

GSK3B Protein, Human, Recombinant (His)

General Information

Synonyms:	GSK-3 β ;GSK3 β ;glycogen synthase kinase 3 beta;glycogen synthase kinase 3 β
Protein Construction:	The amino acids corresponding to the full length of human GSK3B isoform 1 (NP_002084.2) (Met 1-Thr 433) was fused with a polyhistidine tag at the N-terminus. Predicted N terminal: Met
Species:	Human
Expression Host:	Baculovirus Insect Cells
Accession:	P49841-2
Molecular Weight:	50.4 kDa (predicted); 44-48 kDa (reducing conditions)

QC Testing

Biological Activity:	1. The specific activity was determined to be 45 nmol/min/mg using synthetic Phospho-Glycogen Synthase Peptide-2 (YRRAAVPPSPSLSRHSSPHQpSEDEEE) as substrate. 2. Immobilized His-GSK3B at 10 μ g/ml (100 μ l/well) can bind biotinylated human HG3C-CTNNB1 , EC50 of biotinylated human HG3C-CTNNB1 is 0.15-0.35 μ g/ml.
Purity:	\geq 90 % as determined by SDS-PAGE. \geq 90 % as determined by SEC-HPLC.
Endotoxin:	< 1.0 EU/ μ g of the protein as determined by the LAL method.
Formulation:	Supplied as sterile 20 mM Tris, 500 mM NaCl, pH 7.4, 25% glycerol, 0.5 mM PMSF, 0.5 mM EDTA.

Preparation and Storage

Reconstitution:

A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

Stability & Storage:

It is recommended to store the product under sterile conditions at -20°C to -80°C. Samples are stable for up to 12 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

Shipping:

Proteins are shipped with blue ice.

Protein Background

GSK3B is a serine-threonine kinase, belonging to the glycogen synthase kinase subfamily. It Contains 1 protein kinase domain, and is expressed in the testis, thymus, prostate, and ovary and weakly expressed in the lung, brain, and kidney. GSK3B is involved in energy metabolism, neuronal cell development, and body pattern formation. Polymorphisms in the GSK3B gene have been implicated in modifying the risk of Parkinson's disease, and studies in mice show that overexpression of this gene may be relevant to the pathogenesis of Alzheimer's

disease. GSK3B participates in the Wnt signaling pathway. It is implicated in the hormonal control of several regulatory proteins including glycogen synthase, MYB, and the transcription factor JUN. Phosphorylates JUN at sites proximal to its DNA-binding domain, thereby reducing its affinity for DNA. Phosphorylates MUC1 in breast cancer cells, and decreases the interaction of MUC1 with CTNNB1/beta-catenin. GSK3B also plays an important role in ERBB2-dependent stabilization of microtubules at the cell cortex. It prevents the phosphorylation of APC and CLASP2, allowing its association with the cell membrane. In turn, membrane-bound APC allows the localization of MACF1 to the cell membrane, which is required for microtubule capture and stabilization. GSK3B phosphorylates MACF1 and this phosphorylation inhibits the binding of MACF1 to microtubules which are critical for its role in bulge stem cell migration and skin wound repair. It may be required for early embryo development and neuron differentiation.

Reference

- Bergmann C, et al. (2011) Inhibition of glycogen synthase kinase 3 β induces dermal fibrosis by activation of the canonical Wnt pathway. *Ann Rheum Dis.* 70(12):2191-8.
- Ban JO, et al. (2011) Troglitazone, a PPAR agonist, inhibits human prostate cancer cell growth through inactivation of NF κ B via suppression of GSK-3 β expression. *Cancer Biol Ther.* 12(4):288-96.
- Tsukigi M, et al. (2012) Re-expression of miR-199a suppresses renal cancer cell proliferation and survival by targeting GSK-3 β . *Cancer Lett.* 315(2):189-97.
- Nandan D, et al. (2012) Myeloid cell IL-10 production in response to leishmania involves inactivation of glycogen synthase kinase-3 β downstream of phosphatidylinositol-3 kinase. *J Immunol.* 188(1):367-78.

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