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# Animal-Free™ Recombinant Human/Porcine/Bovine Neuregulin-1/NRG1

Catalog Number: Qk045

R&D	SYSTI	EMS
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DESCRIPTION	
Source	<i>E. coli-</i> derived Neuregulin-1/NRG1 protein Accession # Q02297.3
Predicted Molecular Mass	7.5 kDa

SPECIFICATIONS		
SDS-PAGE	Monomeric NRG-1 protein only	
Activity	No significant difference between EC <sub>50</sub> of reference and test lots	
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.	
Mass Spectrometry	Single species with expected mass	
Formulation	Lyophilized from acetonitrile/TFA See Certificate of Analysis for details.	

### PREPARATION AND STORAGE

Reconstitution	Resuspend in water at >100 μg/ml, prepare single use aliquots, add carrier protein if desired.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	BulkLotPrefix assignment required for Storage Info

DATA



#### Recombinant Human/Bovine/Porcine NRG-1, Animal-Free Protein Bioactivity NRG-1 activity is determined using the Promega serum response element luciferase reporter assay (\*) in transfected MCF-7 cells. Cells are treated in triplicate with a serial dilution of NRG-1 for 4 hours. Firefly luciferase activity is measured and normalized to the control Renilla luciferase activity. EC<sub>50</sub> = 0.28

ng/ml (37.9 pM). \*Promega pGL4.33[luc2P/SRE/Hygro]

#E1340

## SDS-PAGE



Recombinant Human/Bovine/Porcine NRG-1, Animal-Free Protein SDS-PAGE NRG-1 migrates as a single band at 7.5 kDa in non-reducing (NR) conditions and upon reduction (R). No contaminating protein bands are visible. Purified recombinant protein (3 µg) was resolved using 18% wiv SDS-PAGE in reduced (+β-mercaptothanol, R) and nonreduced (NR) conditions and stained with Coomassie Brilliant Blue R250.

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## **R**Dsystems

### Catalog Number: Qk045

## BACKGROUND

Neuregulin-1 (NRG1) belongs to a family of structurally related glycoproteins encoded by four distinct but related genes, *Nrg1*, *Nrg2*, *Nrg3*, *and Nrg4*. Through alternative splicing or the use of alternative promoters, *Nrg1* encodes more than 14 soluble or transmembrane proteins. Type I NRG1 isoforms include Neu Differentiation Factor, Heregulin, and ARIA. These consist of an N-terminal domain, an Ig-like domain, a linker with a Ser/Thr rich region, an EGF-like domain, a transmembrane segment, and a cytoplasmic domain. Type II isoforms such as Glial Growth Factor have a larger N-terminal domain and lack the Ser/Thr rich linker. Type III isoforms such as Sensory and Motor neuron-Derived Factor lack the Ig-like domain but contain a cysteine rich domain (CRD) and a second transmembrane segment (1 - 5). The  $\alpha$  and  $\beta$  splice variants of NRG1 differ in their extracellular juxtamembrane regions (3, 6). This recombinant protein corresponds to the extracellular domain (ECD) of the type I alpha isoforms, is required for Neuregulin binding to ErbB3 or ErbB4 receptors (3). ErbB3 or ErbB4 subsequently heterodimerize with ErbB2, resulting in tyrosine phosphorylation and NRG1 (8 - 10). The cytoplasmic region can be cleaved by 7-secretase, generating a repressor that inhibits the transcription of proapoptotic genes (11). NRG1 regulates multiple nervous system functions including axon guidance, synapse formation and plasticity, glial cell development, and axon myelination (1, 2). In the heart, NRG1 regulates organ morphogenesis and contractility and also plays a cardioprotective role following tissue injury (12). Multiple polymorphisms and aberrant expression of NRG1 isoforms are associated with the development of schizophrenia and many cancers (1, 2, 13).

### References:

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- 3. Holmes, W.E. et al. (1992) Science 256:1205.
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#### PRODUCT SPECIFIC NOTICES

The above product was manufactured, tested and released by R&D System's contract manufacturer, Qkine Ltd, at 1 Murdoch House, Cambridge, UK, CB5 8HW. The product is for research use only and not for the diagnostic or theraputic use.

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