

ioMicroglia™
Human iPSC-derived
microglia

Learn more about
ioMicroglia

ioCells™

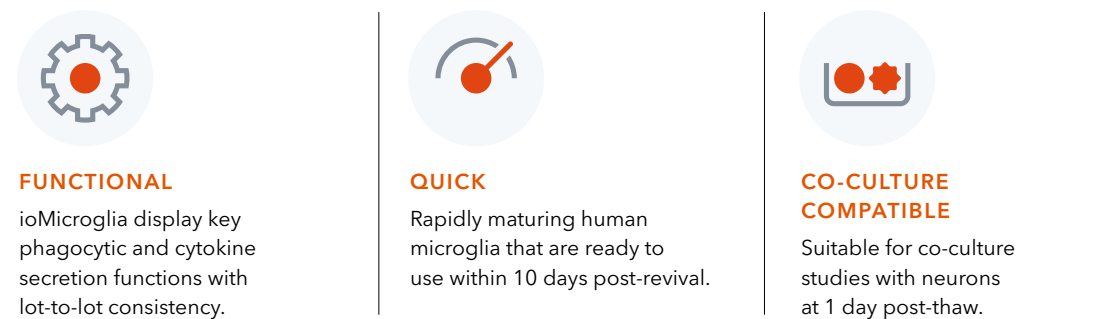


About the cells

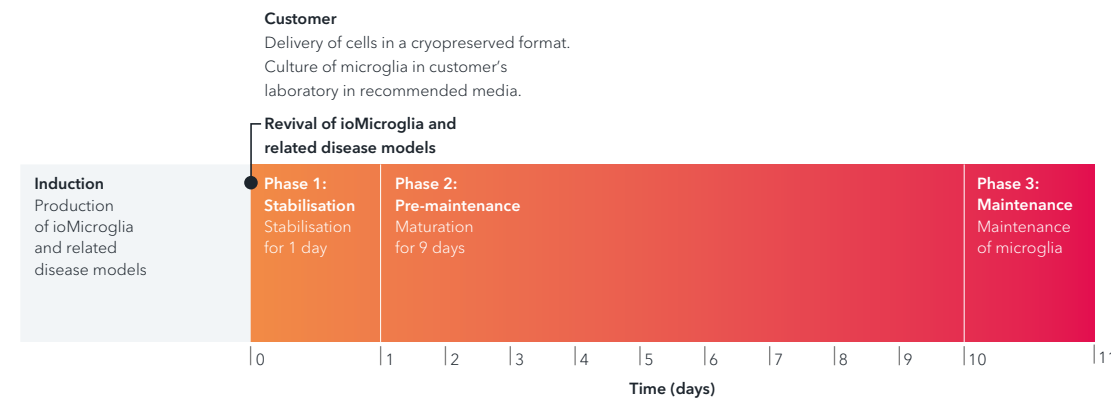
ioMicroglia are human microglial cells precision reprogrammed from iPSC, using opti-ox™ technology. Within 10 days post-revival, ioMicroglia are ready for experimentation, expressing (>90%) key microglia markers, including TMEM119, P2RY12, IBA1, TREM2, CX3CR1, CD11b, CD45, and CD14.

ioMicroglia recapitulate key human microglia functions with lot-to-lot consistency, including mediating an inflammatory response, disposal of unwanted materials, and carrying out immune surveillance. In addition, ioMicroglia also display chemotaxis and can be co-cultured with ioGlutamatergic Neurons™ to gain insights into complex intercellular interactions. ioMicroglia provide a functional, consistent, rapid, and easy-to-use hiPSC-based model for neurodegenerative disease research and drug development.

Benchtop benefits



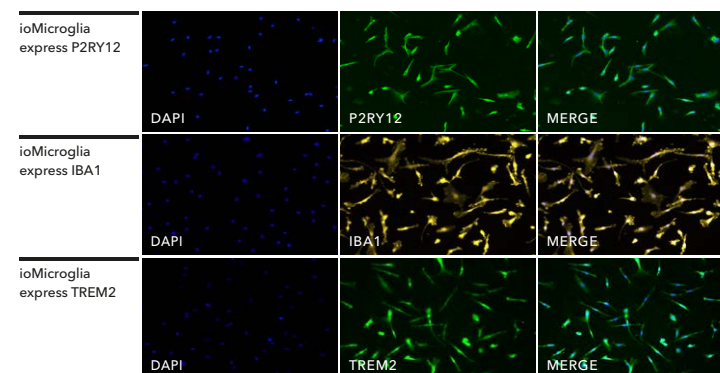
Cell timeline



ioMicroglia are highly characterised and defined, so you know exactly what is in every vial.

ioMicroglia show key microglia marker expression. Immunofluorescent staining on day 10 post-revival shows that ioMicroglia homogeneously express the key microglia marker proteins, P2RY12, IBA1 and TREM2.

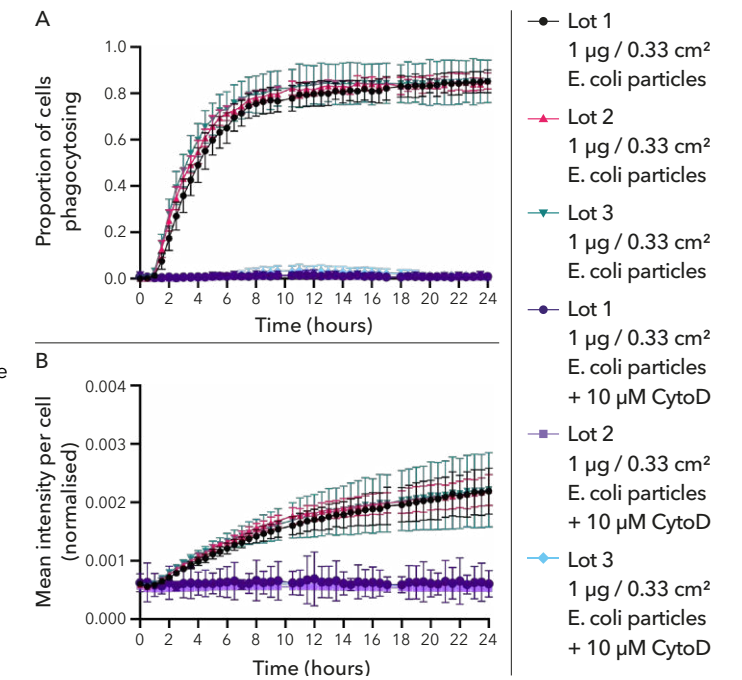
ioMicroglia also display a typical ramified morphology. DAPI counterstain (blue). Image taken at 10X magnification.



ioMicroglia display key phagocytic function with lot-to-lot consistency

ioMicroglia, at day 10 post-revival, from three independent lots, show a consistent phagocytic response upon incubation with pHrodo™ RED labelled E. coli particles for 24 hours +/- cytochalasin D control.

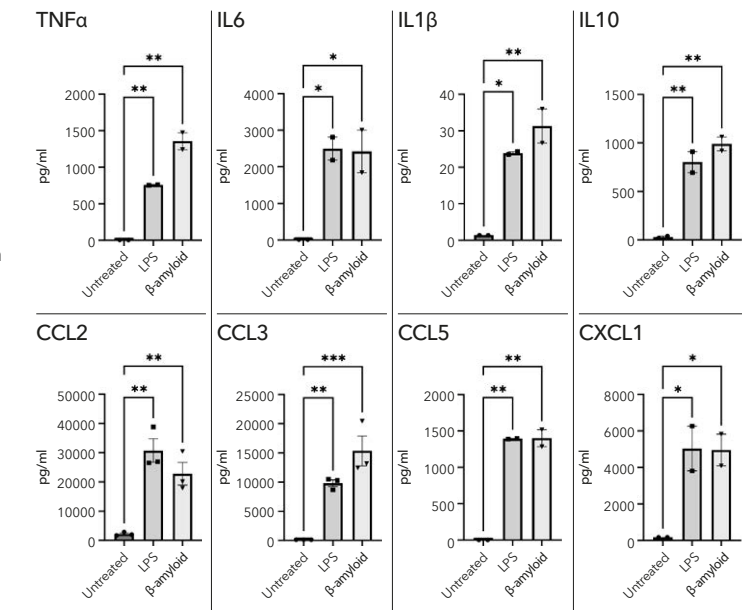
A. The proportion of cells phagocytosing E. coli particles over 24 hours. **B.** The fluorescence intensity per cell displaying the degree of phagocytosis per cell. Images were acquired on the Incucyte® looking at red fluorescence and phase contrast. Three technical replicates were performed per lot.



ioMicroglia show a pro-inflammatory cytokine response to LPS and Amyloid Beta stimulation

ioMicroglia at day 14 post-revival, secrete various pro-inflammatory cytokines and chemokines including TNF-α, IL-1β, IL-6, IL-10, CCL2, CCL3, CCL5, and CXCL1 following stimulation with either 0.5 µM of β-amyloid or 100 ng/ml of LPS. Supernatants were harvested after 24 hours and analysed with a custom Human Luminex® Discovery Assay kit (R&D Systems). Bars represent an average of n=2 or 3 replicates with standard error. This data was generated by Eve Corrie and Emma V. Jones from Medicines Discovery Catapult¹.

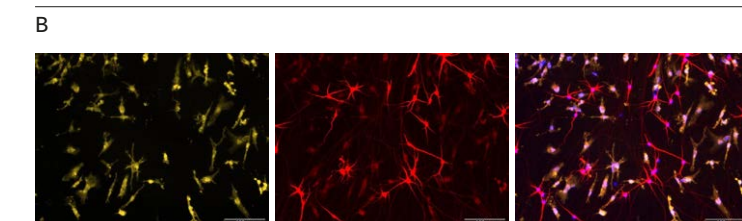
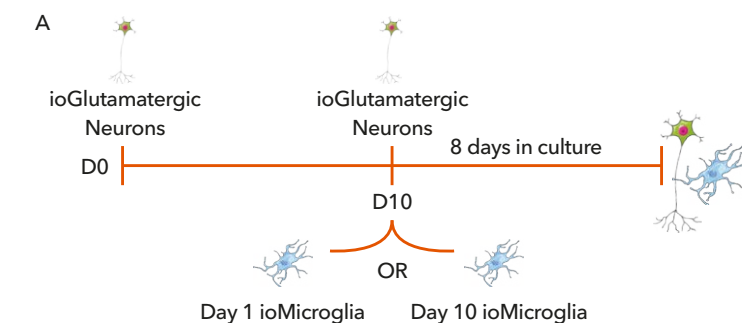
1. Eve Corrie, Emma V. Jones, Medicines Discovery Catapult, Block 35, Mersey, Alderley Park, Macclesfield, SK10 4ZF. UK.



ioMicroglia form co-cultures with ioGlutamatergic Neurons

ioMicroglia form co-cultures with ioGlutamatergic Neurons and ICC staining of co-cultures after 8 days reveals expression of the microglia marker, IBA-1 and the pan-neuronal marker, MAP2, as expected.

A. Schematic showing the co-culture protocol. **B.** ICC staining of co-cultures after a further 8 days shows expression of the microglia marker, IBA1 (yellow) and the pan-neuronal marker, MAP2 (red). Representative images at 10x with 100µm scale bar.



*Note that above schematic (A) was partly generated using Servier Medical Art, provided by Servier, licensed under a Creative Commons Attribution 3.0 unported license.

Product information

Cat code

io1021

Starting material

Human iPSC line

Seeding compatibility

6, 12, 24, 96 & 384 well plates

Shipping info

Dry ice

Donor

Caucasian adult male
(skin fibroblast)

Vial size

Small: $>1.5 \times 10^6$ viable cells

Large: $>5 \times 10^6$ viable cells

Quality control

Sterility, protein expression (ICC),
functional phagocytosis and
cytokine secretion assays

Differentiation method

opti-ox™ cell reprogramming

Recommended seeding density

37,000 to 39,500 cells/cm²

User storage

LN2 or -150°C

Format

Cryopreserved cells

Product use

ioCells™ are for
research use only

Applications

Disease modeling, drug
development, neuroinflammation
research, co-culture studies,
transcriptome analysis

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 precision human cellular reprogramming 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