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Anti-Glutathione Peroxidase 4/GPX4 Antibody Picoband™ (monoclonal, 6I4E7)

Catalog # ABO16599

Product Information

Application	WB, FC
Primary Accession	P36969
Host	Mouse
Isotype	Mouse IgG2b
Reactivity	Human
Clonality	Monoclonal
Format	Lyophilized
Description	Anti-Glutathione Peroxidase 4/GPX4 Antibody Picoband™ (monoclonal, 6I4E7) . Tested in Flow Cytometry, WB applications. This antibody reacts with Human.
Reconstitution	Adding 0.2 ml of distilled water will yield a concentration of 500 □g/ml.

Additional Information

Gene ID	2879
Other Names	Phospholipid hydroperoxide glutathione peroxidase GPX4, PHGPx, 1.11.1.12, Glutathione peroxidase 4, GPx-4, GSHPx-4, 1.11.1.9, GPX4 {ECO:0000303|PubMed:9705830, ECO:0000312|HGNC:HGNC:4556}
Calculated MW	22175
Application Details	Western blot, 0.25-0.5 □g/ml, Human Flow Cytometry, 1-3 □g/1x10^6 cells, Human
Source	Eukaryota
Contents	Each vial contains 4 mg Trehalose, 0.9 mg NaCl and 0.2 mg Na2HPO4.
Clone Names	Clone: 6I4E7
Immunogen	E.coli-derived human Glutathione Peroxidase 4/GPX4 recombinant protein (Position: A30-F197).
Purification	Immunogen affinity purified.
Storage	At -20°C for one year from date of receipt. After reconstitution, at 4°C for one month. It can also be aliquotted and stored frozen at -20°C for six months. Avoid repeated freezing and thawing.

Protein Information

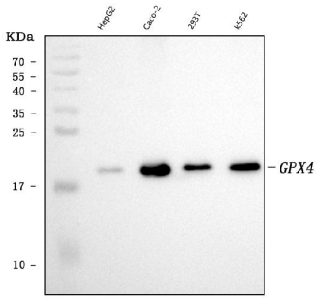
Name	GPX4 {ECO:0000303|PubMed:9705830, ECO:0000312|HGNC:HGNC:4556}
Function	Essential antioxidant peroxidase that directly reduces phospholipid hydroperoxide even if they are incorporated in membranes and lipoproteins (PubMed:40281343). Can also reduce cholesterol hydroperoxide and thymine hydroperoxide (By similarity). Plays a key role in protecting cells from oxidative damage by preventing membrane lipid peroxidation (PubMed:40281343). Required to prevent cells from ferroptosis, a non-apoptotic cell death resulting from an iron- dependent accumulation of lipid reactive oxygen species (PubMed:24439385, PubMed:40281343). 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 (By similarity). 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 (By similarity). May be required to protect cells from the toxicity of ingested lipid hydroperoxides (By similarity). Required for normal sperm development and male fertility (By similarity). Essential for maturation and survival of photoreceptor cells (By similarity). 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 (By similarity). Plays a role of glutathione peroxidase in platelets in the arachidonic acid metabolism (PubMed:11115402). 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 reduce fatty acid-derived hydroperoxides (PubMed:11115402, PubMed:36608588). Can also reduce small soluble hydroperoxides such as H2O2, cumene hydroperoxide and tert-butyl hydroperoxide (PubMed:17630701, PubMed:36608588).
Cellular Location	[Isoform Mitochondrial]: Mitochondrion {ECO:0000250|UniProtKB:O70325}
Tissue Location	Present primarily in testis. Expressed in platelets (at protein level) (PubMed:11115402).

Background

Glutathione peroxidase 4, also known as GPX4, is an enzyme that in humans is encoded by the GPX4 gene. This gene encodes a member of the glutathione peroxidase protein family. Glutathione peroxidase catalyzes the reduction of hydrogen peroxide, organic hydroperoxide, and lipid peroxides by reduced glutathione and functions in the protection of cells against oxidative damage. Human plasma glutathione peroxidase has been shown to be a selenium-containing enzyme and the UGA codon is translated into a selenocysteine. The encoded protein has been identified as a moonlighting protein based on its ability to serve dual functions as a peroxidase as well as a structural protein in mature spermatozoa. Through alternative splicing and transcription initiation, rat produces proteins that localize to the nucleus, mitochondrion, and cytoplasm. In humans, alternative transcription initiation and the cleavage sites of the mitochondrial and nuclear transit peptides need to be experimentally verified. Alternative splicing results in multiple transcript variants.

Images

Figure 1. Western blot analysis of Glutathione Peroxidase 4/GPX4 using anti-Glutathione Peroxidase 4/GPX4 antibody (M02059-1).
Electrophoresis was performed on a 5-20% SDS-PAGE gel at 70V (Stacking gel) / 90V (Resolving gel) for 2-3 hours.
The sample well of each lane was loaded with 30 ug of



sample under reducing conditions.
Lane 1: human HepG2 whole cell lysates,
Lane 2: human CACO-2 whole cell lysates,
Lane 3: human 293T whole cell lysates,
Lane 4: human K562 whole cell lysates.
After electrophoresis, proteins were transferred to a nitrocellulose membrane at 150 mA for 50-90 minutes. Blocked the membrane with 5% non-fat milk/TBS for 1.5 hour at RT. The membrane was incubated with mouse anti-Glutathione Peroxidase 4/GPX4 antigen affinity purified monoclonal antibody (Catalog # M02059-1) at 0.5 µg/mL overnight at 4°C, then washed with TBS-0.1%Tween 3 times with 5 minutes each and probed with a goat anti-mouse IgG-HRP secondary antibody at a dilution of 1:10000 for 1.5 hour at RT. The signal is developed using an Enhanced Chemiluminescent detection (ECL) kit (Catalog # EK1001) with Tanon 5200 system. A specific band was detected for Glutathione Peroxidase 4/GPX4 at approximately 19 kDa. The expected band size for Glutathione Peroxidase 4/GPX4 is at 22 kDa.

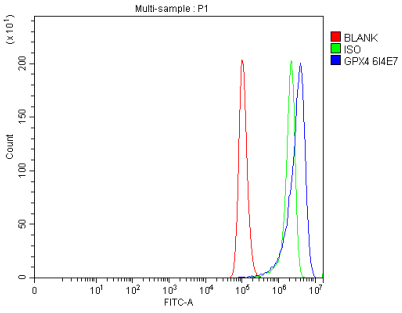


Figure 2. Flow Cytometry analysis of Hela cells using anti-Glutathione Peroxidase 4/GPX4 antibody (M02059-1). Overlay histogram showing Hela cells stained with M02059-1 (Blue line). The cells were blocked with 10% normal goat serum. And then incubated with mouse anti-Glutathione Peroxidase 4/GPX4 Antibody (M02059-1, 1 µg/1x10^6 cells) for 30 min at 20°C. DyLight®488 conjugated goat anti-mouse IgG (BA1126, 5-10 µg/1x10^6 cells) was used as secondary antibody for 30 minutes at 20°C. Isotype control antibody (Green line) was mouse IgG (1 µg/1x10^6) used under the same conditions. Unlabelled sample (Red line) was also used as a control.

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