

# 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

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

