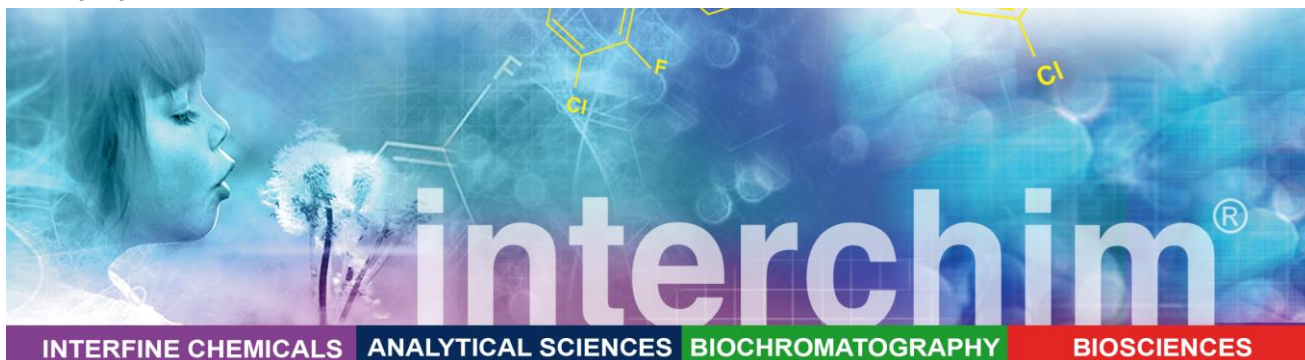


FT- 51254A



FluoProbes® Membrane markers FPMM™ & SynapTracer™

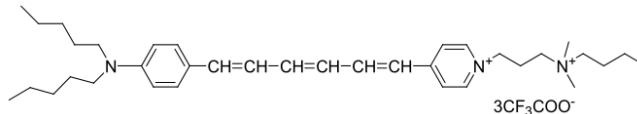
Product Information

Product name Cat. number	MW (g·mol ⁻¹)	$\lambda_{exc}/\lambda_{em.}$ max. MetOH (nm) membrane (nm)	mol. abs. (M ⁻¹ cm ⁻¹)	Comments
Green SynapTracer™ 1-1 FP-AM312A, 5mg	527.4	510 / 625 N/A		Shortest lipophilic tail and the most water soluble, thus expected to show the slowest "on-rate" and fastest "off-rate".
FP Membrane Marker 1-43 (Green SynapTracer 2-5) FP-51254A, 1 mg FP- 51254B, 5 x 1 mg FP-51254C, 5 mg	611.56	510 / 625 479 / 598	56 000	Used in synaptic functional studies and vesicle follow up. It is used to study vacuolar organelle morphology and dynamics, the endocytic pathway and vacuole fusion in yeast, endosomal marker and vital stain. Used with Fura-2 or Sulfo Rhodamine101, it has allowed to study membrane turn over and discriminate nonsynaptic labeling.
FP Membrane Marker 1-43 FX (Green SynapTracer™ 1-4FX) FP-T2982A, 1 mg	560.1	510 / 625 479 / 598	50 000	Contains an amine group that renders it fixable with glutaraldehyde in situ. Ideal if subsequent immunochemistry is desired. Has been used for detection of yeast vacuole membrane staining with FPMM™ 4-64
FP Membrane Marker 3-25 FP-JW6950, 5 mg FP-JW6951, 5 x 1 mg	1226			Larger FPMM™ 1-43 analog with lower brightness in cuvette studies
FP Membrane Marker 1-44 FX (Green SynapTracer™ 1- 4BFX) FP-AN100A, 1 mg		N/A		Improved version of FPMM™ 1-43 FX with better fixability and can be used as a general probe to monitor endocytosis.
FP Membrane Marker 2-10 (Green SynapTracer™ 1-2) FP-77563A, 5mg	555.45	505 / 620 N/A	50 000	More hydrophilic than FPMM™ 1-43, thus faster destaining rate. It may be preferred to FPMM™ 1-43 for quantitative measurements.
FP Membrane Marker 2-10 FX (Green SynapTracer™ 1-2FX) FP-AM307A, 1 mg	499.55	502 / 625 N/A		Analog of FPMM™ 2-10, but contains an amine group that renders it fixable with glutaraldehyde.

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Product name Cat. number	MW (g·mol ⁻¹)	$\lambda_{exc}/\lambda_{em}$ max. MetOH (nm) membrane (nm)	mol. abs. (M ⁻¹ cm ⁻¹)	Comments
Green SynapTracer™ 1-3 FP-80270A, 5 mg	542	510 / 625 480 / 598		Slightly more hydrophilic than FPMM™ 1-43 and a lipophilic tail with one carbon shorter. The hydrophilic end is a trimethylammonium group.
RH 414 FP-47009A, 1 mg FP-47009B, 5 mg	581.48	533 / 717	50 000	A water soluble fluorescent probe for membrane labeling, widely used for functional imaging and tracing of neurons (monitoring membrane potential, synaptic activity and ion channel activity of neurons).
FP Membrane Marker 1-84 (Green SynapTracer™ 1-5) FP-AM3229, 1 mg FP-AM322A, 5 mg FP-AM322B, 5 x1 mg	639.62	511 / 627 N/A		Fluorescent lipophilic tracer for staining and identifying actively firing neurons and investigating the mechanisms of activity-dependent vesicle cycling. A fluorescent nerve terminal dye suitable for monitoring synaptic activity at synapses and at neuromuscular junctions. Less hydrophilic than FPMM™ 1-43, thus faster staining rate but slower destaining rate.
Red SynapTracer™ 3-1 FP-AM323A, 5 mg	579.48	543 / weak N/A		More hydrophilic than FPMM™ 1-43, thus faster destaining rate, thus a greater "off-rate".
FP Membrane Marker 4-64 (Red SynapTracer™ 3-2) FP-41109A, 1 mg	607.53	543 / weak 558 / 737	48 000	Most popular red dye of FPMM™ series. It also used to study vacuolar organelle morphology and dynamics, the endocytic pathway and yeast endocytosis mutants. The green FPMM™ 1-43 and red dye FPMM™ 4-64 have become the most used, allowing dual color imaging, to follow synaptic activities at neuromuscular junctions or synapses, as well as in endocytosis vesicles and vacuoles. Fluorescence spectra are similar for all dyes and show 30-40 nm blue shift from polar environment to membrane one.
FP Membrane Marker 4-64 FX (SynaptoRed™ C2) FP-BJ1011, 1 mg	872.85	558 / 734	46 000	
FP Membrane Marker 5-95 FP-R1422A, 1 mg FP-R1422B, 5 mg	565.43	543 / weak 558 / 737	43 000	Slightly more water soluble than FPMM™ 4-64

(* All FPMM™ and SynapTracer™ dyes are non-fluorescent in water.

Storage: Room temperature >1 year. (M) Protect from light and moisture

Introduction

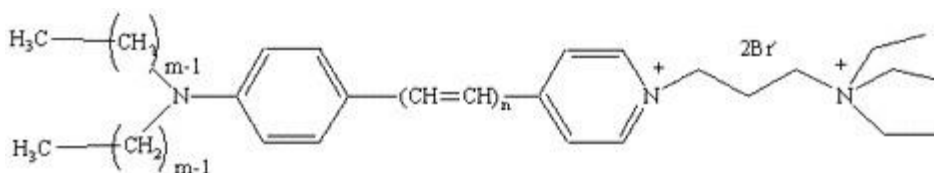
FPMM™ and SynapTracer™ dyes are a range of non toxic cationic styryl dyes, that are non-fluorescent in water but highly fluorescent upon membrane binding and internalization.

FPMM™ and SynapTracer™ dyes are typically formed by a highly hydrophilic, cationic charged, head group and of a lipophilic tail, separated by a linker that contains 1 double bond (giving green fluorescence), or 3 double bonds (giving red fluorescence). The dye name SynapTrace™ n-m indicates the number (n) of double bond and the number (m) carbons in the lipidic tails. Some are available derivatized with an amino group (SynapTracer™ « FX »), that makes the dye fixable in situ with glutaraldehyde. Others have modified chains.

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Applications :

- Terminal nerve and neuro-muscular junction
- Activity-dependent vesicle cycling
- Identifying cell membrane boundaries
- Labeling membranes of living cells
- Morphology or dynamics of endocytosis vesicles and vacuoles

Due to frequent problem of background fluorescence and when repeated washing is not sufficient, some quencher agents are available to remove background fluorescence :

The cyclodextrin ADVASEP-7 forms a water soluble inclusion complex with FPMM™¹⁻⁴³, thus leaving the dye in the aqueous phase.

SCAS is used with FPMM™ and SynapTracer™ and highly reduce background when it is added to the preparation without the need for repeated washing.

SulfoRhodamine 101 can be used to reduce background staining via FRET

Directions for use

Handling and Storage

Powder can be stored 6 months at room temperature. Solutions of FX analogs, are quite unstable (2 weeks at -20°C). Soluble in water or DMSO.

Protocol – Green FPMM™¹⁻⁴³ FX staining protocol on fixated cells

1. Mix 40 µl of FPMM™¹⁻⁴³ FX (stock solution 400 µM) with 4 ml of 50 mM K Tyrode solution to obtain a final dye concentration of 4 µM. Place the coverslip in this solution for 1 min at room temperature.
2. Transfer the coverslip to Tyrode + 0.5 µM TTX solution for 1 min at room temperature.
3. Transfer the coverslip to quencher solution (SCAS in Tyrode + 0.5 µM TTX solution) for 4 min at room temperature. Typical concentration of SCAS working solution is 0.5 mM.
4. Transfer the coverslip to fixation solution (4% formaldehyde, 4% sucrose, 1µM TTX in PBS) for 20 min at room temperature.
5. Transfer the coverslip directly to pre-cooled 0.01% Triton solution for 12 min at +4°C.
6. Wash 3 times, 1 min with cold PBS.

Other protocol may found in the literature.

Related products

- ADVASEP-7, [FP-AM305A](#)
- SCAS, quencher to reduce background with FPMM™ dyes, [FP-AM308A](#)
- SulfoRhodamine 101, [FP-46999A](#)
- α-bungarotoxin, [FP-38034A](#)
- Fura-2 AM, [FP-42776C](#)
- Biotin-xx-a-bungarotoxin

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