1. **No.**

   FP01804057

2. **Title**

   Airway Secreted Exosome as a Novel Therapeutic Target for Chronic Obstructive Pulmonary Disease (COPD)

3. **Period**

   2017-2018

4. **Summary**

   1) Exosomes were induced by cigarette smoke (CS) and inflammatory agents in both *in vitro* and *in vivo* experiments. The miR-146a expression in exosomes were clearly elevated by inflammatory agents and, moreover, enhanced by pretreatment of CS. The miR-146a rich exosomes secreted from airways may play important roles in the pathogenesis of chronic obstructive pulmonary disease (COPD) by controlling abnormal inflammatory response caused by chronic exposure of CS.

   2) Microarray analysis of primary small airway epithelial cells (SAEC) and normal human bronchial epithelial cells (NHBE) following CSE exposure showed that inflammatory-related pathways and terms, including the tumor necrosis factor signaling pathway, were over-represented, especially in SAEC. mRNA and protein expression of COX-2 were significantly increased by CSE exposure in SAEC but not in NHBE. The predominant induction of COX-2 expression in the small airway was confirmed by short-term CS exposure to the lungs of mice. The small airway is more susceptible to CSE than the large airway and might be the initial site of development of CS-related respiratory diseases such as COPD.