

## Recombinant Human GPX4 Protein, His-tagged

**Cat. No.** GPX4-027H    **Lot. No.** (See product label)

### SPECIFICATION

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Product Overview</b> | Active recombinant N-terminal His-tagged full length human GPX4 protein (1-170) was expressed in E. coli strain C321.ΔA.exp.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Species</b>          | Human                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Source</b>           | E.coli                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>ProteinLength</b>    | 1-170                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Description</b>      | <p>The protein encoded by this gene belongs to the glutathione peroxidase family, members of which catalyze the reduction of hydrogen peroxide, organic hydroperoxides and lipid hydroperoxides, and thereby protect cells against oxidative damage. Several isozymes of this gene family exist in vertebrates, which vary in cellular location and substrate specificity. This isozyme has a high preference for lipid hydroperoxides and protects cells against membrane lipid peroxidation and cell death. It is also required for normal sperm development; thus, it has been identified as a 'moonlighting' protein because of its ability to serve dual functions as a peroxidase, as well as a structural protein in mature spermatozoa. Mutations in this gene are associated with Sedaghatian type of spondylometaphyseal dysplasia (SMDS). This isozyme is also a selenoprotein, containing the rare amino acid selenocysteine (Sec) at its active site. Sec is encoded by the UGA codon, which normally signals translation termination. The 3' UTRs of selenoprotein mRNAs contain a conserved stem-loop structure, designated the Sec insertion sequence (SECIS) element, that is necessary for the recognition of UGA as a Sec codon, rather</p> |

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than as a stop signal. Transcript variants resulting from alternative splicing or use of alternate promoters have been described to encode isoforms with different subcellular localization.

|                        |                                                                                                                                                                                                                                                                  |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Molecular Mass</b>  | 21.2 kDa                                                                                                                                                                                                                                                         |
| <b>Purity</b>          | ≥65% estimated by SDS-PAGE                                                                                                                                                                                                                                       |
| <b>Unit Definition</b> | One unit is defined as the amount of enzyme required to produce 1 μmol of NADP <sup>+</sup> per minute at 25 centigrade in 50 mM Tris-HCl, pH 7.6, with 5 mM EDTA, 1 mM GSH, 0.076 units glutathione reductase, 263 μM NADPH and 0.5 mM of cumene hydroperoxide. |
| <b>Applications</b>    | WB, ELISA, and enzymatic assays                                                                                                                                                                                                                                  |
| <b>Stability</b>       | ≥ 9 months                                                                                                                                                                                                                                                       |
| <b>Storage</b>         | At -80 centigrade.                                                                                                                                                                                                                                               |
| <b>Storage Buffer</b>  | 50 mM potassium phosphate buffer, pH 7.6, with 0.1 mM DTT and 5% glycerol                                                                                                                                                                                        |

## GENE INFORMATION

|                        |                                                                                                                                                                                                                                                                                                                     |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Gene Name</b>       | GPX4 glutathione peroxidase 4 [ Homo sapiens (human) ]                                                                                                                                                                                                                                                              |
| <b>Official Symbol</b> | GPX4                                                                                                                                                                                                                                                                                                                |
| <b>Synonyms</b>        | GPX4; glutathione peroxidase 4; MCSP; SMDS; GPx-4; PHGPx; snGPx; GSHPx-4; snPHGPx; phospholipid hydroperoxide glutathione peroxidase; epididymis secretory sperm binding protein; phospholipid hydroperoxidase; phospholipid hydroperoxide glutathione peroxidase, mitochondrial; selenoprotein GPX4; sperm nucleus |

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glutathione peroxidase; EC 1.11.1.12

**Gene ID** 2879

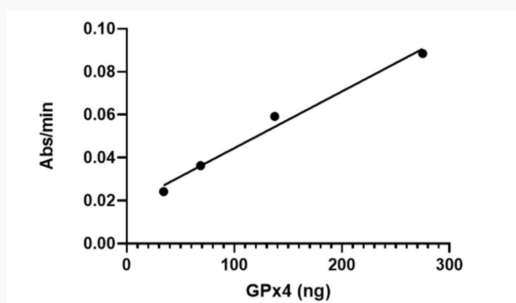
**mRNA Refseq** NM\_002085

**Protein Refseq** NP\_002076

**MIM** 138322

**UniProt ID** P36969

#### GPX4 Activity



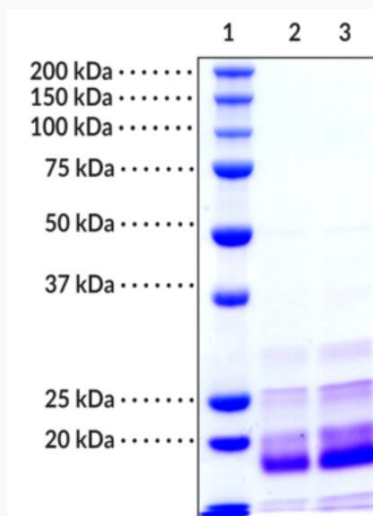
GPX4 activity was determined using Glutathione Peroxidase Assay Kit.

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### SDS-PAGE analysis of GPX4



Lane 1: MW Markers

Lane 2: GPX4 (2 µg)

Lane 3: GPX4 (4 µg)

**GPX4 protein has a selenocysteine incorporated in the active site that has been confirmed by mass spectrometry. Selenocysteine is incorporated in the active site the UGA stop codon indicated in teal.**

|                       |                       |                       |                       |                       |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1-30<br>GSSHHHHHS     | 31-60<br>QDPNSMCASR   | 61-90<br>DDWRCARSMH   | 91-120<br>EFSAKDIDGH  | 121-150<br>MVNLDKYRGF |
| 151-180<br>VCIVTNVASQ | 181-210<br>UGKTEVNYTQ | 211-240<br>LVDLHARYAE | 241-270<br>CGLRILAFPC | 271-300<br>NQFGKQEPGS |
| 301-330<br>NEEIKEFAAG | 331-360<br>YNVKFDMSK  | 361-390<br>ICVNGDDAHP | 391-420<br>LWKWMKIQPK | 421-450<br>GKGILGNAIK |
| 451-480<br>WNFTKFLIDK | 481-510<br>NGCVVKRYGP | 511-540<br>MEEPLVIEKD | 541-570<br>LPHYF      |                       |

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