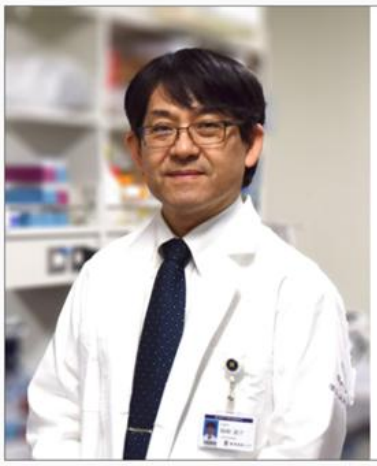


Principal Investigator

KEIO University **Michisuke Yuzaki**

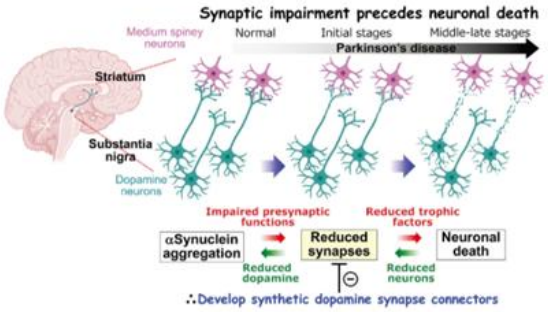
Adopted Theme

Development of a new treatment for Parkinson's disease aiming to restore dopamine synapses by synthetic synaptic connectors

Subject of Research

Development of a new treatment for Parkinson's disease aiming to restore dopamine synapses by synthetic synaptic connectors

Overview



As of 2023, Parkinson's disease affects approximately 2.64 million people across five major countries (the U.S., Japan, and three European nations), with cases continuing to rise due to aging populations. Current treatments for Parkinson's disease primarily rely on symptomatic therapy using levodopa, but no existing therapies can fundamentally halt the progression of neurodegeneration. While levodopa is initially effective, its efficacy declines as the disease advances. Moreover, because dopamine levels cannot be properly regulated in response to daily fluctuations, patients suffer from dopamine deficiency or excess, leading to motor complications and a significant decline in quality of life (QOL). This project aims to develop a synthetic dopamine synapse connector that can repair synapses between endogenous dopamine neurons and the striatum, thereby restoring natural dopamine secretion. This innovative approach is expected to provide groundbreaking therapeutic benefits. Additionally, by repairing synapses, we aim to establish this therapy as a disease-modifying treatment that can slow the progression of neurodegeneration.

Business Models (when applying)

We envision a pipeline-based drug discovery startup that generates new therapeutic programs from a proprietary platform. While patients are the ultimate customers, the primary revenue source of the startup will be pharmaceutical companies (B2B business model). To maximize corporate value, we will advance the project through a Phase II clinical trial, the value inflection point in the biopharma industry. At the stage, we aim to license the program to a global pharmaceutical company. In parallel, we will explore early-stage collaborations and licensing deals with pharmaceutical companies.

Activity Planning (when applying)

Building on our previously identified endogenous molecular mechanisms for dopamine synapse formation, we will:
1. Develop and optimize a synthetic dopamine synapse connector.
2. Evaluate its efficacy in Parkinson's disease mouse models to obtain preclinical proof-of-concept (POC).
3. Refine the target product profile (TPP), including patient segmentation and clinical endpoints, through discussions with Key Opinion Leaders (KOLs), pharmaceutical companies, and advisors.
4. Develop a detailed business model and identify potential executive team members and advisors for a future startup.
5. Draft a business plan and create a roadmap leading to clinical trials.