

## GSK3α Protein, Human (Sf9, GST)

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|--------------------------|---|
| <b>Cat. No.:</b>         | HY-P701690  |
| <b>Synonyms:</b>         | GSK3A; Glycogen synthase kinase-3 alpha; GSK-3 alpha; Serine/threonine-protein kinase GSK3A |
| <b>Species:</b>          | Human   |
| <b>Source:</b>           | Sf9 insect cells  |
| <b>Accession:</b>        | P49840 (S2-S483)  |
| <b>Gene ID:</b>          | 2931  |
| <b>Molecular Weight:</b> | Approximately 77.5 kDa  |

### PROPERTIES

|                                |  |
|--------------------------------|--|
| <b>Biological Activity</b>     | The activity of GSK3α protein is determined using the MSA method, which assesses its ability to phosphorylate fluorescent peptides within 30 minutes.                                |
| <b>Appearance</b>              | Solution   |
| <b>Formulation</b>             | Supplied as a 0.22 μm filtered solution of 50 mM Tris-HCl, 150 mM NaCl, 5% glycerol, 5 mM DTT, 0.1 M Trehalose, pH7.5.   |
| <b>Endotoxin Level</b>         | <1 EU/μg, determined by LAL method.  |
| <b>Reconstitution</b>          | Please use rapid thawing with running water to thaw the protein.   |
| <b>Storage &amp; Stability</b> | Stored at -80°C for 1 year. It is stable at -20°C for 3 months after opening. It is recommended to freeze aliquots at -80°C for extended storage. Avoid repeated freeze-thaw cycles. |
| <b>Shipping</b>                | Shipping with dry ice  |

### DESCRIPTION

#### Background

GSK3α protein, a constitutively active kinase, plays a crucial role as a negative regulator in the hormonal control of glucose homeostasis, Wnt signaling, and transcription factor and microtubule regulation. It exerts its regulatory function by phosphorylating and inactivating key targets such as glycogen synthase (GYS1 or GYS2), CTNNB1/beta-catenin, APC, and AXIN1. Primed phosphorylation is a requisite for the majority of its substrates. GSK3α contributes to insulin's control of glycogen synthesis by inhibiting GYS1 activity and thus glycogen synthesis, particularly in the liver. Additionally, it is implicated in the regulation of insulin resistance and plays a role in Wnt signaling by modulating the level and transcriptional activity of nuclear CTNNB1/beta-catenin. GSK3α also participates in amyloid precursor protein (APP) processing associated with Alzheimer's disease, regulates replication in pancreatic beta-cells, and is crucial for the establishment of neuronal polarity and axon outgrowth. Furthermore, it controls cell apoptosis in response to growth factor deprivation, negatively regulates the extrinsic apoptotic signaling pathway, and promotes the formation of an anti-apoptotic complex at death receptors. GSK3α also acts as a regulator of autophagy by mediating phosphorylation of KAT5/TIP60 under starvation conditions, promoting acetylation of key autophagy regulators. Additionally, it negatively regulates the mTORC2 complex by phosphorylating RICTOR, leading to its ubiquitination and degradation.

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**Caution: Product has not been fully validated for medical applications. For research use only.**

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