

Recombinant Rat Txnrd1 Protein

Cat. No. Txnrd1-001R **Lot. No.** (See product label)

SPECIFICATION

Product Overview	Active recombinant rat TrxR1 protein (3-499) without tag was expressed in E. coli.
Species	Rat
Source	E.coli
ProteinLength	3-499
Description	The protein encoded by this gene belongs to the pyridine nucleotide-disulfide oxidoreductase family, and is a member of the thioredoxin (Trx) system. Three thioredoxin reductase (TrxR) isozymes are found in mammals. TrxRs are selenocysteine-containing flavoenzymes, which reduce thioredoxins, as well as other substrates, and play a key role in redox homeostasis. This gene encodes an ubiquitously expressed, cytosolic form of TrxR, which functions as a homodimer containing FAD, and selenocysteine (Sec) at the active site. Sec is encoded by UGA codon that normally signals translation termination. The 3' UTRs of selenoprotein mRNAs contain a conserved stem-loop structure, the Sec insertion sequence (SECIS) element, which is necessary for the recognition of UGA as a Sec codon rather than as a stop signal. Alternative splicing, primarily at the 5' end, results in transcript variants encoding same or different isoforms.
Molecular Mass	54.5 kDa
Purity	≥90% as determined by SDS-PAGE

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Unit Definition	One unit is defined as the NADPH-dependent production of 2 mmol of 2-nitro-5-thiobenzoate per minute at 22 centigrade in 50 mM potassium phosphate, pH 7.0, with 50 mM potassium chloride, 1 mM EDTA, and 0.2 mg/mL BSA. For inhibition, the selective TrxR1 inhibitor sodium aurothiomalate (ATM) was used at a concentration of 20 mM.
Applications	WB, Enzyme activity assay
Stability	≥ 1 year
Storage	At -80 centigrade.
Storage Buffer	50 mM Tris-HCl, pH 7.4, with 2 mM EDTA and 10% glycerol

GENE INFORMATION

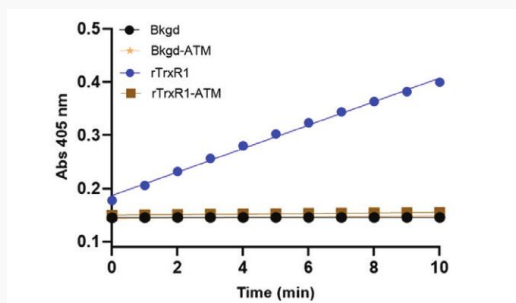
Gene Name	Txnrd1 thioredoxin reductase 1 [Rattus norvegicus (Norway rat)]
Official Symbol	Txnrd1
Synonyms	Txnrd1; thioredoxin reductase 1; Tr; thioredoxin reductase 1, cytoplasmic; NADPH-dependent thioredoxin reductase; selenoprotein oxidoreductase; thioredoxin reductase TR1; EC 1.8.1.9
Gene ID	58819
mRNA Refseq	NM_031614
Protein Refseq	NP_113802
UniProt ID	O89049

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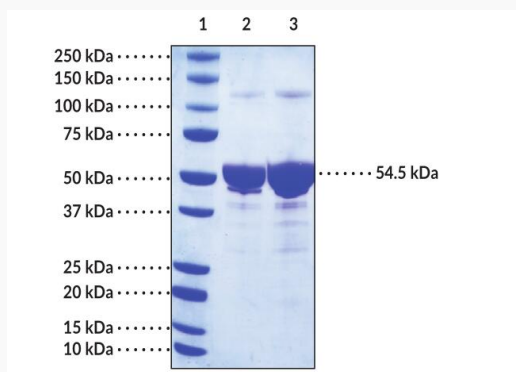
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**Rat Thioredoxin
Reductase 1 (rTrxR1)
activity determined
using Thioredoxin
Reductase
Colorimetric Assay
Kit.**



**SDS-PAGE analysis
of thioredoxin
Reductase 1**



Lane 1: MW Markers

Lane 2: Thioredoxin Reductase 1 (2 µg)

Lane 3: Thioredoxin Reductase 1 (4 µg)

rTrxR1 concentration was determined spectrophotometrically by FAD absorption at 463 nm ($\epsilon=13600\text{M}^{-1}\text{cm}^{-1}$)

Thioredoxin Reductase 1 (rat, recombinant) protein has a selenocysteine incorporated in the active site that has been confirmed by mass spectrometry. Selenocysteine (●) is incorporated in the active site at the UGA stop codon indicated in teal.

10 MDDSKDAPKS	20 YDFDLIIGG	30 GSGGLAAAKE	40 AAKFDKKVMV	50 LDFVTPTPLG
60 TRWGLGGTCV	70 NVGCIPKKLM	80 HQAALLGQAL	90 KDSRNYGWKL	100 EDTVKHDWEK
110 MTESVQNHIG	120 SLNWGYRVAL	130 REKKVYVENA	140 YGKFIGPHKI	150 MATNNKGKEK
160 VYSAERFLIA	170 TGERPRYLG	180 PGDKEYCISS	190 DDLFSLPYCP	200 GKTLLVVGASY
210 VALECAGFLA	220 GIGLDVTVMV	230 RSILLRGFDQ	240 DMANKIGEHM	250 EEHGKIFIRQ
260 FVPTKIEQIE	270 AGTPGRCLKVT	280 AKSTNSEETI	290 EDEFNTVLLA	300 VGRDSCRTTI
310 GLETVGKIN	320 EKTGKIPVTD	330 EEQTNVPYIY	340 AIGDILEGKL	350 ELTPVAIQAG
360 RLLAQRLYGG	370 STVKCDYDNV	380 PTTVFTPLEY	390 GCCGLSEEKA	400 VEKFGREENE
410 VYHSFFWPLE	420 WTVPSRDNNK	430 CYAKVICNLK	440 DNERVVGPHV	450 LGPNAGEVTQ
460 GFAAALKCGL	470 TKQLDSTIG	480 IHPVCAEIFT	490 TSVTKRSGG	500 DILQSGCUG

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