# Effects of scaffold-delivered SDF-1 alpha protein in chronic rat myocardial infarction model.

Authors: Yu J., Sievers R.E., Lee R.J.

Publication Date: 2014

## Abstract:

The delivery of stromal cell-derived factor (SDF)-1 alpha protein via a bioactive scaffold for the repair of chronically damaged myocardium was investigated using in situ tissue engineering. SDF-1 alpha protein, fibrin, or SDF-1 alpha protein in a fibrin matrix were delivered into the myocardium of a rat ischemic cardiomyopathy model five weeks after myocardial infarction (MI). Echocardiography was performed before and five weeks after treatment. The hearts were examined histologically for angiogenesis, infarct size, and stem cell migration. SDF-1 alpha protein alone and fibrin glue both retarded heart function deterioration by recruiting stem cells into the infarcted myocardium and stimulating neovascularization. SDF-1 alpha delivered with fibrin glue recruited the highest quantity of CD34+ in the infarcted area. SDF-1 alpha and fibrin influence the myocardial microenvironment in a chronic MI through the recruitment of stem cells, resulting in arteriogenesis and preservation of left ventricular function. In situ tissue engineering shown to be a viable approach for the treatment of chronic ischemic cardiomyopathy.