Data Sheet

LuminiCell Tracker™ 670- Vascular Labeling Kit

SCT013

Pack Size 1 Kit

Store at 2 - 8 °C

FOR RESEARCH USE ONLY

Not for use in diagnostic procedures. Not for Human or Animal Consumption

Background

Long-term noninvasive cell tracking by fluorescent probes and quantum dots is of great importance to life science and biomedical engineering. Current methods used to fluorescently tag cells have been limited by short signal duration, high background auto-fluorescence or lengthy molecular cloning manipulations using GFP. Vascular structural change or dysfunction is regarded as implications for many diseases such as cardiovascular diseases and cancers. Fluorescence imaging is an emerging modality for vascular structure study.

LuminiCell Trackers™ are biocompatible organic fluorescent nanoparticles based on Aggregation Induced Emission (AIEdot) technology. Aggregation induced emission (AIE) molecules emit fluorescence in an opposite manner than other common fluorophores (Quantum Dots, GFP). Propeller-shaped AIE fluorogens are non-emissive in solutions but become highly fluorescent upon aggregate formation. Due to these differences, LuminiCell Trackers™ have very high fluorescence intensities with minimal signal quenching allowing live cell fluorescent tagging for up to 10 days in vitro and 21 days in vivo. These properties make them optimal candidates for long interval live cell bioimaging experiments.

The Luminicell Tracker™-670 Vascular Labeling Kit contain red fluorescent AIEDots nanoparticles without TAT sequences. These nanoparticles can be used to fluorescently tag vasculature in living tissues and animals for studies of inflammation and vascular leakage.

Quality Control Testing

Absorbance: 510 +/- 5 nm

Concentration: 180–220 nM

Fluorescence: 665 +/- 10 nm

Brightness at 670nM: ≥ 1.70 x 10^7 $M^{-1}cm^{-1}$

Storage and Handling

Store at -2 to 8 °C upon receipt. Thaw at room temperature or in a water bath. Do not Freeze.

Note: Some particulates may form as a result of nanoparticle aggregation during shipping. To get particulates back in solution, sonicate the vial containing LuminiCell Tracker™ three times for 1 min each before use.

Representative Data

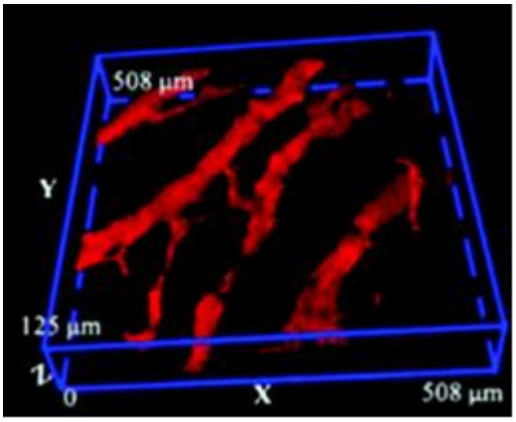

Figure 1. LuminiCell Tracker™-670 Vascular Labeling Kit allows for in vivo fluorescent blood vessel imaging in mouse brain tissue.

Protocols

Product Information

Product Name	Concentration	Storage	Absorption Maximum	Emission Maximum
LuminiCell Tracker Vascular 540 (SCT012)	200 nM in 1 X PBS, pH 7.4	2-8 °C	425 nm	547 nm
LuminiCell Tracker Vascular 670 (SCT013)	200 nM in 1 X PBS, pH 7.4	2-8 °C	510 nm	670 nm

Compatible Instrument Parameters

Product Name	Laser Excitation (nm)	Filter (nm)
LuminiCell Tracker Vascular 540 (SCT012)	405/458/488	480-560
LuminiCell Tracker Vascular 670 (SCT013)	458/488/543	670-800

Preparing Mice for Imaging

1. Remove the hair on/around the area of the animal to be imaged to minimize absorption/scattering of light by the hair. Remove hair thoroughly from the animal for 3D imaging using IVIS or FMT.
2. For imaging skull bone marrow, make a skin incision to expose the skull before immobilizing the head on the imaging stage.

Microinjection

3. Dilute 20-50 µL of LuminiCell Tracker™ (Vascular) stock solution using 1×PBS to afford 100 µL of injection solution. The recommended dose for intravenous injection into a mouse (~25 grams each) is ~50 µL of stock solution.

   Note: For imaging of rats, the concentration of the labeling solution may be adjusted based on the blood volume.
4. Intravenously inject the LuminiCell Tracker™ (Vascular) labelling solution via the lateral tail vein. The injection can be repeated daily if needed.

5. For bone marrow imaging, anesthetize the mice and place it on the heating pad to maintain core body temperature of 37 °C before injection. Inject the LuminiCell Tracker™ (Vascular) labelling solution via retro-orbital injection.

In Vivo Imaging

6. The animal can be directly imaged after injection with LuminiCell Tracker™ (Vascular) using fluorescence imaging systems such as IVIS and two-photon microscope. The injected nanoparticles can retained in the vascular system with minimum leakage and can be imaged for up to 3 hours.

References

1. Liu B, Tang BZ et al. Photostable fluorescent organic dots with aggregation-induced emission (AIE dots) for noninvasive long-term cell tracing. Sci Rep. 2013;3:1150.
2. Kang Y et al. Long-Term Tracking Mesenchymal Stem Cell Differentiation with Photostable Fluorescent Nanoparticles. ACS Appl Mater Interfaces. 2016 May 18;8(19):11925-33.

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