

PRODUCT INFORMATION

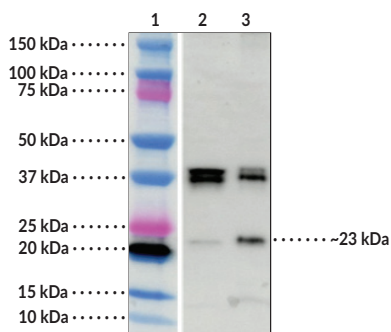
Hyperoxidized Peroxiredoxin-3 Recombinant Monoclonal Antibody (Clone 5H7c)

Item No. 45463

Overview and Properties

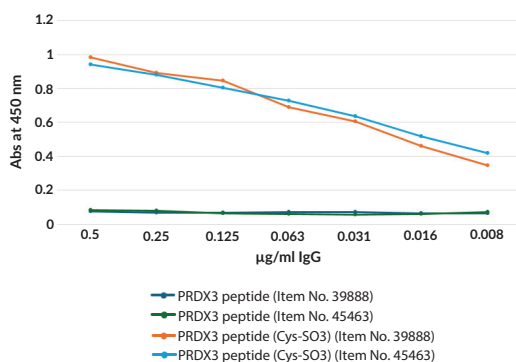
Contents:	This vial contains 100 µg of protein A-purified monoclonal antibody.
Synonyms:	Antioxidant Protein 1, AOP-1, MER5 Homolog, Mitochondrial Thioredoxin-dependent Peroxide Reductase, Peroxiredoxin III, PRDX3, Prx3
Preparation:	This antibody, which contains a mouse IgG isoform, was produced as a recombinant protein expressed in CHO cells using an engineered construct based on Hyperoxidized Peroxiredoxin-3 Monoclonal Antibody (Clone 5H7c).
Cross Reactivity:	(+) Hyperoxidized Prx3, minimal reactivity with non-oxidized Prx3
Species Reactivity:	(+) Human; other species not tested
Molecular Weight:	~23 kDa
Uniprot No.:	P30048
Form:	Liquid
Storage:	-20°C (as supplied)
Stability:	≥3 years
Storage Buffer:	PBS, pH 7.2, with 50% glycerol and 0.02% sodium azide
Clone:	5H7c
Host:	CHO cells
Isotype:	Mouse IgG2aK
Applications:	ELISA and Western blot (WB); the recommended starting dilution is 1:1,000. Other applications were not tested, therefore optimal working concentration/dilution should be determined empirically.

Images



Lane 1: MW Markers
Lane 2: Huh7 cell lysate
Lane 3: Huh7 cell lysate and Erastin (2 µM) (Item No. 17754)

SDS-PAGE Analysis of Hyperoxidized Peroxiredoxin-3.
Untreated and erastin-treated Huh7 cells were lysed, reduced, and run on a 4-20% SDS-PAGE gel followed by Western blotting with Hyperoxidized Peroxiredoxin-3 Recombinant Monoclonal Antibody (Clone 5H7c) (Item No. 45463).



ELISA. Plates were coated with a PRDX3 or PRDX3 (Cys-SO3) peptide followed by blocking with BSA and probing with Hyperoxidized Peroxiredoxin-3 Monoclonal Antibody (Clone 5H7c) (Item No. 39888) or Hyperoxidized Peroxiredoxin-3 Recombinant Monoclonal Antibody (Clone 5H7c) (Item No. 45463).

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.¹ 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).^{1,2} Reduced Prx3 exists as a monomer and hyperoxidized Prx3 is capable of forming dodecamers.² Prx3 is ubiquitously expressed and localizes to the mitochondrial matrix.^{1,3} 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).^{1,4} In the presence of high concentrations of hydrogen peroxide, Cp is oxidized to sulfinic acid (C-SO₂H), which can be reduced by sulfiredoxin (Srx), or the irreversible sulfonic acid (C-SO₃H) species.¹ Knockout of the gene encoding thioredoxin reductase 2 (*TrxR2*) increases the levels of SO₃-Prx3 in isolated mouse embryonic endothelial progenitor cells.⁴ Hyperoxidized Prx3 (SO_{2/3}-Prx3) is also increased during ferroptosis induced by erastin (Item No. 17754) or RSL3 (Item No. 19288) *in vitro*.⁵ Liver levels of SO_{2/3}-Prx3 are increased in mouse models of alcoholic fatty liver disease (AFLD) and non-alcoholic fatty liver disease (NAFLD). Cayman's Hyperoxidized Peroxiredoxin-3 Recombinant Monoclonal Antibody (Clone 5H7c) can be used for ELISA and Western blot (WB) applications. The antibody recognizes hyperoxidized Prx3 at approximately 23 kDa from human samples.

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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