

PRODUCT DATASHEET



iCell® Brain Microvascular Endothelial Cell Kit

The blood-brain barrier (BBB) functions to maintain a tightly controlled microenvironment around the brain. The barrier-forming cells of the BBB are brain microvascular endothelial cells (BMECs), which play a crucial role in maintaining homeostasis by regulating the selective exchange of substances between compartments, protecting against pathogens, and preserving tissue integrity.

The inherent power of induced pluripotent stem cell (iPSC) technology provides access to these specialized cell types, enabling reliable manufacturing to generate a consistent supply of cells at scale. FUJIFILM Cellular Dynamics Inc., a market leader

in iPSC technology and innovation, is launching a component of its popular human iPSC-derived BBB isogenic kit—the Brain Microvascular Endothelial Cells (iCell BMEC Kit)—in response to popular demand.

The components of the iCell BMEC Kit have the potential to integrate with high-throughput screening assays, emerging organ-on-a-chip technologies, and other 3D cell culture systems. This capability offers an exciting new avenue for the drug discovery community to advance the understanding of BMEC function in relation to human health and disease.

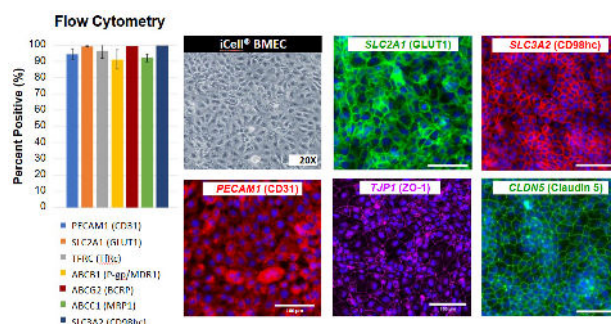


Figure 1: Brain microvascular endothelial cells (BMEC) are a central element of the blood-brain barrier (BBB), together with astrocytes and pericytes, to form an interface between nervous tissue and circulating blood. BMEC are unlike other endothelial cells lining peripheral blood vessels, however, in that they display distinctive morphological, structural, and functional features. iCell BMEC have cobblestone morphology as tightly packed cells with uniform size and clear cell boundaries. Marker expression as measured by ICC reveals the endothelial markers (Claudin 5, ZO-1), transporters (GLUT1, CD98hc), and efflux/ influx proteins (BCRP, P-gp, MRP1, TfRc; data not shown). Analysis of cell purity by flow cytometry indicates that protein expression for markers such as BCRP, GLUT1, MDR1, MRP1, and TfRc are ≥90% positive.

Advantages

- Human Cells:** The iCell Brain Microvascular Endothelial Cells in the iCell BMEC Kit are differentiated from human iPS cells and are isogenic to iCell Astrocytes 2.0 and iCell Pericytes.
- Reproducible:** Rigorous quality control ensures the same performance with every batch to yield reliable and reproducible results.
- Superior Function:** iCell BMEC Kit in vitro model enables long-term survival and superior functional performance assessed by trans-endothelial electrical resistance (TEER) assay (>1500 ohm * cm²) in cell culture insert format.
- Easy to Implement:** iCell BMEC Kits are shipped cryopreserved with optimized media. Simply thaw, plate and assay. Specifically formulated for optimal cell performance.
- Compatible with high throughput screens:** The iCell BMEC Kits can be used in high throughput screening studies to evaluate compound response.

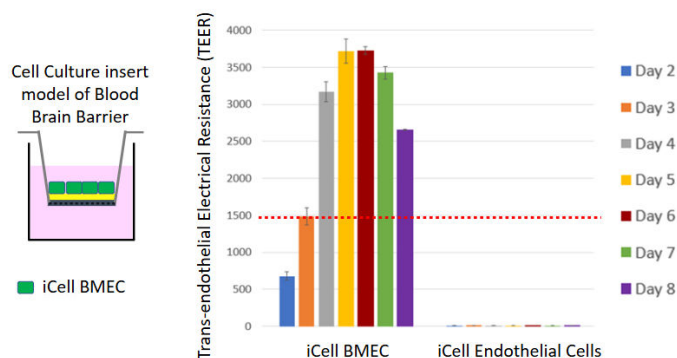


Figure 2: Assessing Barrier function of iCell Brain Microvascular Endothelial Cell Model by measuring Transendothelial Electrical Resistance (TEER). TEER is a widely accepted technique to measure barrier integrity and tight junction dynamics for a cell monolayer. The iCell BMEC Kit was developed and optimized for use on Transwell cell culture inserts (Left). Testing of the functional BMEC monoculture system is ready as soon as Day 2 with values typically beginning $>500 \Omega \cdot \text{cm}^2$. TEER data generated with the iCell BMEC Kit exceeds the minimum range for physiological TEER ($1500 \Omega \cdot \text{cm}^2$).

Applications

iCell BMEC Kits are amenable to a variety of assays including:

- Compound permeability
- Barrier integrity
- Transendothelial Electrical Resistance (TEER)
- Efflux transporter function
- Uptake transporter function
- Cell proliferation
- Receptor-mediated Transcytosis
- Tube formation

Specifications

Cell Type	BMEC
Organism	Human
Source	Differentiated from an FCDI reprogrammed human iPS cell line
Quantity	$\geq 3.0 \times 10^6$ viable
Shipped	Frozen

Ordering Information

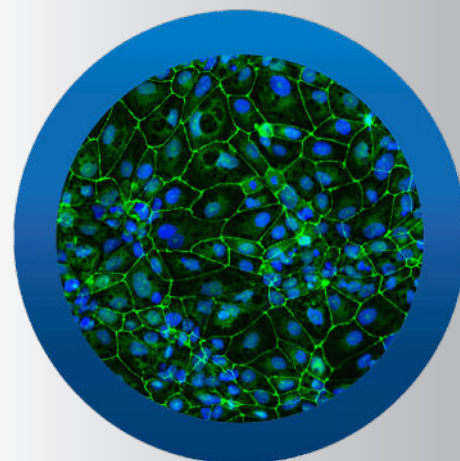
Item	Component(s) ¹	Catalog Number
iCell Brain Microvascular Endothelial Cell Kit, 01279	$\geq 3.0 \times 10^6$ viable iCell Brain Microvascular Endothelial Cells	R1236

¹ A User's Guide is provided in each kit.

iCell Products

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

Visit the [FCDI website](https://www.fujifilmcellulardynamics.com) for the most current list of supported cell types.



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