

# Anti-Nav1.7 Na<sup>+</sup> Channel

## Catalog# SMC-314D

Size: 100µg

Product	Mouse anti-Nav1.7 sodium channel monoclonal
Clone	S68-6
Immunogen	Fusion protein amino acids 1751-1946 (cytoplasmic C-terminus) of human Nav1.7 (also known as channel protein type 9 subunit alpha, neuroendocrine sodium channel, hNE-a and peripheral sodium channel 1, accession number Q15858)
Host and Subclass	Mouse monoclonal, IgG <sub>1</sub>
Cited Applications	WB, IP, ICC, IF
Specificity	~230kDa. No cross reactivity against other Nav channels
Species cross-reactivity	Human, Mouse, Rat.
Format	Protein G Purified. In PBS pH7.4, 50% glycerol and 0.09% sodium azide.
Concentration and working dilution	1mg/mL; WB: 1µg/mL (if results are poor, use lysate without boiling, heat at 37°C for 15 minutes); IHC/ICC: 0.1-1.0µg/mL (Peroxy), 1.0-10µg/mL (IF)
Storage and stability	-20°C; 1 year+; shipped on cold packs or ambient

### Scientific Background

Ion channels are integral membrane proteins that help establish and control the small voltage gradient across the plasma membrane of living cells by allowing the flow of ions down their electrochemical gradient (1). They are present in the membranes that surround all biological cells because their main function is to regulate the flow of ions across this membrane. Whereas some ion channels permit the passage of ions based on charge, others conduct based on a ionic species, such as sodium or potassium. Furthermore, in some ion channels, the passage is governed by a gate which is controlled by chemical or electrical signals, temperature, or mechanical forces.

There are a few main classifications of gated ion channels. There are voltage- gated ion channels, ligand- gated, other gating systems and finally those that are classified differently, having more exotic characteristics. The first are voltage- gated ion channels which open and close in response to membrane potential. These are then separated into sodium, calcium, potassium, proton, transient receptor, and cyclic nucleotide-gated channels; each of which is responsible for a unique role. Ligand-gated ion channels are also known as ionotropic receptors, and they open in response to specific ligand molecules binding to the extracellular domain of the receptor protein. The other gated classifications include activation and inactivation by second messengers, inward-rectifier potassium channels, calcium-activated potassium channels, two-pore-domain potassium channels, light-gated channels, mechano-sensitive ion channels and cyclic nucleotide-gated channels. Finally, the other classifications are based on less normal characteristics such as two-pore channels, and transient receptor potential channels (2).

Nav1.7 is a voltage-gated sodium channel and plays a critical role in the generation and conduction of action potentials and is thus important for electrical signaling by most excitable cells. Therapeutically, the association of pain insensitivity with the loss of function of a certain sodium channel may have implications. Since Nav1.7 is not present in cardiac muscle or neurons in the central nervous system, blockers of Nav1.7 will not have direct action on these cells and thus can have less side effects than current pain medications. By performing more studies, there is a possibility to develop a new generation of drugs that can reduce the pain intensity in animals (3-5).

### Selected References

1. Hille B. (2001) *Ion Channels of Excitable Membranes*, 3<sup>rd</sup> Ed., Sinauer Associated Inc.: Sunderland, MA USA.
2. [www.iochannels.org](http://www.iochannels.org)
3. Dray A. (2008) *Br. J. Anaesth.* 101(1): 48-58.
4. Dray A., Read S.J (2007) *Arthritis Res. Ther.* 9(3): 212.
5. Samuels M.E., teMorshe R.H., Lynch M.E., Drenth J.P. (2008) *Mol Pain.* 4: 21.

### Certificate of Analysis

1 µg/mL of SMC-314 was sufficient for detection of Nav1.7 in 10µg of HEK-293 cell lysate transiently expressing Nav1.7 by colorimetric immunoblot analysis using Goat anti-mouse IgG:HRP as the secondary antibody.

# Material Safety Data Sheet

## Anti- Nav1.7 Na<sup>+</sup> Channel (Monoclonal Antibody) SMC-314

This product is for *in vitro* research use only and is not intended for use in humans or animals

The below information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. StressMarq shall not be held liable for any damage resulting from handling or from contact with the above product. See the Technical Specification, Packing Slip, Invoice, and Product Catalogue for additional terms and conditions of sale.

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### Hazardous Ingredients

The physical, chemical and toxicological properties of these components have not been fully investigated. It is recommended that all laboratory personnel follow standard laboratory safety procedures when handling this product. Safety procedures should include wearing OSHA approved safety glasses, gloves and protective clothing. Direct physical contact with this product should be avoided.

<u>Known Hazardous Components</u>	<u>CAS Number</u>	<u>Percent</u>
Sodium Azide	26628-22-8	0.09

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### Physical Data

This product consists of mouse immunoglobulin in PBS containing 0.09% azide in 50% glycerol, shipped on gel packs. The physical properties of this product have not been investigated thoroughly.

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### Fire and Explosion Hazard and Reactivity Data

NOT APPLICABLE

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### Toxicological Properties

May be harmful by inhalation, ingestion, or skin absorption. The toxicological properties of this product have not been investigated thoroughly. Exercise due caution.

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### Preventative Measures

Wear chemical safety goggles and compatible chemical-resistant gloves. Avoid inhalation, contact with eyes, skin or clothing.

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### Spill and Leak Procedures

Observe all federal, state and local environmental regulations.

- Wear protective equipment.
- Absorb on sand or vermiculite and place in closed containers for disposal.
- Dispose or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

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### First Aid Measures

- If swallowed, wash out mouth with water, provided person is conscious. Call a physician.
- In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. If a rash or other irritation develops, call a physician.
- If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.
- In case of eye contact, flush with copious amounts of water for at least 15 minutes while separating the eyelids with fingers. Call a physician.