

Recombinant Human GPX4 Protein, His-tagged

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

SPECIFICATION

Product Overview	Active recombinant N-terminal His-tagged full length human GPX4 protein (1-170) was expressed in E. coli strain C321.ΔA.exp.
Species	Human
Source	E.coli
ProteinLength	1-170
Description	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

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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.

Molecular Mass	21.2 kDa
Purity	≥65% estimated by SDS-PAGE
Unit Definition	One unit is defined as the amount of enzyme required to produce 1 μmol of NADP ⁺ 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.
Applications	WB, ELISA, and enzymatic assays
Stability	≥ 9 months
Storage	At -80 centigrade.
Storage Buffer	50 mM potassium phosphate buffer, pH 7.6, with 0.1 mM DTT and 5% glycerol

GENE INFORMATION

Gene Name	GPX4 glutathione peroxidase 4 [Homo sapiens (human)]
Official Symbol	GPX4
Synonyms	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

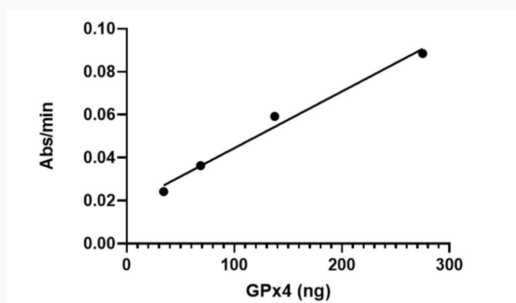
mRNA Refseq NM_002085

Protein Refseq NP_002076

MIM 138322

UniProt ID P36969

GPX4 Activity



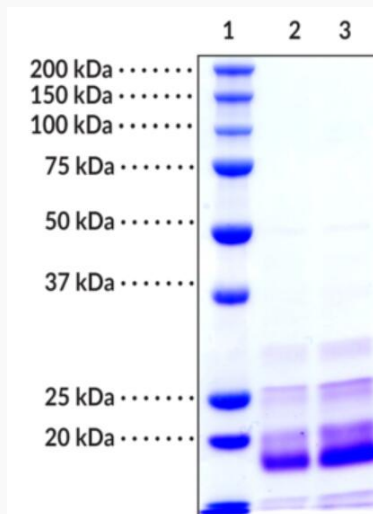
GPX4 activity was determined using Glutathione Peroxidase Assay Kit.

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

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