

# GSK-3 $\alpha$ (10C1): sc-81463

## 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 hyperphosphorylated 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.
4. Sperber, B.R., et al. 1995. Glycogen synthase kinase-3 $\beta$  phosphorylates Tau protein at multiple sites in intact cells. *Neurosci. Lett.* 197: 149-153.
5. Rubinfeld, B., et al. 1996. Binding of GSK-3 $\beta$  to the APC- $\beta$ -catenin complex and regulation of complex assembly. *Science* 272: 1023-1026.
6. Black, M.M., et al. 1996. Tau is enriched on dynamic microtubules in the distal region of growing axons. *J. Neurosci.* 16: 3601-3619.
7. Singh, T.J., et al. 1996. Differential phosphorylation of human Tau isoforms containing three repeats by several protein kinases. *Arch. Biochem. Biophys.* 328: 43-50.
8. Hoshi, M., et al. 1996. Regulation of mitochondrial pyruvate dehydrogenase activity by Tau protein kinase I/glycogen synthase kinase 3? in brain. *Proc. Natl. Acad. Sci. USA* 93: 2719-2723.

## CHROMOSOMAL LOCATION

Genetic locus: GSK3A (human) mapping to 19q13.2; Gsk3a (mouse) mapping to 7 A3.

## SOURCE

GSK-3 $\alpha$  (10C1) is a mouse monoclonal antibody raised against GSK-3 $\alpha$  of human origin.

## PRODUCT

Each vial contains 50  $\mu$ g IgG<sub>1</sub> in 0.5 ml of PBS with < 0.1% sodium azide, 0.1% gelatin, PEG and sucrose.

## APPLICATIONS

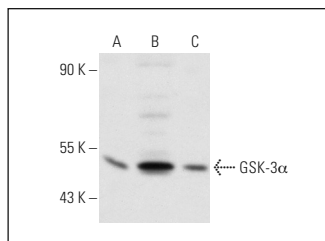
GSK-3 $\alpha$  (C-20) is recommended for detection of GSK-3 $\alpha$  of mouse, rat, human and canine origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for GSK-3 $\alpha$  siRNA (h): sc-29339, GSK-3 $\alpha$  siRNA (m): sc-35526, GSK-3 $\alpha$  shRNA Plasmid (h): sc-29339-SH, GSK-3 $\alpha$  shRNA Plasmid (m): sc-35526-SH, GSK-3 $\alpha$  shRNA (h) Lentiviral Particles: sc-29339-V and GSK-3 $\alpha$  shRNA (m) Lentiviral Particles: sc-35526-V.

Molecular Weight of GSK-3 $\alpha$ : 51 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, A549 cell lysate: sc-2413 or GSK-3 $\alpha$  (h): 293T Lysate: sc-114699.

## DATA



GSK-3 $\alpha$  (10C1): sc-81463. Western blot analysis of GSK-3 $\alpha$  expression in non-transfected 293T: sc-117752 (A), human GSK-3 $\alpha$  transfected 293T: sc-114699 (B) and HeLa (C) whole cell lysates.

## SELECT PRODUCT CITATIONS

1. Zhang, M., et al. 2013. Glycogen synthase kinase 3 promotes p53 mRNA translation via phosphorylation of RNPC1. *Genes Dev.* 27: 2246-2258.

## 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.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.



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