

HCN4 (SHG 1E5): sc-58622

BACKGROUND

Hyperpolarization-activated, cyclic nucleotide-binding channels (HCN) are voltage-gated cation channels that are activated by direct binding of intracellular cyclic nucleotides. The HCN family consists of four members (HCN1-4), each with a core transmembrane segment domain and a C-terminal 120 amino acid cyclic nucleotide-binding domain motif. HCN channels are expressed in the brain, heart, thalamus and testis. The pacemaker properties of HCN channels contribute to spontaneous rhythmic activity in the brain and heart. The genes encoding human HCN1 and HCN2 map to chromosomes 5 and 19p13.3, respectively. The genes encoding HCN3 and HCN4 map to chromosomes 1q22 and 15q24.1, respectively.

REFERENCES

- Ludwig, A., et al. 1999. Two pacemaker channels from human heart with profoundly different activation kinetics. *EMBO J.* 18: 2323-2329.
- Seifert, R., et al. 1999. Molecular characterization of a slowly gating human hyperpolarization-activated channel predominantly expressed in thalamus, heart, and testis. *Proc. Natl. Acad. Sci. USA* 96: 9391-9396.
- Vaccari, T., et al. 1999. The human gene coding for HCN2, a pacemaker channel of the heart. *Biochim. Biophys. Acta* 1446: 419-425.
- Wainger, B.J., et al. 2001. Molecular mechanism of cAMP modulation of HCN pacemaker channels. *Nature* 411: 805-810.
- Stieber, J., et al. 2003. Molecular basis for the different activation kinetics of the pacemaker channels HCN2 and HCN4. *J. Biol. Chem.* 278: 33672-33680.

CHROMOSOMAL LOCATION

Genetic locus: HCN4 (human) mapping to 15q24.1; Hcn4 (mouse) mapping to 9 B.

SOURCE

HCN4 (SHG 1E5) is a rat monoclonal antibody raised against amino acids 1048-1085 of HCN4 of human origin.

PRODUCT

Each vial contains 200 µg IgG₁ in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

HCN4 (SHG 1E5) is available conjugated to agarose (sc-58622 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-58622 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-58622 PE), fluorescein (sc-58622 FITC), Alexa Fluor[®] 488 (sc-58622 AF488), Alexa Fluor[®] 546 (sc-58622 AF546), Alexa Fluor[®] 594 (sc-58622 AF594) or Alexa Fluor[®] 647 (sc-58622 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor[®] 680 (sc-58622 AF680) or Alexa Fluor[®] 790 (sc-58622 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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RESEARCH USE

For research use only, not for use in diagnostic procedures.

APPLICATIONS

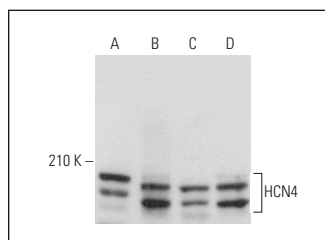
HCN4 (SHG 1E5) is recommended for detection of HCN4 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

Suitable for use as control antibody for HCN4 siRNA (h): sc-42473, HCN4 siRNA (m): sc-42474, HCN4 siRNA (r): sc-270294, HCN4 shRNA Plasmid (h): sc-42473-SH, HCN4 shRNA Plasmid (m): sc-42474-SH, HCN4 shRNA Plasmid (r): sc-270294-SH, HCN4 shRNA (h) Lentiviral Particles: sc-42473-V, HCN4 shRNA (m) Lentiviral Particles: sc-42474-V and HCN4 shRNA (r) Lentiviral Particles: sc-270294-V.

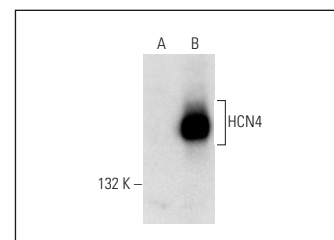
Molecular Weight of HCN4: 150 kDa.

Positive Controls: HCN4 (h): 293T Lysate: sc-173585, HL-60 whole cell lysate: sc-2209 or IMR-32 cell lysate: sc-2409.

DATA



HCN4 (SHG 1E5): sc-58622. Western blot analysis of HCN4 expression in HL-60 (A), IMR-32 (B), NTERA-2 cl.D1 (C) and TF-1 (D) whole cell lysates.



HCN4 (SHG 1E5): sc-58622. Western blot analysis of HCN4 expression in non-transfected: sc-117752 (A) and human HCN4 transfected: sc-173585 (B) 293T whole cell lysates.

SELECT PRODUCT CITATIONS

- Marger, L., et al. 2011. Pacemaker activity and ionic currents in mouse atrioventricular node cells. *Channels* 5: 241-250.
- Cao-Ehlker, X., et al. 2013. Up-regulation of hyperpolarization-activated cyclic nucleotide-gated channel 3 (HCN3) by specific interaction with K⁺ channel tetramerization domain-containing protein 3 (KCTD3). *J. Biol. Chem.* 288: 7580-7589.
- Michalakakis, S., et al. 2013. Characterization of neurite outgrowth and ectopic synaptogenesis in response to photoreceptor dysfunction. *Cell. Mol. Life Sci.* 70: 1831-1847.
- Mesirca, P., et al. 2013. The G protein-gated K⁺ channel, IKACH, is required for regulation of pacemaker activity and recovery of resting heart rate after sympathetic stimulation. *J. Gen. Physiol.* 142: 113-126.
- Saito, Y., et al. 2022. Enhancement of pacing function by HCN4 overexpression in human pluripotent stem cell-derived cardiomyocytes. *Stem Cell Res. Ther.* 13: 141.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.