

# Active Recombinant Rat Thioredoxin Reductase 1

**Cat. No.** Txnrd1-126R    **Lot. No.** (See product label)

## SPECIFICATION

### Product Overview

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Species</b>      | Rat                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Source</b>       | E.coli                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Description</b>  | <p>This gene encodes a member of the family of pyridine nucleotide-disulfide oxidoreductases. This protein is a flavoenzyme, which uses NADPH for reduction of thioredoxins as well as other protein and nonprotein substrates, and plays a role in protection against oxidative stress. It contains a selenocysteine (Sec) residue, which is essential for catalytic activity. The selenocysteine is encoded by the UGA codon that normally signals translation termination. The 3' UTR of Sec-containing genes have a common stem-loop structure, the sec insertion sequence (SECIS), that is necessary for the recognition of UGA as a Sec codon, rather than as a stop signal.</p> |
| <b>Bio-activity</b> | <p>One ampoule contains 340 µof recombinant rat thioredoxin reductase 1 (TrxR1) in 50 mM Tris-HCl, 1 mM EDTA, pH 7.5 and 50 percent glycerol with a total activity of 10.5 units and 0.3 mg of active enzyme protein. One unit of enzyme catalyses oxidation of one micromol of NADPH per min under standard mammalian TrxR assay conditions in the presence of 5 mM DTNB.</p>                                                                                                                                                                                                                                                                                                         |
| <b>Notes</b>        | <p>Some solution may stick to the rubber cover or stay on the walls of the vial. This enzyme is expressed in E.coli gor mutant and is thus free of glutathione reductase activity. Pure thioredoxin reductase is 35 Units per mg protein and has a molecular mass of 112 000 with two identical subunits. Due to UGA codon acting as stop this</p>                                                                                                                                                                                                                                                                                                                                     |

 Tel: 1-631-559-9269    1-516-512-3133

 Email: [info@creative-biomart.com](mailto:info@creative-biomart.com)     Fax: 1-631-938-8127

 45-1 Ramsey Road, Shirley, NY 11967, USA

preparation contains about 50 percent of the truncated protein lacking the Sec-Gly C-terminus. It is homogenous on Western blots. The truncated protein is folded and does not influence activity.

**Stability**

6 months

**Storage**

Keep enzyme frozen in aliquots at -20 centigrade in the dark.

**Reconstitution**

Add 1.57 ml of 50 mM Tris-HCl- 1 mM EDTA, pH 7.5 (or other buffer with EDTA) and mix. This will give 2 ml of a solution with 5 Units /ml or 2.8  $\mu$ M of active enzyme.

## GENE INFORMATION

**Gene Name**

[Txnrd1 thioredoxin reductase 1 \[ Rattus norvegicus \]](#)

**Official Symbol**

Txnrd1

**Synonyms**

Tr; thioredoxin reductase 1, cytoplasmic; NADPH-dependent thioredoxin reductase; selenoprotein oxidoreductase; thioredoxin reductase TR1

**Gene ID**

[58819](#)

**mRNA Refseq**

[NM\\_031614](#)

**Protein Refseq**

[NP\\_113802](#)

**UniProt ID**

O89049

**Chromosome Location**

7q13

**Pathway**

Folic Acid Network, organism-specific biosystem; Oxidative Stress, organism-specific

 Tel: 1-631-559-9269 1-516-512-3133

 Email: [info@creative-biomart.com](mailto:info@creative-biomart.com)  Fax: 1-631-938-8127

 45-1 Ramsey Road, Shirley, NY 11967, USA

biosystem; Pyrimidine metabolism, conserved biosystem

**Function**

NAD(P)H oxidase activity; flavin adenine dinucleotide binding; mercury ion binding

 Tel: 1-631-559-9269 1-516-512-3133

 Email: [info@creative-biomart.com](mailto:info@creative-biomart.com)  Fax: 1-631-938-8127

 45-1 Ramsey Road, Shirley, NY 11967, USA