

# GSK-3 $\beta$ (1V001): sc-71186

## BACKGROUND

Glycogen synthase kinase 3, or GSK-3, is a serine/threonine, proline-directed kinase involved in a diverse array of signaling pathways, including glycogen synthesis and cellular adhesion, and has been implicated in Alzheimer's disease. Two forms of GSK-3, designated GSK-3 $\alpha$  and GSK-3 $\beta$ , have been identified and differ in their subcellular localization. Tau, a microtubule-binding protein which serves to stabilize microtubules in growing axons, is found to be hyper-phosphorylated in paired helical filaments (PHF), the major fibrous component of neurofibrillary lesions associated with Alzheimer's disease. Hyperphosphorylation of Tau is thought to be the critical event leading to the assembly of PHF. Six Tau protein isoforms have been identified, all of which are phosphorylated by GSK-3. This presents the possibility that miscues in GSK-3 signaling contribute to the onset of Alzheimer's disease.

## REFERENCES

1. Pugazhenth, S., et al. 1995. Regulation of glycogen synthase activation in isolated hepatocytes. *Mol. Cell. Biochem.* 149-150: 95-101.
2. Pelech, S.L. 1995. Networking with proline-directed protein kinases implicated in Tau phosphorylation. *Neurobiol. Aging* 16: 247-256.
3. Hoshi, M., et al. 1995. Different localization of Tau protein kinase I/glycogen synthase kinase-3  $\beta$  from glycogen synthase kinase-3  $\alpha$  in cerebellum mitochondria. *J. Biochem.* 118: 683-685.

## CHROMOSOMAL LOCATION

Genetic locus: GSK3B (human) mapping to 3q13.33.

## SOURCE

GSK-3 $\beta$  (1V001) is a mouse monoclonal antibody raised against recombinant GSK-3 $\beta$  of *Xenopus laevis* origin.

## PRODUCT

Each vial contains 50  $\mu$ g IgG<sub>2a</sub> in 0.5 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

GSK-3 $\beta$  (1V001) is recommended for detection of GSK-3 $\beta$  of human, rat and *Xenopus laevis* origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)].

Suitable for use as control antibody for GSK-3 $\beta$  siRNA (h): sc-35527, GSK-3 $\beta$  shRNA Plasmid (h): sc-35527-SH and GSK-3 $\beta$  shRNA (h) Lentiviral Particles: sc-35527-V.

Molecular Weight of GSK-3 $\beta$ : 47 kDa.

Positive Controls: GSK-3 $\beta$  (h): 293T Lysate: sc-176265, A549 cell lysate: sc-2413 or SK-BR-3 cell lysate: sc-2218.

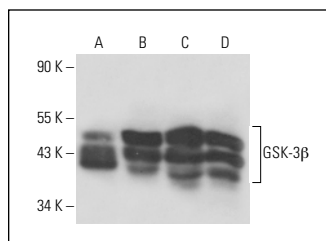
## STORAGE

Store at 4° C, \*\*DO NOT FREEZE\*\*. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

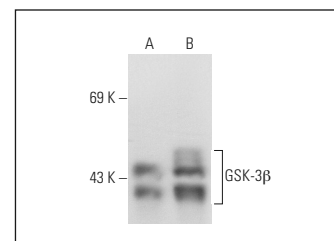
## RESEARCH USE

For research use only, not for use in diagnostic procedures.

## DATA



GSK-3 $\beta$  (1V001): sc-71186. Western blot analysis of GSK-3 $\beta$  expression in HeLa (A), A549 (B), SK-BR-3 (C) and Jurkat (D) whole cell lysates.



GSK-3 $\beta$  (1V001): sc-71186. Western blot analysis of GSK-3 $\beta$  expression in non-transfected: sc-117752 (A) and human GSK-3 $\beta$  transfected: sc-176265 (B) 293T whole cell lysates.

## SELECT PRODUCT CITATIONS

1. Jones, K., et al. 2012. GSK3 $\beta$  mediates muscle pathology in myotonic dystrophy. *J. Clin. Invest.* 122: 4461-4472.
2. Ohishi, K., et al. 2014. Ricinine: a pyridone alkaloid from *Ricinus communis* that activates the Wnt signaling pathway through casein kinase 1 $\alpha$ . *Bioorg. Med. Chem.* 22: 4597-4601.
3. Ohishi, K., et al. 2015. 9-hydroxycanthin-6-one, a  $\beta$ -carboline alkaloid from *Eurycoma longifolia*, is the first Wnt signal inhibitor through activation of glycogen synthase kinase 3 $\beta$  without depending on casein kinase 1 $\alpha$ . *J. Nat. Prod.* 78: 1139-1146.
4. Kim, Y.K., et al. 2016. Disease phenotypes in a mouse model of RNA toxicity are independent of protein kinase C $\alpha$  and protein kinase C $\beta$ . *PLoS ONE* 11: e0163325.
5. Kaushal, J.B., et al. 2017. The regulation of Hh/Gli1 signaling cascade involves GSK3 $\beta$ -mediated mechanism in estrogen-derived endometrial hyperplasia. *Sci. Rep.* 7: 6557.
6. Wang, J., et al. 2018. Protective role of fentanyl in lipopolysaccharide-induced neuroinflammation in BV-2 cells. *Exp. Ther. Med.* 16: 3740-3744.
7. Shin, J.Y., et al. 2019. Jmjd6a regulates GSK3 $\beta$  RNA splicing in *Xenopus laevis* eye development. *PLoS ONE* 14: e0219800.
8. Zhao, C., et al. 2020. Cyclin G2 regulates canonical Wnt signalling via interaction with Dapper1 to attenuate tubulointerstitial fibrosis in diabetic nephropathy. *J. Cell. Mol. Med.* 24: 2749-2760.
9. Oh, Y., et al. 2020. Ark shell protein-derived bioactive peptides promote osteoblastic differentiation through upregulation of the canonical Wnt/ $\beta$ -catenin signaling in human bone marrow-derived mesenchymal stem cells. *J. Food Biochem.* E-published.

## CONJUGATES

See **GSK-3 $\alpha$ / $\beta$  (0011-A): sc-7291** for GSK-3 $\alpha$ / $\beta$  antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor<sup>®</sup> 488, 546, 594, 647, 680 and 790.