1. **No.**

   FP01801008

2. **Title**

   Elucidation of the molecular mechanisms in lung cancer with interstitial pneumonia or COPD

3. **Period**

   2017-2019

4. **Summary**

Idiopathic pulmonary fibrosis (IPF) is reportedly associated with an increased risk of lung cancer. However, optimal diagnosis and treatment for lung cancer associated with IPF remains unclear. In this study, we aimed to clarify the mechanism of carcinogenesis and progression in lung cancer with IPF. We used tumor tissues and adjacent non-tumor lung tissues from 29 lung cancer patients who had undergone complete surgical resection at Nippon Medical School Hospital. Whole-Exon Sequencing was performed on 29 paired samples, consisted of 19 lung cancers with IPF (IPF group) and 10 lung cancers with normal lung (non-IPF group). The two candidate gene alterations discriminating between the IPF and non-IPF group, were identified using the random-forest method, the survival curve of the published microarray data consisted of 1928 patients, gene expression analyses in both IPF site and tumor site of 19 IPF group and 10 non IPF group, and IPA pathway analyses. Two genes which consisted of CADM1 gene which was one of tumor suppressor genes, and SPC25 gene which was one of oncogene. The low CADM1 expression and high SPC25 expression were mechanically associated with invasion, anti-apoptosis and Epithelial-Mesenchymal Transition (EMT). Because CADM1 gene mutation, CADM1 methylation and SPC25 gene mutation existed in both IPF site and tumor site of IPF group, and these gene alteration and epigenetic modification would be associated with carcinogenesis. We will try to clarify the function of specific gene mutations of IPF group. CADM1 gene and SPC25 gene would be molecular target of lung cancers with IPF.