3D iPSC-chondrocyte model

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Organisation

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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
Specify the type of cells/tissues/organs	3D IPSC-derived chondrocyte pellets/ IPSC-derived cartilage tissue

DESCRIPTION

Method keywords

IPSC reprogramming

IPSC-MC differentiation

flow cytometry

Chondrogenesis of iPSCs

immunohistochemical staining

qPCR assay

western blot

Scientific area keywords

Skeletal dysplasias

IPSC research

Method description

Aim: To model cartilage-related disorders in a human-specific context for the investigation of disease mechanisms and the screening of potential therapeutics. Technique: Fibroblasts and/or peripheral blood mononuclear cells (PBMCs) from both healthy donors and patients are reprogrammed into induced pluripotent stem cells (iPSCs). These iPSCs are first differentiated into mesenchymal-like cells and subsequently into 3D chondrocyte pellet cultures consisting of a mixture of both proliferating and hypertrophic chondrocytes similar to growth plate cartilage.

Lab equipment

- Laminar flow hood and incubator preferably in a dedicated stem cell lab.

- Flow cytometer to validate the mesenchymal-like cells for human mesenchymal stem cell markers.

- Real-Time PCR machine and immunostaining equipment for validation of the cartilage tissues.

Method status

Internally validated

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

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