

# GSK-3 Fusion Protein

Concentration: 0.5 mg/ml

- Small 0.04 mg  
 Large 0.12 mg



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**For Research Use Only. Not For Use In Diagnostic Procedures.**

**Description:** GSK-3 Fusion Protein serves as a useful substrate for assaying Akt kinase activity. It is expressed as a protein fusion to the GSK-3  $\alpha/\beta$  crosstide, corresponding to residues surrounding GSK-3  $\alpha/\beta$  (Ser21/9) (CGPKGP-GRRGRRRTSSFAEG).

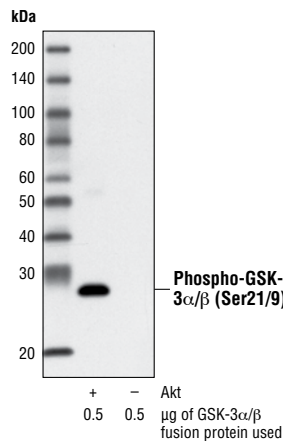
**Background:** Glycogen synthase kinase-3 (GSK-3) was initially identified as an enzyme that regulates glycogen synthesis in response to insulin (1). GSK-3 is a ubiquitously expressed serine/threonine protein kinase that phosphorylates and inactivates glycogen synthase. GSK-3 is a critical downstream element of the PI3 kinase/Akt cell survival pathway whose activity can be inhibited by Akt-mediated phosphorylation at Ser21 of GSK-3 $\alpha$  and Ser9 of GSK-3 $\beta$  (2,3). GSK-3 has been implicated in the regulation of cell fate in *Dictyostelium* and is a component of the Wnt signaling pathway required for *Drosophila*, *Xenopus*, and mammalian development (4). GSK-3 has been shown to regulate cyclin D1 proteolysis and subcellular localization (5).

**Source/Purification:** GSK-3 Fusion Protein is expressed as a GST fusion protein in *E. coli*.

**Molecular Weight:** 27 kDa

**Background References:**

- Welsh, G.I. et al. (1996) *Trends Cell. Biol.* 6, 274–279.
- Srivastava, A.K. and Pandey, S.K. (1998) *Mol. Cell. Biochem.* 182, 135–141.
- Cross, D.A. et al. (1995) *Nature* 378, 785–789.
- Nusse, R. (1997) *Cell* 89, 321–323.
- Diehl, J.A. et al. (1998) *Genes Dev.* 12, 3499–3511.



AKT Kinase activity of PDGF-treated NIH/3T3 cell extracts was analyzed by IP/Kinase assay. Cell extracts (200  $\mu$ l) were incubated overnight with Immobilized Phospho-Akt (Ser473) (D9E) Rabbit mAb #4070. After extensive washing the kinase reaction was performed in the presence of 200  $\mu$ M of cold ATP and 1  $\mu$ g of GSK-substrate. Phosphorylation of GSK-3 was measured by Western blot using Phospho-GSK-3  $\alpha/\beta$  (Ser21/9) Antibody #9327.

Entrez-Gene ID #P49840, P49841  
Swiss-Prot Acc. #2931, 2932

Storage: Supplied in 20 mM Tris-HCl (pH 7.5 at 25°C), 50 mM NaCl, 2 mM Na<sub>2</sub>EDTA, 1 mM dithiothreitol (DTT) and 50% glycerol. Store at -20°C.

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# Material Safety Data Sheet (MSDS) for Fusion Proteins

rev. 05/16/08

## I. Identification:

**Product name:** Fusion Proteins  
**Product Catalog Number:** 6000, 7000, and 9000 series  
**CAS number:** None

**Manufacturer Supplier:** Cell Signaling Technology  
 3 Trask Lane  
 Danvers, MA 01923 USA  
 1-978-867-2300 TEL  
 1-978-867-2400 FAX  
 1-978-578-6737 Emergency Phone

## II. Composition/Information on Ingredients:

This product is composed of proteins in aqueous buffer solution. According to 29 CFR 1910.1200(d), hazardous ingredients at less than <1% and carcinogens at less than < 0.1% are considered non-hazardous. This product may contain the following hazardous ingredients:

Ingredient	CAS#	Percent
Glycerol	56-81-5	50%

## III. Hazard Identification:

To the best of our knowledge, the chemical, physical, and toxicological properties of this solution have not been thoroughly investigated.

**Emergency Overview of Hazardous ingredient:** Glycerol (CAS# 56-81-5)

**Caution:** Avoid contact and inhalation.

**Target organ:** Kidneys.

## IV. First Aid Measures:

**Inhalation:** If inhaled, remove to fresh air. If breathing is difficult, get medical attention.

**Ingestion:** If swallowed, rinse mouth with water provided person is conscious. Get medical attention.

**Skin Exposure:** In case of contact, wash skin with soap and water.

**Eye Exposure:** In case of contact with eyes, immediately flush eyes with water for at least 15 minutes. Get medical attention.

## V. Fire Fighting Measures:

**Flash Point:** Data not available.

**Autoignition Temperature:** Data not available.

**Fire Extinguishing Media:** Water spray, dry chemical, foam, or carbon dioxide.

**Firefighting:** Wear protective clothing and self-contained breathing apparatus to prevent contact with skin and eyes.

## VI. Accidental Release Measures:

Absorb liquid with an absorbent material. Transfer contaminated absorbent to a chemical waste container for disposal.

## VII. Handling And Storage:

Avoid inhalation and contact with eyes and skin. Avoid prolonged or repeated exposure.

Store at -20°C in tightly closed container.

## VIII. Exposure Controls/Personal

**Engineering Controls:** Maintain adequate ventilation, eye wash and quick-drench facilities in work area.

**Personal Protective Equipment:** Lab coat, chemical resistant gloves and chemical safety glasses.

**Occupational Exposure Limits:** Data not available.

## IX. Exposure Controls/Personal Protection:

**Physical State:** liquid  
**Appearance:** colorless  
**Odor:** odorless  
**Boiling Point:** data not available  
**Melting Point:** data not available  
**Volatile Organic Compound:** data not available  
**Solubility in water:** readily miscible in water

## X. Stability and Reactivity:

**Stability:** Stable under recommended conditions.

**Hazardous Decomposition:** May form carbon dioxide and carbon monoxide.

**Conditions to avoid:** Strong oxidizing agents.

## XI. Toxicological Information:

May cause skin irritation.

May be toxic if absorbed through skin or ingested.

May cause eye irritation.

**Target Organs:** Kidneys

Prolonged exposure may cause nausea, headache, and vomiting.

## XII. Ecological Information:

Data not available.

## XIII. Disposal Considerations:

Dispose of in accordance with federal, state and local environmental regulations.

## XIV. Transport Information:

**D. O. T.:** This substance is considered non-hazardous for transport.

**IATA:** This substance is considered non-hazardous for air transport.

## XV. Regulatory Information:

**US Classification and Label information:**

**Caution:** Avoid contact and inhalation.

**Target organ(s):** Kidneys.

**Chemical inventory status :** Not classified/controlled according to EU, USA, WHMIS.

## XVI. Other Information:

This product is not intended for use in humans. It is sold only for research use only. No other use is intended, and any other use may involve substantive hazards.

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide for experienced personnel. Cell Signaling Technology, Inc., shall not be held liable for any damage resulting from the handling of or from contact with the above product. The burden of safe use of this material rests entirely with the user.