Cell-Vive™ GMP Recombinant Human NRG1-β1/HRG1-β1 ECD domain (carrier-free)

Catalog# / Size 765124 / 50 µg

Other Names Neuregulin-1 β1 (NRG1-β1), Heregulin-1 β1 (HRG1-β1)

Description Neuregulin 1 (NRG1) was initially identified in the conditioned medium of a human breast tumor cell line as a protein of 45 kD, which induces the phosphorylation of a tyrosine kinase (ERBB2). The neuregulin family includes four members (NRG1-NRG4) that are encoded from four individual genes. Through differential promoter usage and splicing, these members generate 12 isoforms. The best characterized is neuregulin 1, which includes eight isoforms; all isoforms contain (from N-terminus to C-terminus) an immunoglobulin-like (Ig) domain, a growth factor-like domain (EGF), a transmembrane (TM), and a cytoplasmic domain. Alternative splicing in the EGF-like domain of neuregulin 1 results in α and β isoforms. The EGF-like domain is necessary and sufficient for neuregulin bioactivity. The EGFR family of receptors includes four members (ErbB1 through ErbB4), and neuregulins bind to the ErbB3 and ErbB4 receptors. Neuregulins are released from the membrane by proteolytic cleavage, and this process is required for the binding of the neuregulin derived fragments to ErbB receptors. The neuregulin1-β isoform is predominant in the central nervous system and participates in development, survival, and metabolism in neuron and glial cells. Neuregulin1-β is neuroprotective and attenuates inflammatory responses induced by ischemic stroke in rats, preventing macrophage and microglial infiltration and astrocytic activation. Also, neuregulin1-β blocks the induction of pro-inflammatory and stress genes provoked by ischemia. Neuregulins 1-4 are expressed in approximately 25% of breast cancer carcinomas and increase breast cancer cell proliferation, increase tumorigenesis, and promote invasive characteristics of cancer cells. In this sense, neuregulin1-β induces MMP-1 and MMP-9 in cancer cell lines.

Quality Statement BioLegend Cell-Vive™ GMP Recombinant proteins are manufactured and tested in accordance with USP Chapter 1043, Ancillary Materials for Cell, Gene and Tissue-Engineered Products and Ph. Eur. Chapter 5.2.12 in a dedicated GMP facility compliant with ISO 13485:2016. Specifications and processes include:

- Low endotoxin level (≤ 0.1 EU/µg)
- Purity (≥ 95% or higher)
- Bioburden testing
- Mycoplasma testing
- Batch-to-batch consistency
- Vendor qualification
- Raw material traceability and documentation
- Documented procedures and employee training
- Equipment maintenance and monitoring records
- Lot-specific certificates of analysis
- Quality audits per ISO 13485:2016
- QA review of released products

Product Details

Source Human NRG1-β1 ECD domain, amino acids Ser2-Lys246 (Accession# AAA58639.1), was expressed in *E. coli*.

Molecular Mass The 245 amino acid recombinant protein has a predicted molecular mass of approximately 26.8 kD. The DTT-reduced and non-reduced protein migrate at approximately 33 kD by SDS-PAGE. The predicted N-terminal amino acid is Ser.

N-terminal Sequence Analysis Ser-Glu-Arg-Lys-Glu-Gly-Arg-Gly-Lys-Gly

Purity ≥ 95%, as determined by Coomassie stained SDS-PAGE

Formulation Protein was lyophilized from 0.1 µm filtered solution containing PBS

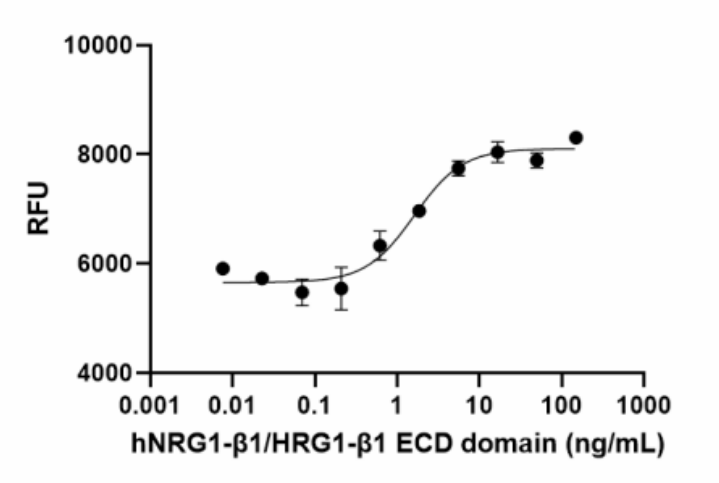
Endotoxin Level Less than or equal to 0.1 EU per µg of protein as determined by LAL method

Residual Host Cell Protein Content	≤ 0.500 ng/µg by ELISA
Concentration	50 µg size is lyophilized
Storage & Handling	Unopened vial can be stored between 2°C and 8°C for up to 2 weeks, at - 20°C or colder until the expiration date. Reconstitute lyophilized protein in sterile PBS. Before reconstitution, make sure sterile PBS and product are at room temperature. Quickly spin the vial or gently tap down on the vial to make sure the lyophilized product is at the bottom of the vial before opening. Use aseptic techniques to add the required volume of reconstitution buffer (sterile PBS) to the vial, to obtain the recommended stock concentration 250 µg/mL. Close the vial and leave at ambient temperature for 15-20 minutes. Then gently invert the vial several times or until all of the lyophilized product dissolves. Leave the vial at room temperature for another 15 minutes. If small particulates are still observed after 15 minutes, incubate at room temperature for an additional 30 minutes and leave the vial at 2°C - 8°C overnight. Next day, invert the vial several times or gently pipette the solution up and down before use. If needed, transfer the reconstituted stock solution to a sterile container for additional dilution to no less than 100 µg/mL. Small working aliquots in polypropylene tubes can be made after reconstitution and store the vials at -20°C or lower. Avoid freeze/ thaw cycles. Carrier protein such as 0.2 - 1% endotoxin-free BSA or HSA can be added when preparing the stock solution. Aliquots can be stored between 2°C and 8°C for up to two weeks or stored at -20°C or colder for up to 3 months.
Activity	The ED_{50} is 1-5 ng/mL, as determined by induction of MCF-7 cell proliferation.
Application	Bioassay
Application Notes	Our lyophilized proteins are validated in-house to maintain activity after shipping at ambient temperature and are backed by our 100% satisfaction guarantee. If you have any concerns, contact us at tech@biolegend.com.
Disclaimer	BioLegend Cell-Vive™ GMP Recombinant proteins are for research use only. Suitable for *ex vivo* cell processing. Not for injection or diagnostic or therapeutic use. Not for resale. BioLegend will not be held responsible for patent infringement or other violations that may occur with the use of our products.

Antigen Details

Structure	Growth Factor
Bioactivity	Human NRG1-β1/HRG1-β1 ECD domain induces proliferation of MCF-7 cells.
Cell Sources	Gastric epithelial cells, breast cancer cells, fibroblasts, and Schwann cells.
Cell Targets	Melanocytes, melanoma cells, epithelial cells, gastric epithelial cells, mesenchymal cells, and Schwann cells.
Receptors	ErbB3-ErbB2 and ErbB3-ErbB4.
Antigen References	1. Holmes WE, *et al*. 1992. *Sciences*. 256:1205-10. 2. Tan W, *et al*. 2007. *J. Biol. Chem*. 282:24343-51. 3. Buac K, *et al*. 2009. *Pigment Cell Melanoma Res*. 22:773-84. 4. Shamir A and Buonanno A. 2010. *J. Neurochem*. 113:1163-76. 5. Mei L and Xiong WC. 2008. *Nat. Rev. Neurosci*. 9:437-52. 6. Zhang K, *et al*. 2013. *Pigment Cell Melanoma Res*. 26:408-14.
Regulation	Neuregulin 1 plays a key role in embryonic development of the nervous system, heart, and mammary glands. Also regulates the constitutive color and melanocyte function in human skin, and might maintain cardiac structure and function in adults.
Gene ID	3084

Product Data



Human NRG1-β1 ECD domain induces the proliferation of human mammary epithelium MCF7 cells.

8999 BioLegend Way, San Diego, CA 92121 www.biolegend.com
Toll-Free Phone: 1-877-Bio-Legend (246-5343) Phone: (858) 768-5800 Fax: (877) 455-9587