

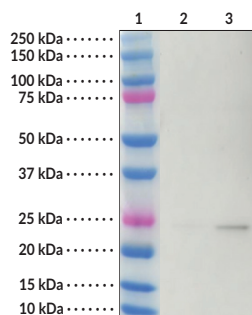
PRODUCT INFORMATION

Hyperoxidized Peroxiredoxin-3 Monoclonal Antibody (Clone 5H7c) Item No. 39888

Overview and Properties

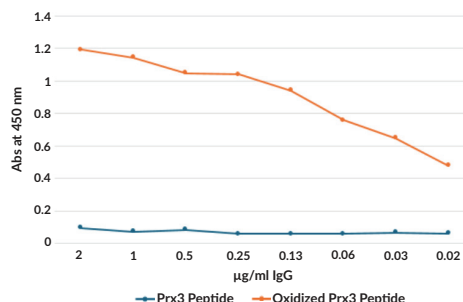
Contents:	This vial contains 100 µg of protein A-purified rabbit monoclonal antibody.
Synonyms:	Antioxidant Protein 1, AOP-1, MER5 Homolog, Mitochondrial Thioredoxin-dependent Peroxide Reductase, Peroxiredoxin III, PRDX3, Prx3
Immunogen:	A hyperoxidized human Prx3 peptide sequence
Cross Reactivity:	(+) Hyperoxidized Prx3, minimal reactivity with non-oxidized Prx3 (include proper controls)
Species Reactivity:	(+) Human, mouse
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:	Rabbit
Isotype:	IgG
Applications:	ELISA, Immunofluorescence (IF), and Western blot (WB); the recommended starting dilution is 1:500-1:1,000 for ELISA and WB and 1:100 for IF. Other applications were not tested, therefore optimal working concentration/dilution should be determined empirically.

Images



Lane 1: MW Markers
Lane 2: Mouse Liver Lysate (20 µg)
Lane 3: Mouse Liver Lysate (20 µg) and Alcohol Treatment

WB of Hyperoxidized Peroxiredoxin-3. Liver lysates generated from mice with or without alcohol treatment were probed with the Hyperoxidized Peroxiredoxin-3 Monoclonal Antibody (Clone 5H7c).



ELISA of Hyperoxidized Peroxiredoxin-3 Monoclonal Antibody (Clone 5H7c). An ELISA plate was coated with either a Prx3 or oxidized Prx3 peptide, blocked with BSA, and probed with the Hyperoxidized Peroxiredoxin-3 Monoclonal Antibody (Clone 5H7c).

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.

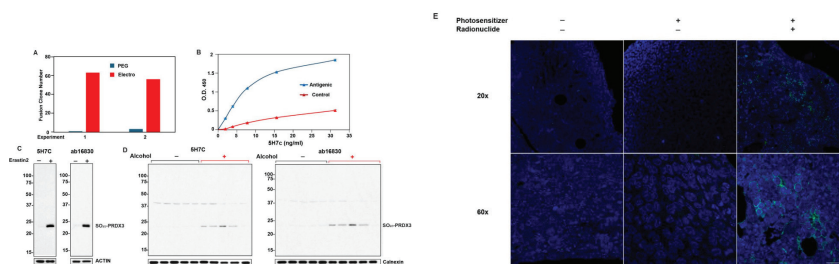
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PRODUCT INFORMATION

Images cont.



Cui, S., Donnelly, L., Ghai, A., et al. 5H7c: A rabbit monoclonal antibody detecting ferroptotic cells. *Mol. Cell* **84**(23), 4471-4472

Detection of ferroptotic cells through Hyperoxidized Peroxiredoxin-3 Monoclonal Antibody (Clone 5H7c).

(A) Efficiency of fusion between rabbit lymphocytes and 240E-1 cells expressed as the number of fusion cell clones per 10^7 lymphocytes through the indicated approach was shown from two independent experiments.

(B) Reactivity of Hyperoxidized Peroxiredoxin-3 Monoclonal Antibody (Clone 5H7c) at various concentrations to the indicated peptide was determined by ELISA.

(C) The same lysates of Huh7 cells treated with 200 nM erastin2 (Item No. 27087) for 18 hours was subject to immunoblot analysis with Hyperoxidized Peroxiredoxin-3 Monoclonal Antibody (Clone 5H7c) (20 ng/ml) or ab16830.

(D) The same liver lysates from female mice fed with or without ethanol was subject to immunoblot analysis with Hyperoxidized Peroxiredoxin-3 Monoclonal Antibody (Clone 5H7c) (20 ng/ml) or ab16830.

(E) Immunofluorescence with Hyperoxidized Peroxiredoxin-3 Monoclonal Antibody (Clone 5H7c) (10 μ g/ml) of bone tissues containing multiple myeloma xenograft from mice subjected to the indicated therapy. Scale bar = 20 μ m.

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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 or RSL3 *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 Monoclonal Antibody (Clone 5H7c) can be used for ELISA, immunofluorescence (IF), and Western blot (WB) applications. The antibody recognizes hyperoxidized Prx3 at approximately 23 kDa from human and mouse 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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