

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

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SCOPE OF THE METHOD

Alternative method relates to	Human health
Alternative method is situated in	Basic Research
Type of alternative method	In vitro - Ex vivo
This method makes use of	Human derived cells / tissues / organs
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.

Lab equipment

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

Associated documents

PARTNERS AND COLLABORATIONS

Organisation

Name of the organisation KU Leuven

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Country Belgium

Geographical Area Flemish Region

Coordinated by



Financed by

