

Cacna2d1 (E-10): sc-271697

BACKGROUND

Voltage-dependent calcium channels are essential for the release of neurotransmitters. Cacna2d1 (calcium channel, voltage-dependent, $\alpha 2/\delta$ subunit 1), also known as CACNA2, CCHL2A, MHS3 or CACNL2A, is a 1,091 amino acid single-pass type I membrane protein that contains one VWFA domain and one cache domain. Expressed in skeletal muscle, aorta tissues and in the central nervous system (CNS), Cacna2d1 functions as an $\alpha 2/\delta$ subunit of voltage-dependent calcium channels and plays an important role in calcium current density, as well as in excitation-contraction coupling. The Cacna2d1 precursor is proteolytically processed to produce two functional subunits, designated $\alpha 2$ -1 and $\delta 1$, which are disulfide-linked to one another.

CHROMOSOMAL LOCATION

Genetic locus: CACNA2D1 (human) mapping to 7q21.11; Cacna2d1 (mouse) mapping to 5 A2.

SOURCE

Cacna2d1 (E-10) is a mouse monoclonal antibody raised against amino acids 25-171 mapping near the N-terminus of Cacna2d1 of human origin.

PRODUCT

Each vial contains 200 μ g IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Cacna2d1 (E-10) is available conjugated to agarose (sc-271697 AC), 500 μ g/0.25 ml agarose in 1 ml, for IP; to HRP (sc-271697 HRP), 200 μ g/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-271697 PE), fluorescein (sc-271697 FITC), Alexa Fluor® 488 (sc-271697 AF488), Alexa Fluor® 546 (sc-271697 AF546), Alexa Fluor® 594 (sc-271697 AF594) or Alexa Fluor® 647 (sc-271697 AF647), 200 μ g/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-271697 AF680) or Alexa Fluor® 790 (sc-271697 AF790), 200 μ g/ml, for Near-Infrared (NIR) WB, IF and FCM.

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APPLICATIONS

Cacna2d1 (E-10) is recommended for detection of Cacna2d1 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 μ g per 100-500 μ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for Cacna2d1 siRNA (h): sc-89621, Cacna2d1 siRNA (m): sc-141968, Cacna2d1 shRNA Plasmid (h): sc-89621-SH, Cacna2d1 shRNA Plasmid (m): sc-141968-SH, Cacna2d1 shRNA (h) Lentiviral Particles: sc-89621-V and Cacna2d1 shRNA (m) Lentiviral Particles: sc-141968-V.

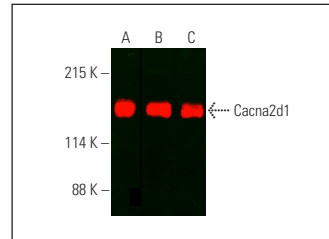
Molecular Weight of Cacna2d1: 123 kDa.

Positive Controls: mouse brain extract: sc-2253, human brain extract: sc-364375 or rat brain extract: sc-2392.

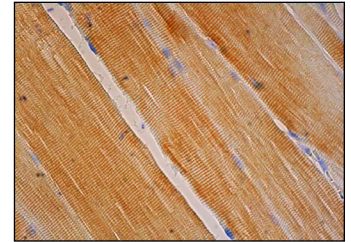
STORAGE

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

DATA



Cacna2d1 (E-10): sc-271697. Near-infrared western blot analysis of Cacna2d1 expression in mouse brain (A), rat brain (B) and human brain (C) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214. Detection reagent used: m-IgGκ BP-CFL 790: sc-516181.



Cacna2d1 (E-10) HRP: sc-271697 HRP. Direct immunoperoxidase staining of formalin fixed, paraffin-embedded mouse skeletal muscle tissue showing cytoplasmic staining of myocytes. Blocked with 0.25X UltraCruz® Blocking Reagent: sc-516214.

SELECT PRODUCT CITATIONS

- Tajada, S., et al. 2013. Down-regulation of Ca_v1.2 channels during hypertension: how fewer Ca_v1.2 channels allow more Ca²⁺ into hypertensive arterial smooth muscle. *J. Physiol.* 591: 6175-6191.
- Ma, H., et al. 2018. $\alpha 2\delta$ -1 couples to NMDA receptors in the hypothalamus to sustain sympathetic vasomotor activity in hypertension. *J. Physiol.* 596: 4269-4283.
- Zhou, J.J., et al. 2018. The $\alpha 2\delta$ -1-NMDA receptor coupling is essential for corticostriatal long-term potentiation and is involved in learning and memory. *J. Biol. Chem.* 293: 19354-19364.
- Araki, K., et al. 2019. TDP-43 regulates early-phase Insulin secretion via Ca_v1.2-mediated exocytosis in islets. *J. Clin. Invest.* 129: 3578-3593.
- Cui, W.Q., et al. 2020. Calcium channel $\alpha 2\delta 1$ subunit mediates secondary orofacial hyperalgesia through PKC-TRPA1/gap junction signaling. *J. Pain* 21: 238-257.
- Özgün, A. and Garipcan, B. 2021. Magnetic field-induced Ca²⁺ intake by mesenchymal stem cells is mediated by intracellular Zn²⁺ and accompanied by a Zn²⁺ influx. *Biochim. Biophys. Acta Mol. Cell Res.* 1868: 119062.
- Zhou, J.J., et al. 2022. $\alpha 2\delta$ -1 protein promotes synaptic expression of Ca²⁺ permeable-AMPA receptors by inhibiting GluA1/GluA2 heteromeric assembly in the hypothalamus in hypertension. *J. Neurochem.* 161: 40-52.
- Jin, D., et al. 2023. $\alpha 2\delta$ -1 protein drives opioid-induced conditioned reward and synaptic NMDA receptor hyperactivity in the nucleus accumbens. *J. Neurochem.* 164: 143-157.
- Kozai, D., et al. 2023. Recognition mechanism of a novel gabapentinoid drug, mirogabalin, for recombinant human $\alpha 2\delta 1$, a voltage-gated calcium channel subunit. *J. Mol. Biol.* 435: 168049.

RESEARCH USE

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