1. No.
   2021Y007

2. Title
   Exploration of therapeutic approach to smoking associated pulmonary fibrosis based on novel understanding of the disease pathogenesis

3. Period
   2021-2023

4. Summary
   Co-immunoprecipitation-mass spectrometry was used to elucidate the mechanism of fibrosis regulation by the RBM7/NEAT1/CXCL12 cascade, and it was found that RBM7 interacts with HUWE1, an E3 ubiquitin ligase, and that knockdown of HUWE1 increases RBM7 expression. Single-cell RNA-seq analysis of diverse interstitial lung disease patients allowed us to identify a population of fibrotic macrophages that significantly correlates with the progressive pathophysiology of fibrosis in interstitial lung disease, and we found that several different immune cell subsets are associated with fibrosis progression. In addition, several different immune cell subsets were found to be associated with fibrosis progression. In addition, by using Visium 10x, which allows spatial gene expression analysis, we were able to examine the dynamic dynamics of different cell populations in tissue space, and by examining the spatiotemporal location of subsets that specifically increase in fibrotic lungs in relation to fibrotic lesions, we found that fibrosis-promoting subsets accumulate within advanced fibrotic lesions and form foci. The results showed that fibrosis-promoting subsets accumulate in fibrotic lesions and form foci that form a dense metabolic linkage with surrounding fibroblasts for the maintenance and progression of fibrotic lesions.