1. **No.**

   FP01807098

2. **Title**

   Mechanism of Cluster Formation of Nicotinic Acetylcholine Receptor as the Contact Point of between Amyloid beta Pathology and Neurofibrillary Formation

3. **Period**

   2016-2019

4. **Summary**

   The clustering of nicotinic acetylcholine receptor is functionally critical on both neuronal synaptic spine and neuromuscular junction. Wnt signaling molecules such as Dvl3, rapsyn, APC, GSK-3beta play an important role in the formation of nicotinic acetylcholine receptor clusters. We found that these molecules specifically localized on granurovacuolar degeneration in the degenerating neurons of patients with Alzheimer's disease and also the treatment of cultured cells with oligomerized amyloid beta peptide induces the cluster of vesicles reminiscent of granurovacuolar degeneration. In addition, we observed the appearance of intracellular aggregation of tau protein when the materials with negatively charged surfaces were introduced into the cells that highly express tau protein. These results suggest that the molecules involved in the formation of nicotinic acetylcholine receptor clusters could connect between the accumulation of amyloid beta peptide and neurofibrillary tangle formation.