



## Genorise® Recombinant Bovine NRG1 Carrier-Free DataSheet

Catalog Number: GR120086-CF

### Background

Neuregulin 1 (NRG1) is a protein that is encoded by the *NRG1* gene.<sup>[1]</sup> NRG1 is one of four proteins in the neuregulin family that act on the EGFR family of receptors. Neuregulin 1 is produced in numerous isoforms by alternative splicing, which allows it to perform a wide variety of functions. It is essential for the normal development of the nervous system and the heart.<sup>[2]</sup> At least six major types (different N termini) of neuregulin 1 are known.<sup>[3]</sup> Six types exist in humans and rodents (type I, II and III NRG1 are expressed in excitatory and inhibitory neurons, as well as astrocytes), and some types (I and IV) can be regulated by neuronal activity.<sup>[4]</sup> Neuregulin 1 is thought to play a role in synaptic plasticity. It has been shown that a loss of Neuregulin 1 within cortical projection neurons results in increased inhibitory connections and reduced synaptic plasticity.<sup>[8]</sup> Similarly, overexpression of Neuregulin 1 results in disrupted excitatory-inhibitory connections, reduced synaptic plasticity, and abnormal dendritic spine growth. Thus, careful regulation of the amount of Neuregulin 1 must be maintained to preserve an intricate balance between excitatory and inhibitory connections within the central nervous system (CNS). Any disruption in this inhibitory system may contribute to impaired synaptic plasticity, a symptom endemic in schizophrenic patients. Neuregulin 1 has been shown to interact with ERBB3<sup>[5]</sup> and LIMK1.<sup>[6]</sup> A schizophrenia associated- missense mutation in Neuregulin 1 has been shown to be associated with changes in cytokine expression using lymphoblastoid cells of heterozygous carriers vs homozygous wild type individuals <sup>[41]</sup>

### References

1. Holmes WE, et al. (1992) *Science*. 256 (5060): 1205–10.
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3. Steinhorsdottir V, et al. (2004). *Gene*. 342 (1): 97–105.
4. Liu X, et al. (2011). *J. Neurosci*. 31 (23): 8491–501.
5. Carraway KL, et al. (1997). *Nature*. 387 (6632): 512–6.
6. Wang JY, et al. (1998). *J. Biol. Chem*. 273 (32): 20525–34.
7. Marballi K, et al. (2010). *Journal of Molecular medicine (Berlin)*. 88 (11): 1133–41.



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### Description

**Source:** *E. coli* derived

Amino acid sequence: Ser20-Val201

Accession # F1MPD0

**Predicted Molecular Mass:** 20 kDa

### Specifications

**SDS-PAGE:** 35 kDa, reducing conditions

**Endotoxin Level:** < 0.01 EU per 1 µg of the protein by the LAL method.

**Purity:** > 95%, by SDS-PAGE under reducing conditions and visualized by silver stain.

**Formulation:** Lyophilized from 0.2 µm filtered solution of PBS, pH 7.3.

### Preparation and Storage

**Reconstitution:** Reconstitute at 50-100 µg/mL in sterile PBS.

**Shipping:** The product is shipped at ambient temperature or in a foam box with ice pads. Upon receipt, store it immediately at the temperature recommended below.

**Stability & Storage:** Use a manual defrost freezer and avoid repeated freeze thaw cycles.

- 6 months from date of receipt, -20 to -70°C as supplied.
- 1 month, -20 to -70°C under sterile conditions after reconstitution.

**FOR LABORATORY RESEARCH USE ONLY  
NOT FOR USE IN HUMANS AND ANIMALS**