



iCell[®] Astrocytes 2.0

iCell Astrocytes 2.0 are serum-free and ready for isogenic co-culture with iCell neurons. These induced pluripotent stem cell (iPSC)-derived human astrocytes are a highly pure population of human astrocytes derived using FCDI's proprietary serum-free differentiation protocol. They have an extended purity and functional quality control profile and are cultured in serum-free medium to provide a robust, reliable, and consistent off-the-shelf option for human astrocytes.

iCell Astrocytes 2.0 express known astroglia markers (CD44, CD49f, S100 β , GFAP) and display functional properties of human astrocytes, including glutamate uptake, IL-6 secretion in response to inflammatory stimuli, and enhancement of neural network formation in co-culture with iCell GlutaNeurons. These cells provide a reliable source of human astrocytes suitable for use in targeted drug discovery, toxicity testing, and other discovery research.

Quiescent and Reactive

Serum-free differentiation and post-thaw culture of iCell Astrocytes 2.0 results in cells that are quiescent at rest and more responsive to inflammatory insult. This translates into a better dynamic range for investigating cellular mechanisms that modulate astrocyte activation during disease and neuroinflammation.

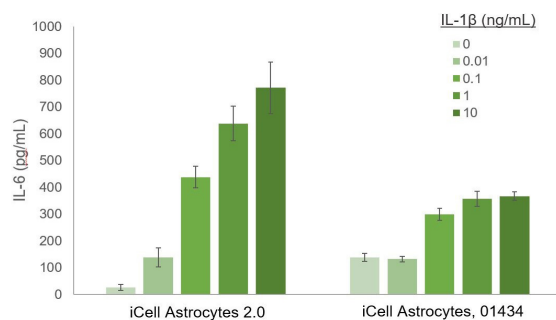


Figure 1: iCell Astrocytes 2.0, cultured in serum-free medium, have lower basal levels of IL-6 secretion compared to serum-cultured astrocytes (iCell Astrocytes, 01434). They are also more responsive to inflammatory stimuli, shown via increased IL-6 secretion in response to IL-1 β stimulation compared to serum-cultured astrocytes.

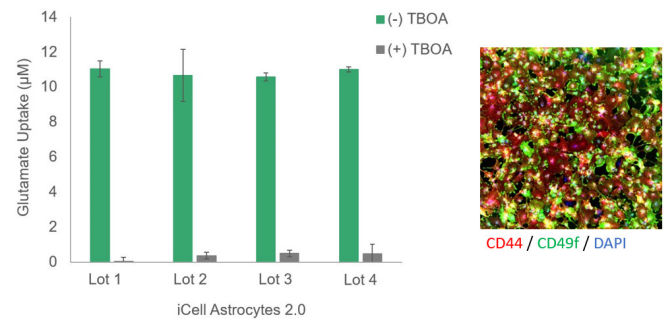
Benefits

- **Compatible for isogenic co-culture with iCell Neurons and iCell Microglia.**
- **Defined serum-free post-thaw culture minimizes baseline inflammatory cytokine secretion.**
- **Robust proinflammatory response to IL-6 stimulation enables neuroinflammation studies.**
- **Consistent glutamate uptake across lots demonstrates performance reproducibility.**
- **Improves neural activity maturation on MEA platforms.**

Consistent Function and Purity

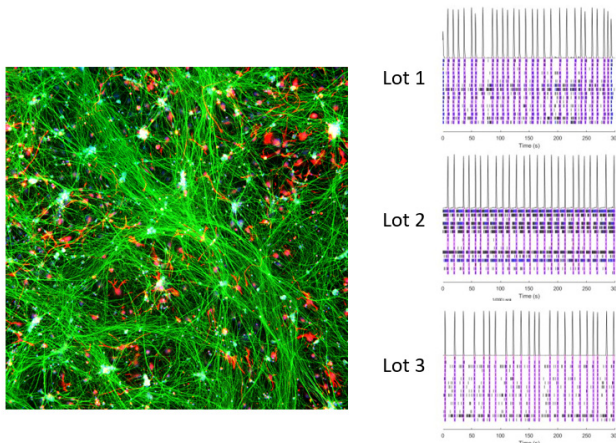
Our iCell Astrocyte 2.0 manufacturing process is robust, scalable, and reproducible. This means that you can easily access a highly pure, lot-to-lot consistent product that is ready-to-use in high throughput disease and drug discovery research.

Figure 2: (Left) iCell Astrocytes 2.0 show consistent glutamate uptake across lots. Assay was performed at 7 days in culture and is inhibited by treatment with DL-threo- β -benzyloxyaspartic acid (TBOA), a selective inhibitor of glutamate excitatory amino-acid transporters. **(Right)** Immunocytochemistry showing high colocalization of astrocyte markers CD44 (red) and CD49 (green).



Applications

iCell Astrocytes 2.0 are ideal for monoculture and multi-cell culture, offering flexibility and support for investigating models of neuroinflammation and neurodegeneration.



Neural Network Formation on MEA

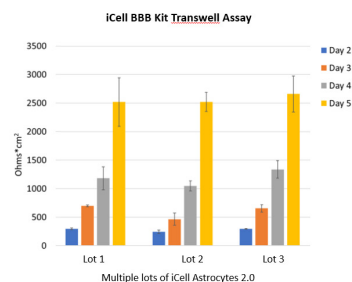
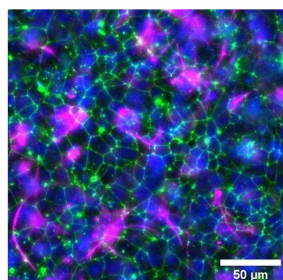
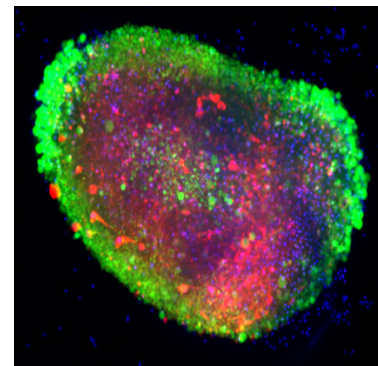
When co-cultured with iPSC-derived neurons, iCell Astrocytes 2.0 enhance synchronous network formation on multielectrode array (MEA) systems. Using our specific MEA protocol, it's never been easier generate robust neural network co-cultures using iPSC-derived cells - iCell Astrocytes 2.0 with iCell GlutaNeurons or iCell Induced Excitatory Neurons.

Figure 3: (Left) iCell Astrocytes 2.0 (GFAP, red) and iCell Induced Excitatory Neurons (Tau; green) in co-culture. **(Right)** Co-culture on MEA plates shows high reproducibility of excitatory neural network formation as depicted by raster plots from 3 different lots of neurons.

2D and 3D Neuroinflammation Models

iCell Astrocytes 2.0 can be co-cultured in 2D or 3D with iCell Microglia and iCell Neurons enabling the generation of “brain-in-a-dish” and “disease-in-a-dish” models. FCDI offers protocols for generating multi-cell neural cultures, including generating 3D iCell NeuroSpheres.

Figure 4. Representative image of an iCell NeuroSphere with iCell Astrocytes 2.0 (red; GFAP) and iCell GlutaNeurons (green; β -III Tubulin). Image provided by Molecular Devices.



Isogenic Blood-Brain Barrier Model

iCell Astrocytes 2.0 are a critical component of the iCell Blood Brain Barrier (BBB) Isogenic Kit (Cat #R1241, providing an essential cell type for establishing high BBB integrity and tight junction dynamics.

Figure 5: (Left) iCell Astrocytes 2.0 (pink) pericytes (blue) and brain microvascular endothelial cells (green) establish the blood brain barrier *in vitro*. **(Right)** The robust manufacturing of astrocytes produces a cell type that performs consistently within the iCell BBB Kit, as demonstrated by reproducible Transendothelial Electrical Resistance (TEER) recordings in the physiological range >1500 ohm*cm² across lots.

Ordering Information

Item	Component(s)*	Catalog Number
iCell Astrocytes 2.0 Kit, 01279	1 Vial: ≥ 1 x 10 ⁶ viable cells	R1240
iCell Astrocytes 2.0, 01279	1 Vial: ≥ 1 x 10 ⁶ viable cells	C1249

*Media Supplements provided with kits

**A User's Guide is provided in each iCell Induced Excitatory Neurons Kit

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iCell Products

Provide access to biologically relevant, human iPS cells for disease modeling, drug discovery, toxicity testing, and regenerative medicine. FCDI's rapidly growing portfolio of iCell products includes human cardiomyocytes, cardiac fibroblasts, cardiac progenitor cells, GABAergic, glutamatergic, dopaminergic, motor, and induced excitatory neurons, hepatocytes, endothelial cells, astrocytes, hematopoietic progenitor cells, macrophages, blood-brain barrier models and others.

Visit the [FCDI website](#) for the most current list of supported cell types.

