10320 Camino Santa Fe, Suite G
San Diego, CA 92121
Tel: 858.875.1900 Fax: 858.875.1999

MC4R Antibody

Catalog # ASC10917

Product Information

Application	WB, IF, E, IHC-P
Primary Accession	P32245
Other Accession	NP_005903, 119508433
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	36943
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	MC4R antibody can be used for detection of MC4R by Western blot at 1 g/mL. Antibody can also be used for immunohistochemistry starting at 2.5 g/mL. For immunofluorescence start at 20 g/mL.

Additional Information

Gene ID	4160
Other Names	Melanocortin receptor 4, MC4-R, MC4R
Target/Specificity	MC4R;
Reconstitution & Storage	MC4R antibody can be stored at 4℃ for three months and -20℃, stable for up to one year. As with all antibodies care should be taken to avoid repeated freeze thaw cycles. Antibodies should not be exposed to prolonged high temperatures.
Precautions	MC4R Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	MC4R {ECO:0000303|PubMed:29311635, ECO:0000312|HGNC:HGNC:6932}
Function	G protein-coupled receptor that binds melanocyte-stimulating hormones (alpha- and beta-MSH) and corticotropin/ACTH, which are peptide products of the POMC precursor (PubMed:12646665, PubMed:14764818, PubMed:25163632, PubMed:32327598, PubMed:33858992, PubMed:8392067). Functions as a central component of the leptin-melanocortin pathway, which is essential for maintaining energy homeostasis (PubMed:32327598, PubMed:33858992). Upon activation, couples to G(s) protein, stimulating adenylate cyclase and the cAMP- dependent signaling pathway, which promotes anorexogenic signaling in the hypothalamus and contributes to a negative energy balance (PubMed:12588803,

PubMed:14764818, PubMed:25163632, PubMed:33858992). Regulates food intake: activation by agonists suppresses appetite, whereas the antagonist Agouti-related protein/AGRP precludes agonist- induced signaling, thereby stimulating appetite (PubMed:9311920, PubMed:29311635). Modulates the firing activity of neurons in paraventricular nucleus (PVN) of the hypothalamus via alpha-MSH and AGRP regulation of inwardly rectifying potassium channel KCNJ13 closure, independently of G(s) signaling (PubMed:32327598). In the PVN, also interacts with opsin 3/OPN3, which couples to G(i/o) proteins to inhibit MC4R-mediated cAMP signaling, thereby promoting food intake (PubMed:39951488). In intestinal epithelial cells, contributes to inhibition of hepatic glucose production via nesfatin-1/NUCB2, leading to increased cAMP levels and glucagon-like peptide 1 (GLP-1) secretion (PubMed:39562740). Interaction with MGRN1 displaces the G(s) protein, further decreasing MC4R signaling activity (PubMed:19737927). Also activated by gamma-MSH, though with low potency (PubMed:8392067).

Cellular Location Cell membrane; Multi-pass membrane protein. Cell projection, cilium membrane; Multi-pass membrane protein

Tissue Location Brain, placental, and gut tissues.

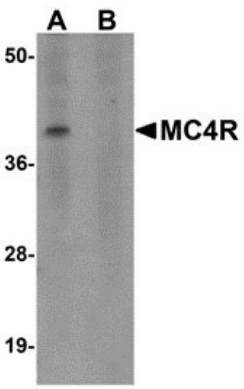
Background

MC4R Antibody: The melanocortin-4 receptor (MC4R) is a member of the superfamily of seven transmembrane G-protein coupled receptors that are involved in multiple signal transduction pathways including the cAMP and MAPK signaling pathways. It is thought that the melanocortin system modulates energy expenditure and insulin sensitivity; activation of the MC4R results in the inhibition of c-Jun N-terminal kinase (JNK) activity and promotes insulin signaling. MC4R-null mice display maturity onset obesity characterized by hyperphagia, increased adiposity, hyperinsulinaemia and hyperleptinaemia, suggesting that like other obesity-linked genes such as FTO, PTER, and NPC1, MC4R is a potential candidate target for the treatment of obesity.

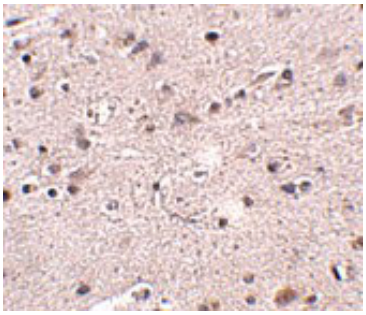
References

Gantz I, Miwa H, Konda Y, et al. Molecular cloning, expression, and gene localization of a fourth melanocortin receptor. J. Biol. Chem.1993; 268:15174-9.
Vongs A, Lynn NM, and Rosenblum CI. Activation of MAP kinase by MC4-R through PI3 kinase. Regul. Pept.2004; 120:113-8.
Cone H. Anatomy and regulation of the central melanocortin system. Nat. Neurosci.2005; 8:571-8.
Chai B, Li J-Y, Zhang W, et al. Melanocartin-4 receptor activation inhibits c-Jun N-terminal kinase activity and promotes insulin signaling. Peptides2009; 30:1098-10

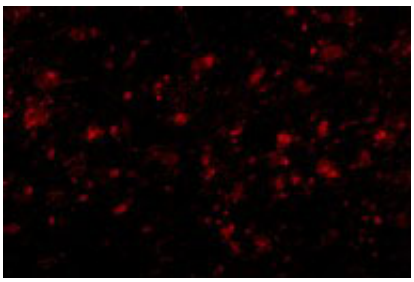
Images



Western blot analysis of MC4R in rat brain tissue lysate with MC4R antibody at 1 µg/mL in (A) the absence and (B) the presence of blocking peptide.



Immunohistochemistry of MC4R in human brain tissue with MC4R antibody at 2.5 µg/mL.



Immunofluorescence of MC4R in Human Brain cells with MC4R antibody at 20 µg/mL.

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.