1. **No.**

   FP01802037

2. **Title**

   Biological role of a smoking history-associated gene, LRRN3

3. **Period**

   2017-2019

4. **Summary**

Recent genetic studies showed that smoking history is robustly associated with the expression levels of LRRN3, a transmembrane protein-encoding gene. However, the biological role of LRRN3 is still unclear. We firstly examined the distribution of mouse Lrrn3 mRNA and found that it was enriched in blood. Therefore, this study aimed the clarification of the role of Lrrn3 in blood. When mice were injected with cigarette extracts or nicotine, Lrrn3 mRNA amount in blood tended to increase upon the chronic administration of cigarette smoke extract or nicotine. Lrrn3 expression in blood was particularly abundant in platelets. We therefore investigated platelet- and bone marrow-associated phenotypes of Lrrn3-deficient mice. As a result, bleeding time was prolonged and platelet aggregation were impaired in Lrrn3-deficient mice. Electron microscopy and flow cytometry analyses revealed some abnormalities in the megakaryocytes and platelets in Lrrn3-deficient mice. These results indicated that Lrrn3 plays a role in murine thrombopoiesis. Further examination of its involvement in thrombopoiesis would be beneficial for better understanding of physiological responses against smoking.