

### **Anti-GSK3 beta Antibody**

Rabbit polyclonal antibody to GSK3 beta Catalog # AP60301

# **Specification**

### **Anti-GSK3 beta Antibody - Product Information**

Application WB, IP, IHC
Primary Accession P49841
Other Accession O9WV60

Reactivity Human, Mouse, Rat, Zebrafish, Pig, Bovine,

SARS Rabbit Polyclonal 46744

Host Clonality Calculated MW

# **Anti-GSK3** beta **Antibody** - **Additional Information**

#### **Gene ID 2932**

### **Other Names**

Glycogen synthase kinase-3 beta; GSK-3 beta; Serine/threonine-protein kinase GSK3B

# **Target/Specificity**

KLH-conjugated synthetic peptide encompassing a sequence within the N-term region of human GSK3 beta. The exact sequence is proprietary.

#### **Dilution**

WB~~WB (1/500 - 1/1000), IH (1/100 - 1/200), IP (1/10 - 1/100) IP~~N/A IHC~~1:100~500

### **Format**

Liquid in 0.42% Potassium phosphate, 0.87% Sodium chloride, pH 7.3, 30% glycerol, and 0.09% (W/V) sodium azide.

#### Storage

Store at -20 °C.Stable for 12 months from date of receipt

### **Anti-GSK3 beta 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 href="http://www.uniprot.org/citations/19946213" target=" blank">19946213</a>). Phosphorylates BMAL1 at 'Ser-17' and 'Ser-21' and primes it for ubiquitination and proteasomal degradation (PubMed: <a href="http://www.uniprot.org/citations/28903391" target=" blank">28903391</a>). Phosphorylates OGT at 'Ser-3' or 'Ser-4' which positively regulates its activity. Phosphorylates MYCN in neuroblastoma cells which may promote its degradation (PubMed: <a href="http://www.uniprot.org/citations/24391509" target=" blank">24391509</a>). 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:<a href="http://www.uniprot.org/citations/30704899" target=" blank">30704899</a>). 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: <a href="http://www.uniprot.org/citations/18846110" target="blank">18846110</a>). Phosphorylates E2F1, promoting the interaction between E2F1 and USP11, stabilizing E2F1 and promoting its activity (PubMed: <a href="http://www.uniprot.org/citations/17050006" target=" blank">17050006</a>, PubMed:<a href="http://www.uniprot.org/citations/28992046" target="blank">28992046</a>). Phosphorylates mTORC2 complex component RICTOR at 'Ser-1235' in response to endoplasmic stress, inhibiting mTORC2 (PubMed:<a href="http://www.uniprot.org/citations/21343617" target=" blank">21343617</a>). Phosphorylates mTORC2 complex component RICTOR at 'Thr-1695' which facilitates FBXW7-mediated ubiquitination and subsequent degradation of RICTOR (PubMed: <a href="http://www.uniprot.org/citations/25897075" target="\_blank">25897075</a>). 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

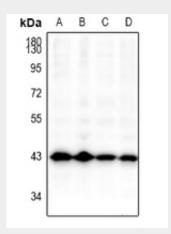
### **Anti-GSK3** beta **Antibody - Protocols**

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

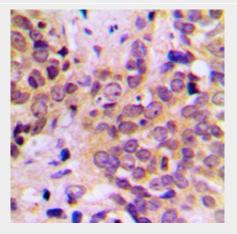
- Western Blot
- Blocking Peptides
- Dot Blot
- <u>Immunohistochemistry</u>
- Immunofluorescence
- Immunoprecipitation
- Flow Cytomety
- Cell Culture



## **Anti-GSK3 beta Antibody - Images**



Western blot analysis of GSK3 beta expression in SGC7901 (A), HEK293T (B), HepG2 (C), PC12 (D) whole cell lysates.



Immunohistochemical analysis of GSK3 beta staining in human prostate cancer formalin fixed paraffin embedded tissue section. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH 6.0). The section was then incubated with the antibody at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX.

# Anti-GSK3 beta Antibody - Background

KLH-conjugated synthetic peptide encompassing a sequence within the N-term region of human GSK3 beta. The exact sequence is proprietary.