# NRG1 Beta 1 (NRG1) Active Protein

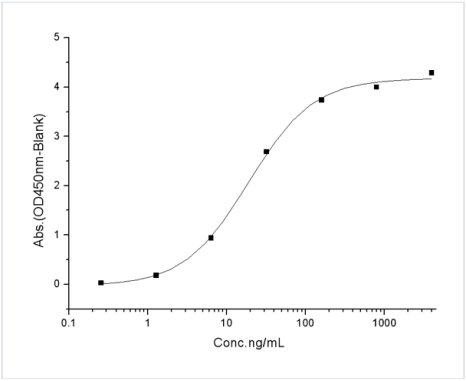
## PRODUCT OVERVIEW

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| **Product Name** | NRG1 Beta 1, Active Protein |
| **Full Product Name** | NRG1 Beta 1 Protein, Human, Recombinant (ECD, Fc Tag) |
| **Product Gene Name** | NRG1 active protein |
| **Product Synonym Names** | Human NRG1-beta 1 Protein (ECD, Fc Tag); ARIA Protein, Human; GGF Protein, Human; GGF2 Protein, Human; HGL Protein, Human; HRG Protein, Human; HRG1 Protein, Human; HRGA Protein, Human; MST131 Protein, Human; MSTP131 Protein, Human; NDF Protein, Human; Neuregulin 1 Protein, Human; NRG1-IT2 Protein, Human; SMDF Protein, Human; neuregulin 1 |
| **Sequence** | Ser2-Lys24 6 |
| **Host** | HEK293 Cells |
| **Form/Format** | Lyophilized from sterile PBS, pH7.4. Normally 5%-8% trehalose, mannitol and 0.01% Tween80 are added as protectants before lyophilization. Please refer to the specific buffer information in the hard copy of CoA. |
| **Purity/Purification** | >85% as determined by SDS-PAGE |
| **Preparation and Storage** | Samples are stable for up to twelve months from date of receipt at -20 degree C to -80 degree C. Store it under sterile conditions at -20 degree C to -80 degree C. It is recommended that the protein be aliquoted for optimal storage. Avoid repeated freeze-thaw cycles.<br>In general, recombinant proteins are provided as lyophilized powder which are shipped at ambient temperature. Bulk packages of recombinant proteins are provided as frozen liquid.<br>They are shipped out with blue ice. |
| **Molecular Weight** | 70,392 Da |
| **Chromosome Location** | Chromosome: 8; NC_000008.10 (31496820..32622558). Location: 8p12 |
| **OMIM** | 142445 |
| **3D Structure** | ModBase 3D Structure for Q02297 |
| **Active Protein Note** | Protein activity can be an ambiguous term. Please refer to the data sheet or inquire with Technical Support to determine the definition of activity for this product. |
| **Species** | Human |
| **Endotoxin** | <1.0EU per ug of the protein as determined by the LAL method |
| **Predicted N Terminal** | Glu |
| **Tag** | N-human IgG1-Fc |
| **Protein Construction** | A DNA sequence encoding the N-terminal fragment (Ser 2-Lys 246) of human NRG1 isoform beta1 (Q02297-6) was fused with the Fc region of human IgG1 at the N-terminus. |
| **Reconstitution** | A hardcopy of COA with reconstitution instruction is sent along with the products. Please refer to it for detailed information. |
| **Activity** | 1. Immobilized Human ERBB3 His at 2ug/ml (100uL/well) can bind Human NRG1 Fc. The EC50 of Human NRG1 Fc is 8-40ng/mL.<br>2. Immobilized Rhesus ERBB3 His at 2ug/ml (100uL/well) can bind Human NRG1 Fc. The EC50 of Human NRG1 Fc is 20-80ng/mL. |

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| **Related Product Information for NRG1 active protein** | Background: Neuregulin 1 or NRG1 is one of four proteins in the neuregulin family that act on the EGFR family of receptors. This growth factor was originally identified as a 44-kD glycoprotein that interacts with the NEU/ERBB2 receptor tyrosine kinase to increase its phosphorylation on tyrosine residues. NRG1 is a trophic factor that has been implicated in neural development, neurotransmission, and synaptic plasticity. NRG1 has multiple isoforms that are generated by the usage of different promoters and alternative splicing of a single gene. Neuregulin 1 (NRG1) is essential for the development and function of multiple organ systems, and its dysregulation has been linked to diseases such as cancer and schizophrenia. NRG1 is a schizophrenia candidate gene and plays an important role in brain development and neural function. Schizophrenia is a complex disorder, with etiology likely due to epistasis. |
| **Product References and Citations for NRG1 active protein** | Nicodemus KK, et al. (2010) Biological validation of increased schizophrenia risk with NRG1, ERBB4, and AKT1 epistasis via functional neuroimaging in healthy controls. Arch Gen Psychiatry. 67 (10): 991-1001.Tan W, et al. (2007) Molecular cloning of a brain-specific, developmentally regulated neuregulin 1 (NRG1) isoform and identification of a functional promoter variant associated with schizophrenia. J Biol Chem. 282 (33): 24343-51.Holmes WE, et al. (1992) Identification of heregulin, a specific activator of p185erbB2. Science. 256 (5060): 1205-10. |
| **Other Notes** | Small volumes of NRG1 active protein vial(s) may occasionally become entrapped in the seal of the product vial during shipment and storage. If necessary, briefly centrifuge the vial on a tabletop centrifuge to dislodge any liquid in the container`s cap. Certain products may require to ship with dry ice and additional dry ice fee may apply. |
| **Searchable Terms for NRG1 purchase** | MBS8120872 is an active protein targeting NRG1. Also known as NRG1 Beta 1 Protein, Human, Recombinant (ECD, Fc Tag). Host: HEK293 Cells. |




SDS-Page of NRG1 active protein




**Testing Data of NRG1 active protein**

1. Immobilized Human ERBB3 His at 2 ug/ml (100 ul/well) can bind Human NRG1 Fc, the EC50 of Human NRG1 Fc is 8-40 ng/mL. 2. Immobilized Rhesus ERBB3 His at 2 ug/ml (100 ul/well) can bind Human NRG1 Fc, the EC50 of Human NRG1 Fc is 20-80 ng/mL.

## ADDITIONAL DETAILS

NCBI/Uniprot data below describe general gene information for NRG1. It may not necessarily be applicable to this product.

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| **NCBI GI #** | 236461509 |
| **NCBI GeneID** | 3084 |
| **NCBI Accession #** | NP_001153467.1 |
| **UniProt Primary Accession #** | Q02297 |
| **UniProt Secondary Accession #** | O14667; P98202; Q02298; Q02299; Q07110; Q07111; A5YAK4; A5YAK5; A8K1L2; B7Z4Z3; E9PHH4 |
| **UniProt Related Accession #** | Q02297 |
| **GenBank Nucleotide #** | NM_001159995.1 |
| **NCBI Official Full Name** | pro-neuregulin-1, membrane-bound isoform isoform HRG-beta1c |
| **NCBI Official Synonym Full Names** | neuregulin 1 |
| **NCBI Official Symbol** | NRG1 |
| **NCBI Official Synonym Symbols** | GGF; HGL; HRG; NDF; ARIA; GGF2; HRG1; HRGA; SMDF; MST131 |

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| **UniProt Protein Name** | Pro-neuregulin-1, membrane-bound isoform |
| **UniProt Synonym Protein Names** | Acetylcholine receptor-inducing activity; ARIA; Breast cancer cell differentiation factor p45; Glial growth factor; Heregulin; HRG; Neu differentiation factor; Sensory and motor neuron-derived factor |
| **Protein Family** | Pro-neuregulin |
| **UniProt Gene Name** | NRG1 |
| **UniProt Synonym Gene Names** | GGF; HGL; HRGA; NDF; SMDF; Pro-NRG1; ARIA; HRG |
| **UniProt Entry Name** | NRG1_HUMAN |
| **NCBI Protein Information** | pro-neuregulin-1, membrane-bound isoform; MSTP131; pro-NRG1; glial growth factor; neu differentiation factor; neuregulin 1 type IV beta 3; neuregulin 1 type IV beta 1a; sensory and motor neuron derived factor; heregulin, alpha (45kD, ERBB2 p185-activator) |
| **NCBI Summary for NRG1** | The protein encoded by this gene was originally identified as a 44-kD glycoprotein that interacts with the NEU/ERBB2 receptor tyrosine kinase to increase its phosphorylation on tyrosine residues. This protein is a signaling protein that mediates cell-cell interactions and plays critical roles in the growth and development of multiple organ systems. It is known that an extraordinary variety of different isoforms are produced from this gene through alternative promoter usage and splicing. These isoforms are tissue-specifically expressed and differ significantly in their structure, and thereby these isoforms are classified into types I, II, III, IV, V and VI. The gene dysregulation has been linked to diseases such as cancer, schizophrenia and bipolar disorder (BPD). [provided by RefSeq, May 2009] |

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| **UniProt Comments for NRG1** | NRG1: Direct ligand for ERBB3 and ERBB4 tyrosine kinase receptors. Concomitantly recruits ERBB1 and ERBB2 coreceptors, resulting in ligand-stimulated tyrosine phosphorylation and activation of the ERBB receptors. The multiple isoforms perform diverse functions such as inducing growth and differentiation of epithelial, glial, neuronal, and skeletal muscle cells; inducing expression of acetylcholine receptor in synaptic vesicles during the formation of the neuromuscular junction; stimulating lobuloalveolar budding and milk production in the mammary gland and inducing differentiation of mammary tumor cells; stimulating Schwann cell proliferation; implication in the development of the myocardium such as trabeculation of the developing heart. Isoform 10 may play a role in motor and sensory neuron development. The cytoplasmic domain interacts with the LIM domain region of LIMK1. Interacts with ERBB3 and ERBB4. Type I isoforms are the predominant forms expressed in the endocardium. Isoform alpha is expressed in breast, ovary, testis, prostate, heart, skeletal muscle, lung, placenta liver, kidney, salivary gland, small intestine and brain, but not in uterus, stomach, pancreas, and spleen. Isoform 3 is the predominant form in mesenchymal cells and in non-neuronal organs, whereas isoform 6 is the major neuronal form. Isoform 8 is expressed in spinal cord and brain. Isoform 9 is the major form in skeletal muscle cells; in the nervous system it is expressed in spinal cord and brain. Also detected in adult heart, placenta, lung, liver, kidney, and pancreas. Isoform 10 is expressed in nervous system: spinal cord motor neurons, dorsal root ganglion neurons, and brain. Predominant isoform expressed in sensory and motor neurons. Not detected in adult heart, placenta, lung, liver, skeletal muscle, kidney, and pancreas. Not expressed in fetal lung, liver and kidney. Type IV isoforms are brain-specific. Belongs to the neuregulin family. 10 isoforms of the human protein are produced by alternative splicing.<br><br>Protein type: Membrane protein, integral; Cell development/differentiation; Ligand, receptor tyrosine kinase; Motility/polarity/chemotaxis; Cytokine<br><br>Chromosomal Location of Human Ortholog: 8p12<br><br>Cellular Component: extracellular space; membrane; integral to plasma membrane; axon; apical plasma membrane; cytoplasm; extracellular region; nucleus; neuromuscular junction<br><br>Molecular Function: ErbB-2 class receptor binding; protein binding; transmembrane receptor protein tyrosine kinase activator activity; growth factor activity; ErbB-3 class receptor binding; transcription cofactor activity; cytokine activity; protein tyrosine kinase activator activity; receptor tyrosine kinase binding; receptor binding<br><br>Biological Process: regulation of protein heterodimerization activity; positive regulation of cell adhesion; transmembrane receptor protein tyrosine kinase activation (dimerization); neural crest cell development; cellular protein complex disassembly; nerve growth factor receptor signaling pathway; wound healing; cell morphogenesis; ventricular cardiac muscle cell differentiation; locomotory behavior; positive regulation of striated muscle cell differentiation; cardiac muscle cell differentiation; synaptogenesis; mammary gland development; cell communication; positive regulation of cardiac muscle cell proliferation; epidermal growth factor receptor signaling pathway; nervous system development; cell migration; fibroblast growth factor receptor signaling pathway; phosphoinositide-mediated signaling; neurotransmitter receptor metabolic process; regulation of protein homodimerization activity; MAPKKK cascade; neuron fate commitment; positive regulation of cell growth; peripheral nervous system development; positive regulation of protein kinase B signaling cascade; cell proliferation; embryonic development; glial cell fate commitment; innate immune response; negative regulation of secretion; positive regulation of Ras protein signal transduction; negative regulation of protein catabolic process; negative regulation of transcription, DNA-dependent; transmembrane receptor protein tyrosine kinase signaling pathway<br><br>Disease: Schizophrenia 6 |
| **Research Articles on NRG1** | **1.** NRG1 is a putative susceptibility gene for a spectrum of major psychiatric disorders such as schizophrenia |
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