

#14684 Store at -20°C

Na Channel $\beta 1$ Subunit (D9T5B) Rabbit mAb



Cell Signaling
TECHNOLOGY®

Orders: 877-616-CELL (2355)
orders@cellsignal.com

Support: 877-678-TECH (8324)

Web: info@cellsignal.com
cellsignal.com

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

For Research Use Only. Not for Use in Diagnostic Procedures.

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
WB, IP	H M R	Endogenous	38	Rabbit IgG	#Q07699	6324

Product Usage Information

Application

Western Blotting
Immunoprecipitation

Dilution

1:1000
1:100

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 μ g/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at -20°C . *Do not aliquot the antibody.*

Specificity / Sensitivity

Na Channel $\beta 1$ Subunit (D9T5B) Rabbit mAb recognizes endogenous levels of total sodium channel $\beta 1$ subunit protein. This antibody also cross-reacts with an unidentified protein of 60 kDa in whole brain lysate.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Ala51 of human sodium channel $\beta 1$ subunit protein.

Background

Mammalian voltage-gated sodium channels (VGSCs) are composed of a pore-forming α subunit and one or more regulatory β subunits (1). Four separate genes (SCN1B-SCN4B) encode the five mammalian β subunits $\beta 1$, $\beta 1B$, $\beta 2$, $\beta 3$, and $\beta 4$. In general, β subunit proteins are type I transmembrane proteins, with the exception of secreted $\beta 1B$ protein (reviewed in 2). β subunits regulate α subunit gating and kinetics, which controls cell excitability (3,4). Sodium channel β subunits also function as Ig superfamily cell adhesion molecules that regulate cell adhesion and migration (5,6). Additional research reveals sequential processing of β subunit proteins by β -secretase (BACE1) and γ secretase, resulting in ectodomain shedding of β subunit and generation of an intracellular carboxy-terminal fragment (CTF). Generation of the CTF is thought to play a role in cell adhesion and migration (7,8). Multiple studies demonstrate a link between β subunit gene mutations and a number of disorders, including epilepsy, cardiac arrhythmia, multiple sclerosis, neuropsychiatric disorders, neuropathy, inflammatory pain, and cancer (9-13). The sodium channel $\beta 1$ subunit (SCN1B) plays a crucial role in neuronal migration and pathfinding during brain development (14). Mutations in the corresponding *SCN1B* gene are associated with generalized epilepsy with febrile seizures plus 1 (15), Brugada syndrome (16), and familial atrial fibrillation (17). A *SCN1B* loss of function mutation results in a severe form of pediatric epileptic encephalopathy known as Dravet syndrome (18).

Background References

- Catterall, W.A. (1992) *Physiol Rev* 72, S15-48.
- Catterall, W.A. (2012) *J Physiol* 590, 2577-89.
- Isom, L.L. et al. (1992) *Science* 256, 839-42.
- Brackenbury, W.J. and Isom, L.L. (2011) *Front Pharmacol* 2, 53.
- Isom, L.L. et al. (1995) *Cell* 83, 433-42.
- Malhotra, J.D. et al. (2000) *J Biol Chem* 275, 11383-8.
- Wong, H.K. et al. (2005) *J Biol Chem* 280, 23009-17.
- Kim, D.Y. et al. (2005) *J Biol Chem* 280, 23251-61.
- Wallace, R.H. et al. (1998) *Nat Genet* 19, 366-70.
- Lopez-Santiago, L.F. et al. (2007) *J Mol Cell Cardiol* 43, 636-47.
- Chioni, A.M. et al. (2009) *Int J Biochem Cell Biol* 41, 1216-27.
- O'Malley, H.A. et al. (2009) *Mol Cell Neurosci* 40, 143-55.
- Valdivia, C.R. et al. (2010) *Cardiovasc Res* 86, 392-400.
- Brackenbury, W.J. et al. (2013) *Proc Natl Acad Sci U S A* 110, 1089-94.
- Meadows, L.S. et al. (2002) *J Neurosci* 22, 10699-709.
- Hu, D. et al. (2012) *Heart Rhythm* 9, 760-9.
- Li, R.G. et al. (2013) *Int J Mol Med* 32, 144-50.
- Patino, G.A. et al. (2009) *J Neurosci* 29, 10764-78.

Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

WB: Western Blotting **IP:** Immunoprecipitation

Cross-Reactivity Key

H: human **M:** mouse **R:** rat **Hm:** hamster **Mk:** monkey **Vir:** virus **Mi:** mink **C:** chicken **Dm:** D. melanogaster
X: Xenopus **Z:** zebrafish **B:** bovine **Dg:** dog **Pg:** pig **Sc:** S. cerevisiae **Ce:** C. elegans **Hr:** horse
GP: Guinea Pig **Rab:** rabbit **All:** all species expected

Trademarks and Patents

Cell Signaling Technology is a trademark of Cell Signaling Technology, Inc.

XP is a registered trademark of Cell Signaling Technology, Inc.

All other trademarks are the property of their respective owners. Visit cellsignal.com/trademarks for more information.

Limited Uses

Except as otherwise expressly agreed in a writing signed by a legally authorized representative of CST, the following terms apply to Products provided by CST, its affiliates or its distributors. Any Customer's terms and conditions that are in addition to, or different from, those contained herein, unless separately accepted in writing by a legally authorized representative of CST, are rejected and are of no force or effect.

Products are labeled with For Research Use Only or a similar labeling statement and have not been approved, cleared, or licensed by the FDA or other regulatory foreign or domestic entity, for any purpose. Customer shall not use any Product for any diagnostic or therapeutic purpose, or otherwise in any manner that conflicts with its labeling statement. Products sold or licensed by CST are provided for Customer as the end-user and solely for research and development uses. Any use of Product for diagnostic, prophylactic or therapeutic purposes, or any purchase of Product for resale (alone or as a component) or other commercial purpose, requires a separate license from CST. Customer shall (a) not sell, license, loan, donate or otherwise transfer or make available any Product to any third party, whether alone or in combination with other materials, or use the Products to manufacture any commercial products, (b) not copy, modify, reverse engineer, decompile, disassemble or otherwise attempt to discover the underlying structure or technology of the Products, or use the Products for the purpose of developing any products or services that would compete with CST products or services, (c) not alter or remove from the Products any trademarks, trade names, logos, patent or copyright notices or markings, (d) use the Products solely in accordance with CST Product Terms of Sale and any applicable documentation, and (e) comply with any license, terms of service or similar agreement with respect to any third party products or services used by Customer in connection with the Products.