

Fatty Acid Uptake Probe

Catalog# / Size	421940 / 5 mg
Regulatory Status	RUO
Other Names	fatty acid analog, FL-C12 fatty acid probe, BODIPY FL C12 fatty acid, fatty acid uptake probe, C1-BODIPY-C12
Description	Fatty acids are an important source of cellular energy and serve as precursors to complex lipids such as cholesterol and membrane phospholipids. They are also essential metabolites for cell activation, proliferation and function, and can profoundly affect gene expression via nuclear receptors such as HNF4 and the PPAR family. Fatty acid uptake at the plasma membrane is controlled by CD36 (fatty acid translocase), plasma membrane-associated FABP, and Fatty Acid Transport Proteins (FATPs). The green fluorescent BODIPY C12 fatty acid can serve as a synthetic precursor in cellular metabolism. This probe can be used to measure fatty acid transport activity in many cell types by live cell imaging and flow cytometry and to screen compounds that inhibit fatty acid transport.

Product Details

Verified Reactivity	Human, Mouse
Reported Reactivity	Yeast, Zebrafish
Formulation	1 vial (5 mg) of Fatty Acid Uptake Probe (BODIPY FL C12 Fatty Acid)
Storage & Handling	Store in freezer at -20°C and protect from light
Application	Live cell imaging - Quality tested FC - Verified In vivo imaging - Reported in the literature, not verified in house

Application Notes	<u>Components:</u> - 1 vial (5 mg) of Fatty Acid Uptake Probe (BODIPY FL C12 Fatty Acid)
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Required Materials Not Included:
 - For live cell imaging: tissue culture vessel with coverslip bottom
 - DMSO
 - PBS
 - Bovine Serum Albumin (fatty acid free)

Detection/Imaging Guidelines:
 - Recommended fluorescence microscope filter set: GFP/FITC

- Excitation: 512 nm
- Emission: 522 nm

- Recommended flow cytometry channels:

- Excitation: 488 nm laser
- Emission: 530/30 nm
- Instrument specification(s): FITC channel

Preparation of Stock Solution:

Prepare a 10 mM stock solution by adding 1.2 mL of DMSO to vial containing 5 mg of the Fatty Acid Uptake Probe (BODIPY FL C12 Fatty Acid). Vortex to dissolve and aliquot to avoid repeated freeze/thaw cycles. Store aliquots at -20°C.

Preparation of Working Solution:

Dilute the stock solution of Fatty Acid Uptake Probe 1:100 in PBS with 1% Bovine Serum Albumin (fatty acid free). For example, add 1 µL of 10 mM stock solution to 99 µL PBS/BSA. Vortex and incubate at room temperature for 15 minutes.

Experimental Protocol:

1. Treat your cell samples under desired experimental conditions in serum-free media.
2. **For live cell imaging:** Add 4 μL of the Fatty Acid Uptake Probe working solution to each well of a 96-well plate containing your cells in 100 μL of media.
For flow cytometry: Add 2 μL of the Fatty Acid Uptake Probe working solution to 100 μL cell suspension (up to 1×10^6 cells per 100 μL media). For larger sample volumes or higher cell numbers, scale up accordingly.
3. Incubate the samples at 37°C for 2 hours.
Note: Final concentration of probe and incubation time may need to be optimized depending on cell type and experimental conditions.
4. Gently wash the cells 3 times with PBS and add desired amount of buffer/solution/media to the cells for analysis.
Optional: For live cell imaging, you may add 100 μL of 0.001% Trypan Blue in PBS to each well to reduce background signal from free probe. The 0.001% Trypan Blue can be prepared by diluting a 0.4% Trypan Blue solution 1:300 in PBS.
5. Analyze samples: For live cell imaging, observe cells with an inverted fluorescence microscope using the GFP/FITC filter set. For flow cytometry, monitor the fluorescence intensity using the FITC (530/30 nm) channel.

Application References

(PubMed link indicates BioLegend citation)

1. Faergeman NJ, *et al.* 1997. *J Biol Chem.* 8531.
2. Li H, *et al.* 2005. *Anal Biochem.* 11.
3. Carten JD, *et al.* 2011. *Dev Biol.* 276.

Antigen Details

Structure Synthetic fluorescent fatty acid analog with a molecular weight of 418.34 g/mol

Distribution Cytoplasm

Biology Area Cell Biology, Cell Proliferation and Viability

Antigen References

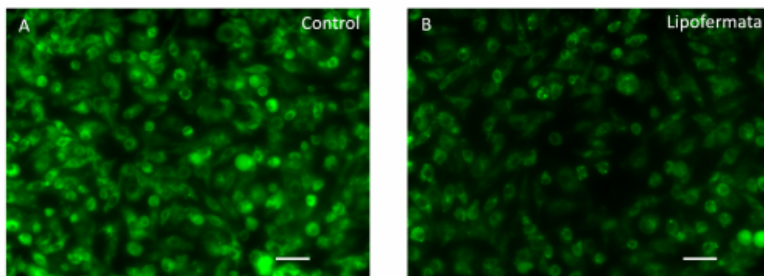
1. Li H, *et al.* 2005. *Anal Biochem.* 336(1):
2. Hara T, *et al.* 2009. *Mol Pharmacol.* 75:85-91.
3. Carten JD, *et al.* 2011. *Dev Biol.* 276.
4. Dubikovskaya E, *et al.* 2014. *Meth Enzym.* 538:107-34.
5. Matschke, *et al.* 2016. *Radiation Oncology.* 11:75.

Gene ID NA

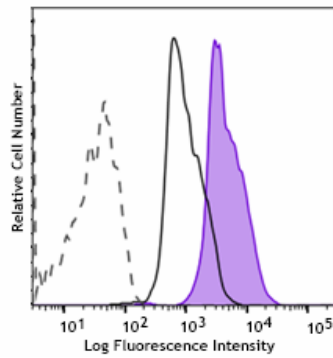
Related Protocols

- [Cell Surface Flow Cytometry Staining Protocol](#)

Product Data



Live cell fluorescence imaging of RAW 264.7 cells untreated (panel A) or treated with the FATP2 inhibitor Lipofermata (10 μM) for 2 hours (panel B). Cells were then incubated with Fatty Acid Uptake Probe for 2 hours and washed with PBS. Cells treated with Lipofermata show reduced uptake of Fatty Acid Probe. Images were captured using a 20X objective. Scale bar: 20 μm



Flow Cytometry of activated human T cells after incubation with Fatty Acid Uptake Probe for 1 hour. Cells pre-treated with the FATP2 inhibitor Lipofermata (10 μ M) for 1 hour (open histogram) show reduced uptake compared to untreated cells (filled purple histogram). Unstained cells are shown as a control (dashed histogram). After staining, cells were washed with PBS and analyzed in the FITC channel.

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8999 BioLegend Way, San Diego, CA 92121 www.biolegend.com
Toll-Free Phone: 1-877-Bio-Legend (246-5343) Phone: (858) 768-5800 Fax: (877) 455-9587