



Miltenyi Biotec

hPSC-derived cerebral organoid workflow

From differentiation to cellular analysis
and 3D imaging

Integrated workflows for hPSC-derived cerebral organoids

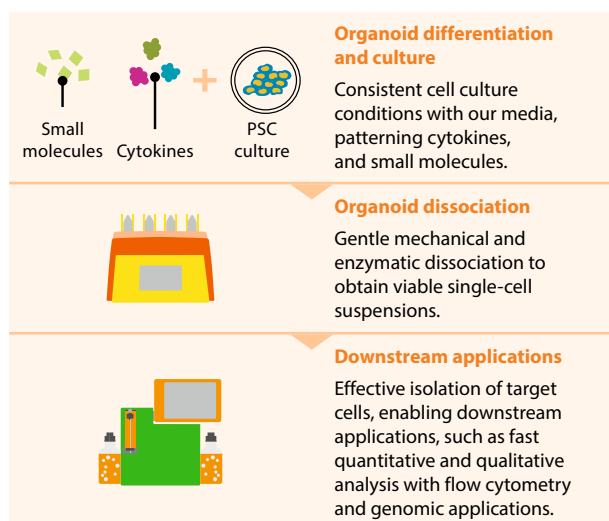


Figure 1: Cellular analysis workflow

Get the most out of your human pluripotent stem cell (hPSC)-derived cerebral organoids with our integrated cellular analysis (fig. 1) and 3D imaging (fig. 2) workflows and gain an in-depth understanding of your *in vitro* model.

Consistent hPSC-derived cerebral organoid differentiation

Our MACS® Cell Culture and Stimulation portfolio offers a specialized range of cell culture media and supplements, as well as a wide selection of highly pure StemMACS™ Small Molecules. Our MACS Premium-Grade Cytokines enable exact unit dosing of active cytokine, based on the biological activity provided for each cytokine batch. These patterning factors can be added at specific time points to our neuronal serum-free media and supplements to effectively support the differentiation of hPSCs into any kind of neural organoid.

- Ensure reproducibility and save time and resources with our reagents, designed for excellent performance without under- or oversaturation.
- Flexibly select the perfect solutions for your differentiation needs with our broad cytokine and small molecule portfolio.
- Achieve optimal cell culture conditions that support long-term neural viability.

Well-orchestrated cellular analysis workflow

The combination of mechanical and enzymatic dissociation with the gentleMACS™ Octo Dissociator and our dissociation kits provides a gentle yet efficient dissociation of hPSC-derived cerebral organoids into single cells. The resultant single-cell suspension is immediately ready for downstream applications, such as magnetic isolation of target cells, flow cytometric analysis, genomic applications, and cell culture.

- Preserve neural cells' integrity and surface epitopes through gentle dissociation.
- Enhance experimental efficiency and consistency with automated and user-independent hPSC-derived cerebral organoid dissociation.
- Obtain reliable qualitative and quantitative flow cytometric results with our recombinant REAfinity® Antibody conjugates.

Product	Order no.
MACS Neuro Medium	130-093-570
MACS NeuroBrew-21	130-093-566
Human FGF-2	130-093-840
StemMACS LDN-193189	130-106-540
StemMACS SB431542	130-106-275
gentleMACS Octo Dissociator with Heaters	130-096-427
Neural Tissue Dissociation Kit, P or T	130-092-628, 130-093-231
Pax-6 Antibody, anti-human, PE, REAfinity	130-123-311
OTX2 Antibody, anti-human, Vio® B515, REAfinity	130-121-202
CD11b Antibody, anti-human, VioGreen™, REAfinity	130-110-617

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Visit our website to discover cytokines, small molecules, and antibodies for your organoid research.

► [miltenyibiotec.com/cerebral-organoids](https://www.miltenyibiotec.com/cerebral-organoids)

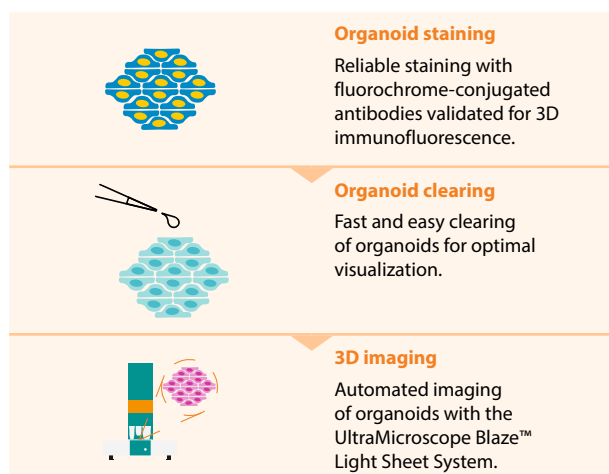


Figure 2: 3D imaging workflow

Groundbreaking 3D imaging workflow

Our recombinantly engineered, fluorochrome-conjugated antibodies from a growing portfolio have already been validated for 3D imaging. Benefit from our step-by-step, easy-to-follow protocol for organoid clearing with fast and easy-to-use reagents that will render the organoids transparent for maximum light penetration. Image up to 48 hPSC-derived cerebral organoids in one go with our automated light sheet fluorescence microscope, the UltraMicroscope Blaze.

- Save time and ensure excellent signal-to-noise ratio and minimal background interference with our recombinant fluorochrome-conjugated antibodies.
- Fast, easy, and uniform clearing of hPSC-derived cerebral organoids without compromising their morphology.
- Obtain high-resolution images to visualize complex neural connections through to subcellular structures.



Discover MACS iQ View – 3D Large Volume, our light sheet microscopy image processing software.

► [miltenyibiotec.com/
UltraMicroscope-
image-processing](https://miltenyibiotec.com/UltraMicroscope-image-processing)

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Product	Order no.
Ki-67 Antibody, anti-human/mouse, Vio R667, REAfinity	130-128-745
Sox2 Antibody, anti-human/mouse, Vio B515, REAfinity	130-128-343
β-Tubulin 3 Antibody, anti-human/mouse, Vio G570, REAfinity	130-133-801
Tyrosine Hydroxylase Antibody, anti-human/mouse/rat, Vio R667, REAfinity	130-131-157
MACS Clearing Kit	130-126-719
MACS Imaging Solution	130-128-511
MACS UltraMount 48	130-135-488
UltraMicroscope Blaze*	

*Please request further information

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Experience 3D imaging speeds like never before – with LightSpeed Mode

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lightspeedmode](https://miltenyibiotec.com/lightspeedmode)

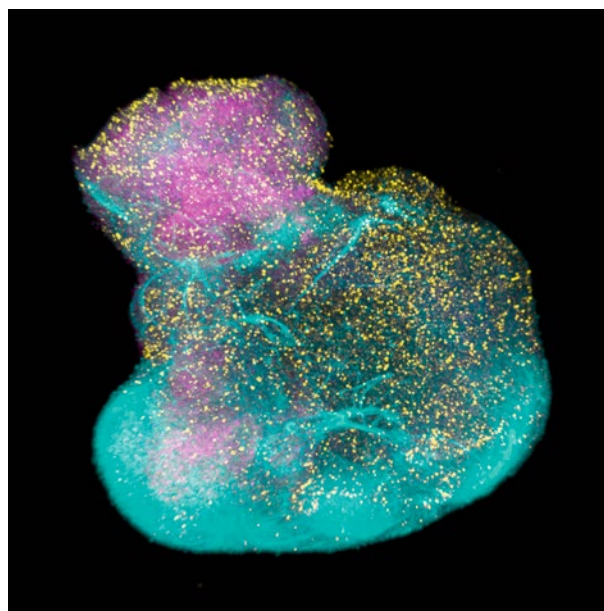


Figure 3: 3D imaging of a cerebral organoid generated from human iPSC cells. Organoid was labeled with REAfinity Recombinant Antibodies Ki-67 Antibody, Vio R667, REA183 (yellow); SOX2 Antibody, Vio B515, REA320 (magenta); and β-Tubulin 3 Antibody, Vio G570, REA1152 (cyan), and optically cleared using the MACS Clearing Kit. Imaged by UltraMicroscope technology.



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