

# For Advanced Mitochondrial Research (ROS Research Related)



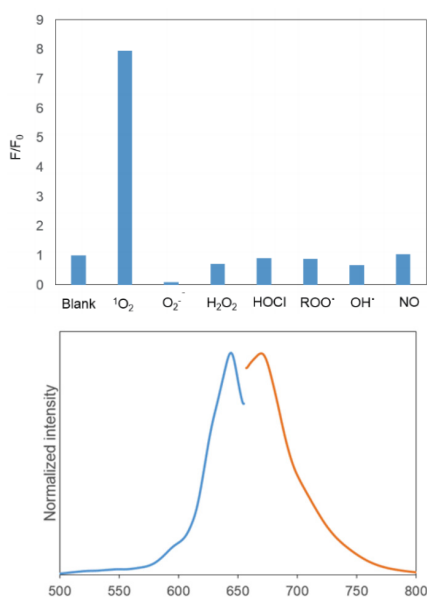
Si-DMA for Mitochondrial Singlet Oxygen Imaging  
[Code#: MT05-10] 1 set (2  $\mu$ g)

## Si-DMA for Mitochondrial Singlet Oxygen Imaging

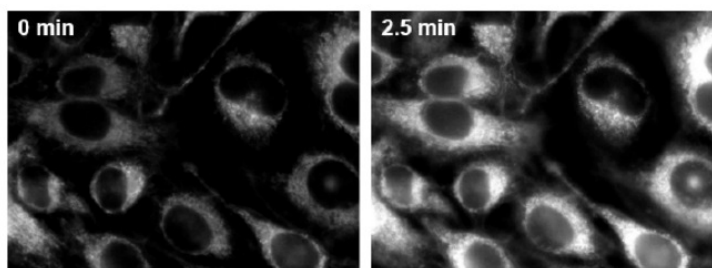
### PRODUCT DESCRIPTION

Majima *et al.* synthesized a new far-red fluorescence probe composed of silicon-containing rhodamine and anthracene moieties, namely Si-DMA, as a chromophore and a  $^1\text{O}_2$  reactive site, respectively. In the presence of  $^1\text{O}_2$ , fluorescence of Si-DMA increases 17 times due to endoperoxide formation at the anthracene moiety. Among seven different ROS, Si-DMA is able to selectively detect the  $^1\text{O}_2$ . In addition, Si-DMA is able to visualize the real-time generation of  $^1\text{O}_2$  from protoporphyrin IX in mitochondria with 5-aminolevulinic acid (5-ALA), a precursor of heme.

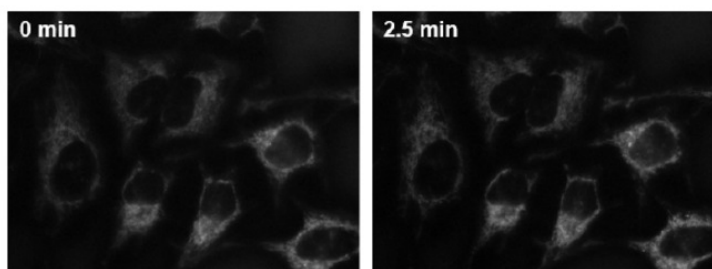
### SINGLET OXYGEN SPECIFICITY



5-ALA (+)



5-ALA (-)



Fluorescence imaging of mitochondrial  $^1\text{O}_2$  with Si-DMA in HeLa cells after the addition of 5-ALA

### REFERENCE

- 1) T. Majima, S. Kim, T. Tachikawa, M. Fujitsuka, "Far-Red Fluorescence Probe for Monitoring Singlet Oxygen during Photodynamic Therapy", *J. Am. Chem. Soc.*, **2014**, 136 (33), 11707-11715.
- 2) T. Majima, S. Kim, T. Tachikawa, M. Fujitsuka, WO 2015194606, A1, (23, December, **2015**).



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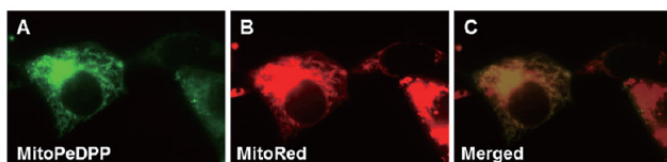
[Code#: M466-10] 3 x 5 µg

## MitoPeDPP

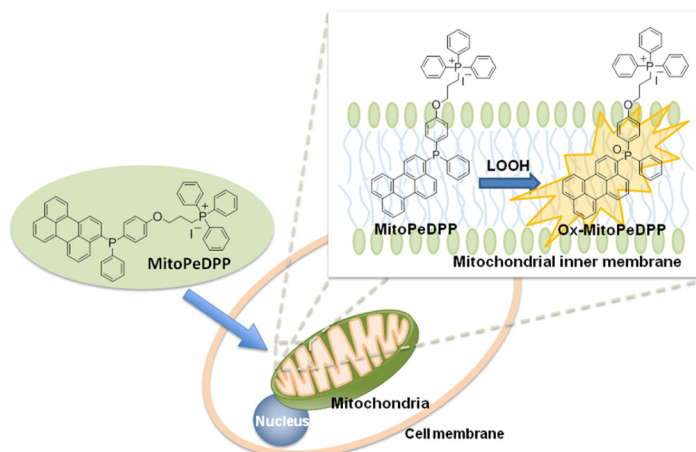
### PRODUCT DESCRIPTION

MitoPeDPP is a cell-membrane-permeable probe, Perylene-based dye. It specifically localizes in mitochondria due to the triphenylphosphonium moiety introduced. As the excitation and emission wavelength of MitoPeDPP are 452 nm and 470 nm, respectively, the probe can be applied for lipophilic peroxide imaging in living cells. This probe has been developed by Dr. Shioji *et. al.* at Fukuoka University, Department of Chemistry.

### LOCALIZATION



Lipophilic Peroxides Detection in Mitochondria (HepG2 cell)



A: MitoPeDPP stained Mitochondria with t-BHP treatment  
B: MitoRed stained Mitochondria  
C: Merged Image (A/B)

### REFERENCE

- 1) K. Shioji K, Y. Oyama, K. Okuma and H. Nakagawa, *Bioorg Med Chem Lett.*, **2010**, 20, (13), 3911.
- 2) K. Shioji, Y. Ogawa, H. Iwashita, Y. Oyama, N. Nagahora, K. Okuma and H. Nakagawa, "Fluorescence imaging of accumulated lipid peroxidation in mitochondria by oxidative stress", *Bioorg. Med. Chem.*, submitted.



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