Creation of robust in vitro models to study liver disease

Commonly used acronym: *iPSC-liver*

Created on: 26-08-2019 - Last modified on: 08-11-2019

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	Liver

DESCRIPTION

Method keywords

IPSC

3D in vitro model

NAFLD/NASH

Scientific area keywords

liver disease

DILI

NASH

regeneration

Method description

We developed *in vitro* models to study liver disease, such as liver inflammation and fibrosis, as seen in non-alcoholic fatty liver disease/non-alcoholic steatohepatitis (NAFLD/NASH); or hepatitis viral infection; or to enhance our ability to detect drugs that cause acute or repeat dose drug induced liver injury (DILI) assessment, and this in medium to high throughput format. The 2D and also 3D models consist of (i) longer-term stable functioning iPSC-derived hepatocytes that can be damaged by a compound /insult; iPSC-derived macrophages; endothelial cells and hepatic stellate cells that can respond to this damage. The cells also contain built-in stress reporter genes to allow high-content image-based definition of cell stress. Finally, the model can be down-scalable to 96 (or 384) well format allowing medium/high througput drug screening.

Lab equipment

Biosafety cabinet incubator FACS qRT-PCR robotised stem cell platform high content imaging.

Method status

Internally validated

Published in peer reviewed journal

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

Coordinated by

Financed by