

## LipiDye™ <Lipid Droplet Green>

Catalog NO. FDV-0010, FDV-0010B

Research use only, not for human or animal therapeutic or diagnostic use.

### Product Background

Lipid droplets (LDs) are organelles which store neutral lipids such as triglycerides and sterol esters. LDs are frequently observed in adipose tissue and are considered as sites for energy storage or lipid turnover. Recent studies discovered that LDs are not only in adipocytes, but also in ubiquitous cells such as skeletal muscle cells, macrophages, and glia cells. Typical LDs in adipocytes are about  $>10\ \mu\text{m}$  and can be detected by using commercial probes including Nile Red. On the other hand, LDs in those non-adipocytes are generally too small ( $<1\ \mu\text{m}$ ) to detect by these probes because of high background and low specificity. Sensitive and specific probes are desired to detect small LDs.

LipiDye™ is a green fluorescent dye for specific detection of LDs (ref.1). LipiDye™ shows high sensitivity, low cell toxicity and high photostability compared with Nile red (Figure 1). LipiDye™ is compatible with imaging of both live cells and fixed cells.

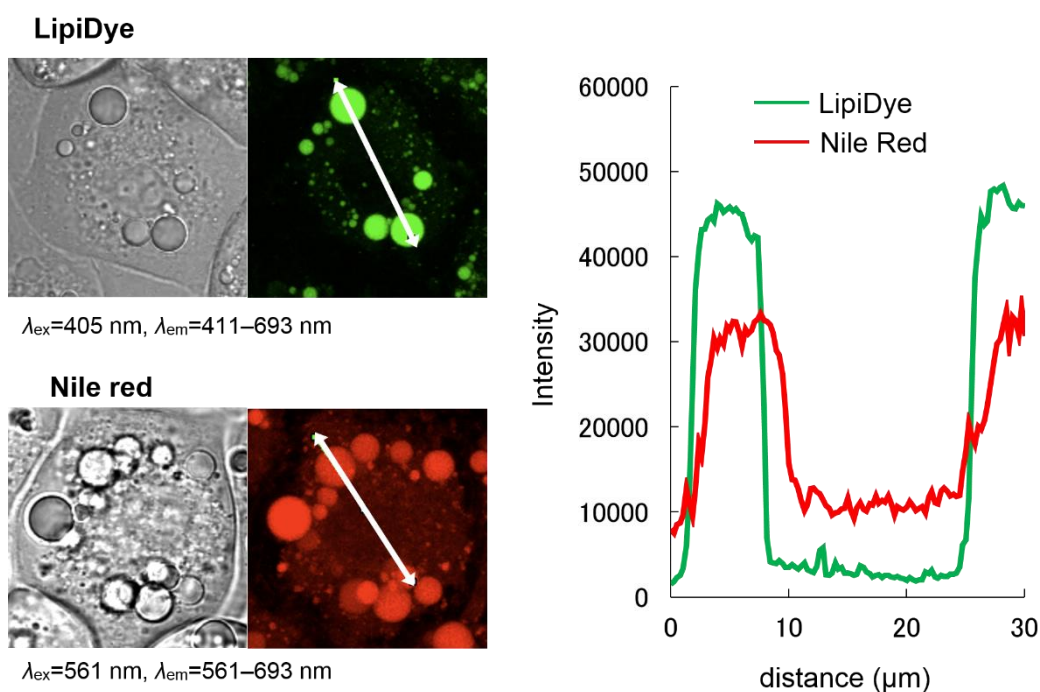


Figure 1. Comparison between LipiDye™ and Nile Red by plot profile

## Description

Catalog Number: FDV-0010, FDV-0010B

Size: 0.1 mg (FDV-0010), 0.1 mg x 5 (FDV-0010B)

Formulation: C<sub>38</sub>H<sub>28</sub>NOP

Molecular weight: 545.58 g/mol

Solubility: Soluble in DMSO

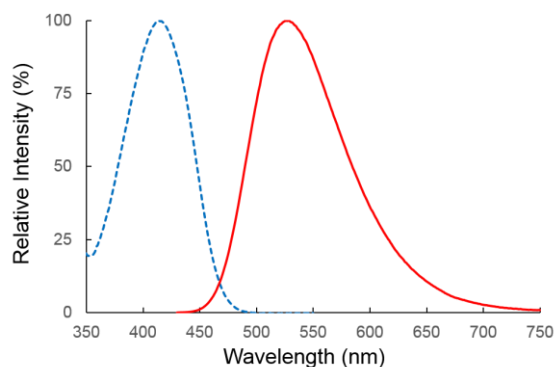
Fluorescent characteristics:

Ex. 360-450 nm (maximum ~410 nm)

Recommended excitation laser 405 nm

Em. 460-650 nm (maximum ~520 nm)

Note : Filter sets for conventional green fluorescence dyes such as FITC and GFP are not compatible with LipiDye™. Please use appropriate filter sets.



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## Reconstitution and Storage

Reconstitution: Stock solution recommended concentration 1mM in 100% DMSO.

Storage (powder): Store powder at RT

Storage (solution): After reconstitution in DMSO, aliquot and store at -20°C.

Avoid repeated freeze-thaw cycles and protect from light.

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## How to use

### General procedure for live cell-staining

\*This procedure is an example of live cell staining

1. Prepare 1 μM (0.1-1% DMSO) in serum-free and phenol red-free medium such as DMEM
2. Remove culture medium and wash cells PBS several times
3. Add LipiDye™-containing medium to cells
4. Incubate cells at 37 °C for over 2 hours
5. Wash cells with PBS or medium and add fresh medium (Optional)
6. Observe cells

NOTE: Empirically optimize and determine the concentration and incubation time of LipiDye™ for your experiments.

### General procedure for fixed cell-staining

\*This procedure is an example of fixed cell staining

1. After fixing cells with 4% formaldehyde, cells were washed with PBS two times.
2. Cells were stained with proper concentration of LipiDye™ such as 1 μM in PBS for at least 30 min on ice.
3. Wash cells with PBS
4. Observe cells

NOTE: Empirically optimize and determine the concentration and incubation time of LipiDye™ for your experiments. MeOH fixation is not recommended because lipid droplets may be disrupted. Please use formaldehyde for fixation.

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## Reference

1. Yamaguchi *et al.*, *Angew. Chem. Int. Ed.*, **54**, 4539-4543 (2015) Environment-sensitive fluorescent probe: a benzophosphole oxide with an electron-donating substituent

## Related products

### Lipidye™ II <Lipid Droplet Live Imaging>

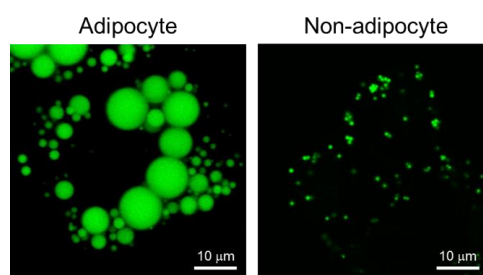
Lipidye™ II is a highly sensitive lipid droplet staining dye with extremely photostable property. This dye is the second generation of Lipidye™. This dye allows us to detect small lipid droplets (<1 μm) in non-adipocytes and to apply into long-term live cell imaging for dynamic lipid droplet movements.

Catalog No. FDV-0027

Size 0.1 mg

Features

- Recommended Ex/Em: 400-500 nm / 490-550 nm
- Enable to detect <1 μm lipid droplets
- Suitable for long-term live cell imaging
- Extremely photostable compared with conventional dyes
- Compatible with both live and fixed cells



### FAOBlue™ <Fatty Acid Oxidation Detection Reagent>

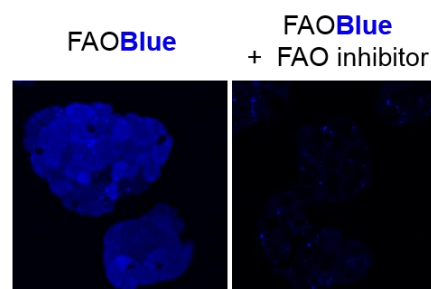
FAOBlue™ is a cell-based fatty acid beta-oxidation (FAO) detection dye which emits blue fluorescence upon FAO activity. FAOBlue™ enables to quantitatively monitor cellular FAO activities under various conditions.

Catalog No. FDV-0033

Size 0.2 mg

Features

- Recommended Ex/Em: ~405 nm / 460 nm
- Enable to detect cellular FAO activity directly without any specific equipment, only need microscopy.
- Monitor drug-induced change of FAO activity quantitatively.



### LipiORDER™ <Membrane Lipid Order Imaging Dye>

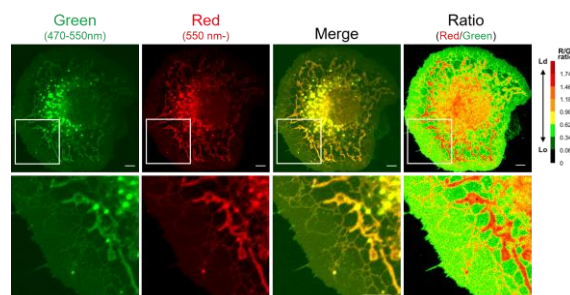
LipiORDER™ is a solvatochromic dye for membrane lipid order imaging. LipiORDER™ exhibits green fluorescence with Lo phase and exhibits red fluorescence with Ld phase. The ratiometric analysis ( $F_{red}/F_{green}$ ) enables the quantitative visualization of membrane lipid order.

Catalog No. FDV-0041

Size 0.1 mg

Features

- Recommended Ex/Em: ~405 nm / 500-550 nm (Green channel) and 550-650 nm (Red channel)
- Enable to quantitatively monitor lipid order on plasma and inner membranes in live cells
- Highly photostable and cellularly stable compared with similar conventional dyes.



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