

# p-DARPP-32 (Thr 75): sc-16304

## BACKGROUND

Dopaminergic signaling pathways, which are essential for multiple brain functions, are abnormal in several neurological disorders, such as schizophrenia, Parkinson's disease and drug abuse. DARPP-32 is abundant in neurons that receive dopaminergic input. Activation of PKA and the consequent phosphorylation of DARPP-32 on Thr 34 occurs in response to dopamine acting upon D1-like receptors. Dopamine interaction with D2-like receptors results in the inhibition of PKA activation, the activation of protein phosphatase 2B and the consequent dephosphorylation of DARPP-32 at Thr 34. Phosphorylated DARPP-32 at Thr 34 is a potent inhibitor of PP-1. Phosphorylation of DARPP-32 on Ser 137 by casein kinase inhibits the dephosphorylation of Thr 34 by calcineurin. Phosphorylation of DARPP-32 on Thr 75 by Cdk5 inhibits PKA by a competitive mechanism *in vitro*. Decreasing the phosphorylation of DARPP-32 Thr 75 increases the dopamine-induced phosphorylation of PKA substrates.

## REFERENCES

1. Walaas, S.I., et al. 1984. DARPP-32, a dopamine- and adenosine 3':5'-monophosphate-regulated phosphoprotein enriched in dopamine-innervated brain regions. I. Regional and cellular distribution in the rat brain. *J. Neurosci.* 4: 84-98.
2. Hemmings, H.C. Jr., et al. 1984. DARPP-32, a dopamine- and adenosine 3':5'-monophosphate-regulated neuronal phosphoprotein I. Amino acid sequence around the phosphorylated Threonine. *J. Biol. Chem.* 259: 14486-14490.
3. Hemmings, H.C. Jr., et al. 1984. DARPP-32, a dopamine-regulated neuronal phosphoprotein, is a potent inhibitor of protein phosphatase-1. *Nature* 310: 503-505.
4. Desdouits, F., et al. 1995. Dopamine- and cAMP-regulated phosphoprotein DARPP-32: phosphorylation of Ser 137 by casein kinase I inhibits dephosphorylation of Thr 34 by calcineurin. *Proc. Natl. Acad. Sci. USA* 92: 2682-2685.
5. Nishi, A., et al. 1997. Bidirectional regulation of DARPP-32 phosphorylation by dopamine. *J. Neurosci.* 17: 8147-8155.
6. Fienberg, A.A., et al. 1998. DARPP-32: regulator of the efficacy of dopaminergic neuro-transmission. *Science* 281: 838-842.
7. Bibb, J.A., et al. 1999. Phosphorylation of DARPP-32 by Cdk5 modulates dopamine signalling in neurons. *Nature* 402: 669-671.

## CHROMOSOMAL LOCATION

Genetic locus: PPP1R1B (human) mapping to 17q12.

## SOURCE

p-DARPP-32 (Thr 75) is available as either goat (sc-16304) or rabbit (sc-16304-R) affinity purified polyclonal antibody raised against a short amino acid sequence containing Thr 75 phosphorylated DARPP-32 of human origin.

## RESEARCH USE

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

## 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-16304 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## APPLICATIONS

p-DARPP-32 (Thr 75) is recommended for detection of Thr 75 phosphorylated DARPP-32 of 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

p-DARPP-32 (Thr 75) is also recommended for detection of correspondingly phosphorylated DARPP-32 in additional species, including equine, canine, bovine, porcine and avian.

Suitable for use as control antibody for DARPP-32 siRNA (h): sc-35173, DARPP-32 shRNA Plasmid (h): sc-35173-SH and DARPP-32 shRNA (h) Lentiviral Particles: sc-35173-V.

Molecular Weight of p-DARPP-32: 32 kDa.

## RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: for goat primary antibody (sc-16304): use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), for rabbit primary antibody sc-16304-R: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto B Blocking Reagent: sc-2335 (use 50 mM NaF, sc-24988, as diluent), Western Blotting Luminol Reagent: sc-2048 and Lambda Phosphatase: sc-200312A. 2) Immunofluorescence: for goat primary antibody (sc-16304): use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941, for rabbit primary antibody (sc-16304-R): use goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

## STORAGE

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

## PROTOCOLS

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