

ioOligodendrocyte-like cells

Human iPSC-derived
oligodendrocyte-like cells

Powered by opti-ox™

Consistent. Defined. Scalable.

Learn more about
ioOligodendrocyte-like
cells

ioCells™



About the cells

ioOligodendrocyte-like cells resemble a premyelinating oligodendrocyte state. These highly characterised cells enable the screening of compounds that modulate myelination, supporting drug development for neurodegenerative and demyelinating diseases, such as multiple sclerosis.

ioOligodendrocyte-like cells are deterministically programmed from human iPSCs using opti-ox™ technology, meaning scalability and consistency are built-in.

Benchtop benefits



DEFINED

Human O4⁺ cells initially display a typical OPC-like morphology. They mature into oligodendrocyte-like cells that have multiple branched processes.



QUICK

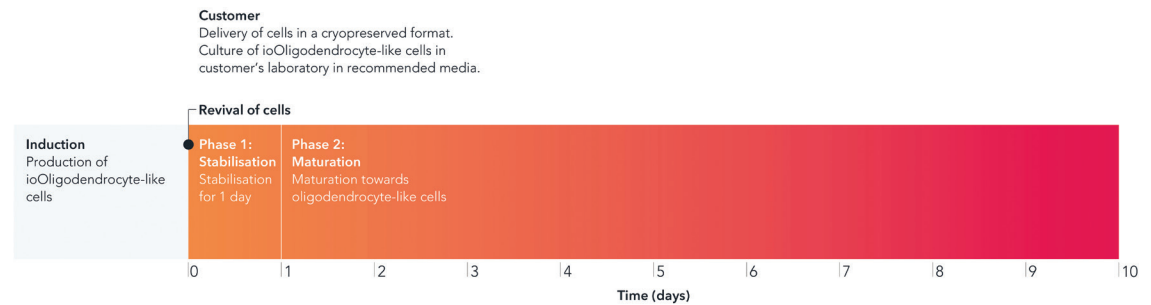
O4⁺ cells are ready from day 1 post-revival and rapidly mature into O4⁺ MBP⁺ oligodendrocyte-like cells with an 8 day protocol.



EASY TO USE

Cryopreserved cells arrive ready to be used upon revival. Simple monolayer culture protocol. No lentiviral transduction required.

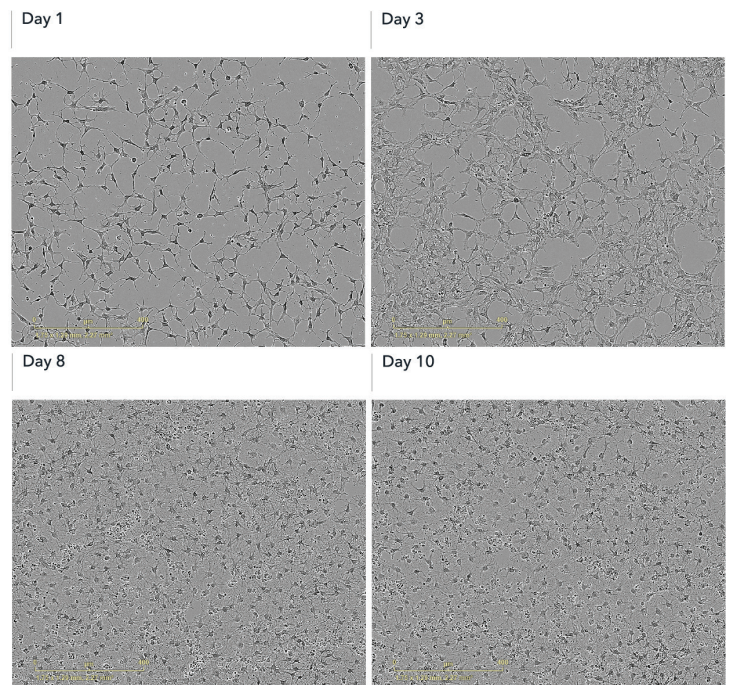
Cells arrive ready to plate



Cells show an oligodendrocyte-like morphology by day 8

Upon deterministically cell programming, cells show rapid morphological changes, acquiring an OPC-like morphology by day 1 post-revival.

By day 8, cells have matured and display an oligodendrocyte-like morphology. Scale bar: 400 μm .

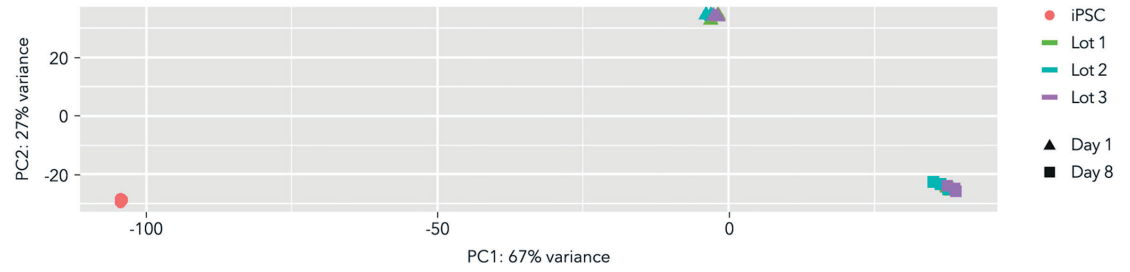


0 μm 400
1.75 x 1.29 mm, 2.27 mm²

Whole transcriptome analysis demonstrates high lot-to-lot consistency

Bulk RNA-sequencing analysis was performed on three manufactured lots of ioOligodendrocyte-like cells at day 1 and day 8 post-revival

Principal component analysis (PCA) represents the variance in gene expression between the three different lots of product. This analysis shows lots clustering very closely which demonstrates high consistency at each given timepoint. This lot-to-lot consistency in every vial gives scientists confidence in their experimental reproducibility.

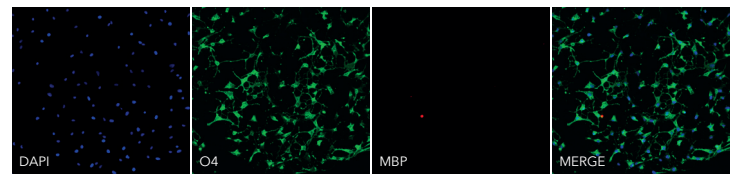


Cells rapidly express oligodendroglial-specific markers

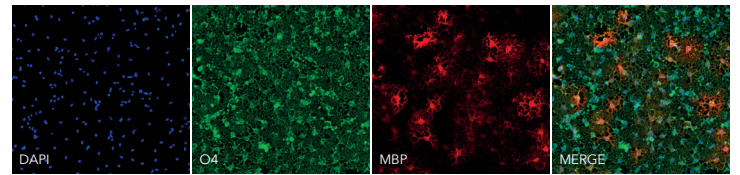
Immunofluorescence staining for O4 and MBP

At day 1, the cells are positive for the oligodendrocyte-specific marker O4 (green), and the DAPI counterstain (blue). At day 10, ioOligodendrocyte-like cells show an increased complexity and are positive for O4 (green), the myelin basic protein (MBP) (red), and the DAPI counterstain (blue).

Day 1



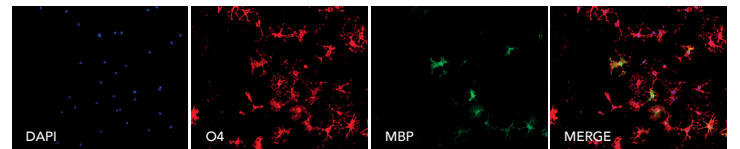
Day 10



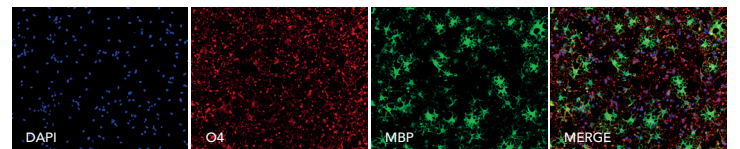
Enhancement of MBP expression by optimising db-cAMP concentration in media

Increasing db-cAMP concentration to 100 μ M enhances cell maturation, resulting in a 4-5 fold higher proportion of MBP-expressing cells compared to the standard 1 μ M condition.

Day 10 | 1 μ M db-cAMP



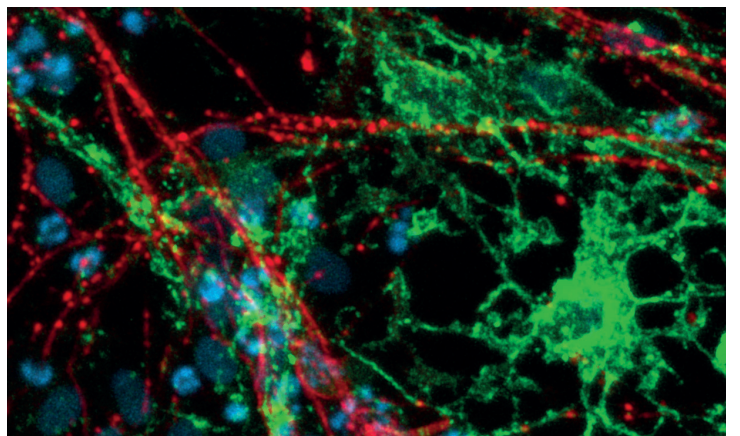
Day 10 | 100 μ M db-cAMP



ioOligodendrocyte-like cells show increased MBP expression when in co-culture with ioGlutamatergic Neurons

A valuable in vitro cellular model for scientists studying neurons and oligodendrocytes interactions

Immunofluorescent staining of a co-culture of ioOligodendrocyte-like cells expressing the oligodendrocyte marker MBP (green) and ioGlutamatergic Neurons pan-neuronal marker TUBB3 (red), and DAPI counterstain (blue). Co-cultures were analysed on day 21.



Product information

Cat code

io1028

Starting material

Human iPSC line

Karyotype

46, XY*

*High-resolution Optical Genome Mapping (OGM) has identified a ~35mb gain of the short arm of chromosome 12

Seeding compatibility

6, 12, 24, 96 well plates

Shipping info

Dry ice

Donor

Caucasian adult male
(skin fibroblast)

Vial size

Small: >1 x 10⁶ viable cells

Quality control

Sterility, protein expression (ICC)
and gene expression (RT-qPCR)

Differentiation method

opti-ox™ cell reprogramming

Recommended seeding density

27,000 cells/cm²

User storage

LN2

Format

Cryopreserved cells

Product use

ioCells™ are for
research use only

Applications

Screening of compounds
that modulate myelination,
phenotypic assays, target
validation, neurotoxicity assays,
neuroinflammation assays

Integrate ioOligodendrocyte-like cells into your workflows to study neuroinflammation and neurodegenerative disease in complex cell models.

ioWild Type Cells

ioOPC-like cells

CRISPR-Ready ioCells

CRISPRko-Ready ioCells

CRISPRko-Ready
ioOligodendrocyte-like cells

Can be co-culture with

ioGlutamatergic Neurons

ioMicroglia

ioAstrocytes

Who we are

bit.bio combines the concepts of cell programming and biology to provide human cells for research, drug discovery and cell therapy, enabling a new generation of medicines.

This is possible with our deterministic cell programming technology opti-ox – a gene engineering approach that enables unlimited batches of any human cell to be manufactured consistently at scale.

For general information,
email info@bit.bio

To learn more,
visit www.bit.bio

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