

Product Information

Glial Cell Line-derived Neurotrophic Factor, human
recombinant, expressed in *Escherichia coli*
cell culture tested

Catalog Number **G1777**
Storage Temperature $-20\text{ }^{\circ}\text{C}$

Synonyms: ATF, GDNF

Product Description

Glial Cell Line-derived Neurotrophic Factor (GDNF) is a member of the cysteine-knot superfamily of growth factors that assume stable dimeric protein structures. GDNF signals through a multicomponent receptor, composed of the transmembrane tyrosine kinase receptor RET and one of four GPI-linked GDNF family receptors alpha 1-4 ($\text{GFR}\alpha 1\text{--}\alpha 4$). While all GDNF family members signal through the tyrosine kinase receptor RET, binding and specificity is mediated through interactions with the $\text{GFR}\alpha$ members. Among the $\text{GFR}\alpha$ receptor family members, $\text{GFR}\alpha\text{-1}$ mediates GDNF signaling.¹⁻⁴

GDNF promotes neuron survival in many different neuron cell types and specifically promotes dopamine uptake, survival, and morphological differentiation of midbrain neurons. In addition, exogenously applied GDNF has been shown to rescue damaged facial motor neurons *in vivo*.²⁻³

Mature GDNF, a disulfide-linked homodimeric glycoprotein, is predicted to contain two 15 kDa monomers. Each monomer contains seven conserved cysteine residues, one of which, Cys¹⁰¹, is used for interchain disulfide bridging and the others are involved in intramolecular ring formation known as the cysteine knot configuration.⁴ GDNF shows remarkable cross-species amino acid sequence homology, with ~93% identity between rat and human GDNF.

This recombinant Glial Cell Line-derived Neurotrophic Factor is produced from a DNA sequence encoding the human GDNF precursor¹ and expressed in *Escherichia coli*. It is lyophilized from a 0.2 μm filtered solution of 10 mM sodium citrate and 150 mM sodium chloride containing 0.5 mg bovine serum albumin per 10 μg GDNF.

Purity: $\geq 98\%$ (SDS-PAGE)

Recombinant GDNF bioactivity is measured in a cell proliferation assay of SH-SY5Y human neuroblastoma cells in the presence of $\text{GFR}\alpha\text{-1}$.

Endotoxin level: < 1.0 EU (endotoxin units)/ μg of protein

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

Reconstitute the contents of the vial using 0.2 μm filtered water.

Storage/Stability

Store the product at $-20\text{ }^{\circ}\text{C}$. After reconstitution, the product should be frozen in working aliquots at $-20\text{ }^{\circ}\text{C}$. Repeated freezing and thawing is not recommended. Do not store in a frost-free freezer.

References

1. Lin, L.F. et al., GDNF: a glial cell line-derived neurotrophic factor for midbrain dopaminergic neurons. *Science*, **260**, 1130-2 (1993).
2. Oppenheim, R.W. et al., The neurotrophic theory and naturally occurring motoneuron death. *Nature*, **373**, 344-346 (1995).
3. Yan, Q. et al., *In vivo* neurotrophic effects of GDNF on neonatal and adult facial motor neurons. *Nature*, **373**, 341-344 (1995).
4. Hirata, Y., and Kiuchi, K., Mitogenic effect of glial cell line-derived neurotrophic factor is dependent on the activation of p70S6 kinase, but independent of the activation of ERK and up-regulation of Ret in SH-SY5Y cells. *Brain Res.*, **983**, 1-12 (2003).

DT,ANK,FF,KAA,PHC,MAM 07/14-1