in Heart Failure: A Tale Untold

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**Abstract :** Myocardial fibrosis (MF) has been loosely defined as the process occurring in the pathological remodeling of the myocardium due to excessive production and deposition of extracellular matrix (ECM) proteins, including collagen. This reduces tissue compliance and accelerates progression to heart failure, as well as affecting the electrical properties of the myocytes resulting in arrhythmias. Microscopic interrogation of MF is key to understanding the molecular orchestrators of disease. It is well-established that recruitment and stimulation of myofibroblasts result in Collagen deposition and the resulting expansion in the ECM. Many types of Collagens have been identified and implicated in scarring of tissue. In a series of experiments conducted at our lab, we aim to elucidate the role collagen VI plays in the development of myocardial fibrosis and its direct impact on myocardial function. This was investigated through an animal experiment in Rats with Collagen VI knockout diseased and healthy animals as well as Collagen VI wild diseased and healthy rats. Echocardiogram assessments of these rats ensued at four-time points, followed by microscopic interrogation of the myocardium aiming to correlate the role collagen VI plays in myocardial function. Our results demonstrate a deterioration in cardiac function as represented by the ejection fraction in the knockout healthy and diseased rats. This elucidates a potential protective role that collagen-VI plays following a myocardial insult. Current work is dedicated to the microscopic characterisation of the fibrotic process in all rat groups, with the results to follow.

**Keywords :** heart failure, myocardial fibrosis, collagen, echocardiogram, confocal microscopy

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