1. No.
   2018T005

2. Title
   Integrative Analysis of CNV Model in Human Chromosome 15q13.3

3. Period
   2018-2022

4. Summary
   15q13.3 is located between two breakpoints (BP4 and BP5) on human chromosome 15 and has been suggested to correlate with neurodevelopmental and neuropsychiatric disorders. In this study, we generated a novel mouse model lacking autism risk genes, the alpha 7 nicotinic acetylcholine receptor (CHRNA7) and the OTUD7A, using genome editing technology. Through an unbiased behavioral battery test, we identified social deficits, one of the core symptoms of autism spectrum disorder. In addition to this *in vivo* analysis, we performed *in vitro* analysis using a single-cell RNA-sequence (scRNA-seq) technique. We identified enrichment in translational signaling regardless of cell type via pathway and gene ontology (GO) analysis. Finally, since CHRNA7 is known to have anti-inflammatory effects, we focused on microglial function in the brain. We found increased inflammatory markers (M1) in microglia in the cerebral cortex and hippocampus. In addition, microglial morphological abnormalities were observed in the somatosensory cortex. These analyses suggest that microglia may be a novel potential drug target for patients with 15q13.3 deletion.