**A Stem Cell Nanomedicine to treat idiopathic pulmonary fibrosis**

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**Project Description:**  
Idiopathic pulmonary fibrosis (IPF) is one of the most common interstitial lung diseases and it affects predominantly adults over the age of 50 with a higher incidence in men than women. Once diagnosed, prognosis is poor and average time from clinical diagnosis to death is 2 years. Current drugs on the market are incredibly expensive and can only slow down disease progression but do not halt the disease or reverse established prognosis. We have developed a patented stem cell derived nanomedicine that has potent anti-inflammatory and anti-fibrotic effects. We will combine our novel approach to regenerative medicine with emerging evidence that attrition and/or accelerated aging of endogenous stem/progenitor cells contribute to the underlying pathology of IPF. In this project, you will investigate the potential for stem cell derived nanomedicine to recruit, activate and expand the endogenous stem/progenitor cells in the lungs and if this can potentially reverse established fibrosis. You will test this hypothesis using a combination of small animal model of lung fibrosis, echocardiography and 3D stem cell organoid culture. You will learn techniques such as small animal handling, flow cytometry, histopathology, immunology, mammalian cell culture and stem cell isolation.