Effect of AGX-51 on Human Lung Fibroblasts

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Idiopathic Pulmonary fibrosis (IPF) is a chronic, progressive, fibrotic lung disease with high morbidity and mortality with limited treatments currently available. A key feature of IPF is airway remodeling which is driven by fibroblast proliferation and differentiation. Thus, agents targeting the proliferation and differentiation of fibroblasts have a potential role as therapeutic agents for pulmonary fibrosis. AGX-51 is one such agent that has been shown to be an ID1 (inhibitor of DNA binding) antagonist. ID1 proteins have shown to encourage proliferation and differentiation in lung fibroblasts. This study proposes that AGX-51 could impact proliferation and differentiation rates of lung fibroblasts and could therefore be a potential therapeutic agent of this illness. When testing the proliferation of IPF and NHLF (Normal Human Lung Fibroblasts), different concentrations (1, 4, 20, 40, 100μM) of AGX-51 were evaluated for their impact on proliferation. When testing the differentiation of IPF and NHLF cells, AGX-51 was used as a treatment on different genes (aSMA, Col1a1, and Col3al). The results of proliferation experiment show that concentrations above 20μM are most effective in reducing proliferation rate. The results of the differentiation experiment show that when IPF and NHLF cells were treated with AGX-51, differentiation levels were reduced to the same level as they were in the control trial. In conclusion, the initial hypothesis was correct, the results (using One-way ANOVA) indicate a statistically significant ($P<0.05$) decrease in both cell types differentiation rate, as well as a proliferation rate.