The cellular and animal model for Parkinson's disease

Abstract

My laboratory focuses on two search studies: (1) the pathogenic mechanisms of Parkinson's disease (PD) and (2) development of molecular biomarkers and therapeutic compounds for Parkinson's disease. Upon identification of novel candidate genes from PD patients, we generated primary cultured neurons, induced pluripotent stem cells and CRISPR/Cas knockin mice and further study signaling pathways of these genes involved in neurodegeneration. We have earlier identified Ras-Related Protein 35 (RAB35) gene, involved in endocytic recycling, plays an important role in the abnormal α-synuclein protein aggregation in neurons. We further demonstrated that RAB35 promotes the secretion of α-synuclein to extracellular space and causes neuronal death. We generated induced pluripotent stem cells with PLA2G6 mutations and used for studying disease mechanisms. Role and mechanism of PLA2G6 that regulate neuronal is currently under investigation. Further studies are undertaken to examine other molecular mechanisms underlying PD-associated mutations and developed therapeutic strategies for PD.