Data Sheet

# BioTracker™ Polyamine Spermidine Live Cell Probe

Live Cell Probe

**SCT249**

**Pack Size: 500 µg**

**Store at -20 °C**

FOR RESEARCH USE ONLY

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

## Background

Polyamines participate in a variety of critical roles in the cell. Polyamine-associated processes include gene expression, cell proliferation and differentiation, and cellular stress. Polyamine dysregulation has been associated with several cancers. In colorectal cancer, for example, polyamine content and biosynthesis is dramatically higher when compared to normal colorectal tissue. A relationship between polyamines and their metabolites has been used to observe progression in breast cancer, lung cancer, colorectal cancer, ovarian cancer, prostate cancer, and pancreatic cancer. In normal cells, there is firm regulation of polyamines through routine cellular mechanisms. One of these is known as the polyamine transport system (PTS), the mechanisms of which are not fully characterized. Examination of the PTS has demonstrated that cancer cells have high PTS activity, suggesting this system as a target for cancer research.

The relationship between polyamine systems and cancer led to the creation of clickable polyamine derivatives which can be used in functional studies of the PTS. The BioTracker™ spermidine live cell dye is a spermidine moiety bound to a BODIPY fluorophore through click chemistry. This fluorescent probe permits evaluation of polyamine uptake in live cells using the green emission channel (FITC filter).

## Source

SCT249 does not contain genetically modified organisms.

## Spectral Properties

Excitation: 485-505 nm

Emission: 510 nm

## Quality Control Testing

Purity: ≥ 80% confirmed by HNMR, LC-MS and HPLC and elemental analysis

Molar Mass: 599.44 g/mol

## Storage and Handling

Store BioTracker™ Spermidine Live Cell Dye at –20 °C, desiccate and protect from light.

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

## Presentation

Lyophilized. Orange-red solid.

## Representative Data

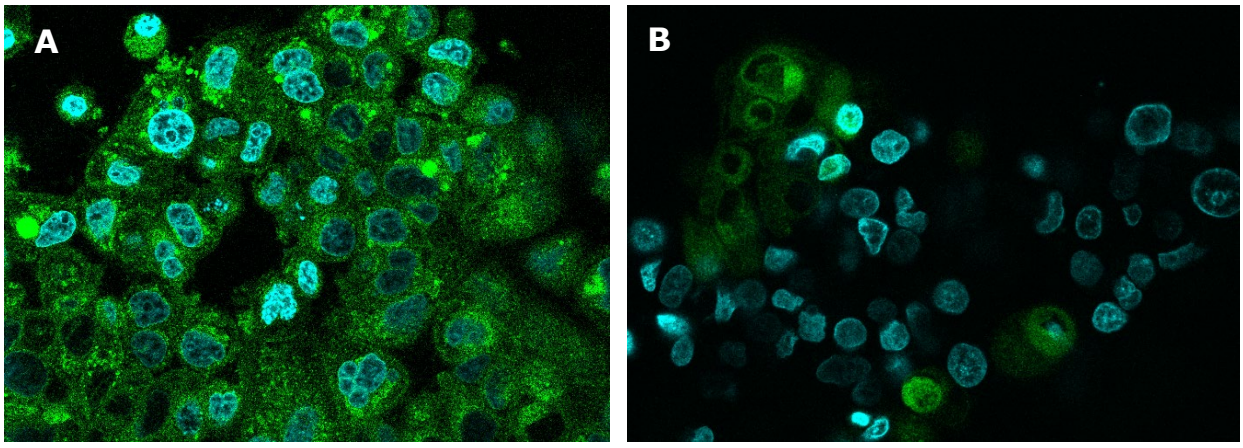


**Figure 1:** (**A**) Confocal imaging of SCT249 spermidine probe in MCF7 cells. Cells were treated with 10 µM spermidine probe for 4 hours at 37 °C and counterstained with Hoechst 33342 nuclear dye for 10 minutes. (**B**) Cytoplasmic and perinuclear staining of spermidine dye is observable (green), indicating uptake of spermidine. Cells were pre-treated with 100 µM of an inhibitor of polyamine uptake, benzyl viologen, overnight at 37 °C before being incubated with 10 µM spermidine probe. Inhibition of polyamine transport system results in substantially reduced spermidine uptake.

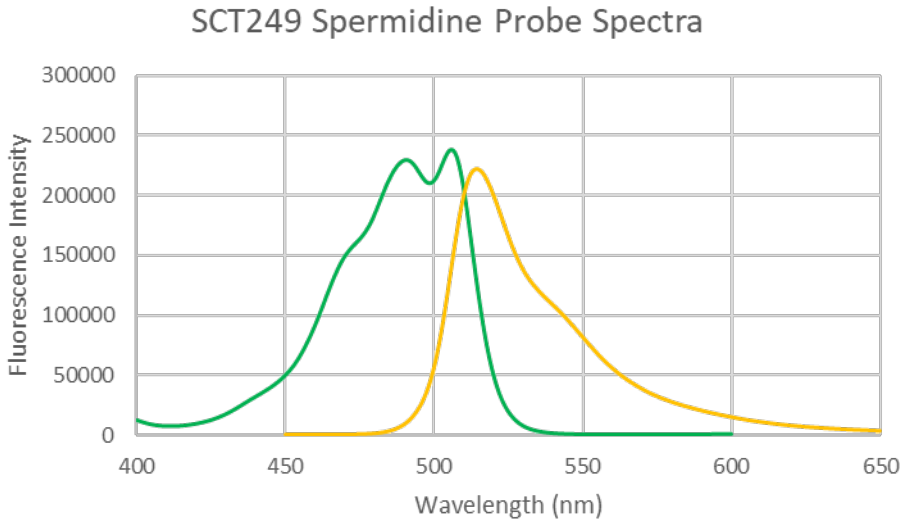


**Figure 2:** Probe excitation and emission data. 7 µL of probe at stock concentration (10 mM) was diluted in 1 mL of Tris HCl buffer (10 µM, pH 7.0). Spectral scans were conducted using a PerkinElmer FL8500 Fluorescence Spectrophotometer.

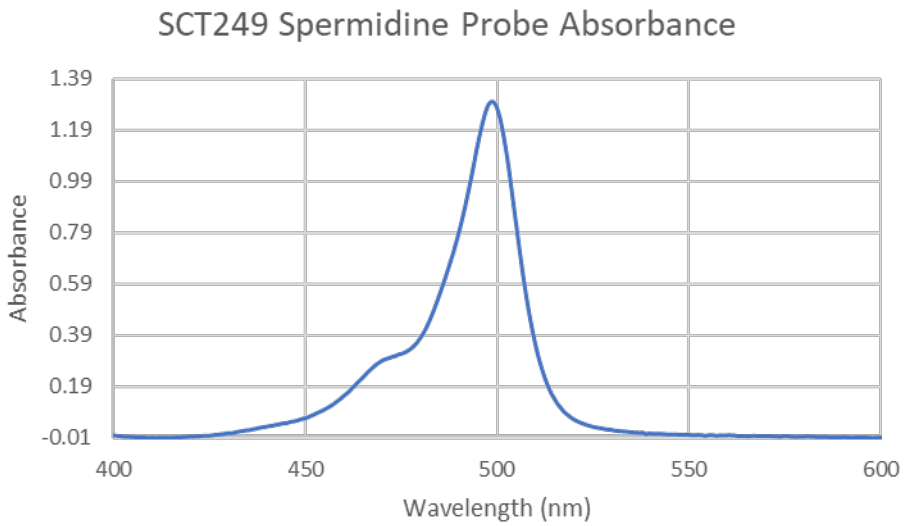


**Figure 3**: Probe absorbance data. 7 µL of probe at stock concentration (10 mM) was diluted in 1 mL of Tris HCl buffer (10 µM, pH 7.0). Spectral scans were conducted using a PerkinElmer FL8500 Fluorescence Spectrophotometer.

## Protocols

### Reagent Preparation

1. Before opening the vial, spin down the solid to the bottom by a microcentrifuge or by a desktop centrifuge.
2. Warm the vial to the room temperature and add DMSO to make a 1000X stock solution of 10 mM (freeze aliquots at –20 °C).
3. Dilute in cell culture media at a final concentration of 10 µM and add to cells in culture. Incubate at 37 °C for 4 hours.
4. If desired, counterstain with nuclear dye (for example, Hoechst 33342 at 0.1 mg/mL) for 10 minutes.
5. Wash cells with PBS buffer before imaging

   **Note:** Optimal concentration must be determined by end user.

## References

1. Vanhoutte, R., Kahler, J. P., Martin, S., van Veen, S., & Verhelst, S. H. (2018). Clickable polyamine derivatives as chemical probes for the polyamine transport system. ChemBioChem, 19(9), 907-911.
2. Li, J., Meng, Y., Wu, X., & Sun, Y. (2020). Polyamines and related signaling pathways in cancer. Cancer cell international, 20, 1-16.

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