Use of iPSC derived brain cells to model neurodegenerative disorders

Commonly used acronym: *iPSC-brain*

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Organisation

Name of the organisation Katholieke Universiteit Leuven (KUL)
Department Development and Regeneration
Country Belgium
Geographical Area Flemish Region

SCOPE OF THE METHOD

The Method relates to	Human health
The Method is situated in	Basic Research, Translational - Applied Research
Type of method	In vitro - Ex vivo
Species from which cells/tissues/organs are derived	human
Type of cells/tissues/organs	brain

DESCRIPTION

Method keywords

IPSC
2D models
3D models being created
neural and glial cells
CRISPR/Cas

Scientific area keywords

AD
FTD
ALS
MS

Method description

Despite major advances in our understanding of neurodegenerative disorders, no efficient therapies are available for patients with dementia, motor neuron disease and other neurodegenerative disorders. With the advent of pluripotent stem cells (PSCs) it now

becomes possible to better model human disease *in vitro* (and in humanized mice), which may lead to the development of novel therapies for these currently untreatable disorders. We are building such models, using PSC-derived cells combined with genome engineering to study neuronal characteristics but also glial (astrocyte, oligodendrocyte and microglia) contribution to neurodegeneration in 2D (downscaled to medium/high throughput 384 well plate formats for medium/high throughput screening and high content imaging) and starting to develop 3D models, to identify novel therapeutic targets and therapies.

Lab equipment

Laminar flow ;
Incubator ;
Microfluidics device ;
qRT-PCR ;
Automated robotised stem cell platform ;
High content imager.

Method status

Still in development
Internally validated

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

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