3D Organoids from primary melanoma cell lines and from iPSC-derived neural crest stem cells

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Organisation

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Country Belgium
Geographical Area Flemish Region

SCOPE OF THE METHOD

<table>
<thead>
<tr>
<th>The Method relates to</th>
<th>Human health</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Method is situated in</td>
<td>Basic Research</td>
</tr>
<tr>
<td>Type of method</td>
<td>In vitro - Ex vivo</td>
</tr>
<tr>
<td>Specify the type of cells/tissues/organs</td>
<td>Human iPSC; Primary melanoma cells</td>
</tr>
</tbody>
</table>

DESCRIPTION

Method keywords

3D culture
organoid
single-cell
**Scientific area keywords**

melanoma
enhancer
single-cell RNA seq
single-cell ATAC seq

**Method description**

We propose to generate three-dimensional tumoroids from the primary melanoma cell lines, as well as 3D organoids from the iPSc-derived neural crest stem cells. We will use the AggreWell system (STEMCELL Technologies) to generate uniform, size-controlled three-dimensional spheroids. After 5 days in the AggreWell plate, the spheroids are moved to a PEG-based artificial ECM hydrogel (Gjorevski et al.; Nature Protocols 2017). The organoids can be cultured for weeks in these PEG-droplets. At different time points during organoid culture, organoids will be used for immunostaining and/or for single-cell sequencing. We will dissociate the PEG gel to obtain single cells by use of the cell-dissociation enzyme TrypLE.

**Lab equipment**

Biosafety cabinet ;
Cell incubator CO2-connected ;
Centrifuge for plates.

**Method status**

Published in peer reviewed journal

**PROS, CONS & FUTURE POTENTIAL**

**Advantages**

3D organoids mimic tissue architecture heterogenous cell culture to study cellular differentiation enhancer testing.
Challenges

Not every cell type/tissue can be studied.

Modifications

Different cell types are studied to form organoids.

Future & Other applications

Drug application: concentration and activity can be tested.

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

References