NeuroFluor™ CDr3

Membrane-permeable fluorescent probe for the detection of neural progenitor cells

Catalog # 01800 0.5 mL

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Product Description

NeuroFluor™ CDr3 is a membrane-permeable fluorescent probe that selectively labels live primary and pluripotent stem cell-derived neural progenitor cells. NeuroFluor™ CDr3-labeled cells can be visualized using fluorescent imaging, quantified using flow cytometry, and isolated using fluorescent-activated cell sorting (FACS). Labeling with this probe is non-permanent; it can be washed off, providing unlabeled, viable cells for downstream applications. NeuroFluor™ CDr3 binds specifically to mouse, rat, and human fatty acid binding protein 7 (FABP7). For additional information, see References.

Concentration: 100 µM stock solution in dimethyl sulfoxide (DMSO)
Molecular weight: 571.64 g/mol
Excitation/Emission: 579/604 nm

- Enables selective labeling of mouse, rat, or human neural progenitor cells, without fixation
- Can be used for confirmation of neural induction of human pluripotent stem cells
- Can be used to label live cells for fluorescent imaging, flow cytometry, and FACS
- Non-toxic and non-permanent
- Simple and rapid labeling protocol

Properties

Storage: Store at -20°C.

Shelf Life: Stable for 15 months from date of manufacture (MFG) on label. Protect product from prolonged exposure to light.

Contains:
- 100 µM CDr3 (CAS: 1357577-75-3)
- DMSO
- Other ingredients

Please refer to the Safety Data Sheet (SDS) for hazard information. This product contains components dissolved in dimethyl sulfoxide (DMSO). DMSO is a strong solvent and skin penetrant, and can transport many substances through the skin. DMSO can also penetrate some protective glove materials including latex and silicone. Use extra caution when handling this product.

Handling / Directions For Use

Thaw NeuroFluor™ CDr3 at room temperature (15 - 25°C).
NOTE: If not used immediately, aliquot and store at -20°C.

NeuroFluor™ CDr3 may be used to label human pluripotent stem cell (hPSC)-derived neural progenitor cells generated using either an embryoid body (EB) or monolayer culture method. NeuroFluor™ CDr3 may also be used to label central nervous system (CNS)-derived neural progenitor cells (human, mouse, or rat). NeuroFluor™ CDr3 is designed for labeling live cells; it is not recommended for use with fixed cells.

For instructions on how to generate neural progenitor cells from hPSCs, refer to the Technical Manual: Generation and Culture of Neural Progenitor Cells using the STEMdiff™ Neural System (Document #28782) available at www.stemcell.com or contact us to request a copy.

A. PREPARATION OF LABELING MEDIUM

The suggested working concentration of NeuroFluor™ CDr3 is 1 - 2 µM. It is recommended to titrate the concentration for each application. Dilute NeuroFluor™ CDr3 (100 µM) in the appropriate warm (37°C) medium:

- For CNS-derived neural progenitor cells, use complete NeuroCult™ Proliferation Medium with cytokines.
  NOTE: NeuroCult™ Proliferation Medium is available for human (Catalog #05751), mouse (Catalog #05702), or rat (Catalog #05771). Supplementation with cytokines is required. For instructions on the preparation of complete NeuroCult™ Proliferation Medium with cytokines, refer to the Technical Manuals for human (Document #28724), mouse (Document #28704), or rat (Document #28725), available at www.stemcell.com or contact us to request a copy.
- For hPSC-derived neural progenitor cells generated using an EB or a monolayer culture method, use STEMdiff™ Neural Induction Medium (Catalog #05835).

NOTE: Protect labeling medium from light.

B. LABELING PROCEDURES

i) CNS-DERIVED NEURAL PROGENITOR CELLS

The following are instructions for labeling CNS-derived neural progenitor cells in 1 well of a 24-well tissue culture plate (e.g. Catalog #38017). If using other cultureware, adjust volumes accordingly.

1. Aspirate medium and add 1 mL of labeling medium (see section A).
2. Incubate at 37°C for 1 - 1.5 hours.
3. Remove labeling medium.
4. Wash 2 - 3 times with 1 mL of warm (37°C) phosphate-buffered saline (PBS).
   OPTIONAL: Labeling of cell nuclei
   a. Add 0.5 mL of PBS containing 2 µg/mL DAPI (Catalog #75004).
   b. Incubate at 37°C for 10 - 15 minutes.
   c. Wash twice with 1 mL of PBS.
5. Add 1 mL of complete NeuroCult™ Proliferation Medium with cytokines.
6. Visualize NeuroFluor™ CDr3 labeling using a fluorescent microscope with appropriate filter sets (CDr3 Ex/Em: 579/604 nm).
   NOTE: Cells should be visualized on the same day the labeling procedure is completed, as the NeuroFluor™ CDr3 signal may diminish over time.

ii) hPSC-DERIVED NEURAL PROGENITOR CELLS GENERATED USING AN EB OR MONOLAYER CULTURE METHOD

The following are instructions for labeling hPSC-derived neural progenitor cells generated using an EB or monolayer culture method in one well of a 24-well plate. If using other cultureware, adjust volumes accordingly.

1. Aspirate medium and add 1 mL of labeling medium (see section A).
2. Incubate at 37°C for 1 hour.
3. Remove labeling medium.
4. Add 1 mL of fresh medium without NeuroFluor™ CDr3 (STEMdiff™ Neural Induction Medium).
5. Incubate at 37°C for 16 - 24 hours.
6. Aspirate medium and add 1 mL of fresh medium without NeuroFluor™ CDr3 (STEMdiff™ Neural Induction Medium).
7. Visualize NeuroFluor™ CDr3 labeling using a fluorescent microscope with appropriate filter sets (CDr3 Ex/Em: 579/604 nm).
   NOTE: Cells should be visualized on the same day the labeling procedure is completed, as the NeuroFluor™ CDr3 signal may diminish over time.

References

Leong C et al. (2013) Neural stem cell isolation from the whole mouse brain using the novel FABP7-binding fluorescent dye, CDr3. Stem Cell Res 11(3): 1314–22.

Yun SW et al. (2012) Neural stem cell specific fluorescent chemical probe binding to FABP7. Proc Natl Acad Sci USA 109(26): 10214–17.