SANTA CRUZ BIOTECHNOLOGY, INC.

# p-KV4.2 (C-6): sc-377574

SANTA CRUZ BIOTECHNOLOGY

*The Power to Question*

## BACKGROUND

Voltage-gated $K^+$ channels in the plasma membrane control the repolarization and the frequency of action potentials in neurons, muscles, and other excitable cells. The KV gene family encodes more than 30 genes that comprise the subunits of the $K^+$ channels, and they vary in their gating and permeation properties, subcellular distribution, and expression patterns. Functional KV channels assemble as tetramers consisting of pore-forming $\alpha$-subunits (KV), which include the KV1, KV2, KV3, and KV4 proteins, and accessory or KV-subunits that modify the gating properties of the coexpressed KV subunits. Differences exist in the patterns of trafficking, biosynthetic processing, and surface expression of the major KV1 subunits (KV1.1, KV1.2, and KV1.4) expressed in rat and human brain, suggesting that the individual protein subunits are highly regulated to control for the assembly and formation of functional neuronal channels. The mitogen-activated protein kinase ERK2 phosphorylated KV4.2 at Thr 602, Thr 607 and Ser 616.

## CHROMOSOMAL LOCATION

Genetic locus: KCND2 (human) mapping to 7q31.31; Kcnd2 (mouse) mapping to 6 A2.

## SOURCE

p-KV4.2 (C-6) is a mouse monoclonal antibody raised against a short amino acid sequence containing Thr 602 phosphorylated KV4.2 of human origin.

## PRODUCT

Each vial contains 200 µg IgM kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-377574 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

## STORAGE

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

## APPLICATIONS

p-KV4.2 (C-6) is recommended for detection of Thr 602 phosphorylated KV4.2 of human, mouse, rat, equine, canine, bovine and ovine origin and Thr 603 phosphorylated KV4.2 of avian origin by Western Blotting (starting dilution 1:100, 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 solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

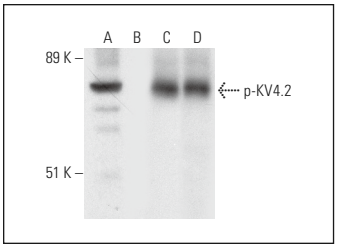
Suitable for use as control antibody for KV4.2 siRNA (h): sc-42722, KV4.2 siRNA (m): sc-42723, KV4.2 siRNA (r): sc-156129, KV4.2 shRNA Plasmid (h): sc-42722-SH, KV4.2 shRNA Plasmid (m): sc-42723-SH, KV4.2 shRNA Plasmid (r): sc-156129-SH, KV4.2 shRNA (h) Lentiviral Particles: sc-42722-V, KV4.2 shRNA (m) Lentiviral Particles: sc-42723-V and KV4.2 shRNA (r) Lentiviral Particles: sc-156129-V.

Molecular Weight of p-KV4.2: 71 kDa.

## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto B Blocking Reagent: sc-2335 (use 50 mM NaF, sc-24988, as diluent), Lambda Phosphatase: sc-200312A and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein L-Agarose: sc-2336 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

## DATA




Western blot analysis of KV4.2 phosphorylation in untreated (**A**,**C**) and lambda protein phosphatase (sc-200312A) treated (**B**,**D**) rat cerebellum tissue extracts. Antibodies tested include p-KV4.2 (C-6): sc-377574 (**A**,**B**) and KV4.2/4.3 (H-5): sc-390571 (**C**,**D**).

## SELECT PRODUCT CITATIONS


1. Carrillo-Reid, L., et al. 2019. Mutant huntingtin enhances activation of dendritic Kv4 $K^+$ channels in striatal spiny projection neurons. Elife 8: e40818.
2. Yang, W., et al. 2021. Brain-specific suppression of AMPK$\alpha$2 isoform impairs cognition and hippocampal LTP by PERK-mediated eIF2$\alpha$ phosphorylation. Mol. Psychiatry 26: 1880-1897.
3. Park, H.R., et al. 2023. Novel psychopharmacological herbs relieve behavioral abnormalities and hippocampal dysfunctions in an animal model of post-traumatic stress disorder. Nutrients 15: 3815.


## RESEARCH USE

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

## PROTOCOLS

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