

## 3D iPSC-chondrocyte model

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### Organisation

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**Department** Center of Medical Genetics

**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 - Applied Research
<b>Type of method</b>	In vitro - Ex vivo
<b>Specify the type of cells/tissues/organs</b>	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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