

Product Data Sheet

Product Name: SNAP-TMR

Cat. No.: GC80349

Chemical Properties

Cas. No. 1418275-35-0

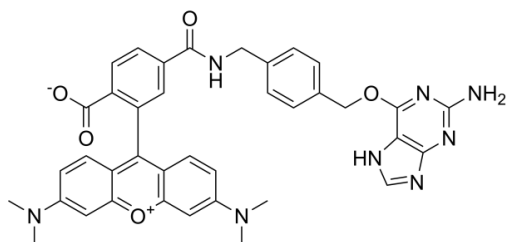
Formula $C_{38}H_{34}N_8O_5$ M.Wt 682.73

Solubility DMSO: 50 mg/mL (73.24 mM; Need ultrasonic) Storage Store at 4°C, away from moisture and light

General tips For obtaining a higher solubility, please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution : ship with blue ice All other available size: ship with RT, or blue ice upon request.

Structure



Background

Caution: Product has not been fully validated for medical applications. For research use only.

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SNAP-TMR (BG-TMR) is a cell-permeable fluorescent dye used for visualizing SNAP fusion proteins and performing single-molecule imaging for motor movement analysis. SNAP-TMR covalently binds to the active site of the SNAP tag domain on fusion proteins, thereby reporting the presence, localization, or movement of the protein. The excitation wavelength of SNAP-TMR is 561 nm, and the maximum labeling efficiency reaches 80% [1] [2].

In Vitro, Guidelines (The following is a recommended experimental protocol for reference only, and adjustments should be made according to specific requirements)

1. Stock Solution Preparation 1.1 Solvent: DMSO; alternatively, DMEM can be used. 1.2 Concentration Recommendation: It is generally recommended to prepare a high-concentration stock solution at 1-10 mM. 2. Working Solution Preparation 2.1 Diluent: Cell lysis buffer (50 mM Tris pH 7.5, 100 mM NaCl, 0.1% Tween20, 1× protease inhibitor cocktail); alternatively, DMEM can be used. 2.2 Working Concentration: 1.5 µM; alternatively, 3 µM can be used. 2.3 Notes: Adjust the working solution concentration as needed; prepare and use the solution immediately. 3. Staining Procedures 3.1 Applicable to adherent and suspension cells expressing SNAP fusion proteins^[1]: 3.1.1 Sample Preparation: Collect adherent cells after trypsinization; collect suspension cells by centrifugation at 1000 g for 5 min at room temperature. 3.1.2 Endogenous SNAP-tagged cell lines (e.g., HAP1 SNAP-CLCaEN) are also applicable. 3.1.3 Washing Before Labeling: Wash the collected cells twice with PBS before lysis for labeling. 3.1.4 Incubation Conditions: Incubate the cell lysis buffer with 1.5 µM SNAP-TMR working solution at room temperature for 30 min. 3.2 Applicable to adherent mammalian cells (COS7 cells)^[2]: 3.2.1 Incubation Conditions: Incubate the cells with 3 µM SNAP-TMR working solution at 37°C under 5% (vol/vol) CO₂ for 30 min. 3.2.2 Cell Collection: Collect cells by trypsinization after incubation. 3.2.3 Washing Steps: Wash the cells three times with DMEM, followed by incubation in DMEM for 30 min to remove unbound ligands. 4. Detection and Analysis 4.1 Instrument Type: Gel imaging system; alternatively, total internal reflection fluorescence (TIRF) microscope can be used. 4.2 Excitation/Emission Wavelength: Consistent with Cy3/TMR spectra; alternatively, use 561 nm excitation and TMR emission. 4.3 Result Analysis: 4.3.1 Fluorescence Properties: SNAP-TMR produces red/purple or red fluorescence, and the signal intensity is sufficient to support single-molecule detection. 4.3.2 Localization: Fluorescence signals localize to the subcellular compartments of SNAP fusion proteins (e.g., clathrin-coated vesicles corresponding to SNAP-CLCaEN, kinesin-1 motors distributed along microtubule tracks). 4.3.3 Quantitative Analysis: Quantify the fluorescence intensity of SNAP-TMR-labeled SNAP fusion proteins with reference to a total protein loading control (e.g., TCE staining). 4.3.4 Motility Analysis (Applicable to samples labeled with motor proteins):

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Generate kymographs to measure the run length, dwell time and velocity of labeled motors; analyze the cumulative distribution function to determine the mean values.

References:

- [1]. Pol SA, et al. Induced degradation of SNAP-fusion proteins. RSC chemical biology. 2024 Oct 21;5(12):1232-47.
- [2]. Norris SR, et al. Influence of fluorescent tag on the motility properties of kinesin-1 in single-molecule assays. Biophysical journal. 2015 Mar 10;108(5):1133-43.

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