# Cytokines

**Human Recombinant CNTF**

Ciliary neurotrophic factor

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|---|---|---|
| Catalog # | 78010 | 10 µg |
| | 78010.1 | 50 µg |

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## Product Description

Ciliary neurotrophic factor (CNTF) is a neurotrophic factor that belongs to the four-helix bundle cytokine family and is structurally related to interleukin 6 (IL-6), interleukin 11 (IL-11), leukemia inhibitory factor (LIF), and oncostatin M (OSM). CNTF binds to its receptor CNFTRα and induces formation of a heterodimer of the signal-transducing IL-6 receptor gp130 and LIF receptor (LIFR)-β, which triggers JAK/STAT, ERK, and the PI3K signaling cascades (Schuster et al.). CNTF plays an important role in neurogenesis and the differentiation of neural stem cells and has been suggested to possess a therapeutic role in treating neurological disorders (Ding et al.; Oppenheim et al.). CNTF has also been shown to protect rod photoreceptors from light-induced damage and to have therapeutic effects on retinal degenerative diseases caused by genetic defect or damage induced by toxins, autoantibodies, or strong light (Pernet et al.; Rhee et al.). Another therapeutic role of CNTF has been reported in protecting oligodendrocytes from death induced by apoptosis (Louis et al.). Additionally, CNTF is commonly used to differentiate human pluripotent stem cell (hPSC)-derived neural progenitor cells into astrocytes (Krencik & Zhang).

## Product Information

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| Alternative Names: | Ciliary neurotrophic factor |
| Accession Number: | P26441 |
| Amino Acid Sequence: | AFTEHSPLTP HRRDLCSRSI WLARKIRSDL TALTESYVKH QGLNKNINLD SADGMPVAST DQWSELTEAE RLQENLQAYR TFHVLLARLL EDQQVHFTPT EGDFHQAIHT LLLQVAAFAY QIEELMILLE YKIPRNEADG MPINVGDGGL FEKKLWGLKV LQELSQWTVR SIHDLRFISS HQTGIPARGS HYIANNKKM |
| Predicted Molecular Mass: | 22.8 kDa |
| Species: | Human |
| Cross Reactivity: | Rat |
| Formulation: | Lyophilized after dialysis against phosphate-buffered saline. |
| Source: | E. coli |

## Specifications

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| Activity: | The specific activity is ≥ 5 x 10^3 units/mg (EC50 ≤ 200 ng/mL) as determined by a cell proliferation assay using TF-1 cells. |
| Purity: | ≥ 95% |
| Endotoxin Level: | Measured by kinetic Limulus amebocyte lysate (LAL) analysis and is ≤ 0.2 EU/µg protein. |

## Preparation and Storage

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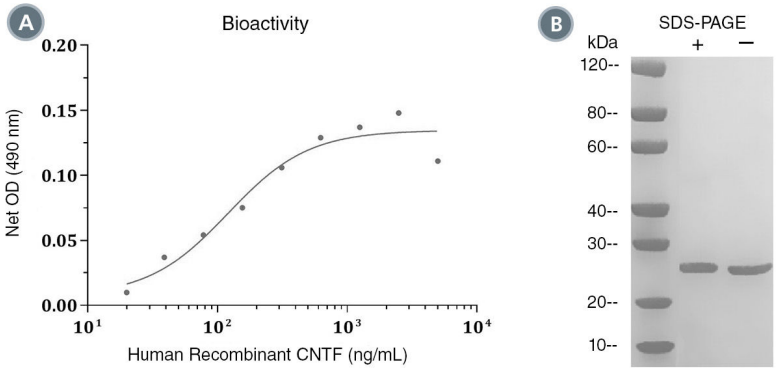
| Storage: | Store at -80°C. |
| Stability: | Stable as supplied for 12 months from date of receipt. |
| Preparation: | Centrifuge vial before opening. Reconstitute the product in sterile water to at least 0.1 mg/mL by pipetting the solution down the sides of the vial. Do not vortex. As a general guide, do not store at 2 - 8°C for more than 2 weeks or at -20°C for more than 3 months. Avoid repeated freeze-thaw cycles. |

## Data




(A) The biological activity of Human Recombinant CNTF was tested by its ability to promote the proliferation of TF-1 cells. Cell proliferation was measured using a fluorometric assay method. The EC50 is defined as the effective concentration of the growth factor at which cell proliferation is at 50% of maximum. The EC50 in the above example is less than 200 ng/mL.
(B) 2 µg of Human Recombinant CNTF was resolved with SDS-PAGE under reducing (+) and non-reducing (-) conditions and visualized by Coomassie Blue staining. Human Recombinant CNTF has a predicted molecular mass of 22.8 kDa.

## Related Products

For a complete list of cytokines, as well as related products available from STEMCELL Technologies, visit www.stemcell.com/cytokines or contact us at techsupport@stemcell.com.

## References

Ding J et al. (2013) Role of ciliary neurotrophic factor in the proliferation and differentiation of neural stem cells. J Alzheimers Dis 37(3): 587–92.
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Louis JC et al. (1993) CNTF protection of oligodendrocytes against natural and tumor necrosis factor-induced death. Science 259(5095): 689–92.
Oppenheim RW et al. (1991) Control of embryonic motoneuron survival in vivo by ciliary neurotrophic factor. Science 251(5001): 1616–8.
Pernet V et al. (2013) Long-distance axonal regeneration induced by CNTF gene transfer is impaired by axonal misguidance in the injured adult optic nerve. Neurobiol Dis 51: 202–13.
Rhee K Do et al. (2013) CNTF-mediated protection of photoreceptors requires initial activation of the cytokine receptor gp130 in Müller glial cells. Proc Natl Acad Sci USA 110(47): E4520–9.
Schuster B et al. (2003) Signaling of human ciliary neurotrophic factor (CNTF) revisited. The interleukin-6 receptor can serve as an alpha-receptor for CTNF. J Biol Chem 278(11): 9528–35.