

The use of induced pluripotent stem cells in the study of neurodevelopmental disorders

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Contact person

Hilde Van Esch

Organisation

Name of the organisation Katholieke Universiteit Leuven (KUL)

Department Human Genetics

Country Belgium

Geographical Area Flemish Region

SCOPE OF THE METHOD

The Method relates to	Human health
The Method is situated in	Basic Research
Type of method	In vitro - Ex vivo
Specify the type of cells/tissues/organs	Fibroblasts

DESCRIPTION

Method keywords

IPSC
Stem cells
differentiation
cell culture
organoid
CrispR

Scientific area keywords

neurodevelopmental disorders
Rett syndrome
MECP2
MECP2 duplication syndrome
intellectual disability

Method description

We have successfully set-up the iPSC technology and are able to derive human cortical neurons for the study of neurodevelopmental disorders e.g. the MECP2 duplication syndrome (published) and other projects in the lab (ongoing). We also create isogenic

lines using CrispR-Cas technology. All lines are human derived. We use the iPSC to derive specific subtypes of neurons and study differentiation capacity and morphology. We also study neuronal synaptic connectivity. For certain diseases, we also study migration capacity.

Method status

Still in development

History of use

Published in peer reviewed journal

PROS, CONS & FUTURE POTENTIAL

Advantages

To study processes underlying cognitive and behavioral function at a molecular and cellular level in a human context.

Challenges

High cost.

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

References

Nageshappa et al., Mol Psychiatry 2016

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