TO3-3PEG-Biotin Fluorophore

Cat. No. G7959

Store at -20°C. Protect from light.

Product Description

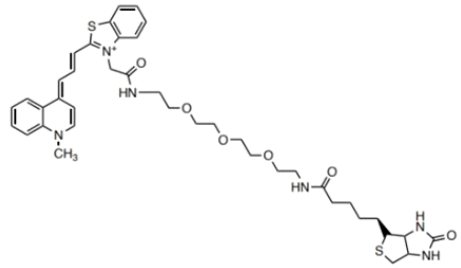
TO3-3PEG-Biotin is a small bifunctional fluorophore that has very low unbound fluorescence. When bound to the Mango series of RNA aptamers (KCl required) it becomes up to 61-fold brighter[1], emitting in the red region of the visible spectrum. The fluorophore exhibits peak excitation maxima of 615 nm (with additional excitation when bound at 260 nm)and peak fluorescence emission of 658 nm when bound to Mango aptamers[2].

Cat. No.	Product	Quantity
G7959	TO3-3PEG-Biotin Fluorophore	250 µM (100 µl)

Applications

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

Product Specifications

Structure	
Molecular Mass	889.02
Formula	$C_{42}H_{51}F_3N_6O_8S_2$
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

Excitation/Emission Wavelength (unbound)	624/647 nm
Excitation/Emission Wavelength (bound)	637/648 nm
Extinction Coefficient at 615 nm (aqueous buffer)	66,800 M^{-3} cm^{-1}*
Binding Affinity to Mango I Aptamer	5.1 ± 0.3 nM [3]
Binding Affinity to Mango II Aptamer	1.4 ± 0.3 nM [1]
Binding Affinity to Mango III Aptamer	8.7 ± 1.6 nM [4]
Binding Affinity to Mango III (A10U) Aptamer	160 ± 22 nM [4]
Binding Affinity to Mango I Aptamer	10.4 ± 0.1 nM [3]
Fluorescent Enhancement, Bound to Mango I Aptamer	35 [2]
Fluorescent Enhancement, Bound to Mango II Aptamer	61 ± 2 [1]
Fluorescent Enhancement, Bound to Mango III (A10U) Aptamer	9.9 ± 0.3 [6]

*When extinction coefficient is determined from fluorescent titration, the determination relies on the assumption that only one (1) bound state between fluorophore and aptamer is present. In cases when only a fraction of T03-3PEG-Biotin is bound in a conformation that contributes to emitted fluorescence, functional extinction coefficient determined by titration significantly exceeds the value obtained from weight and absorbance measurement[3,5].

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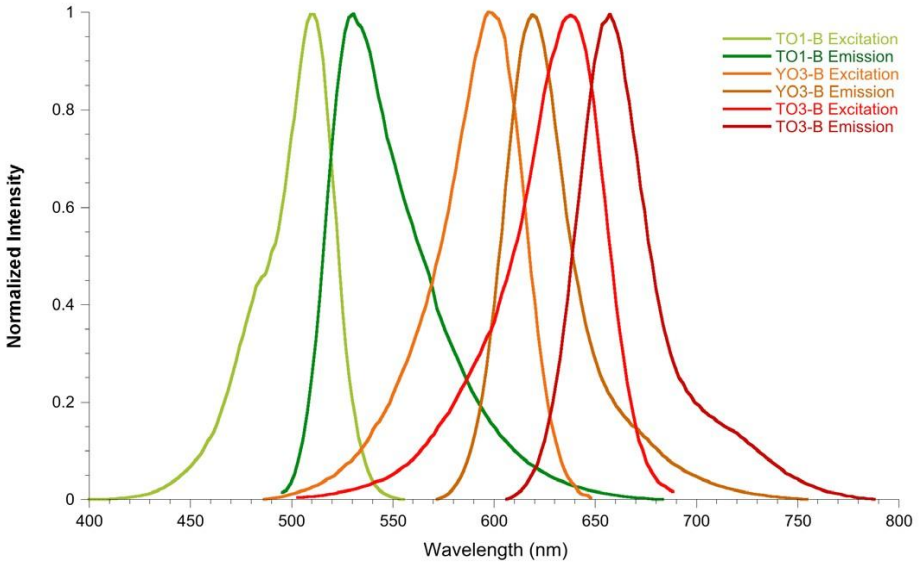

Patent

US11434490B2

References

1. Trachman, R.J. et al. (2018). Crystal structures of the Mango-II RNA aptamer reveal heterogeneous fluorophore binding and uide engineering of variants with improved selectivity and brightness. Biochemistry 57, 354403548. **2.** Dolgosheina, E.V. et al. (2018). RNA Mango aptamer-fluorophore: A bright, high-affinity complex for RNA labeling and tracking. ACS Chen. Biol. 9, 2412-2420. **3.** Autour, A. et al. (2018). Fluorogenic RNA Mango aptamers for imaging small non-coding RNAs in mammalian cells. Nat. Commun. 9, 656. **4.** Trachman III, R.J., et al. (2019). Structural and functional reselection of the Mango-III fluorogenic RNA apatmer. Nat. Chem. Biol. 15, 472. **5.** Trachman III, R.J. & Ferre-D'Amare, A.R. (2019). Tracking RNA with light: selection, structure, and design of fluorescence turn-on RNA aptamers. Q. Rev. Biophys. 52. **6.** Kristen Kong, Unrau laborator; unpublished data (2019).

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