SANTA CRUZ BIOTECHNOLOGY, INC.

p-GSK-3α/β (Tyr 279/216): sc-135653

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-3α/β (Tyr 279/216) is a rabbit polyclonal antibody raised against a short amino acid sequence containing Tyr 279/216 phosphorylated GSK-3β of human origin.

PRODUCT

Each vial contains 100 µg IgG in 1.0 ml PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

p-GSK-3α/β (Tyr 279/216) is recommended for detection of Tyr 279 phosphorylated GSK-3α and Tyr 216 phosphorylated GSK-3β of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500).

Molecular Weight of p-GSK-3α/β: 47 kDa.

Positive Controls: NIH/3T3 whole cell lysate: sc-2210, NIH/3T3 + PDGF cell lysate: sc-3803 or A-431 whole cell lysate: sc-2201.

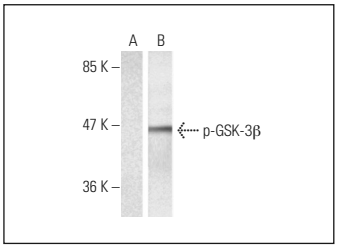
STORAGE

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

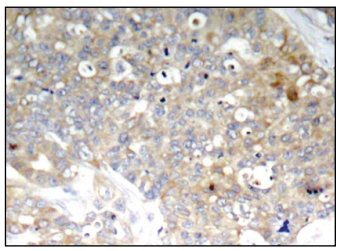
RESEARCH USE

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

DATA



p-GSK-3α/β (Tyr 279/216): sc-135653. Western blot analysis of phosphorylated GSK-3β expression in untreated (**A**) and Insulin-treated (**B**) 293 cell extracts.



p-GSK-3α/β (Tyr 279/216): sc-135653. Immunoperoxidase staining of formalin-fixed, paraffin-embedded human breast carcinoma tissue showing cytoplasmic and membrane localization.

SELECT PRODUCT CITATIONS

1. Sze, C.I., et al. 2004. Down-regulation of WW domain-containing oxidoreductase induces Tau phosphorylation *in vitro*. A potential role in Alzheimer's disease. J. Biol. Chem. 279: 30498-30506.
2. Liu, X., et al. 2005. Rapid, Wnt-induced changes in GSK-3β associations that regulate β-catenin stabilization are mediated by G_α proteins. Curr. Biol. 15: 1989-1997.
3. Yu, W., et al. 2005. Neurodegeneration in heterozygous Niemann-Pick type C1 (NPC1) mouse: implication of heterozygous NPC1 mutations being a risk for tauopathy. J. Biol. Chem. 280: 27296-27302.
4. Singh, R.R., et al. 2009. Sonic hedgehog signaling pathway is activated in ALK-positive anaplastic large cell lymphoma. Cancer Res. 69: 2550-2558.
5. Duka, T., et al. 2009. α-synuclein contributes to GSK-3β-catalyzed Tau phosphorylation in Parkinson's disease models. FASEB J. 23: 2820-2830.
6. Schütz, S.V., et al. 2011. Inhibition of glycogen synthase kinase-3β counteracts ligand-independent activity of the androgen receptor in castration resistant prostate cancer. PLoS ONE 6: e25341.
7. Park, S.S., et al. 2012. Asp664 cleavage of amyloid precursor protein induces tau phosphorylation by decreasing protein phosphatase 2A activity. J. Neurochem. 123: 856-865.
8. Johnson, J.L., et al. 2013. Flavonoid apigenin modified gene expression associated with inflammation and cancer and induced apoptosis in human pancreatic cancer cells through inhibition of GSK-3β/NFκB signaling cascade. Mol. Nutr. Food Res. 57: 2112-2127.
9. Hsieh, S.R., et al. 2013. Epigallocatechin-3-gallate-mediated cardioprotection by Akt/GSK-3β/caveolin signalling in H9c2 rat cardiomyoblasts. J. Biomed. Sci. 20: 86.

PROTOCOLS

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