



TO1-3PEG-Desthiobiotin Fluorophore

Cat. No. G7956

Store at -20°C. Protect from light.

Product Description

TO1-3PEG-Desthiobiotin is a small bifunctional fluorophore that allows for the recovery of native RNA complexes while simultaneously rendering them highly fluorescent¹. The bound fluorescent complex of Mango I and TO1-3PEG-Desthiobiotin is bright^{2,3} and when bound next generation aptamers (Mango III and IV) have a brightness that exceeds that of enhanced GFP. When bounded to streptavidin, can be eluted by the addition of free biotin allowing for the recovery of complexes that can be further purified (i.e. size chromatography).

The TO dye has a number of other desirable properties including:

- small size
- lack of toxicity
- plasma and nuclear membrane permeability
- short intracellular half-life
- the accessibility of a broad wavelength range simply via substitutions and alterations to the TO structure

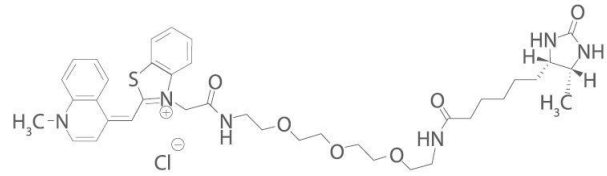
TO1-biotin is the standard variety of TO dye for *in vitro* and *in vivo* RNA Mango and RNA Peach experiments.

Cat. No.	Product	Quantity
G7956	TO1-3PEG-Desthiobiotin Fluorophore	250 µM (100 µl)

Applications

Application	Recommended Final Concentration of RNA Mango Dye
<i>In Vitro</i> Fluorescence Assays	100 nM – 200 nM
<i>In Vivo</i> Cellular Imaging	100 nM – 200 nM
<i>In Vitro</i> Transcription (IVT) and RNA Purification	50 nM – 200 nM
FRET Assay	50 nM – 500 nM

Product Specifications

Structure	
Molecular Mass	719.9159
Formula	C ₃₈ H ₅₁ N ₆ O ₆ S ⁺
Purity	>95% (by HPLC)
Form	Liquid, in DMF
Solubility	DMF, DMSO, 10% Acetonitrile or MeOH-CH ₂ -Cl ₂
Shelf Life	Three (3) months from receipt.
General Notes	Do not store in water. May break down in water.

Properties of the Fluorophore-Aptamer Complex

Quantum Yield for the Mango I Complex	Φ _{bound} = 0.14
Binding Affinity to Mango I Aptamer	3 nM (KCL required)
Fluorescent Enhancement when Bound to Mango I Aptamer	~1000
Extinction Coefficient when Bound to Mango I Aptamer	ε ₅₁₀ = 77,500 M ⁻¹ cm ⁻¹
Brightness when Bound to Mango I Aptamer	B ₅₃₅ = 11,000 M ⁻¹ cm ⁻¹

Patent

US11434490B2

References

1. Panchapakesan et al. (2017). Ribonucleoprotein Purification and Characterization using RNA Mango. *RNA*. 1592-1599. 2. Dolgosheina et al. (2014). RNA Mango Aptamer-Fluorophore: A Bright, High-Affinity Complex for RNA Labeling and Tracking. *ACS Chem. Biol.* 9 (10): 2412-2420. 3. Jeng et al. (2016). Fluorophore ligand binding and complex stabilization of the RNA Mango and RNA Spinach aptamers. *RNA*. 22: 1884-1892.