SANTA CRUZ BIOTECHNOLOGY, INC.

# $Na^+$ CP type Vα (H-170): sc-22758

SANTA CRUZ BIOTECHNOLOGY

*The Power to Question*

## BACKGROUND

Voltage-gated sodium channels drive the initial depolarization phase of the cardiac action potential and, therefore, critically determine conduction of excitation through the heart. The sodium channel gene SCN5A, which encodes the $Na^+$ CP type Vα protein, possesses two fundamental properties, ion conduction and gating. The human SCN5A gene maps to chromosome 3p22.2. Deletions or loss-of-function mutations in SCN5A result in a wide range of arrhythmias, including bradycardia, atrioventricular conduction delay and ventricular fibrillation. Specifically, patients with Brugada syndrome have mutations in the SCN5A gene, which reduces the sodium current. Additionally, gain-of-function mutations are associated with long QT syndrome type III (LQT3), a cardiac disorder that causes sudden death from ventricular tachyarrhythmias, specifically torsade de pointes. The SCN5A gene is expressed in human atrial and ventricular cardiac muscle, but not in adult skeletal muscle, brain, myometrium, liver or spleen.

## REFERENCES


1. Wang, Q., et al. 1998. The molecular basis of long QT syndrome and prospects for therapy. Mol. Med. Today 4: 382-388.
2. Wang, Q., et al. 1998. Genetics, molecular mechanisms and management of long QT syndrome. Ann. Med. 30: 58-65.
3. Cerrone, M., et al. 2001. Long QT syndrome and Brugada syndrome: two aspects of the same disease? Ital. Heart J. Suppl. 2: 253-257.
4. Grant, A.O. 2001. Molecular biology of sodium channels and their role in cardiac arrhythmias. Am. J. Med. 110: 296-305.
5. Papadatos, G.A., et al. 2002. Slowed conduction and ventricular tachycardia after targeted disruption of the cardiac sodium channel gene SCN5A. Proc. Natl. Acad. Sci. USA 99: 6210-6215.
6. Clancy, C.E., et al. 2002. $Na^+$ channel mutation that causes both Brugada and long QT syndrome phenotypes: a simulation study of mechanism. Circulation 105: 1208-1213.


## CHROMOSOMAL LOCATION

Genetic locus: SCN5A (human) mapping to 3p22.2; Scn5a (mouse) mapping to 9 F3.

## SOURCE

$Na^+$ CP type Vα (H-170) is a rabbit polyclonal antibody raised against amino acids 971-1140 mapping within an internal region of $Na^+$ CP type Vα of human origin.

## PRODUCT

Each vial contains 200 µg 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.

## APPLICATIONS

$Na^+$ CP type Vα (H-170) is recommended for detection of $Na^+$ CP type Vα 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 solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for $Na^+$ CP type Vα siRNA (h): sc-42640, $Na^+$ CP type Vα siRNA (m): sc-42641, $Na^+$ CP type Vα shRNA Plasmid (h): sc-42640-SH, $Na^+$ CP type Vα shRNA Plasmid (m): sc-42641-SH, $Na^+$ CP type Vα shRNA (h) Lentiviral Particles: sc-42640-V and $Na^+$ CP type Vα shRNA (m) Lentiviral Particles: sc-42641-V.

Molecular Weight of $Na^+$ CP type Vα: 260 kDa.

Positive Controls: SW620 whole cell lysate.

## 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.

## SELECT PRODUCT CITATIONS


1. Pinto, F.M., et al. 2009. Molecular and functional characterization of voltage-gated sodium channels in human sperm. Reprod. Biol. Endocrinol. 7: 71.
2. Gershome, C., et al. 2011. Colocalization of voltage-gated $Na^+$ channels with the $Na^+/Ca^{2+}$ exchanger in rabbit cardiomyocytes during development. Am. J. Physiol. Heart Circ. Physiol. 300: H300-H311.
3. Beltran-Alvarez, P., et al. 2011. The cardiac sodium channel is post-translationally modified by arginine methylation. J. Proteome Res. 10: 3712-3719.


## RESEARCH USE

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