Reversal of myofibroblast phenotype due to the adhesion of Lung mixed culture-derived epithelial cells (LMDEC)

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Fibroblast-to-myofibroblast differentiation is recognized as critical process of developing irreversible pulmonary fibrosis through the excessive accumulation of extracellular matrix. To elucidate the factor that can induce dedifferentiation of myofibroblast phenotype will provide a new therapeutic target for pulmonary fibrosis. We have previously reported Lung mixed culture-derived epithelial cells (LMDECs) as the cell populations, collected from crude culture of the mouse whole lung, satisfied some characteristics of Type-2 alveolar epithelial cells, and ameliorated experimental pulmonary fibrosis. However, the mechanism as to how LMDECs exerts beneficial effects on the pulmonary fibrosis remains to be clarified. We showed the myofibroblasts dedifferentiation induced by the communication between LMDECs and myofibroblasts. The primary Myofibroblast-Like Cells (MyoLCs), exhibiting increased expression of myofibroblast marker proteins (α-smooth muscle actin and ED-A-fibronectin), were isolated from resected human fibrotic lung. Immunoblotting revealed reduced expression of myofibroblast marker proteins in LMDEC/MyoLC direct contact co-culture, while LMDEC did not change expression of them in non-contact co-culture. We will further investigate the association of LMDEC-derived membrane proteins with myofibroblast dedifferentiation.