

FUNCTIONAL IN VITRO MODELS OF HUMAN NEURONAL AND ASTROCYTE INTERACTIONS

<https://www.neurodegenerationresearch.eu/survey/functional-in-vitro-models-of-human-neuronal-and-astrocyte-interactions/>

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Sweden

Title of project/programme

FUNCTIONAL IN VITRO MODELS OF HUMAN NEURONAL AND ASTROCYTE INTERACTIONS

Source of funding information

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Start date of award

01-01-2014

Total duration of award in years

4.0

The project/programme is most relevant to:

Alzheimer's disease & other dementias

Keywords

Stem cells | drug development | Alzheimer's disease | neurons | astrocytes

Research Abstract

For the human central nervous system it is very difficult to pursue studies of disease mechanisms, development of drugs and predict drug side effects. One reason is that there are no in vitro (outside body) methods that are truly physiologically relevant. This project aims at developing such models in the form of functional cell cultures of neurons and astrocytes. To have a renewable and reproducible cells source we will use human induced pluripotent stem

cells, derived from skin samples of healthy controls or patients, and differentiate these to specific types of neurons or astrocytes. A key aspect of the project is to create an in vivo like interface between the two main cell types of the brain, a task we will tackle with co-cultures in two and three-dimensional (2D/3D) systems. We will develop 3D hydrogel culture systems optimized to neural cells. We will specifically study disease mechanisms in Alzheimer's disease, but all methods will also be useful to predict drug side effects in neural cells. Focus will be on developing scalable methods that are easily applicable in industrial settings. This project is a collaboration between Sweden's only major pharmaceutical company, AstraZeneca, and Sweden's largest medical research institution, Karolinska Institutet. Results could therefore find widespread applications and the graduate student financed through the program would have insight into world leading research in both academic and industrial settings.

Types:

Fellowships

Member States:

Sweden

Diseases:

Alzheimer's disease & other dementias

Years:

2016

Database Categories:

N/A

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