India Contact: Life Technologies (India) Pvt. Ltd.
Mobile: +91-9810521400, Ph: +91-11-42208000
Email: customerservice@lifetechindia.com
Web: www.lifetechindia.com

Human Cortical Neurons (iPSC-derived, Normal)

Catalog Number	40HU-009-1M	**Cell Number**	1.0 million cells/vial
Species	*Homo sapiens*	**Storage Temperature**	Liquid nitrogen

Product Description

The human cerebral cortex is composed of a mix of cell types including long-range excitatory projection (or pyramidal) neurons and local inhibitory neurons. During embryonic development, excitatory and inhibitory cortical neurons originate separately outside of the cerebral cortex in the ventricular zone and subventricular zone (VZ and SVZ) and the ganglionic eminences, respectively, and migrate into the cortex in a layer specific manner [1, 2]. Cortical neurons participate in a range of higher order brain functions such as processing and integration of sensory and motor information and regulate complex behaviors. Dysfunction of cortical neuron circuits is central to the pathophysiology of many neurodevelopmental and neurodegenerative disorders [3, 4, 5, 6, 7], making these cells a useful model system for disease research [8, 9]. Furthermore, cortical neurons can be co-cultured with other cell types to recapitulate disease phenotypes [5, 10].

iXCells Biotechnologies is proud to offer a fully differentiated, pure, and functional human iPSC-derived cortical neuron product that displays typical neuronal morphology and expresses the key forebrain and synaptic markers typical of this cell type (Figure 1) when cultured in the Cortical Neuron Maintenance Medium (Cat# MD-0093). In addition, our iPSC-derived cortical neurons can be co-cultured with microglia or glial cells for drug screening applications.

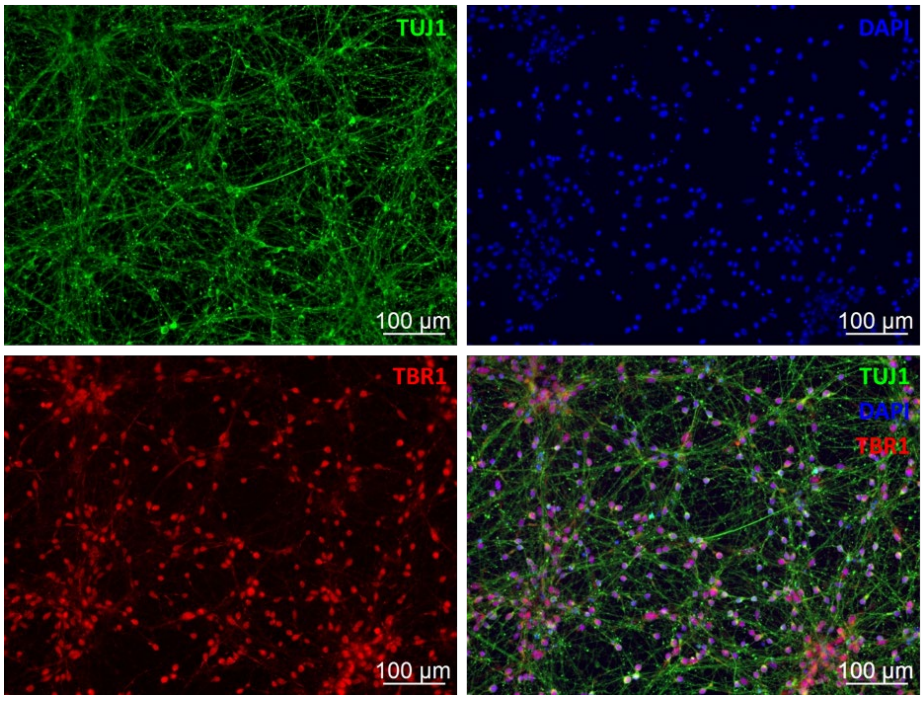

Figure 1: iPSC-derived Cortical Neurons were recovered and cultured at a density of 100,000 cells per well on Cultrex-coated 48-well culture plates for 3 days. Cells were stained with TBR1 (Red) and TUJ1 (Green). DAPI nuclei counter stain is shown in blue. Scale bar: 100 µm.

Product Details

Tissue Origin	**Human iPSC-derived cortical neurons**
Package Size	1.0 million cells/vial
Shipped	Cryopreserved
Storage	Liquid Nitrogen
Growth Properties	Adherent
Media	Cortical Neuron Maintenance Medium (Cat# MD-0093)

Protocols

Monoculture of hiPSC-Derived Cortical Neurons

1. Prepare the coated vessel before thawing cells. iXCells' cortical neuron product has been tested for quality control (QC) using Cultrex-coated plates, however, other neuron-specific coating materials are suitable. Please refer to the iXCells' coating protocol for additional information about vessel coating options.

   ***Note**: Upon receipt of the frozen cells, it is recommended to thaw the cells and initiate the culture immediately in order to retain the highest cell viability. Please store the cryovials in the vapor phase of LN2 if the cells can't be recovered immediately. However, the viability may be influenced by the long-term storage after shipping.*

2. To thaw the cells, put the vial in 37°C water bath with gentle agitation for ~1-2 minutes. Keep the cap out of water to minimize the risk of contamination.

3. Pipette the cells into a 15 mL conical tube with 5 mL **Cortical Neuron Maintenance Medium (Cat# MD-0093)**.

4. Centrifuge at 500*g* for 5 minutes at room temperature.

5. Remove the supernatant and re-suspend the cells in Cortical Neuron Maintenance Medium.

   ***Optional**: Cells can be resuspended in Cortical Neuron Maintenance Medium supplemented with 10μM Y27632 to minimize cell death. Y27632 can be removed after 24 hours by replenishing fresh medium carefully.*

6. Seed the cells on a pre-coated plate at the desired density. Incubate in 37°C CO_2 incubator overnight.

   ***Note:** We recommend seeding 100-200K cells per cm^2 depending on the application. Cell debris may be observed after cell recovery because the cryopreserved neurons are fragile. Refer to the CoA of each lot to determine the seeding density for your experiment.*

7. Perform half medium change every 2-3 days. Most of the cells should express high levels of TUJ1 and MAP2 2-3 days after thaw, and express synaptic markers such as SV2 and PSD-95 7 days after thaw.

   ***Note:** Pure cortical neurons tend to aggregate and detach from the plates. Change 50% of the medium with extra care to avoid cell loss.*

References

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Disclaimers