USER PROTOCOL

Vascular Tracker™– Vascular Labelling Kit

RUO-PTC-002-en-rev2
Revision Date: 05 Aug 2024

PRODUCT DESCRIPTION

Vascular Tracker (previously known as Luminicell Tracker) consists of biocompatible organic fluorescent nanoparticles, that can be used to visualise vascular structure for in vitro vessel models, ex vivo organ imaging and in vivo vasculature studies of living tissues and animals. Vascular Tracker is designed to flows smoothly inside blood vessels under normal condition. When used in inflammation or infection models, the nanoparticles leak out in response to blood vessel permeability changes, which can be used to study vessel leakage sites with precise detection.

PRODUCT INFORMATION

Product Name	Ex (nm)	Product Code	Configuration				
			Kit Volume (µL) Code			Surface	
						Code	Description
Vascular Tracker 470 (Blue)	355	LCTV-470	100	250	500	02	Methoxy (inert)
Vascular Tracker 506 (Cyan)	355	LCTV-506					
Vascular Tracker 540 (Green)	423	LCTV-540					
Vascular Tracker 670 (Red)	506	LCTV-670					
Vascular Tracker 810 (NIR-I)	635	LCTV-810					
Vascular Tracker 1010 (NIR-II)	725	LCTV-1010					

Notes: Concentration of products are 200 nM in ultrapure water. Nanoparticle surfaces are PEGylated, and surface conjugated with methoxy group to serve as an inert fluorescent agent for vessels. Store in 2 – 8 °C upon receiving, do not freeze.

Product Code	Compatible Laser Lines (nm)	Recommended Filter Sets (nm)
LCTV-470	**355***/390	400 – 500
LCTV-506	**355***/405	440 – 520
LCTV-540	355/**405***/458/488	480 – 560
LCTV-670	355/458/**488***/543	670 – 800
LCTV-810	355/543/**633***/755	700 – 1000
LCTV-1010	355/405/633/**755***	> 1000

* Denotes best excitation wavelength for fluorescent signal. Two-photon compatible.

LABELLING PROTOCOLS

1. **Prepare Mice for Imaging**
    a. 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.

    b. For imaging skull bone marrow, make a skin incision to expose the skull before immobilizing the head on the imaging stage.

2. **Microinjection**
    a. Dilute 20–50 µL of the stock solution of the Vascular Tracker to 1X PBS to make a total volume of 100 µL injection solution. (This dosage is recommended for mice with ~25 g weight.)

Note: For imaging of rats, the concentration of the labelling solution may be adjusted based on the blood volume.

    b. Intravenously inject the Vascular Tracker solution via the lateral tail vein. The injection can be repeated daily if needed.

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

3. **In Vivo Imaging**

The animal can be directly imaged after injection with the Vascular Tracker using fluorescence imaging systems such as IVIS and two-photon microscopes.

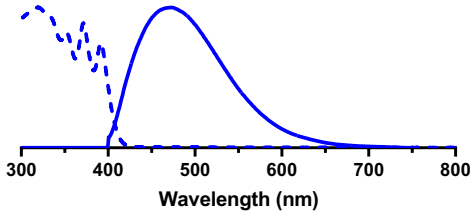
The injected nanoparticles can be retained in the vascular system with minimum leakage and can be imaged for up to 3 hours.

Note: For in-vitro imaging, dilute the stock solution between 2 to 10 times prior to injecting into the vessels for perfusion studies.

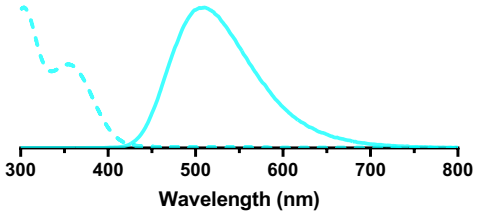
USER PROTOCOL

SPECTRAL PROFILE

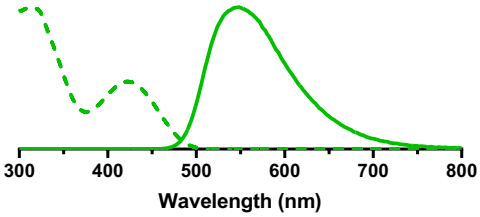
Vascular Tracker 470 (Blue)



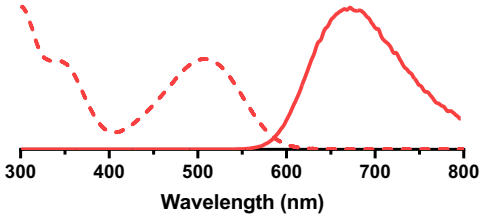
Vascular Tracker 506 (Cyan)



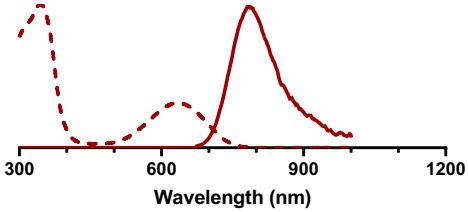
Vascular Tracker 540 (Green)



Vascular Tracker 670 (Red)



Vascular Tracker 810 (NIR-I)



Vascular Tracker 1010 (NIR-II)