SANTA CRUZ BIOTECHNOLOGY, INC.

p-GAP-43 (Ser 41): sc-17109

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

GAP-43 is a neural protein kinase C (PKC) substrate enriched in nerve growth cones that is implicated in growth cone plasticity. Endogenous growth cone GAP-43 is phosphorylated at multiple sites, on both Serine and Threonine residues. Stimulation of PKC activity increases the phosphorylation of only those proteolytic fragments containing Ser 41. However, phosphorylation is predominantly associated with fragments not containing Ser 41. Casein kinase II (CKII) phosphorylates GAP-43 at Serines 191/192 and Threonines 88, 89 and/or 95 both *in vitro* and in neuronal growth cones. Thus, GAP-43 in growth cones is not only a substrate for PKC, but also for CKII. Basic fibroblast growth factor promotes GAP-43 translocation from the cytosol to adherent membrane patches and stimulates GAP-43 phosphorylation, mainly at Ser 41. The stimulation of neurite outgrowth by NCAM also requires GAP-43 function; and GAP-43 phosphorylation in isolated growth cones occurs via an FGF receptor-dependent increase in arachidonic acid. Phosphorylated GAP-43 stabilizes long actin filaments indicating that post-translational modifications of GAP-43, which can be regulated in response to extracellular signals, have the ability to directly infuence the structure of the actin cytoskeleton.

CHROMOSOMAL LOCATION

Genetic locus: GAP43 (human) mapping to 3q13.31; Gap43 (mouse) mapping to 16 B4.

SOURCE

p-GAP-43 (Ser 41) is available as either goat (sc-17109) or rabbit (sc-17109-R) polyclonal affinity purified antibody raised against a short amino acid sequence containing Ser 41 phosphorylated GAP-43 of mouse origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-17109 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

p-GAP-43 (Ser 41) is recommended for detection of Ser 41 phosphorylated GAP-43 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

p-GAP-43 (Ser 41) is also recommended for detection of correspondingly phosphorylated GAP-43 in additional species, including equine, canine, bovine, porcine and avian.

Suitable for use as control antibody for GAP-43 siRNA (h): sc-35446, GAP-43 siRNA (m): sc-35447, GAP-43 shRNA Plasmid (h): sc-35446-SH, GAP-43 shRNA Plasmid (m): sc-35447-SH, GAP-43 shRNA (h) Lentiviral Particles: sc-35446-V and GAP-43 shRNA (m) Lentiviral Particles: sc-35447-V.

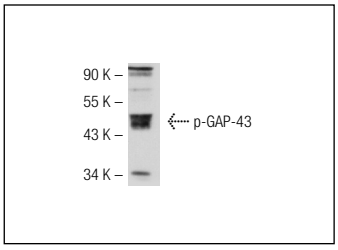
Molecular Weight of p-GAP-43: 43 kDa.

Positive Controls: mouse brain extract: sc-2253.

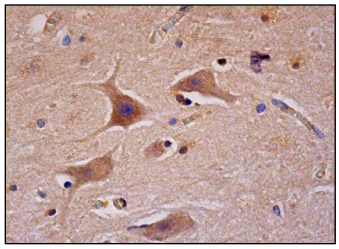
STORAGE

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

DATA



p-GAP-43 (Ser 41)-R: sc-17109-R. Western blot analysis of GAP-43 phosphorylation in mouse brain tissue extract.



p-GAP-43 (Ser 41): sc-17109. Immunoperoxidase staining of formalin fixed, paraffin-embedded human cerebral cortex tissue showing cytoplasmic staining of neuronal cells, glial cells and endothelial cells.

SELECT PRODUCT CITATIONS

1. Zhang, G.R., et al. 2005. Genetic enhancement of visual learning by activation of protein kinase C pathways in small groups of rat cortical neurons. J. Neurosci. 25: 8468-8481.
2. Kim, H.J., et al. 2006. Acute ethanol administration decreases GAP-43 and phosphorylated-GAP-43 in the rat hippocampus. Brain Res. 1112: 16-25.
3. Botto, L., et al. 2007. Changes in the composition of detergent-resistant membrane domains of cultured neurons following protein kinase C activation. J. Neurosci. Res. 85: 443-450.
4. Einat, H., et al. 2007. Protein kinase C inhibition by tamoxifen antagonizes manic-like behavior in rats: implications for the development of novel therapeutics for bipolar disorder. Neuropsychobiology 55: 123-131.
5. Zakharov, V.V., et al. 2007. M-calpain-mediated cleavage of GAP-43 near Ser41 is negatively regulated by protein kinase C, calmodulin and calpain-inhibiting fragment GAP-43-3. J. Neurochem. 101: 1539-1551.
6. Alm, H., et al. 2010. *In vitro* neurotoxicity of PBDE-99: immediate and concentration-dependent effects on protein expression in cerebral cortex cells. J. Proteome Res. 9: 1226-1235.
7. Boczek, T., et al. 2012. Gene expression pattern in PC12 cells with reduced PMCA2 or PMCA3 isoform: selective up-regulation of calmodulin and neuromodulin. Mol. Cell. Biochem. 360: 89-102.
8. Boczek, T., et al. 2015. Regulation of GAP43/calmodulin complex formation via calcineurin-dependent mechanism in differentiated PC12 cells with altered PMCA isoforms composition. Mol. Cell. Biochem. 407: 251-262.

RESEARCH USE

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