Wnt signaling in dopamine neuron development and Parkinson´s disease cell therapy

https://www.neurodegenerationresearch.eu/survey/wnt-signaling-in-dopamine-neuron-development-and-parkinsons-disease-cell-therapy/

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Country

Sweden

Title of project or programme

Wnt signaling in dopamine neuron development and Parkinson´s disease cell therapy

Source of funding information

Swedish Research Council

Total sum awarded (Euro)

€ 870,511

Start date of award

01-01-2012

Total duration of award in years

5.0

The project/programme is most relevant to:

Parkinson's disease & PD-related disorders

Keywords
Research Abstract
Parkinson´s disease (PD) is a progressive neurodegenerative disorder that affects midbrain dopamine (DA) neurons, the cell type that causes the classical motor symptoms of PD. Currently available treatments are symptomatic and do not change the progressive

degeneration. We previously found that morphogens of the Wnt family of proteins improve the DA differentiation of stem cells. However the mechanisms by which they do that are largely unknown. We think that such mechanisms hold the key to improve the generation of DA neurons in vitro and their successful transplantation. In our project we thus propose to investigate: (1) How is the Wnt/Planar Cell Polarity (PCP) signal is transduced in VM DA neurons. (2) The function of Wnt/PCP signaling in midbrain DA neuron development. (3) The role of Wnt signaling in midbrain DA neuron subtype specification. Next we plan to perform a screening for small molecules capable of activating Wnt/PCP signaling in vitro and in vivo. With this knowledge and tools we will then work to develop two novel methods for PD cell replacement therapy: (1) Improve the differentiation and functional integration of midbrain DA neurons derived from pluripotent stem cells. (2) Develop a method for the direct reprogramming of fibroblasts into midbrain DA neurons, which could be used for autologous transplantation in PD patients. Our final goal is to develop fundamental knowledge and novel therapies for PD.

Lay Summary
Further information available at:

Types:
Investments > €500k

Member States:
Sweden

Diseases:
Parkinson's disease & PD-related disorders

Years:
2016

Database Categories:
N/A

Database Tags:
N/A