

Product Information



Ca_v3.2 Calcium Channel Monoclonal Antibody (Clone S55-10)

Item No. 13704

Contents:	This vial contains 100 µg of protein G-purified IgG in 100 µl PBS, pH 7.4, containing 50% glycerol and 0.09% sodium azide.
Antigen:	Fusion protein amino acids 1,019-1,293 (II-III loop) of human Ca _v 3.2
Isotype:	IgG ₁
Host:	Mouse, clone S55-10
Cross Reactivity:	(+) Human, mouse, and rat Ca _v 3.2
Stability:	≥1 year at -20°C
Applications:	Western blot (WB), immunohistochemistry (IHC), and immunocytochemistry (ICC). The recommended starting dilution for WB is 1-10 µg/ml, IHC/ICC is 0.1-1.0 µg/ml (HRP detection), and 1-10 µg/ml (IF).

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 and 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

Ca_v3.2 is a protein which in humans is encoded by the CACNA1H gene. Studies suggest certain mutations in this gene lead to childhood absence epilepsy.^{3,4} Studies also suggest that the up-regulations of Ca_v3.2 may participate in the progression of prostate cancer toward an androgen-independent stage.⁵

References

1. Hille, B. *Ion Channels of Excitable Membranes*. 3rd Ed., Sinauer Associates Inc., Sunderland, MA (2001).
2. What are ion channels? Retrieved October 22, 2009, from <http://www.ionchannels.org/>
3. Chen, Y., Lu, J., Pan, H., *et al.* Associated between genetic variation of CACNA1H and childhood absence epilepsy. *Annals of Neurology* **54**(2), 239-243 (2003).
4. Khosravani, H., Altier, C., Simms, B., *et al.* Gating effects of mutations in the Ca_v3.2 T-type calcium channel associated with childhood absence epilepsy. *J.Biol.Chem.* **279**(11), 9681-9684 (2004).
5. Gackière, F., Bidaux, G., Delcourt, P., *et al.* Ca_v3.2 T-type calcium channels are involved in calcium-dependent secretion of neuroendocrine prostate cancer cells. *J.Biol.Chem.* **283**(15), 1,0162-1,0173 (2008).

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