

## TrkA Protein, Canine, Recombinant (His)

### General Information

|                       |   |
|-----------------------|---|
| Synonyms:             | neurotrophic tyrosine kinase, receptor, type 1  |
| Protein Construction: | A DNA sequence encoding the canine NTRK1 (XP_851619.3) (Pro285-Lys410) was expressed with a N-terminal polyhistidine tag. Predicted N terminal: His |
| Species:              | Canine  |
| Expression Host:      | HEK293 Cells  |
| Accession:            | XP_851619.3   |
| Molecular Weight:     | 16.2 kDa (predicted); 27-33 kDa (reducing condition, due to glycosylation)  |

### QC Testing

|                      |  |
|----------------------|--|
| Biological Activity: | Measured by its ability to inhibit NGF-induced proliferation of TF-1 human erythroleukemic cells. The ED50 for this effect is typically 0.4-1.6 µg/mL in the presence of 10 ng/mL of recombinant 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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