Ncardia

Fact sheet

Ncyte® Astrocytes

Human iPSC-derived astrocytes

- High purity population
- Ideal for co-culturing with hiPSC-derived neurons
- Suitable for neuroinflammatory assays

Description

Astrocytes are essential players in neurodegenerative disease progression, providing a valuable tool for drug discovery and disease modeling. Ncyte® Astrocytes, our human induced pluripotent stem cell (hiPSC)-derived astrocytes, express key identity markers and support co-culture with human iPSC-derived neurons. Ncyte® Astrocytes can be used in large screening campaigns and model relevant disease-phenotypes such as neuroinflammation.

Product specifications

Cell type	Ncyte Astrocytes
Identity markers with %	≥ 70% GFAP at day 10 post thaw and culture as per user guide
Size (viable cells / vial)	≥ 2 x10^6 cells/vial, ≥ 50% viability at thaw
Quality Control	Cell count, Viability, Identity, Mycoplasma
Format	Cryopreserved cells
Donor	Female
Reprogramming method	Non-viral
Shipping conditions	Dry shipper, -180°C to -135°C
Storage conditions	Vapour phase of liquid nitrogen
Supplied with	Neuronal Supplement

Identity

Ncyte® Astrocytes display the characteristic star-shaped morphology of astrocytes in culture. Further, they express key identity markers such as the glial fibrillary acidic protein (GFAP) and the mature stage markers S100 calcium-binding protein B (S100ß) and aquaporin 4 (AQP4). Further identification based on other biomarkers can be performed upon request.

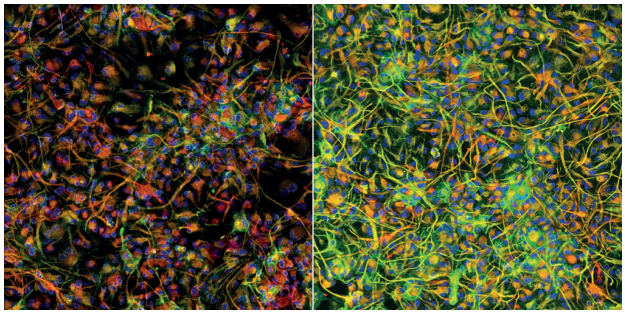

Figure 1. Immunofluorescence labeling of AQP4 (green), GFAP (yellow), ßIII-tubulin (red), and DAPI (blue) for Ncyte® Astrocytes after 10 days of maturation.

Applications

Ncyte® Astrocytes are an ideal partner throughout the whole process of drug discovery, be it target identification, hit identification, or lead selection and optimization.

Co-culture with neurons and long-term electrophysiological studies

Ncyte® Astrocytes are a physiologically relevant tool for *in vitro* testing on human biology. They recapitulate important brain functions of astrocytes, such as contributing to the homeostasis of the neurotransmitter glutamate, which affects neuron firing. As shown in Figure 2, co-culturing of hiPSC-derived cortical neurons with Ncyte® Astrocytes increased neuronal firing and reduced extracellular glutamate levels. This combination enables long-term electrophysiological studies and physiologically relevant disease modeling.

Model neuroinflammation

Ncyte® Astrocytes are highly suitable for modeling neuroinflammation, a common hallmark of neurodegenerative diseases (Figure 3). In fact, Ncyte® Astrocytes release inflammatory mediators such as IL-6, IL-8, CCL-2, and BDNF upon treatment with a pro-inflammatory cocktail consisting of TNF-alpha, IL-1Beta and IFN-gamma. In addition, Ncyte® Astrocytes can be used to study neurotoxicity.

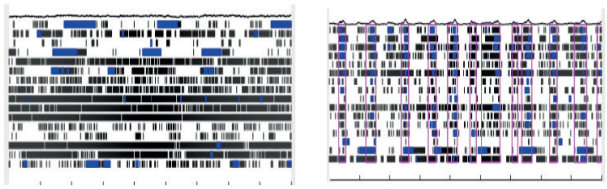

Figure 2. Multi electrode array raster plots of cortical neurons at day 14 post-thawing in absence (A) and presence of Ncyte® Astrocytes (B). The overall neuronal electrical activity increases in co-culture with Ncyte® Astrocytes.

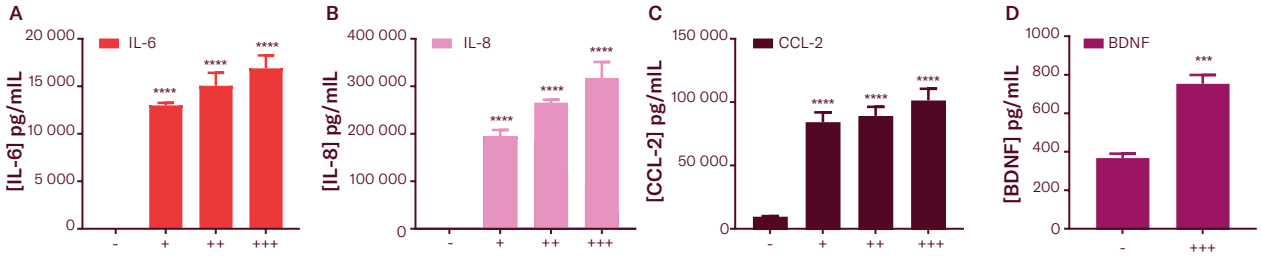

Figure 3. Study of the secretion levels of IL-6 (A), IL-8 (B), CCL-2 (C) and BDNF (D) in cell supernatants of Ncyte® Astrocytes at day 7 post-thawing. (-): non-treated cells; (+/++/+++): cells treated with three increasing doses of a pro-inflammatory cocktail.
Neuroinflammation study combining hiPSC-derived astrocytes and HTRF, in collaboration with Cisbio.

For further support in your drug discovery programs, you can take advantage of our customized services, including disease modeling and assay development for *in vitro* pharmacology or toxicology screenings, to increase the confidence in your selected candidates and successfully bring your project to the next level.