

# Human choroid plexus organoids

**Commonly used acronym:** ChP organoids

Created on: 31-01-2025 - Last modified on: 08-09-2025

## Contact person

Xenia Ghysel

## Organisation

**Name of the organisation** Vlaams Instituut voor Biotechnologie (VIB)

**Department** Center for Inflammation Research

**Specific Research Group or Service** Barriers in inflammation lab

**Country** Belgium

**Geographical Area** Flemish Region

**Name of the organisation** Ghent University (UGent)

**Department** Biomedical molecular biology

**Specific Research Group or Service** Barriers in inflammation lab

**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
<b>Type of method</b>	In vitro - Ex vivo

<b>Specify the type of cells/tissues/organs</b>	Induced pluripotent stemcells / embryonic stemcells
---	---

## DESCRIPTION

### Method keywords

matrigel

human embryonic stem cell derived organoid model

Human induced Pluripotent Stem Cell

HUman brain organoids

### Scientific area keywords

choroid plexus

blood-csf barrier

brain delivery

csf

### Method description

ChP organoids are produced starting from human induced pluripotent or embryonic stem cells. 7 days after seeding of the stem cells, the organoids are embedded in matrigel. After 30-40 days, the organoids are differentiated and form a functional blood-CSF barrier with fluid-filled cysts resembling human CSF. This method has first been described and published by Laura Pellegrini (2020).

### Lab equipment

- Shaker in incubator with 5% CO<sub>2</sub> at 37°C,
- General cell culture equipment and flows.

### Method status

Published in peer reviewed journal

## PROS, CONS & FUTURE POTENTIAL

### Advantages

This system can be more relevant to study the human choroid plexus and CSF in comparison to the use of other *in vitro* models with immortalized cells. The organoids produce a CSF-like fluid, enabling study of CSF production and composition in a much less invasive and difficult way compared to the use of mice.

### Challenges

The long culturing time is a downside. Additionally, there might be variability between different batches, influence of the batch of matrigel or other components used during culturing, and there is a big impact of the cell type that is used.

## REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

### References

Laura Pellegrini et al. ,Human CNS barrier-forming organoids with cerebrospinal fluid production. Science369,eaaz5626(2020). DOI:10.1126/science.aaz5626

<https://www.stemcell.com/stemdiff-choroid-plexus-organoid-differentiation-kit.html>

### Associated documents

[Publication from Laura Pellegrini.pdf](#)

[Protocol ChP organoids from stemcell technologies kit.pdf](#)

### Links

[Human CNS barrier-forming organoids with cerebrospinal fluid production, L. Pel...](#)

Coordinated by



Financed by



Vlaanderen  
verbeelding werkt

