

**KD-Validated Anti-Glycogen synthase kinase 3 beta Rabbit Monoclonal Antibody**  
**Rabbit monoclonal antibody**  
**Catalog # AGI2314****Specification****KD-Validated Anti-Glycogen synthase kinase 3 beta Rabbit Monoclonal Antibody - Product Information**

Application	WB, FC, ICC
Primary Accession	<a href="#">P49841</a>
Reactivity	Rat, Human, Mouse
Clonality	Monoclonal
Isotype	Rabbit IgG
Calculated MW	Predicted, 47 kDa, observed, 40 kDa kDa
Gene Name	GSK3B
Aliases	Glycogen Synthase Kinase 3 Beta; Serine/Threonine-Protein Kinase GSK3B; Glycogen Synthase Kinase-3 Beta; EC 2.7.11.26; GSK-3 Beta; EC 2.7.11.1; EC 2.7.11
Immunogen	A synthesized peptide derived from human GSK3 beta

**KD-Validated Anti-Glycogen synthase kinase 3 beta Rabbit Monoclonal Antibody - Additional Information**

Gene ID	2932
<b>Other Names</b>	
Glycogen synthase kinase-3 beta, GSK-3 beta, 2.7.11.26, Serine/threonine-protein kinase GSK3B, 2.7.11.1, GSK3B (<a href="http://www.genenames.org/cgi-bin/gene_symbol_report?hgnc_id=4617" target="_blank">HGNC:4617</a>)	

**KD-Validated Anti-Glycogen synthase kinase 3 beta Rabbit Monoclonal Antibody - Protein Information****Name** GSK3B ([HGNC:4617](#))**Function**

Constitutively active protein kinase that acts as a negative regulator in the hormonal control of glucose homeostasis, Wnt signaling and regulation of transcription factors and microtubules, by phosphorylating and inactivating glycogen synthase (GYS1 or GYS2), EIF2B, CTNNB1/beta-catenin, APC, AXIN1, DPYSL2/CRMP2, JUN, NFATC1/NFATC, MAPT/TAU and MACF1 (PubMed:<a href="http://www.uniprot.org/citations/11430833" target="\_blank">11430833</a>, PubMed:<a href="http://www.uniprot.org/citations/12554650" target="\_blank">12554650</a>, PubMed:<a href="http://www.uniprot.org/citations/14690523" target="\_blank">14690523</a>, PubMed:<a href="http://www.uniprot.org/citations/16484495" target="\_blank">16484495</a>, PubMed:<a href="http://www.uniprot.org/citations/1846781" target="\_blank">1846781</a>, PubMed:<a href="http://www.uniprot.org/citations/20937854" target="\_blank">20937854</a>, PubMed:<a

href="http://www.uniprot.org/citations/9072970" target="\_blank">9072970</a>). Requires primed phosphorylation of the majority of its substrates (PubMed:<a href="http://www.uniprot.org/citations/11430833" target="\_blank">11430833</a>, PubMed:<a href="http://www.uniprot.org/citations/16484495" target="\_blank">16484495</a>). In skeletal muscle, contributes to insulin regulation of glycogen synthesis by phosphorylating and inhibiting GYS1 activity and hence glycogen synthesis (PubMed:<a href="http://www.uniprot.org/citations/8397507" target="\_blank">8397507</a>). May also mediate the development of insulin resistance by regulating activation of transcription factors (PubMed:<a href="http://www.uniprot.org/citations/8397507" target="\_blank">8397507</a>). Regulates protein synthesis by controlling the activity of initiation factor 2B (EIF2BE/EIF2B5) in the same manner as glycogen synthase (PubMed:<a href="http://www.uniprot.org/citations/8397507" target="\_blank">8397507</a>). In Wnt signaling, GSK3B forms a multimeric complex with APC, AXIN1 and CTNNB1/beta-catenin and phosphorylates the N-terminus of CTNNB1 leading to its degradation mediated by ubiquitin/proteasomes (PubMed:<a href="http://www.uniprot.org/citations/12554650" target="\_blank">12554650</a>). Phosphorylates JUN at sites proximal to its DNA-binding domain, thereby reducing its affinity for DNA (PubMed:<a href="http://www.uniprot.org/citations/1846781" target="\_blank">1846781</a>). Phosphorylates NFATC1/NFATC on conserved serine residues promoting NFATC1/NFATC nuclear export, shutting off NFATC1/NFATC gene regulation, and thereby opposing the action of calcineurin (PubMed:<a href="http://www.uniprot.org/citations/9072970" target="\_blank">9072970</a>). Phosphorylates MAPT/TAU on 'Thr-548', decreasing significantly MAPT/TAU ability to bind and stabilize microtubules (PubMed:<a href="http://www.uniprot.org/citations/14690523" target="\_blank">14690523</a>). MAPT/TAU is the principal component of neurofibrillary tangles in Alzheimer disease (PubMed:<a href="http://www.uniprot.org/citations/14690523" target="\_blank">14690523</a>). Plays an important role in ERBB2-dependent stabilization of microtubules at the cell cortex (PubMed:<a href="http://www.uniprot.org/citations/20937854" target="\_blank">20937854</a>). Phosphorylates MACF1, inhibiting its binding to microtubules which is critical for its role in bulge stem cell migration and skin wound repair (By similarity). Probably regulates NF-kappa-B (NFKB1) at the transcriptional level and is required for the NF-kappa-B-mediated anti- apoptotic response to TNF-alpha (TNF/TNFA) (By similarity). Negatively regulates replication in pancreatic beta-cells, resulting in apoptosis, loss of beta-cells and diabetes (By similarity). Through phosphorylation of the anti-apoptotic protein MCL1, may control cell apoptosis in response to growth factors deprivation (By similarity). Phosphorylates MUC1 in breast cancer cells, decreasing the interaction of MUC1 with CTNNB1/beta-catenin (PubMed:<a href="http://www.uniprot.org/citations/9819408" target="\_blank">9819408</a>). Is necessary for the establishment of neuronal polarity and axon outgrowth (PubMed:<a href="http://www.uniprot.org/citations/20067585" target="\_blank">20067585</a>). Phosphorylates MARK2, leading to inhibition of its activity (By similarity). Phosphorylates SIK1 at 'Thr-182', leading to sustainment of its activity (PubMed:<a href="http://www.uniprot.org/citations/18348280" target="\_blank">18348280</a>). Phosphorylates ZC3HAV1 which enhances its antiviral activity (PubMed:<a href="http://www.uniprot.org/citations/22514281" target="\_blank">22514281</a>). Phosphorylates SNAI1, leading to its ubiquitination and proteasomal degradation (PubMed:<a href="http://www.uniprot.org/citations/15448698" target="\_blank">15448698</a>, PubMed:<a href="http://www.uniprot.org/citations/15647282" target="\_blank">15647282</a>, PubMed:<a href="http://www.uniprot.org/citations/25827072" target="\_blank">25827072</a>, PubMed:<a href="http://www.uniprot.org/citations/29059170" target="\_blank">29059170</a>). Phosphorylates SFPQ at 'Thr-687' upon T-cell activation (PubMed:<a href="http://www.uniprot.org/citations/20932480" target="\_blank">20932480</a>). Phosphorylates NR1D1 st 'Ser-55' and 'Ser-59' and stabilizes it by protecting it from proteasomal degradation. Regulates the circadian clock via phosphorylation of the major clock components including BMAL1, CLOCK and PER2 (PubMed:<a href="http://www.uniprot.org/citations/19946213" target="\_blank">19946213</a>, PubMed:<a href="http://www.uniprot.org/citations/28903391" target="\_blank">28903391</a>). Phosphorylates FBXL2 at 'Thr-404' and primes it for ubiquitination by the SCF(FBXO3) complex and proteasomal degradation (By similarity). Phosphorylates CLOCK AT 'Ser-427' and targets it for proteasomal degradation (PubMed:<a

[19946213](http://www.uniprot.org/citations/19946213)). Phosphorylates BMAL1 at 'Ser-17' and 'Ser-21' and primes it for ubiquitination and proteasomal degradation (PubMed: [28903391](http://www.uniprot.org/citations/28903391)). Phosphorylates OGT at 'Ser-3' or 'Ser-4' which positively regulates its activity. Phosphorylates MYCN in neuroblastoma cells which may promote its degradation (PubMed: [24391509](http://www.uniprot.org/citations/24391509)). Regulates the circadian rhythmicity of hippocampal long-term potentiation and BMAL1 and PER2 expression (By similarity). Acts as a regulator of autophagy by mediating phosphorylation of KAT5/TIP60 under starvation conditions, activating KAT5/TIP60 acetyltransferase activity and promoting acetylation of key autophagy regulators, such as ULK1 and RUBCNL/Pacer (PubMed: [30704899](http://www.uniprot.org/citations/30704899)). Negatively regulates extrinsic apoptotic signaling pathway via death domain receptors. Promotes the formation of an anti-apoptotic complex, made of DDX3X, BRIC2 and GSK3B, at death receptors, including TNFRSF10B. The anti-apoptotic function is most effective with weak apoptotic signals and can be overcome by stronger stimulation (PubMed: [18846110](http://www.uniprot.org/citations/18846110)). Phosphorylates E2F1, promoting the interaction between E2F1 and USP11, stabilizing E2F1 and promoting its activity (PubMed: [17050006](http://www.uniprot.org/citations/17050006), PubMed: [28992046](http://www.uniprot.org/citations/28992046)). Phosphorylates mTORC2 complex component RICTOR at 'Ser-1235' in response to endoplasmic stress, inhibiting mTORC2 (PubMed: [21343617](http://www.uniprot.org/citations/21343617)). Phosphorylates mTORC2 complex component RICTOR at 'Thr-1695' which facilitates FBXW7-mediated ubiquitination and subsequent degradation of RICTOR (PubMed: [25897075](http://www.uniprot.org/citations/25897075)). Phosphorylates FXR1, promoting FXR1 ubiquitination by the SCF(FBXO4) complex and FXR1 degradation by the proteasome (By similarity). Phosphorylates interleukin-22 receptor subunit IL22RA1, preventing its proteasomal degradation (By similarity).

#### Cellular Location

Cytoplasm. Nucleus. Cell membrane. Note=The phosphorylated form shows localization to cytoplasm and cell membrane (PubMed:20937854) The MEMO1-RHOA-DIAPH1 signaling pathway controls localization of the phosphorylated form to the cell membrane (PubMed:20937854)

#### Tissue Location

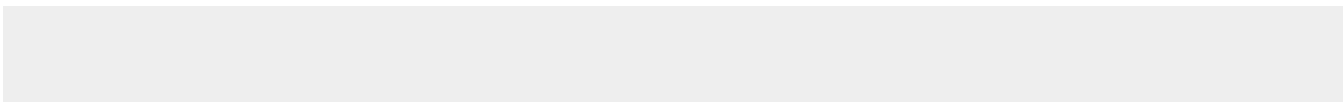
Expressed in testis, thymus, prostate and ovary and weakly expressed in lung, brain and kidney. Colocalizes with EIF2AK2/PKR and TAU in the Alzheimer disease (AD) brain

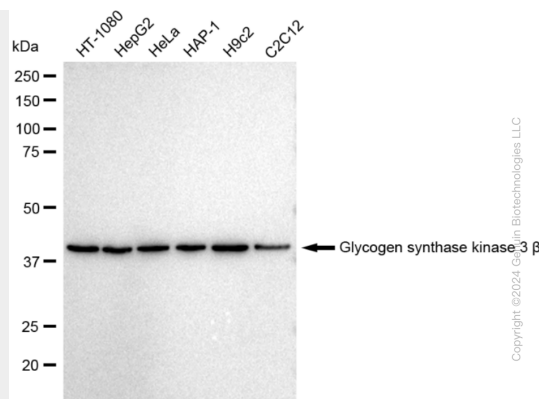
### KD-Validated Anti-Glycogen synthase kinase 3 beta Rabbit Monoclonal Antibody - Protocols

Provided below are standard protocols that you may find useful for product applications.

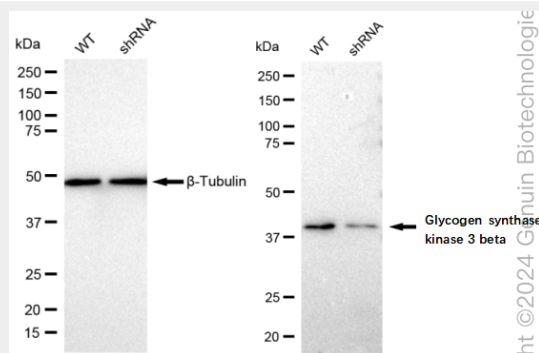
- [Western Blot](#)
- [Blocking Peptides](#)
- [Dot Blot](#)
- [Immunohistochemistry](#)
- [Immunofluorescence](#)
- [Immunoprecipitation](#)
- [Flow Cytometry](#)
- [Cell Culture](#)

### KD-Validated Anti-Glycogen synthase kinase 3 beta Rabbit Monoclonal Antibody - Images

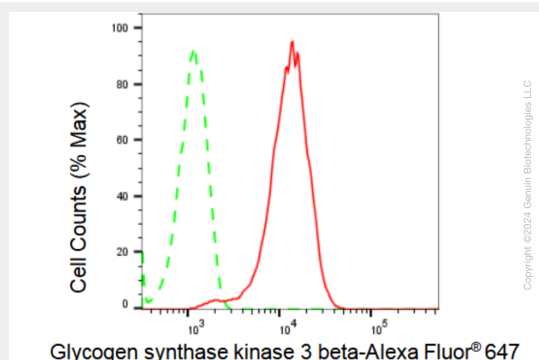




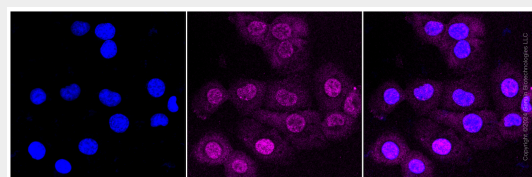
Western blotting analysis using anti-Glycogen synthase kinase 3 beta antibody (Cat#AGI2314). Total cell lysates (30 µg) from various cell lines were loaded and separated by SDS-PAGE. The blot was incubated with anti-Glycogen synthase kinase 3 beta antibody (Cat#AGI2314, 1:5,000) and HRP-conjugated goat anti-rabbit secondary antibody respectively.



Western blotting analysis using anti-Glycogen synthase kinase 3 beta antibody (Cat#AGI2314). Glycogen synthase kinase 3 beta expression in wild type (WT) and glycogen synthase kinase 3 beta shRNA knockdown (KD) HeLa cells with 30 µg of total cell lysates. β-Tubulin serves as a loading control. The blot was incubated with anti-Glycogen synthase kinase 3 beta antibody (Cat#AGI2314, 1:5,000) and HRP-conjugated goat anti-rabbit secondary antibody respectively.



Flow cytometric analysis of Glycogen synthase kinase 3 beta expression in HepG2 cells using Glycogen synthase kinase 3 beta antibody (Cat#AGI2314, 1:2,000). Green, isotype control; red, Glycogen synthase kinase 3 beta.



Immunocytochemical staining of HT-1080 cells with Glycogen synthase kinase 3 beta antibody (Cat#AGI2314, 1:1,000). Nuclei were stained blue with DAPI; Glycogen synthase kinase 3 beta was stained magenta with Alexa Fluor® 647. Images were taken using Leica stellaris 5. Protein abundance based on laser Intensity and smart gain: Medium. Scale bar: 20  $\mu$ m.