

3DPD: Advanced modelling of Parkinson's disease with three-dimensional human midbrain organoids

<https://neurodegenerationresearch.eu/survey/3dpd-advanced-modelling-of-parkinson%20s-disease-with-three-dimensional-human-midbrain-organoids/>

Question

Principal Investigators

J. Schwamborn, H.Schöler, P.Ertl, V.Bonifati, D.Seliktar

Related

Institution

Multiple

Contact information of lead PI

Country

Luxembourg|Germany|Netherlands|Israel

Title of project or programme

3DPD: Advanced modelling of Parkinson's disease with three-dimensional human midbrain organoids

Source of funding information

JPND-JPcofuND

Total sum awarded (Euro)

€ 1,487,850

Start date of award

01/01/2016

Total duration of award in years

3.0

The project/programme is most relevant to:

Parkinson's disease & PD-related disorders

Keywords

Research Abstract

One of the main limitations in neuroscience and in the modeling of neurodegenerative diseases is the lack of advanced experimental in vitro models that truly recapitulate the complexity of the human brain. Therefore, it is the aim of this research project to generate brain-like structures, so called organoids, that resemble the human midbrain. These organoids will be developed in a multifunctional lab-on-a-chip device. We call this a midbrain-on-a-chip approach. We will focus on Parkinson's disease, which is the second most common neurodegenerative disease. The midbrains-on-a-chip will be generated from induced pluripotent stem cells derived from Parkinson's disease patients. This will allow us to elucidate how Parkinson's disease imparts architectural remodelling, dopamine release and network formation of the midbrain tissue. The successful cultivation of in vitro midbrain organoids in a micro-analytical analysis platform will yield substantial insights and open new avenues for exploring the mechanisms of onset and progression under physiologically relevant measurement conditions. Moreover, with the usage of microfluidics devices, the whole approach is cost-effective and suitable for screening purposes.

Lay Summary

Further information available at:

Types:

Investments > €500k, JPND Projects

Member States:

Austria, Germany, Israel, JPND, Luxembourg, Netherlands

Diseases:

Parkinson's disease & PD-related disorders

Years:

2016

Database Categories:

N/A

Database Tags:

N/A