

# Na<sup>+</sup> CP type IV $\alpha$ (H-90): sc-28751

## BACKGROUND

Voltage-gated sodium channels are selective ion channels that regulate the permeability of sodium ions in excitable cells. During the propagation of an action potential, sodium channels allow an influx of sodium ions, which rapidly depolarize the cell. The three glycoproteins that comprise the voltage-gated sodium channel proteins include a pore-forming  $\alpha$  subunit, a non-covalently associated  $\beta 1$  subunit and a disulfide-linked  $\beta 2$  subunit. The two  $\beta$  subunits regulate the level of channel expression, modulate gating and function as cell adhesion molecules for cellular aggregation and cytoskeleton interaction. The  $\alpha$  subunits of sodium channels type I and III are predominantly expressed in neuronal cell bodies and proximal processes, while type II $\alpha$  subunits are more abundant along axons. The  $\beta 1$  subunit of sodium channel type I is expressed in brain, skeletal and cardiac muscle. In the brain,  $\beta 1$  and  $\beta 2$  are highly expressed in Purkinje cells, and  $\beta 1$  is also expressed in the pyramidal cells of the deep cerebellar nuclei. Impaired voltage-gated sodium channels lead to a number of diseases including myotonia.

## REFERENCES

- Rosenfeld, J., et al. 1997. A novel muscle sodium channel mutation causes painful congenital myotonia. *Ann. Neurol.* 42: 811-814.
- Catterall, W.A. 1999. Molecular properties of brain sodium channels: an important target for anticonvulsant drugs. *Adv. Neurol.* 79: 441-456.
- Whitaker, W.R., et al. 2000. Distribution of voltage-gated sodium channel  $\alpha$  subunit and  $\beta$  subunit mRNAs in human hippocampal formation, cortex, and cerebellum. *J. Comp. Neurol.* 422: 123-139.
- Isom, L.L. 2001. Sodium channel  $\beta$  subunits: anything but auxiliary. *Neuroscientist* 7: 42-54.
- Whitaker, W.R., et al. 2001. Comparative distribution of voltage-gated sodium channel proteins in human brain. *Mol. Brain Res.* 88: 37-53.

## CHROMOSOMAL LOCATION

Genetic locus: SCN4A (human) mapping to 17q23.3; Scn4a (mouse) mapping to 11 E1.

## SOURCE

Na<sup>+</sup> CP type IV $\alpha$  (H-90) is a rabbit polyclonal antibody raised against amino acids 829-918 mapping within an internal region of Na<sup>+</sup> CP type IV $\alpha$  of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## 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.

## APPLICATIONS

Na<sup>+</sup> CP type IV $\alpha$  (H-90) is recommended for detection of sodium channel type IV $\alpha$  of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g 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 Na<sup>+</sup> CP type IV $\alpha$  siRNA (h): sc-42648, Na<sup>+</sup> CP type IV $\alpha$  siRNA (m): sc-42649, Na<sup>+</sup> CP type IV $\alpha$  shRNA Plasmid (h): sc-42648-SH, Na<sup>+</sup> CP type IV $\alpha$  shRNA Plasmid (m): sc-42649-SH, Na<sup>+</sup> CP type IV $\alpha$  shRNA (h) Lentiviral Particles: sc-42648-V and Na<sup>+</sup> CP type IV $\alpha$  shRNA (m) Lentiviral Particles: sc-42649-V.

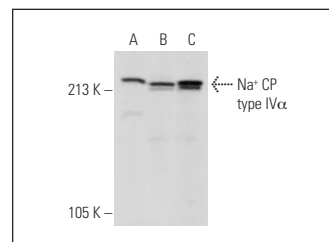
Molecular Weight of Na<sup>+</sup> CP type IV $\alpha$ : 210 kDa.

Positive Controls: Jurkat whole cell lysate: sc-2204, Sol8 cell lysate: sc-2249 or rat skeletal muscle extract: sc-364810.

## RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: 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 A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: 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.

## DATA



Na<sup>+</sup> CP type IV $\alpha$  (H-90): sc-28751. Western blot analysis of Na<sup>+</sup> CP type IV $\alpha$  expression in Jurkat (A) and Sol8 (B) whole cell lysates and rat skeletal muscle tissue extract (C).

## SELECT PRODUCT CITATIONS

- Pinto, F.M., et al. 2009. Molecular and functional characterization of voltage-gated sodium channels in human sperm. *Reprod. Biol. Endocrinol.* 7: 71.

## PROTOCOLS

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