abcam

ab314333

Alexa Fluor® 488 Anti-Glutathione Peroxidase 4 antibody [EPNCIR144]

Recombinant | RabMAb

Key facts

Isotype	IgG
Host species	Rabbit
Conjugation	Alexa Fluor® 488
Excitation/Emission	Ex: 495nm, Em: 519nm
Storage buffer	pH: 7.4 Preservative: 0.02% Sodium azide Constituents: PBS, 30% Glycerol (glycerin, glycerine), 1% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPNCIR144
Purification technique	Affinity purification Protein A
Concentration	0.5 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	1/100
Notes	-

Expected

Species	Mouse, Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

ICC/IF

Expected

Species	Mouse, Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

Not recommended

Species	Human
Dilution info	-
Notes	-

Flow Cyt (Intra)

Expected

Species	Human, Mouse, Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

Target data

See full target information Phospholipid hydroperoxide glutathione peroxidase

Function	Essential antioxidant peroxidase that directly reduces phospholipid hydroperoxide even if they are incorporated in membranes and lipoproteins (PubMed:29290465). Can also reduce fatty acid hydroperoxide, cholesterol hydroperoxide and thymine hydroperoxide (By similarity). Plays a key role in protecting cells from oxidative damage by preventing membrane lipid peroxidation (PubMed:12566075). Required to prevent cells from ferroptosis, a non-apoptotic cell death resulting from an iron-dependent accumulation of lipid reactive oxygen species (PubMed:12566075, PubMed:24439385, PubMed:25402683, PubMed:25922076, PubMed:29290465). The presence of selenocysteine (Sec) versus Cys at the active site is essential for life: it provides resistance to overoxidation and prevents cells against ferroptosis (PubMed:29290465). The presence of Sec at the active site is also essential for the survival of a specific type of parvalbumin-positive interneurons, thereby preventing against fatal epileptic seizures (PubMed:29290465). May be required to protect cells from the toxicity of ingested lipid hydroperoxides (PubMed:12566075). Required for normal sperm development and male fertility (PubMed:19783653, PubMed:25922076). Essential for maturation and survival of photoreceptor cells (PubMed:22207760). Plays a role in a primary T-cell response to viral and parasitic infection by protecting T-cells from ferroptosis and by supporting T-cell expansion (PubMed:25824823). Plays a role of glutathione peroxidase in platelets in the arachidonic acid metabolism (By similarity). Reduces hydroperoxy ester lipids formed by a 15-lipoxygenase that may play a role as down-regulator of the cellular 15-lipoxygenase pathway (By similarity). Can also reduce small soluble hydroperoxides such as H2O2 and tert-butyl hydroperoxide (PubMed:12566075). Isoform Cytoplasmic. Specifically able to suppress the production of leukotriene and prostaglandin in response to several stimuli by reducing fatty acid hydroperoxide. Isoform Mitochondrial. Specifically required to prevent mitochondrial cell death by mediating reduction of cardiolipin hydroperoxide (By similarity). Also required for normal sperm development and male fertility (PubMed:19417079). Isoform Nuclear. Required for male fertility by stabilizing the condensed chromatin in sperm nuclei (PubMed:12566075).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle, Store in the dark

Notes

Patented technology
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

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Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	Glutathione Peroxidase 4 (GPX4) also known as PHGPx acts as an important enzyme in protecting cells from oxidative damage by reducing lipid hydroperoxides to their alcohols and free hydrogen peroxide to water. It has a mass of approximately 20 kDa. GPX4 is widely expressed in various tissues including the brain testis kidney and liver underlining its significance in different physiological processes. GPX4 is essential in cellular anti-oxidant defense making it a potential marker in studies using GPX4 western blot techniques.
Biological function summary	GPX4 plays an important role in protecting cellular membranes from lipid peroxidation by acting alone which differentiates it from other glutathione peroxidases that work in a complex. It is necessary for the production of glutathione products and helps maintain redox homeostasis by converting glutathione peroxides. This action prevents cell death pathways linked to oxidative stress and ensures cellular integrity particularly in sensitive tissues like the brain and reproductive organs.
Pathways	GPX4 integrates into important cellular antioxidant pathways. Specifically it functions within the glutathione metabolic pathway collaborating with related proteins like glutathione synthetase and glutathione reductase. GPX4 is also involved in ferroptosis regulation a cell death pathway critically linked to glutathione levels. It helps balance redox-sensitive signaling and metabolic

activities demonstrating synergy with other antioxidant enzymes in the cellular response to oxidative stress.

Associated diseases and disorders

Research connects GPX4 deficiency to neurological disorders and cancer. Its important antioxidative activity makes it significant in preventing neurodegenerative diseases such as Alzheimer's where it interacts with proteins like PINK1. GPX4 also shows relevance in cancer as its altered expression may increase vulnerability to cell death suggesting its potential role in chemotherapy resistance and therapy development.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

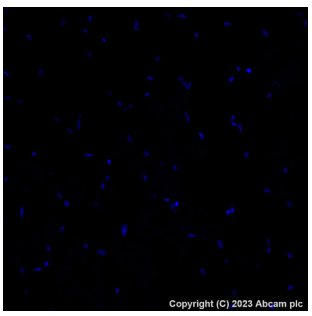
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

3 product images

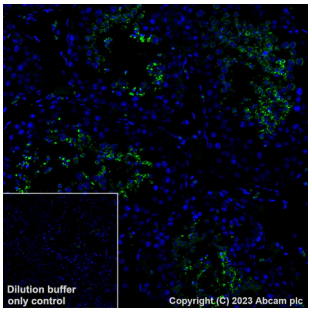


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Alexa Fluor® 488 Anti-Glutathione Peroxidase 4 antibody [EPNCIR144] (ab314333)

Glutathione Peroxidase 4 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Human skeletal muscle using rabbit Anti-Glutathione Peroxidase 4 antibody

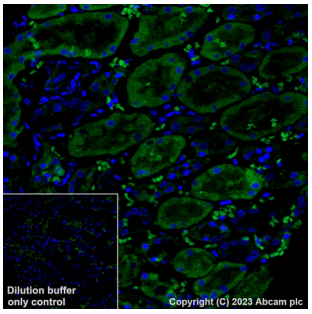
Immunohistochemical analysis of paraffin-embedded human skeletal muscle tissue labeling Glutathione Peroxidase 4 with ab314333 at 1/100 (5.0 ug/ml). Negative control: no staining on

human skeletal muscle. The section was incubated with ab314333 for 60 mins at room temperature (shown in green). Nuclear DNA was labeled with DAPI (shown in blue). The section was then mounted using Fluoromount®. The immunostaining was performed on a Leica Biosystems BOND RX instrument. Image was taken with a confocal microscope (Leica-Microsystems, TCS SP8). Heat mediated antigen retrieval was performed with Tris-EDTA buffer (pH 9.0, Epitope Retrieval Solution2) for 40 mins.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Alexa Fluor® 488 Anti-Glutathione Peroxidase 4 antibody [EPNCIR144] (ab314333)

Immunohistochemical analysis of paraffin-embedded human testis tissue labeling Glutathione Peroxidase 4 with ab314333 at 1/100 (5.0 ug/ml). Positive staining on human testis. The section was incubated with ab314333 for 60 mins at room temperature (shown in green). Nuclear DNA was labeled with DAPI (shown in blue). The section was then mounted using Fluoromount®. The immunostaining was performed on a Leica Biosystems BOND RX instrument. Image was taken with a confocal microscope (Leica-Microsystems, TCS SP8). Heat mediated antigen retrieval was performed with Tris-EDTA buffer (pH 9.0, Epitope Retrieval Solution2) for 40 mins.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Alexa Fluor® 488 Anti-Glutathione Peroxidase 4 antibody [EPNCIR144] (ab314333)

Immunohistochemical analysis of paraffin-embedded human kidney tissue labeling Glutathione Peroxidase 4 with ab314333 at 1/100 (5.0 ug/ml). Positive staining on human kidney. The section was incubated with ab314333 for 60 mins at room temperature (shown in green). Nuclear DNA was labeled with DAPI (shown in blue). The section was then mounted using Fluoromount®. The immunostaining was performed on a Leica Biosystems BOND RX instrument. Image was taken with a confocal microscope (Leica-Microsystems, TCS SP8). Heat mediated antigen retrieval was performed with Tris-EDTA buffer (pH 9.0, Epitope Retrieval Solution2) for 40 mins.

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.