

# PRODUCT INFORMATION

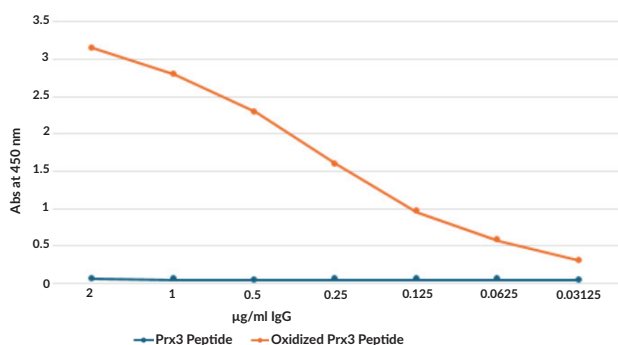


## Hyperoxidized Peroxiredoxin-3 Monoclonal Antibody - Biotinylated (Clone 5H7c) Item No. 44744

### Overview and Properties

<b>Contents:</b>	This vial contains 100 µg of biotinylated protein A-purified monoclonal antibody.
<b>Synonyms:</b>	Antioxidant Protein 1, AOP-1, MER5 Homolog, Mitochondrial Thioredoxin-dependent Peroxide Reductase, Peroxiredoxin III, PRDX3, Prx3
<b>Immunogen:</b>	A hyperoxidized human Prx3 peptide sequence
<b>Cross Reactivity:</b>	(+) Hyperoxidized Prx3, minimal reactivity with non-oxidized Prx3 (include proper controls)
<b>Species Reactivity:</b>	(+) Human
<b>Uniprot No.:</b>	P30048
<b>Form:</b>	Liquid
<b>Storage:</b>	-20°C (as supplied)
<b>Stability:</b>	≥2 years
<b>Storage Buffer:</b>	PBS, pH 7.2, with 50% glycerol and 0.02% sodium azide
<b>Clone:</b>	5H7c
<b>Host:</b>	Rabbit
<b>Isotype:</b>	IgG
<b>Applications:</b>	ELISA and Western blot (WB); the recommended starting dilution is 1:500-1:1,000 for ELISA and WB. Other applications were not tested, therefore optimal working concentration/dilution should be determined empirically.

### Image



ELISA of Hyperoxidized Peroxiredoxin-3 Monoclonal Antibody - Biotinylated (Clone 5H7c). Streptavidin-HRP detection.

#### 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

Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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## Description

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 (Item No. 17754) or RSL3 (Item No. 19288) *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 Monoclonal Antibody (Clone 5H7c) - Biotinylated can be used for ELISA and Western blot (WB) applications.

## References

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).

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