SANTA CRUZ BIOTECHNOLOGY, INC.

p-GSK-3β (2D3): sc-81494

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Glycogen synthase kinase-3α (GSK-3α) and GSK-3β are highly similar isoforms of serine/threonine kinases that regulate metabolic enzymes and transcription factors, which are responsible for coordinating processes such as glycogen synthesis and cell adhesion. GSK-3β activity is also required for nuclear activity of Rel dimers, which mediate an anti-apoptotic response to TNFα in mice. GSK-3 catalytic kinase activity is controlled through differential phosphorylation of serine/threonine residues, which have an inhibitory effect, and tyrosine residues, which have an activating effect. Growth factor stimulation of mammalian cells expressing GSK-3α and GSK-3β induces phosphorylation of Ser 21 and Ser 9, respectively, through a phosphatidylinositol 3-kinase (PI 3-K)-protein kinase B (PKB)-dependent pathway, thereby enhancing proliferative signals. Additionally, GSK-3 physically associates with cAMP-dependent protein kinase A (PKA), which phosphorylates Ser 21 of GSK-3α or Ser 9 of GSK-3β and inactivates both forms. GSK-3α/β is positively regulated by phosphorylation on Tyr 279 and Tyr 216, respectively. Activated GSK-3α/β participates in energy metabolism, neuronal cell development, and body pattern formation. Tyrosine dephosphorylation of GSK-3 is involved in its extracellular signal-dependent inactivation.

CHROMOSOMAL LOCATION

Genetic locus: GSK3B (human) mapping to 3q13.33; Gsk3b (mouse) mapping to 16 B3.

SOURCE

p-GSK-3β (2D3) is a mouse monoclonal antibody raised against a phosphopeptide corresponding to amino acid residues surrounding Ser 9 of GSK-3β of human origin.

PRODUCT

Each vial contains 50 µg IgG_1 in 0.5 ml of PBS with < 0.1% sodium azide, 0.1% gelatin, PEG and sucrose.

APPLICATIONS

p-GSK-3β (2D3) is recommended for detection of Ser 9 phosphorylated GSK-3β of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)].

Suitable for use as control antibody for GSK-3β siRNA (h): sc-35527, GSK-3β siRNA (m): sc-35525, GSK-3β shRNA Plasmid (h): sc-35527-SH, GSK-3β shRNA Plasmid (m): sc-35525-SH, GSK-3β shRNA (h) Lentiviral Particles: sc-35527-V and GSK-3β shRNA (m) Lentiviral Particles: sc-35525-V.

Molecular Weight of p-GSK-3β: 47 kDa.

Positive Controls: GSK-3β (m): 293T Lysate: sc-120654, NIH/3T3 whole cell lysate: sc-2210 or NIH/3T3 + PDGF cell lysate: sc-3803.

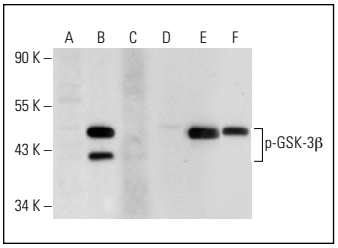
STORAGE

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

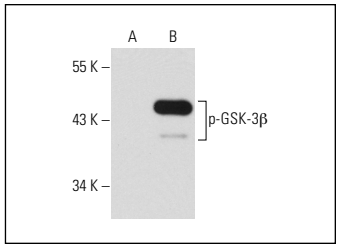
RESEARCH USE

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

DATA



Western blot analysis of GSK-3β phosphorylation in non-transfected: sc-117752 (**A**,**D**), untreated mouse GSK-3β transfected: sc-120654 (**B**,**E**) and lambda protein phosphatase treated mouse GSK-3β transfected: sc-120654 (**C**,**F**) 293T whole cell lysates. Antibodies tested include p-GSK-3β (2D3): sc-81494 (**A**,**B**,**C**) and GSK-3β (1F7): sc-53931 (**D**,**E**,**F**).



p-GSK-3β (2D3): sc-sc-81494. Western blot analysis of GSK-3β phosphorylation in non-transfected: sc-117752 (**A**) and mouse GSK-3β transfected: sc-120654 (**B**) 293T whole cell lysates.

SELECT PRODUCT CITATIONS

1. Moro, L., et al. 2009. Mitochondrial DNA depletion in prostate epithelial cells promotes anoikis resistance and invasion through activation of PI3K/Akt2. Cell Death Differ. 16: 571-583.
2. Wang, Q., et al. 2013. The role of uPAR in epithelial-mesenchymal transition in small airway epithelium of patients with chronic obstructive pulmonary disease. Respir. Res. 14: 67.
3. Chen, K.C., et al. 2014. Pemetrexed induces S-phase arrest and apoptosis via a deregulated activation of Akt signaling pathway. PLoS ONE 9: e97888.
4. Cai, Y., et al. 2017. Downregulation of β-catenin blocks fibrosis via Wnt2 signaling in human keloid fibroblasts. Tumour Biol. 39: 1010428317707423.
5. Kim, S.A., et al. 2018. Cryptotanshinone induces cell cycle arrest and apoptosis of NSCLC cells through the PI3K/Akt/GSK-3β pathway. Int. J. Mol. Sci. 19: 2739.
6. Chen, Y., et al. 2019. Akt regulated phosphorylation of GSK-3β/cyclin D1, p21 and p27 contributes to cell proliferation through cell cycle progression from G1 to S/G2M phase in low-dose arsenite exposed HaCat cells. Front. Pharmacol. 10: 1176.
7. Camaforte, N.A.P., et al. 2019. Hypoglycaemic activity of *Bauhinia holophylla* through GSK3-β inhibition and glycogenesis activation. Pharm. Biol. 57: 269-279.
8. Sathyamoorthy, Y., et al. 2020. Glycyrrhizic acid renders robust neuroprotection in rodent model of vascular dementia by controlling oxidative stress and curtailing cytochrome-c release. Nutr. Neurosci. 22: 1-16.
9. Jiang, M., et al. 2021. Role of lincRNA-Cox2 targeting miR-150 in regulating the viability of chondrocytes in osteoarthritis. Exp. Ther. Med. 22: 800.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.