1. **No.**

   FP01912029

2. **Title**

   Elucidation of Smoker's Headache: Real-time Imaging of Cerebral Blood Flow, Neural Activity, and Pain-related Behavior in Mice

3. **Period**

   2018-2020

4. **Summary**

   The ultra-compact CMOS imaging device used in this study is able to measure cerebral blood flow (CBF) under non-anesthesia and free-moving conditions, demonstrating that treatment with nicotine increases CBF. We also focused on the Na+, K+- ATPase as factors associated with the onset of headache and found that nicotine increased Na+, K+- ATPase activity. As the results of pharmacological analysis, it was not possible to elucidate the detailed mechanism of the increase in CBF because the increase in CBF due to nicotine was not suppressed by the pretreatment with DHβE and MLA. On the other hand, DHβE suppressed the increase in Na+, K+- ATPase activity by nicotine. However, the relationship between Na+, K+- ATPase activity and CBF increase by nicotine is unclear. Therefore, further detailed analysis is required.