

## TrkA Protein, Human, Recombinant (aa 194-413, His)

### General Information

Synonyms:	neurotrophic tyrosine kinase, receptor, type 1;MTC;Trk-A;p140-TrkA;TRK1;TRKA;TRK
Protein Construction:	A DNA sequence encoding the amino acid sequence (Pro 194-Glu 413) of human NTRK1 (NP_002520.2), corresponding to the Ig-like C2-type 1 & 2 domains, was expressed and purified, with a N-terminal polyhistidine tag. Predicted N terminal: His
Species:	Human
Expression Host:	HEK293 Cells
Accession:	P04629-1
Molecular Weight:	26 kDa (predicted); 45-50 kDa (reducing condition, due to glycosylation)

### QC Testing

Biological Activity:	Measured by its ability to inhibit NGF-induced proliferation of TF1 human erythroleukemic cells. The ED50 for this effect is typically 0.5-4 µg/ml in the presence of 10 ng/mL of human NGF.
Purity:	> 95 % as determined by SDS-PAGE
Endotoxin:	< 1.0 EU/µg of the protein as determined by the LAL method.
Formulation:	Lyophilized from a solution filtered through a 0.22 µm filter, containing PBS, pH 7.4. Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization.

### Preparation and Storage

**Reconstitution:**  
A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

**Stability & Storage:**

It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

*Actual storage temperature shall be subject to the COA.*

**Shipping:**

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

### Protein Background

TRKA is a member of the neurotrophic tyrosine kinase receptor (NTRK) family. It is a membrane-bound receptor that, upon neurotrophin binding, phosphorylates itself and members of the MAPK pathway. Isoform TrkA-III promotes angiogenesis and has oncogenic activity when overexpressed. Isoform TrkA-I is found in most non-

neuronal tissues. Isoform TrkA-II is primarily expressed in neuronal cells. TrkA-III is specifically expressed by the pluripotent neural stem and neural crest progenitors. The presence of NTRK1 leads to cell differentiation and may play a role in specifying sensory neuron subtypes. Mutations in the TRKA gene have been associated with congenital insensitivity to pain, anhidrosis, self-mutilating behavior, mental retardation, and cancer. It was originally identified as an oncogene as it is commonly mutated in cancers, particularly colon and thyroid carcinomas. TRKA is required for high-affinity binding to nerve growth factor (NGF), neurotrophin-3 and neurotrophin-4/5 but not brain-derived neurotrophic factor (BDNF). Known substrates for the Trk receptors are SHC1, PI 3-kinase, and PLC-gamma-1. NTRK1 has a crucial role in the development and function of the nociceptive reception system as well as the establishment of thermal regulation via sweating. It also activates ERK1 by either SHC1- or PLC-gamma-1-dependent signaling pathway. Defects in NTRK1 are a cause of congenital insensitivity to pain with anhidrosis and thyroid papillary carcinoma. Cancer Immunotherapy Immune Checkpoint Immunotherapy Targeted Therapy

### Reference

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Benito-Gutiérrez E, et al. (2006) Origin and evolution of the Trk family of neurotrophic receptors. *Mol Cell Neurosci.* 31(2):179-92.

Martin-Zanca D, et al. (1986) A human oncogene formed by the fusion of truncated tropomyosin and protein tyrosine kinase sequences. *Nature.* 319(6056):743-8.

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