

## Recombinant Porcine EGF Protein DataSheet

Catalog Number: GR189033

### Background

Epidermal growth factor (EGF) is a growth factor that stimulates cell growth, proliferation, and differentiation by binding to its receptor EGFR. Human EGF is a 6045-Da protein<sup>[1]</sup> with 53 amino acid residues and three intramolecular disulfide bonds.<sup>[2]</sup> EGF results in cellular proliferation, differentiation, and survival.<sup>[3]</sup> EGF is a low-molecular-weight polypeptide first purified from the mouse submandibular gland, but since then found in many human tissues including submandibular gland, parotid gland. Salivary EGF, which seems also regulated by dietary inorganic iodine, also plays an important physiological role in the maintenance of oro-esophageal and gastric tissue integrity. The biological effects of salivary EGF include healing of oral and gastroesophageal ulcers, inhibition of gastric acid secretion, stimulation of DNA synthesis as well as mucosal protection from intraluminal injurious factors such as gastric acid, bile acids, pepsin, and trypsin and to physical, chemical and bacterial agents.<sup>[4]</sup> EGF acts by binding with high affinity to epidermal growth factor receptor (EGFR) on the cell surface. This stimulates ligand-induced dimerization,<sup>[5]</sup> activating the intrinsic protein-tyrosine kinase activity of the receptor (see the second diagram). The tyrosine kinase activity, in turn, initiates a signal transduction cascade that results in a variety of biochemical changes within the cell - a rise in intracellular calcium levels, increased glycolysis and protein synthesis, and increases in the expression of certain genes including the gene for EGFR - that ultimately lead to DNA synthesis and cell proliferation.<sup>[6]</sup>

### References

1. Harris RC, et al. (2003). *Experimental Cell Research* **284** (1): 2–13.
2. Carpenter G, et al. (1990). *The Journal of Biological Chemistry* **265** (14): 7709–12.
3. Herbst RS (2004). *Intl J Radiation Oncology, Biology, Physics* **59** (2 Suppl): 21–6.
4. Venturi S, et al. (2009). *Nutrition and Health* **20** (2): 119–134.
5. Dawson JP, et al. (2005). *Mol. Cell. Biol.* **25** (17): 7734–42.
6. Fallon JH, et al. (1984). *Science* **224** (4653): 1107–9.



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### Description

Quantity: 5 µg

Sources: Expressed in *E. coli*.

Composition: Ser971-His1023

Accession #: NP\_999185.1

Molecular weight: 6 kDa

Activity: Measured cell proliferation assay using Balb/3T3 mouse embryonic fibroblast cells.

Rubin, J.S. *et al.* (1991) Proc. Natl. Acad. Sci. USA **88**:415..

The ED50 for this effect is typically 20-100 pg/ml.

Endotoxin level: <1.0 EU per 1 µg of the protein by the LAL method.

Purity: > 98%, by SDS-PAGE under reducing conditions and visualized by silver staining.

Formulation: Lyophilized from a 0.2 µm filtered solution in PBS with BSA as a carrier protein.

Reconstitution: reconstitute at 50 µg/ml in sterile PBS and store at -20°C ~ -70°C for up to 3 months.

Shipping and storage: The product is shipped at ambient temperature or with ice pad. Upon receipt, store it immediately at -20°C to avoid loss of activity and use it in 6 months.

### DECLARATION

THIS REAGENT IS FOR IN VITRO LABORATORY TESTING AND RESEARCH USE ONLY. DO NOT USE IT FOR CLINICAL DIAGNOSTICS. DO NOT USE OR INJECT IT IN HUMANS AND ANIMALS.

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