Store at -20°C

BODIPY 581/591 C11 (Lipid Peroxidation Sensor)

#95978

1 mg

Cell Signaling TECHNOLOGY®

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For Research Use Only. Not for Use in Diagnostic Procedures.

Description: BODIPY 581/591 C11 (Lipid Peroxidation Sensor) is a fluorescent dye that localizes to membranes and is used to measure lipid peroxidation in live cells. It is a highly sensitive fluorescent probe that has a shift in fluorescent emission upon oxidation of the polyunsaturated butadienyl portion of its fatty acid analog in live cells. When this occurs, fluorescence emission peaks shift from red (~590 nm) to green (~510 nm). BODIPY 581/591 C11 (Lipid Peroxidation Sensor) measures lipid peroxidation through the ratiometric shift in fluorescence between reduced and oxidized states of the probe.

Lipid peroxidation is the free radical oxidative degradation of lipids from excessive reactive oxygen species production. Oxidative damage to lipids produces lipid peroxides that can cause damage to cell membranes, leading to changes downstream in signaling pathways, eventually leading to cell death. Lipid peroxidation can occur during apoptotic cell death but has been recognized as a defining characteristic of the non-apoptotic cell death pathway ferroptosis. Ferroptosis is defined by iron-dependent, lipid peroxidation. An increase in ferroptosis occurs during aging, and pathologies including cancer, atherosclerosis, neurodegeneration, and cardiovascular disease.

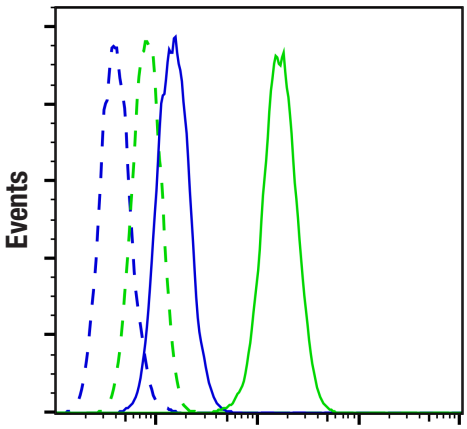
Molecular Weight: 504.4 g/mol

CAS: 217075-36-0

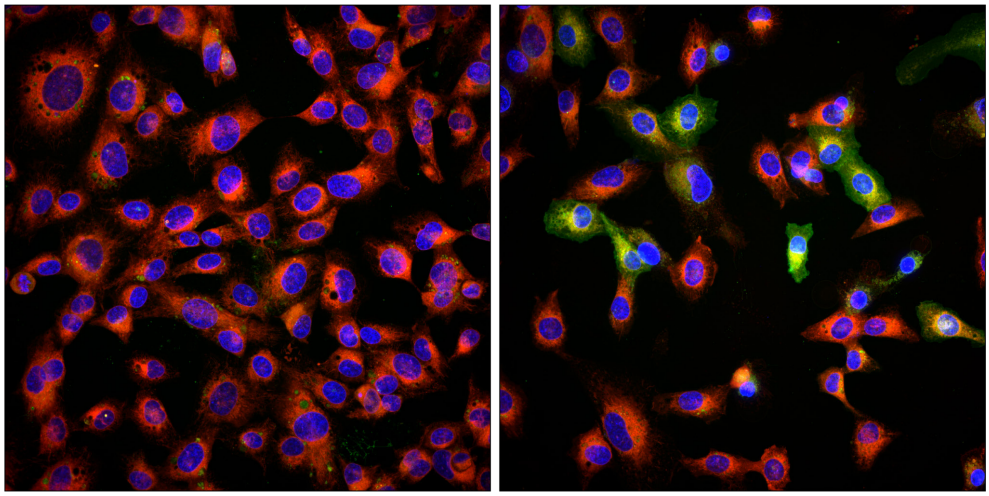
Fluorescent Properties:

Excitation/Emission Max: 581/591 nm

After Oxidation Excitation/Emission Max: 488/510 nm



Flow cytometric analysis of live HL-60 cells, untreated (blue) or treated with tert-Butyl hydroperoxide (200 µM, 2 hr; green), labeled with BODIPY 581/591 C11 (Lipid Peroxidation Sensor) (2 µM, 30 min) (solid lines) or unlabeled (dashed lines). Data collected using blue laser excitation and FL1 emission.



Confocal analysis of HT-1080 cells, untreated (left) or treated with erastin (10 µM, 22 hr; right), using BODIPY 581/591 C11 (Lipid Peroxidation Sensor) (green and red) and Hoechst 33342 #4082 (blue).

Storage: Store lyophilized at -20°C. In lyophilized form, the product is stable for 12 months.

Please visit cellsignal.com for validation data and a complete listing of recommended companion products.

Directions for Use:

Supplied Reagent:

1. BODIPY 581/591 C11 (Lipid Peroxidation Sensor): Create a 10 mM stock solution by dissolving 1 mg of BODIPY 581/591 C11 (Lipid Peroxidation Sensor) into 198.26 µL of high-quality anhydrous DMSO.

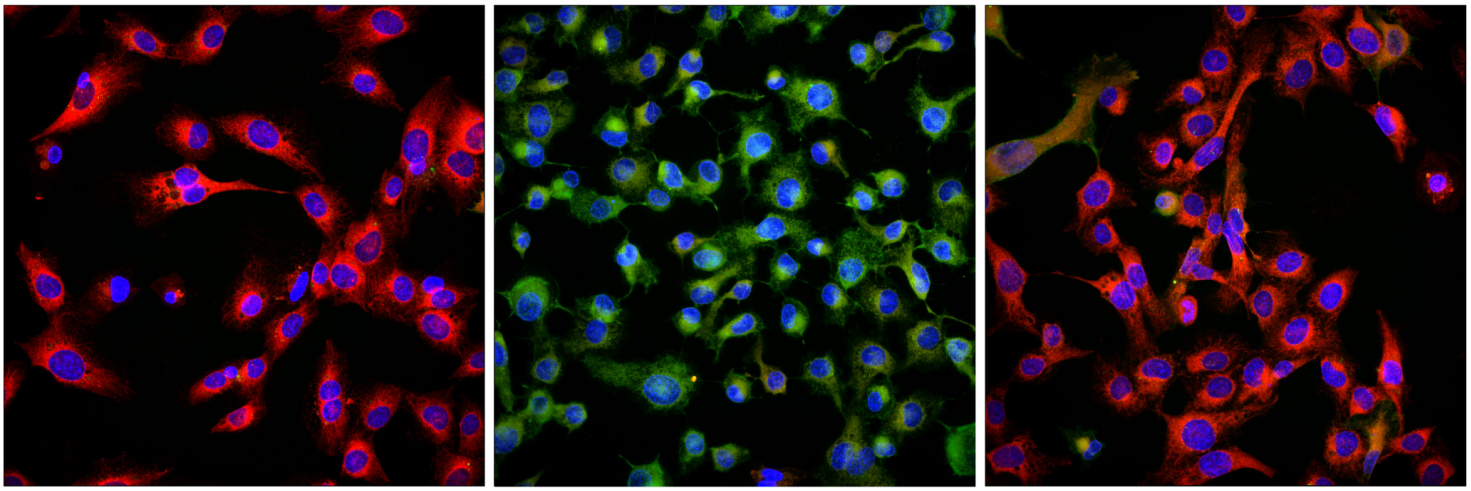
Additional Reagents (Not Supplied):

1. Hanks' Balanced Salt Solution (HBSS)
2. DMSO (Dimethyl Sulfoxide), Sterile #12611

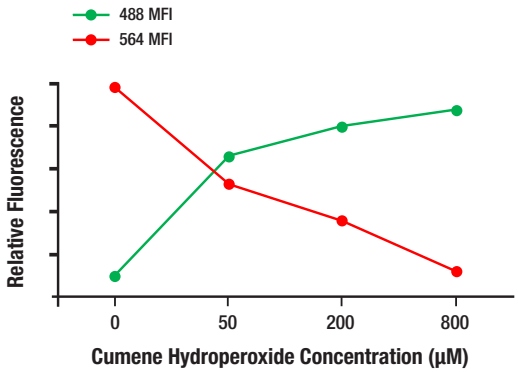
Protocol:

1. Incubate cells with 1 - 2 µM of BODIPY 581/591 C11 (Lipid Peroxidation Sensor) and 1 µM of Hoechst 33342 #4082 (optional) in cell culture media for 30 min.
2. Wash two times with HBSS.
3. Add desired treatments in HBSS and incubate as needed.
4. Examine cells by fluorescence microscopy. Refer to the Fluorescent Properties section for excitation and emission spectra.
5. For analysis by flow cytometry, dissociate adherent cells or collect suspension cells. Viability dye can be used if desired. Analyze on a flow cytometer at desired cell density.

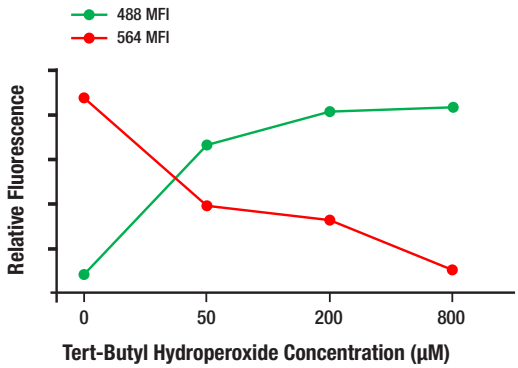
Applications: **W**—Western **IP**—Immunoprecipitation **IHC**—Immunohistochemistry **ChIP**—Chromatin Immunoprecipitation **IF**—Immunofluorescence **F**—Flow cytometry **FC-FP**— Flow cytometry-Fixed/Permeabilized **FC-L**— Flow cytometry-Live **E-P**—ELISA-Peptide
Species Cross-Reactivity: **H**—human **M**—mouse **R**—rat **Hm**—hamster **Mk**—monkey **Mi**—mink **C**—chicken **Dm**—D. melanogaster **X**—Xenopus **Z**—zebrafish **B**—bovine **Dg**—dog **Pg**—pig **Sc**—S. cerevisiae **Ce**—C. elegans **Hr**—Horse
All—all species expected Species enclosed in parentheses are predicted to react based on 100% homology.



Confocal analysis of HT-1080 cells, untreated (left), treated with cumene hydroperoxide (200 µM, 2 hr; middle), or treated with cumene hydroperoxide (200 µM, 2 hr) after inhibiting with α-tocopherol (25 µM, 20 hr; right) using BODIPY 581/591 C11 (Lipid Peroxidation Sensor) (green and red) and Hoechst 33342 #4082 (blue).



Fluorescence analysis of HT-1080 cells incubated with 2 µM BODIPY 581/591 C11 (Lipid Peroxidation Sensor). Increasing concentrations of cumene hydroperoxide cause an increase in lipid peroxidation which is detected as increasing 488 MFI (green) and decreasing 564 MFI (red). MFI data were captured using an Operetta CLS high content analysis system.



Fluorescence analysis of HT-1080 cells incubated with 1 µM BODIPY 581/591 C11 (Lipid Peroxidation Sensor). Increasing concentrations of tert-Butyl hydroperoxide cause an increase in lipid peroxidation which is detected as increasing 488 MFI (green) and decreasing 564 MFI (red). MFI data were captured using an Operetta CLS high content analysis system.