Data Sheet

BioTracker™ Cys Hcy GSH Triple Live Cell Dye

Live Cell Probe

SCT062

Pack Size: 1 mg

Store at –20 °C

FOR RESEARCH USE ONLY

Not for use in diagnostic procedures. Not for human or animal consumption.

Background

Biothiols such as cysteine (Cys), homocysteine (Hcy), and glutathione (GSH) play crucial and ubiquitous roles in biological systems as endogenous species. GSH is a vital antioxidant and the most abundant intracellular biothiol. Substandard levels of GSH concentration are closely related to oxidative stress and diverse pathologies. Cys is a building block for protein synthesis. It is positioned in many active sites of proteins due to the reactivity of its sulfhydryl group. Abnormal levels of Cys may play an important part in various symptoms and diseases. The role of Hcy in diseases remains under investigation; abnormal total Hcy concentrations are believed to cause cognitive impairment in the elderly.

The BioTracker™ Cys Hcy GSH triple live cell probe is a novel fluorescent probe with four binding sites, which can simultaneously and selectively detect Cys, Hcy, and GSH in three different emission channels. This probe can be used to simultaneously monitor endogenous Cys and GSH and exogeneous Cys, Hcy, and GSH through multicolor imaging.

Source

The BioTracker™ Cys Hcy GSH Triple Live Cell Dye (SCT062) does not contain genetically modified organisms.

Spectral Properties

Absorbance: 503 nm

Cysteine Window: λ_{ex}: 380 nm λ_{em}:530nm	370/500nm	360/457nm
GSH Window: λ_{ex}: 520 nm λ_{em}: 550 nm	400/529nm	
Hcy Window: λ_{ex}: 495 nm λ_{em}: 565-615nm	440-480/555-559nm	

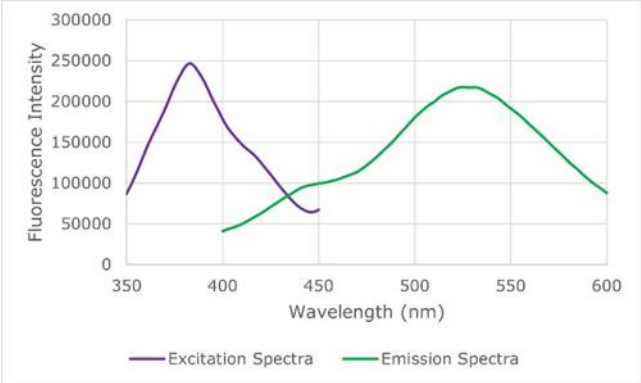

Figure 1. Probe excitation and emission data **(Cysteine-activated spectra)** 5 µL of probe at stock concentration (10 mM) was diluted in 1mL of solution (Tris buffer pH 8.0 w/ DMSO 2/8, v/v) before undergoing excitation and emission scans. Spectral scans were conducted using a PerkinElmer FL8500 Fluorescence Spectrophotometer.

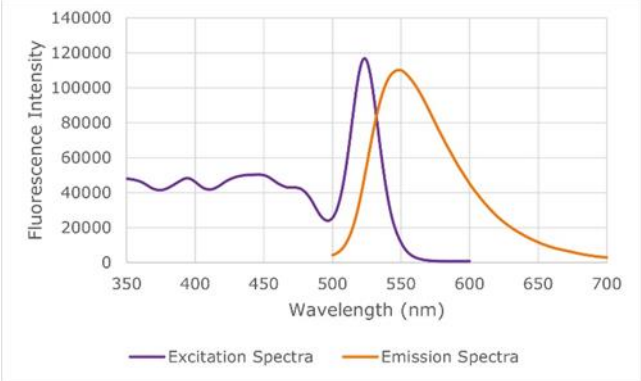

Figure 2. Probe excitation and emission data **(GSH-activated spectra)** 5 µL of probe at stock concentration (10 mM) was diluted in 1 mL of DMSO before undergoing excitation and emission scans. Spectral scans were conducted using a PerkinElmer FL8500 Fluorescence Spectrophotometer.

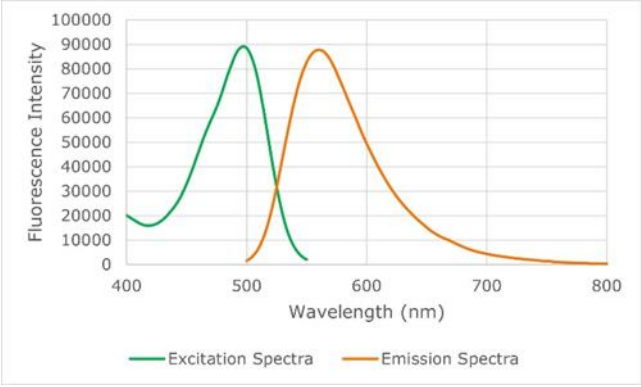

Figure 3. Probe excitation and emission data **(Hcy-activated spectra)** 5 µL of probe at stock concentration (10 mM) was diluted in 1 mL of solution (DMSO/PBS pH 7.4 6/4, v/v) before undergoing excitation and emission scans. Spectral scans were conducted using a PerkinElmer FL8500 Fluorescence Spectrophotometer.

Quality Control Testing

Purity: ≥ 98% confirmed by HNMR, LC-MS and HPLC and elemental analysis.

Molar Mass: 435.93 g/mol

Storage and Handling

Store BioTracker™ Cys Hcy GSH Triple Live Cell Dye at –20 °C, desiccated and protected from light.

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

Presentation

Lyophilized

Representative Data

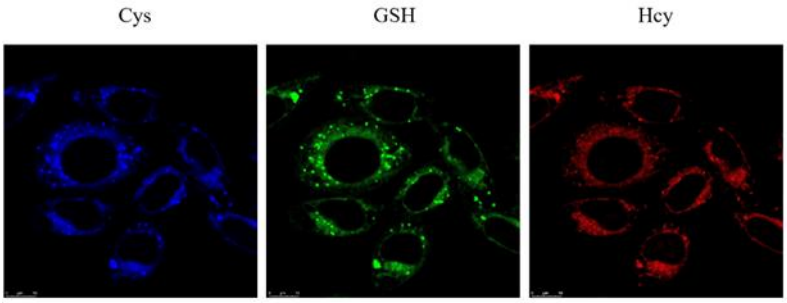

Figure 4. Confocal images of HeLa cells stained with 10 µM Triple live cell dye for 30 minutes.

Protocols

Preparing triple dye stock solution

Prepare the (Molecular Weight: 435.93 g/mol) dye stock solution by dissolving the contents of one vial (1 mg) in 229 µL of DMSO to create a 10 mM solution. Stock solution should be stored at ≤ –20 °C for longer periods.

Labeling cells

1. Culture cells in an appropriate medium and vessel for fluorescence microscopy.
2. Prepare the cell probe working solution by diluting the probe stock solution 1:1000 in culture medium.
3. Remove culture medium from the cells.
4. Add sufficient probe working solution to cover the cells.
5. Incubate for 30 minutes, protected from light (No wash step.).
6. Image the cells.

References

1. Yin G, Niu T, Gan Y, Yu T, Yin P, Chen H, Zhang Y, Li H, Yao S. 2018. A Multi-signal Fluorescent Probe with Multiple Binding Sites for Simultaneous Sensing of Cysteine, Homocysteine, and Glutathione. Angewandte Chemie. 130(18):5085–5088. doi:https://doi.org/10.1002/ange.2018004

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