

Product Information



Ca_vβ1 Calcium Channel Monoclonal Antibody (Clone S7-18)

Item No. 13700

Contents:	This vial contains 100 µg of protein G-purified IgG in PBS, pH 7.4, containing 50% glycerol and 0.09% sodium azide.
Antigen:	Synthetic peptide from rat Ca _v β1 amino acids 19-34
Isotype:	IgG _{2a}
Host:	Mouse, clone S7-18
Cross Reactivity:	(+) Human, mouse, and rat Ca _v β1
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 1.0-10 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 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 an 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

Calcium channel, voltage-dependent, β1 subunit, also known as CACNB1, is a human gene. The protein encoded by this gene belongs to the calcium channel β subunit family. It plays an important role in the calcium channel by modulating G protein inhibition, increasing peak calcium current, controlling the α1 subunit membrane targeting and shifting the voltage dependence of activation and inactivation. Alternative splicing occurs at this locus and three transcript variants encoding three distinct isoforms have been identified.^{2,3}

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. Leyris, J.-P., Condeau, C., Charnet, A., *et al.* RGK GTPase-dependent Ca_v2.1 Ca²⁺ channel inhibition is independent of Cavβ-subunit-induced current potentiation. *FASEB J.* **23**, 2627-2638 (2009).

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