

Store at  
-20C  
#13950**Na Channel  $\beta$ 1 Subunit (D4Z2N) Rabbit mAb**
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Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W, IP	H M R	Endogenous	38	Rabbit IgG	#Q07699	6324

**Product Usage Information****Application**Western Blotting  
Immunoprecipitation**Dilution**1:1000  
1:50**Storage**Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100  $\mu$ g/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at  $-20^{\circ}\text{C}$ . Do not aliquot the antibody.**Specificity/Sensitivity**Na Channel  $\beta$ 1 Subunit (D4Z2N) Rabbit mAb recognizes endogenous levels of total sodium channel  $\beta$ 1 subunit protein.**Source / Purification**Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues near the carboxy terminus of human sodium channel  $\beta$ 1 subunit protein.**Background**

Mammalian voltage-gated sodium channels (VGSCs) are composed of a pore-forming  $\alpha$  subunit and one or more regulatory  $\beta$  subunits (1). Four separate genes (SCN1B-SCN4B) encode the five mammalian  $\beta$  subunits  $\beta$ 1,  $\beta$ 1B,  $\beta$ 2,  $\beta$ 3, and  $\beta$ 4. In general,  $\beta$  subunit proteins are type I transmembrane proteins, with the exception of secreted  $\beta$ 1B protein (reviewed in 2).  $\beta$  subunits regulate  $\alpha$  subunit gating and kinetics, which controls cell excitability (3,4). Sodium channel  $\beta$  subunits also function as Ig superfamily cell adhesion molecules that regulate cell adhesion and migration (5,6). Additional research reveals sequential processing of  $\beta$  subunit proteins by  $\beta$ -secretase (BACE1) and  $\gamma$  secretase, resulting in ectodomain shedding of  $\beta$  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  $\beta$  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**

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**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**

**W:** Western Blotting **IP:** Immunoprecipitation

**Cross-Reactivity Key**

**H:** Human **M:** Mouse **R:** Rat

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