1. No.

   2023Y009

2. Title

   Effects of Nicotinic Acetylcholine Receptor Manipulations on Behavioral Flexibility

3. Period

   2023-2025

4. Summary

During the three-year funding period, we established not only the head-fixed behavioral paradigms described in this report but also multiple behavioral assays under freely moving conditions, along with diverse physiological measurement systems. Because this funding supported the early phase of laboratory establishment, the financial support was particularly valuable in enabling us to build the experimental infrastructure necessary for behavioral, pharmacological, and physiological studies and to place these research activities on a stable trajectory.

From a pharmacological perspective, we conducted studies using nicotine and various agonists and antagonists targeting nicotinic acetylcholine receptors, as well as compounds acting on muscarinic acetylcholine receptors. Furthermore, our work developed into a strong collaborative project with Dr. Yasuhiro Moriwaki at the Faculty of Pharmacy, Keio University, which enabled us to initiate studies using genetically modified mice related to α7 nicotinic acetylcholine receptors. These efforts established an integrated framework to investigate the roles of nicotinic acetylcholine receptors in behavior and cognition from both pharmacological and genetic perspectives.

Research output has begun to emerge, and several international publications are currently in preparation. In recognition of these achievements, we have also been invited to edit a special issue on nicotinic receptors in *Frontiers in Molecular Neuroscience*. Building on the research foundation established during this funding period, further significant advances are expected in the coming years.