

Product Information

Anti-HCN1

Developed in Rabbit
Affinity Isolated Antibody

Catalog Number **H3038**

Product Description

Anti-HCN1 is developed in rabbit using a highly purified peptide (C)KPNSASNSRDDGNSVYPSK, corresponding to amino acid residues 6-24 of rat HCN1 with an additional N-terminal cysteine as the immunogen. This epitope is highly homologous in mouse (18/19 residues identical) and rabbit (16/19 residues identical). The antibody was affinity isolated on immobilized immunogen.

Anti-HCN1 specifically recognizes the HCN1 channel protein in rat heart by immunoblotting and immunohistochemistry

Hyperpolarization-activated, cyclic nucleotide-gated (HCN) channels are involved in pacemaker activity of cardiac sinoatrial node myocytes and central neurons.^{1,2} Cardiac pacemaking determines the heart rate and rhythm, and is generated by the slow membrane depolarization period that occurs between action potentials.³ A hyperpolarization-activated current, I_h (or I_f), is an important part of the ionic conductance responsible for cardiac pacemaker depolarization. I_h , which is carried by both Na^+ and K^+ , is activated by membrane hyperpolarization. Rising cAMP levels result in increased inward current at a fixed negative membrane potential. This mechanism is responsible for heart rate acceleration in response to sympathetic stimulation.⁴ cAMP binds directly to the channel to regulate current.⁵ An I_h current exists in a variety of neuronal cells as well. A major function of the current in brain is to regulate neuronal pacemaking, the rate of rhythmic oscillations of single neurons and neuronal networks.^{6,7}

Hyperpolarization-activated cyclic nucleotide-gated (HCN) channels belong to the superfamily of voltage-gated cation channels.⁸ Their features include: six transmembrane helices (S1-S6) and an ion-conducting P region between the fifth and sixth segment. In addition, HCN channels contain a cyclic nucleotide-binding domain (CNBD) in this C-terminus. This region allows the channel to be modulated by direct interaction with cAMP or cGMP.²

Although the functional role of the HCN channels is becoming clear, the physiological role is less straightforward. There are several disorders of pacemaking, such as congenital sinus node dysfunction. Future work will investigate the possibility that these diseases are linked to mutations of the HCN genes.

Reagents

Anti-HCN1 is supplied as a lyophilized powder. After reconstitution the antibody solution consists of phosphate buffered saline, pH 7.4, with 1% bovine serum albumin and 0.05 % sodium azide.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Due to the sodium azide content, a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

Reconstitute the lyophilized vial with 0.05 ml or 0.2 ml of deionized water, depending on the package size purchased. Antibody dilutions should be made in buffer containing 1–3 % bovine serum albumin.

Storage/Stability

Lyophilized powder can be stored intact at room temperature for several weeks. For extended storage, it should be stored at $-20\text{ }^{\circ}\text{C}$ or below.

After reconstitution, the stock antibody solution may be stored at $2-8\text{ }^{\circ}\text{C}$ for up to 2 weeks. For extended storage of the stock solution, freeze in working aliquots. Repeated freezing and thawing is not recommended. Storage in "frost-free" freezers is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Centrifuge all antibody preparations before use ($10,000 \times g$ for 5 minutes). Working dilution samples should be discarded if not used within 12 hours.

Product Profile

The recommended working dilution is 1:200 to 1:400 for immunoblotting rat brain membrane proteins.

This antibody is suitable for immunohistochemistry using mouse cerebellum frozen sections. For immunohistochemistry, a dilution of 1:300 was used in rat dorsal root ganglion primary culture.

Note: In order to obtain best results and assay sensitivities of different techniques and preparations, we recommend determining optimal working dilutions by titration test.

References

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