BioTracker™ 664 NIR Ca2+ Dye

Live Cell Dye

Cat. # SCT022

pack size:1mg

Store at -20ºC

FOR RESEARCH USE ONLY.
NOT FOR USE IN DIAGNOSTIC PROCEDURES.
NOT FOR HUMAN OR ANIMAL CONSUMPTION.

Data Sheet

Background

Calcium (Ca2+) play a vital role in the physiology and biochemistry of the cell. Calcium ions play an important role in signal transduction pathways, neurotransmitter release from neurons, contraction of all muscle cell types, and in fertilization. Extracellular calcium is also important for maintaining the potential difference across excitable cell membranes, as well as proper bone formation.

The BioTracker™ 664 NIR Ca2+ Dye is a live cell far-red fluorescent calcium indicator. The dye changes fluorescent intensity greatly (1000-fold) when it binds to calcium. Multicolor imaging is possible between the dye and Hoechst, Fluorescein, Rhodamine, GFP, YFP and RFP etc., which are fluorescent probes or fluorescent proteins having fluorescent wavelength from UV region to visible area. The advantages of long wavelength region are greater tissue penetration and low phototoxicity.

BioTracker™ 664 NIR Ca2+ Dye can be introduced by microinjection, patch clamp and electroporation. BioTracker™ 664 NIR Ca2+ AM Dye is an acetoxymethyl ester version and can permeate cell membranes.

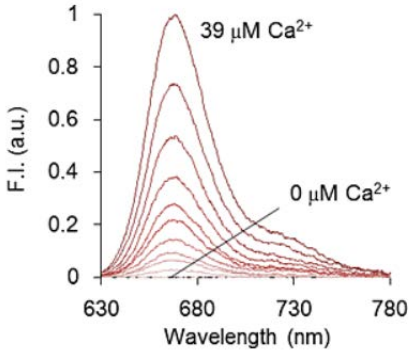

Figure 1. Fluorescent spectra of BioTracker 664 NIR Ca2+ Dye was measured (ex: 620nm) in the presence of various concentrations of Ca2+. When Ca2+ concentration was fluctuated from 0 μM to 39 μM, fluorescent intensity raised more than 1000-fold.

Storage

Store BioTracker 664 NIR Ca2+ Dye at -20°C, desiccate and protect from light

Note: Centrifuge vial briefly to collect contents at bottom of vial before opening.

Spectral Properties

Absorbance: 650nm
Emission: 664nm

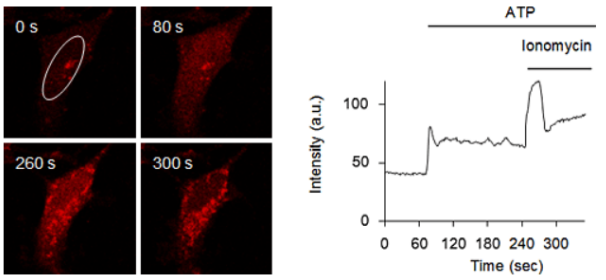

Figure 2. Live cell imaging of Ca2+ ions. BioTracker 664 NIR Ca2+ Dye was loaded to HeLa cells and stimulated by ATP and ionomycin. Although a part of probe localized to lysosome, it was possible enough to visualize Ca2+ concentration change.

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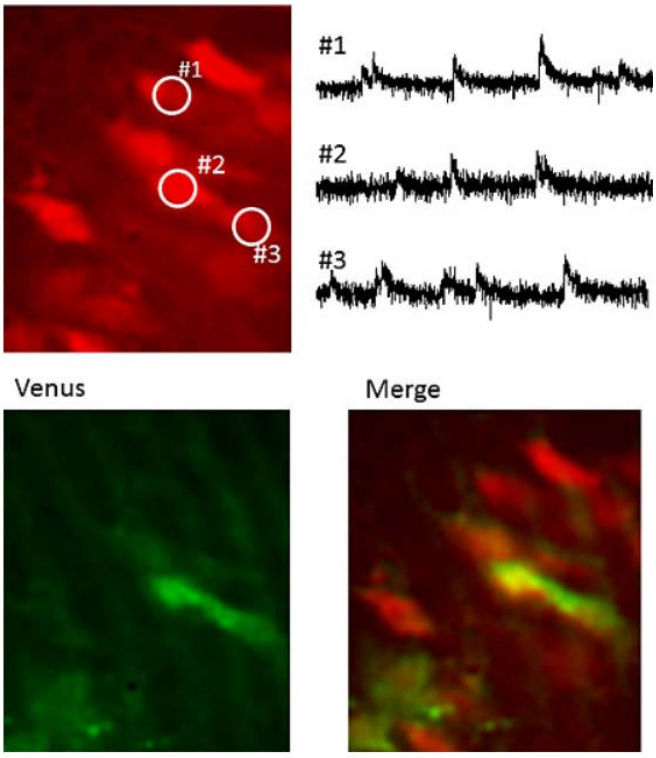

Figure 3. Ca2+ imaging of mouse cranial nerve. BioTracker 664 NIR Ca2+ AM Dye was added to a mouse brain slice in which a fraction of neurons expressed Venus (a mutant of YFP) and live cell Ca2+ imaging was analyzed. Ca2+ is shown as red color and Venus is shown green.

Protocol

Reagent Preparation

1. Before opening the vial, spin down the solid to the bottom by a microcentrifuge or by a desktop centrifuge.
2. Dissolve 50µg of dye in 46 µL of DMSO to achieve a 1 mM concentration. To improve the induction efficiency and inhibit localization of the probe, the addition of Pluronic F-127 is recommended.

Staining Protocol of Cultured Cells

1. Dilute an aliquot of stock dye solution to a final concentration of 1-10 µM in appropropriate loading medium or buffer such as HBSS. Final concentration of Pluronic F-127 is around 0.01-0.05 %.
2. Remove the culture medium from cell culture dish and wash with loading medium.
4. Add stain solution to the dish and incubate 10 to 60 minutes under 37℃, 5% CO2 conditions.
5. After staining, remove the stain solution from the dish and wash 2 or 3 times by medium or buffer which is not contain dye. Replace to HBSS buffer and observe the changes of intracellular fluorescence intensity using a fluorescence microscopy.