abcam

ab19347

Anti-CaSR antibody [5C10, ADD]

Key facts

Isotype	IgG2a
Host species	Mouse
Storage buffer	Preservative: 0.05% Sodium azide Constituents: PBS, 0.1% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	Synthetic Peptide within Human CASR aa 200-250. The exact immunogen used to generate this antibody is proprietary information. Database link P41180
Clone number	5C10
Purification technique	Affinity purification Immunogen
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	-
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Expected

Species	Mouse
Dilution info	Use at an assay dependent concentration.
Notes	-

Flow Cyt

Tested

Species	Human
Dilution info	1 µg for 10^6 Cells
Notes	ab170191 - Mouse monoclonal IgG2a, is suitable for use as an isotype control with this antibody.

Expected

Species	Mouse
Dilution info	Use at an assay dependent concentration.
Notes	-

IHC-Fr

Tested

Species	Mouse
Dilution info	2 µg/mL
Notes	-

Species	Human
Dilution info	2 µg/mL
Notes	-

Target data

See full target information CASR

Function	G-protein-coupled receptor that senses changes in the extracellular concentration of calcium ions and plays a key role in maintaining calcium homeostasis (PubMed:17555508, PubMed:19789209, PubMed:21566075, PubMed:22114145,

PubMed:22789683, PubMed:23966241, PubMed:25104082, PubMed:25292184, PubMed:25766501, PubMed:26386835, PubMed:32817431, PubMed:33603117, PubMed:34194040, PubMed:34467854, PubMed:7759551, PubMed:8636323, PubMed:8702647, PubMed:8878438). Senses fluctuations in the circulating calcium concentration: activated by elevated circulating calcium, leading to decreased parathyroid hormone (PTH) secretion in parathyroid glands (By similarity). In kidneys, acts as a key regulator of renal tubular calcium resorption (By similarity). Ligand binding causes a conformation change that triggers signaling via guanine nucleotide-binding proteins (G-proteins) and modulates the activity of downstream effectors (PubMed:38632411). CASR is coupled with different G(q)/G(11), G(i)/G(o)- or G(s)-classes of G-proteins depending on the context (PubMed:38632411). In the parathyroid and kidney, CASR signals through G(q)/G(11) and G(i)/G(o) G-proteins: G(q)/G(11) coupling activates phospholipase C-beta, releasing diacylglycerol (DAG) and inositol 1,4,5-trisphosphate (IP3) second messengers, while G(i)/G(o) coupling mediates inhibition of adenylate cyclase activity (PubMed:38632411, PubMed:7759551). The G-protein-coupled receptor activity is activated by a co-agonist mechanism: aromatic amino acids, such as Trp or Phe, act concertedly with divalent cations, such as calcium or magnesium, to achieve full receptor activation (PubMed:27386547, PubMed:27434672, PubMed:32817431, PubMed:33603117, PubMed:34194040). Acts as an activator of the NLRP3 inflammasome via G(i)/G(o)-mediated signaling: down-regulation of cyclic AMP (cAMP) relieving NLRP3 inhibition by cAMP (PubMed:32843625). Acts as a regulator of proton-sensing receptor GPR68 in a seesaw manner: CASR-mediated signaling inhibits GPR68 signaling in response to extracellular calcium, while GPR68 inhibits CASR in presence of extracellular protons (By similarity).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	The calcium-sensing receptor often referred to as CaSR is a critical G-protein coupled receptor involved in calcium ion homeostasis. Also known as CASR this receptor detects changes in extracellular calcium concentration and modulates signaling pathways accordingly. The CaSR protein has a molecular weight of approximately 120 kDa. It is mainly expressed in the parathyroid gland kidney and several other tissues playing a significant role in regulating serum calcium levels.

Biological function summary	The calcium-sensing receptor modulates parathyroid hormone secretion and renal calcium excretion in response to calcium fluctuations. Although not typically part of a larger protein complex it interacts with several other proteins to perform its functions efficiently. CaSR ensures the stability of calcium concentration which is essential for bone health muscle contraction and nerve function.
Pathways	Several other proteins work alongside the calcium-sensing receptor in the calcium signaling and parathyroid hormone secretion pathways. In particular CaSR influences the MAPK pathway which impacts cell growth and differentiation. Phosphate transporters and calbindins are related to CaSR within these pathways indicating its broad scope in calcium metabolism.
Associated diseases and disorders	The calcium-sensing receptor is closely associated with conditions like hypercalcemia and autosomal dominant hypocalcemia. CaSR mutations can result in dysfunctional calcium regulation impacting parathyroid hormone levels. The relationship between CaSR and parathyroid hormone-related peptide highlights its significance in maintaining calcium balance and preventing skeletal and neurological complications.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

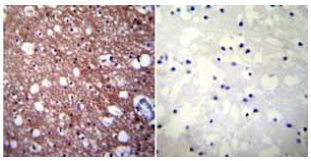
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

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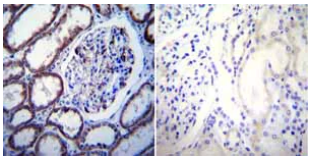
5 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CaSR antibody [5C10, ADD] (ab19347)

CaSR Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-CaSR antibody

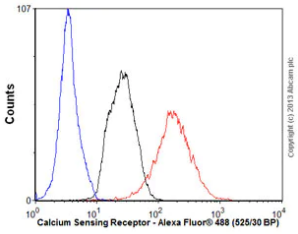
Immunohistochemistry was performed on normal biopsies of deparaffinized Human brain tissue. To expose target proteins heat induced antigen retrieval was performed using 10mM sodium citrate (pH6.0) buffer microwaved for 8-15 minutes. Following antigen retrieval tissues were blocked in 3% BSA-PBS for 30 minutes at room temperature. Tissues were then probed at a dilution of 1:100 with a mouse monoclonal antibody recognizing CaSR ab19347 or without primary antibody (negative control) overnight at 4°C in a humidified chamber. Tissues were washed extensively with PBST and endogenous peroxidase activity was quenched with a peroxidase suppressor. Detection was performed using a biotin-conjugated secondary antibody and SA-HRP followed by colorimetric detection using DAB. Tissues were counterstained with hematoxylin and prepped for mounting.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CaSR antibody [5C10, ADD] (ab19347)

CaSR Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-CaSR antibody

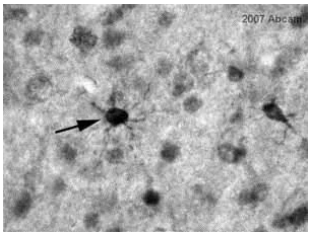
Immunohistochemistry was performed on normal biopsies of deparaffinized Human kidney tissue. To expose target proteins heat induced antigen retrieval was performed using 10mM sodium citrate (pH6.0) buffer microwaved for 8-15 minutes. Following antigen retrieval tissues were blocked in 3% BSA-PBS for 30 minutes at room temperature. Tissues were then probed at a dilution of 1:100 with a mouse monoclonal antibody recognizing CaSR ab19347 or without primary antibody (negative control) overnight at 4°C in a humidified chamber. Tissues were washed extensively with PBST and endogenous peroxidase activity was quenched with a peroxidase suppressor. Detection was performed using a biotin-conjugated secondary antibody and SA-HRP followed by colorimetric detection using DAB. Tissues were counterstained with hematoxylin and prepped for mounting.



Flow Cytometry - Anti-CaSR antibody [5C10, ADD] (ab19347)

CaSR Flow Cytometry staining using mouse Anti-CaSR antibody

Overlay histogram showing SH-SY5Y cells stained with ab19347 (red line). The cells were fixed with 4% paraformaldehyde (10 min) and incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions. The cells were then incubated with the antibody (ab19347, 1µg/1x10^6 cells) for 30 min at 22°C. The secondary antibody used was Alexa Fluor® 488 goat anti-mouse IgG (H+L) (ab150113) at 1/2000 dilution for 30 min at 22°C. Isotype control antibody (black line) was mouse IgG2a [ICIGG2A] (ab91361, 1µg/1x10^6 cells) used under the same conditions. Unlabelled sample (blue line) was also used as a control. Acquisition of >5,000 events were collected using a 20mW Argon ion laser (488nm) and 525/30 bandpass filter. This antibody gave a positive result in 80% methanol (5 min) fixed SH-SY5Y cells used under the same conditions. Please note that Abcam do not have any data for use of this antibody on non-fixed cells. We welcome any customer feedback.

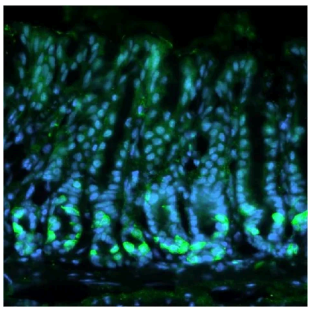


This image is courtesy of an anonymous customer review

Immunohistochemistry (Frozen sections) - Anti-CaSR antibody [5C10, ADD] (ab19347)

CaSR Immunohistochemistry (Frozen sections) staining using mouse Anti-CaSR antibody

ab19347 at 1/100 staining rat brain (cerebral cortex) tissue sections by IHC-Fr. The tissue was paraformaldehyde fixed and blocked with serum before incubation with the primary antibody for 24 hours at 4°C. A biotinylated horse anti-mouse IgG was used as the secondary.



Immunohistochemistry (Frozen sections) - Anti-CaSR antibody [5C10, ADD] (ab19347)

CaSR Immunohistochemistry (Frozen sections) staining using mouse Anti-CaSR antibody

Immunohistochemical analysis of 4% formalin fixed frozen mouse stomach tissue labeling CaSR with ab19347 at 1/100 dilution overnight at 4°C, followed by fluorophore-conjugated goat anti-mouse IgG secondary antibody for 2 hours at RT.
Fresh stomach tissue was fixed in 4% formalin for 1 hour and then incubated overnight at in 25% sucrose before embedding in tissue freezing medium. Antigen retrieval was carried out on 8µm cryo-sections by incubating in sodium citrate buffer for 45 minutes at 4°C, immersing in sodium citrate buffer for 10 minutes at 100°C before washing 3 times for 5 minutes each in 1X PBS. Sections were then blocked in blocking buffer (0.3% Triton X-100 in 1X PBS containing 10% normal goat serum) for 30 minutes at RT before staining with ab19347.

Sections were also stained with DAPI nuclear stain (blue). Positive cells (green) were found at the base of the antral glands in the mouse stomach.

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