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Product Information

Anti-Sodium Channel $\text{Na}_v1.9$

(Anti-NAN, Anti-SNS2)

produced in rabbit, affinity isolated antibody

Product Number **S2196**

Product Description

Anti-Sodium Channel $\text{Na}_v1.9$ is developed in rabbit using a peptide CNGDLSSLDVAKVKVHND corresponding to residues 1748-1765 of rat $\text{Na}_v1.9$ as the immunogen. This sequence has 15/18 residues identical in mouse and 14/18 residues identical in human. The antibody was affinity isolated on immobilized immunogen.

Anti-Sodium Channel $\text{Na}_v1.9$ specifically recognizes $\text{Na}_v1.9$ in rat DRG (dorsal root ganglion) lysates by immunoblotting and in rat embryo DRG formalin frozen sections by immunohistochemistry.

Voltage-gated sodium channels (VGSCs) are present in most excitable cells. They play a crucial role in regulating the cell excitability, being primarily responsible for the initial depolarization phase of the action potential.¹ Muscle and nerve function cannot occur without them. There are 10 types of voltage-gated sodium channels, named for their α -subunits, $\text{Na}_v1.1$ - $\text{Na}_v1.9$ and Na_x . They differ in structure, distribution, rate of inactivation and sensitivity to tetrodotoxin.²

The majority of Na^+ channels in the mammalian heart are tetrodotoxin (TTX)-insensitive $\text{Na}_v1.5$. They are responsible for myocardial conduction and maintenance of cardiac rhythm.³ Mutations in the C-terminus of $\text{Na}_v1.5$ were described in connection to Long QT syndrome and Brugada syndrome.⁴

TTX-resistant channels have been suggested to play an important role in nociceptive transmission.^{5,6} Two TTX-resistant Na_v channels, $\text{Na}_v1.8$ and $\text{Na}_v1.9$, are mainly expressed in small-diameter DRG neurons, but have also been found in other areas. Involvement of $\text{Na}_v1.8$ in multiple sclerosis (MS) was suggested due to up-regulation of both mRNA and protein in Purkinje cells of MS patients and also in animal models.⁷ Recently, it has been shown that BDNF activated $\text{Na}_v1.9$ channels in the hippocampus suggesting that its expression is not restricted to DRG alone.⁸

Reagent

The antibody is supplied lyophilized from phosphate buffered saline, pH 7.4, with 1% bovine serum albumin and 0.05 % sodium azide as preservative.

Precautions and Disclaimer

Due to the sodium azide content, a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazardous and safe handling.

Preparation Instructions

Reconstitute the lyophilized vial with 0.05 or 0.2 ml deionized water, depending on the package size purchased. Antibody dilutions should be made in buffer containing 1 % bovine serum albumin.

Storage/Stability

Lyophilized powder can be stored intact at room temperature for several weeks. For extended storage, it should be stored at -20°C or below. The reconstituted solution can be stored at $2-8^\circ\text{C}$ for up to 2 weeks. For longer storage, freeze in working aliquots. Repeated freezing and thawing, or storage in "frost-free" freezers, is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

Product Profile

The recommended working dilution is 1:200 for immunoblotting.

Note: In order to obtain best results and assay sensitivities of different techniques and preparations, we recommend determining optimal working dilutions by titration test.

References

1. Denac, H., et al., Structure, function and pharmacology of voltage-gated sodium channels, *Naunyn Schmiedebergs Arch Pharmacol.* **362**, 453-479 (2000).

2. Catterall, W.A., et al., International Union of Pharmacology. XXXIX. Compendium of voltage-gated ion channels: sodium channels, *Pharmacol Rev.*, **55**, 575-578 (2003).
3. Abriel, H. and Kass, R.S., Regulation of the voltage-gated cardiac sodium channel Nav1.5 by interacting proteins, *Trends Cardiovasc. Med.*, **15**, 35-40 (2005).
4. Wu, L., et al., Localization of Nav1.5 sodium channel protein in the mouse brain, *NeuroReport*, **13**, 2547-2541 (2002).
5. Lai, J., et al., Voltage-gated sodium channels and hyperalgesia, *Annu. Rev. Pharmacol. Toxicol.*, **44**, 371-397 (2004).
6. Wood, J.N., et al., Voltage-gated sodium channels and pain pathways, *J. Neurobiol.*, **61**, 55-71 (2004).
7. Renganathan, M. et al., Expression of Nav1.8 sodium channels perturbs the firing patterns of cerebellar Purkinje cells, *Brain Res.*, **959**, 235-242 (2003).
8. Delmas, P. and Coste, B., Na⁺ channel Na_v1.9: in search of a gating mechanism, *Trends Neurosci.*, **26**, 55-57 (2003).

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