

# PRODUCT INFORMATION



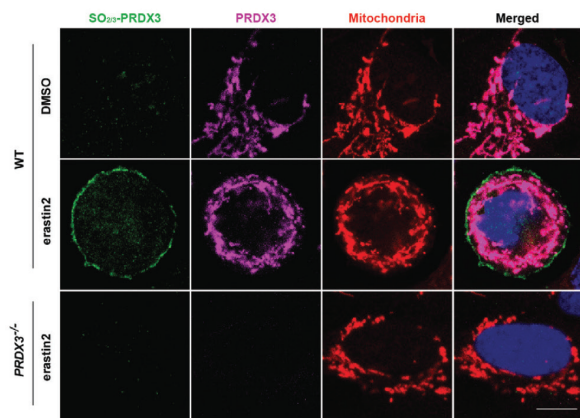
## Hyperoxidized Peroxiredoxin-3 Polyclonal Antibody

Item No. 39806

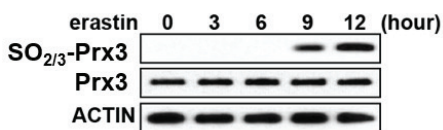
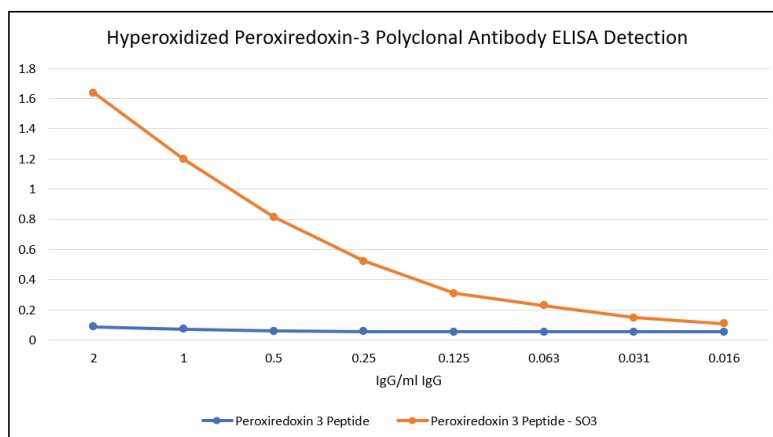
### Overview and Properties

**Contents:** This vial contains 100 µg of protein A-affinity purified polyclonal antibody.  
**Synonyms:** Antioxidant Protein 1, AOP-1, MER5 Homolog, Mitochondrial Thioredoxin-dependent Peroxide Reductase, Peroxiredoxin III, PRDX3, Prx3  
**Immunogen:** A hyperoxidized human Prx3 peptide sequence  
**Cross Reactivity:** (+) Hyperoxidized Prx3, minimal reactivity with non-oxidized Prx3 (include proper controls)  
**Species Reactivity:** (+) Human; other species not tested  
**Molecular Weight:** ~23 kDa  
**Uniprot No.:** P30048  
**Form:** Liquid  
**Storage:** -20°C (as supplied)  
**Stability:** ≥1 year  
**Storage Buffer:** PBS, pH 7.2, with 50% glycerol and 0.02% sodium azide  
**Host:** Rabbit  
**Applications:** ELISA, Immunofluorescence (IF), and Western blot (WB); the recommended starting dilution is 1:100-1:200 for ELISA and WB, and 1:100 for IF. Other applications were not tested, therefore optimal working concentration/dilution should be determined empirically.

### Images



Indicated cells treated with or without 200 nM erastin2 (Item No. 27087) for 12 h were subject to immunofluorescent microscopy with indicated antibodies and MitoTracker®. Scale bars, 10 µm.



Western blot analysis using Hyperoxidized Peroxiredoxin-3 Polyclonal Antibody in erastin-treated cells. The amount of hyperoxidized Prx3 in indicated cells treated with 2 µM erastin (Item No. 17754) for the indicated time was determined by immunoblot analysis.

**WARNING**  
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

**SAFETY DATA**  
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

**WARRANTY AND LIMITATION OF REMEDY**  
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## Description

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Peroxiredoxin-3 (Prx3) is a typical 2-Cys-containing Prx that is involved in the maintenance of cellular thiol redox homeostasis.<sup>1</sup> It exists as a homodimer when oxidized and is composed of an N-terminal mitochondrial targeting sequence and a catalytic domain that contains peroxidatic and resolving cysteines (Cp and Cr, respectively).<sup>1,2</sup> Reduced Prx3 exists as a monomer and hyperoxidized Prx3 is capable of forming dodecamers.<sup>2</sup> Prx3 is ubiquitously expressed and localizes to the mitochondrial matrix.<sup>1,3</sup> During the catalytic cycle, hydrogen peroxide oxidizes Cp to form a sulfenic acid intermediate (C-SOH), which reacts with the Cr of the opposite subunit to form a disulfide bond that is subsequently restored to a reduced state by thioredoxin 2 (Trx2).<sup>1,4</sup> In the presence of high concentrations of hydrogen peroxide, Cp is oxidized to sulfinic acid (C-SO<sub>2</sub>H), which can be reduced by sulfiredoxin (Srx), or the irreversible sulfonic acid (C-SO<sub>3</sub>H) species.<sup>1</sup> Knockout of the gene encoding thioredoxin reductase 2 (*TrxR2*) increases the levels of SO<sub>3</sub>-Prx3 in isolated mouse embryonic endothelial progenitor cells.<sup>4</sup> Hyperoxidized Prx3 (SO<sub>2/3</sub>-Prx3) is also increased during ferroptosis induced by erastin or RSL3 *in vitro*.<sup>5</sup> Liver levels of SO<sub>2/3</sub>-Prx3 are increased in mouse models of alcoholic fatty liver disease (AFLD) and non-alcoholic fatty liver disease (NAFLD). Cayman's Hyperoxidized Peroxiredoxin-3 Polyclonal Antibody can be used for ELISA, immunofluorescence (IF), and Western blot (WB) applications. The antibody recognizes hyperoxidized Prx3 at approximately 23 kDa from human samples.

## References

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1. Ismail, T., Kim, Y., Lee, H., *et al.* Interplay between mitochondrial peroxiredoxins and ROS in cancer development and progression. *Int. J. Mol. Sci.* **20(18)**, 4407 (2019).
2. Zao, Z., Bhella, D., and Lindsay, J.G. Reconstitution of the mitochondrial PrxIII antioxidant defence pathway: General properties and factors affecting PrxIII activity and oligomeric state. *J. Mol. Biol.* **372(4)**, 1022-1033 (2007).
3. Dammeyer, P. and Arnér, E.S. Human Protein Atlas of redox systems - What can be learnt? *Biochim. Biophys. Acta* **1810(1)**, 111-138 (2011).
4. Kameritsch, P., Singer, M., Nuernbergk, C., *et al.* The mitochondrial thioredoxin reductase system (TrxR2) in vascular endothelium controls peroxynitrite levels and tissue integrity. *Proc. Natl. Acad. Sci. USA* **118(7)**, e1921828118 (2021).
5. Cui, S., Ghai, A., Deng, Y., *et al.* Identification of hyperoxidized PRDX3 as a ferroptosis marker reveals ferroptotic damage in chronic liver diseases. *Mol. Cell* **83(21)**, P3931-3939.E5 (2023).