

Generation of induced pluripotent stem cells from people with Parkinson's / Modelling Parkinson's with rat embryonic stem cells and transgenesis (extension)

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Principal Investigators

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Institution

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Contact information of lead PI

Country

United Kingdom

Title of project or programme

Generation of induced pluripotent stem cells from people with Parkinson's / Modelling Parkinson's with rat embryonic stem cells and transgenesis (extension)

Source of funding information

Parkinson's UK

Total sum awarded (Euro)

€ 744,219

Start date of award

01/01/2010

Total duration of award in years

6.0

The project/programme is most relevant to:

Parkinson's disease & PD-related disorders

Keywords

Research Abstract

The recent advances in reprogramming somatic cells to generate induced Pluripotent Stem (iPS) cells has provided the opportunity to establish patient-specific pluripotent cell lines. These may be used for disease modelling, an autologous source of material for future cell-based therapies, or to generate a bank of HLA-typed pluripotent cells. A significant drawback of the current methods is the use of viruses to deliver the reprogramming factors. We have established a novel non-viral method based on a single DNA construct that is able to efficiency reprogram mouse and human cells. We will use this technology combined with the piggyBac transposon system to establish genetically unmodified iPS cells from people with Parkinson's. This proof-of-principle study will establish the feasibility and efficiency of this approach. The established Parkinson's and control iPS cell lines will be compared in differentiation studies and sensitivity to apoptotic stimuli. The neuroprotective E3 ubiquitin ligase, Parkin, will be added to Parkinson's iPS cells using a tunable inducible system, and the resulting cells will be differentiated and used in a 6-hydroxydopamine rat model of Parkinson's. This work will establish a procedure to generate genetically unmodified iPS cells that can be used to create models of familial Parkinson's and for potential future cell-based therapies.

Lay Summary

Further information available at:

Types:

Investments > €500k

Member States:

United Kingdom

Diseases:

Parkinson's disease & PD-related disorders

Years:

2016

Database Categories:

N/A

Database Tags:

N/A