abcam

ab239906

Anti-CaMKII alpha antibody [EPR1828] - BSA and Azide free

Recombinant | RabMAb

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Carrier free	Yes
Clone number	EPR1828
Purification technique	Affinity purification Protein A
Specificity	The peptide immunogen shares a 100% homology with CaMKII beta, gamma and delta therefore we believe cross-reactivity is highly likely but this has not been experimentally assessed.
Concentration	1.077 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

WB

Expected

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

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	-
Notes	ab199376 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Predicted

Species	Mouse, Rat
Dilution info	-
Notes	-

Target data

See full target information CAMK2A

Function

Calcium/calmodulin-dependent protein kinase that functions autonomously after Ca(2+)/calmodulin-binding and autophosphorylation, and is involved in various processes, such as synaptic plasticity, neurotransmitter release and long-term potentiation (PubMed:14722083). Member of the NMDAR signaling complex in excitatory synapses, it regulates NMDAR-dependent potentiation of the AMPAR and therefore excitatory synaptic transmission (By similarity). Regulates dendritic spine development (PubMed:28130356). Also regulates the migration of developing neurons (PubMed:29100089). Phosphorylates the transcription factor FOXO3 to activate its transcriptional activity (PubMed:23805378). Phosphorylates the transcription factor ETS1 in response to calcium signaling, thereby decreasing ETS1 affinity for DNA (By similarity). In response to interferon-gamma (IFN-gamma) stimulation, catalyzes phosphorylation of STAT1, stimulating the JAK-STAT signaling pathway (PubMed:11972023). In response to interferon-beta (IFN-beta) stimulation, stimulates the JAK-STAT signaling pathway (PubMed:35568036). In response to interferon-gamma (IFN-gamma) stimulation, catalyzes phosphorylation of PSAT1, inhibiting ferroptosis by promoting GPX4 hydroxylation and stability (PubMed:40281343). Acts as a negative regulator of 2-arachidonoylglycerol (2-AG)-mediated synaptic signaling via modulation of DAGLA activity (By similarity).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C
Storage information	Do Not Freeze

Notes

ab239906 is the carrier-free version of ab92332.

Patented technology

Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?

This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Conjugation ready

Our carrier-free antibodies are typically supplied in a PBS-only formulation, purified and free of BSA, sodium azide and glycerol. This conjugation-ready format is designed for use with fluorochromes, metal isotopes, oligonucleotides, and enzymes, which makes them ideal for antibody labelling, functional and cell-based assays, flow-based assays (e.g. mass cytometry) and Multiplex Imaging applications.

Use our conjugation kits for antibody conjugates that are ready-to-use in as little as 20 minutes with 1 minute hands-on-time and 100% antibody recovery: available for fluorescent dyes, HRP, biotin and gold.

Compatibility

This product is compatible with the Maxpar® Antibody Labeling Kit from Fluidigm, without the need for antibody preparation. Maxpar® is a trademark of Fluidigm Canada Inc.

Supplementary info

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

Activity summary	CaMKII alpha also known as CAMK2A is an enzyme belonging to the CaMK kinase family. This protein is a calcium/calmodulin-dependent protein kinase and exhibits a molecular weight of approximately 50 to 60 kDa. CaMKII alpha is primarily expressed in the brain specifically in the hippocampus and other regions involved

	in synaptic activity. Due to its role as a serine/threonine kinase CaMKII alpha is significant in phosphorylating various substrates as part of cellular signaling.
Biological function summary	CaMKII alpha plays an important role in synaptic plasticity a process vital for learning and memory. The protein acts as an important component of the postsynaptic density complex where it interacts with other proteins to regulate synaptic strength. When calcium levels rise CaMKII alpha is activated through phosphorylation altering its conformation and allowing interactions with downstream substrates. This regulatory mechanism highlights its role in modulating neurotransmission synaptic potentiation and memory consolidation.
Pathways	CaMKII alpha functions within the calcium signaling pathway contributing to long-term potentiation (LTP) and long-term depression (LTD). It interacts with proteins such as NMDA receptors to facilitate changes in synaptic strength alongside other kinases. This pathway's activation leads to memory formation and synaptic plasticity in the central nervous system. Additionally CaMKII alpha connects with the MAPK signaling pathway integrating signals from various neurotransmitter systems which help coordinate neuronal response to stimuli.
Associated diseases and disorders	Alterations in CaMKII alpha have been linked to neurological conditions such as Alzheimer's disease and schizophrenia. In Alzheimer's discourse in CaMKII alpha phosphorylation correlates with impaired memory and cognitive function. The protein also interfaces with tau another key protein related to neurofibrillary tangles in Alzheimer's. In schizophrenia abnormalities in CaMKII alpha expression and activity suggest its role in synaptic dysfunction and neurodevelopmental irregularities. Targeting CaMKII alpha may provide therapeutic opportunities for managing these and related neurological disorders.

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

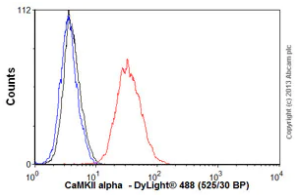
We do not recommend this combination. It is not covered by our product promise.

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.

Full details and terms and conditions can be found here:
Terms & Conditions.

1 product image



Flow Cytometry (Intracellular) - Anti-CaMKII alpha antibody [EPR1828] - BSA and Azide free (ab239906)

CaMKII alpha Flow Cytometry (Intracellular) staining using rabbit Anti-CaMKII alpha antibody

Overlay histogram showing SH-SY5Y cells stained with ab92332 (red line). The cells were fixed with 4% paraformaldehyde (10 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab92332, 1/1000 dilution) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-rabbit IgG (H+L) (ab96899) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was rabbit IgG (monoclonal) (0.1µg/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 signal in SH-SY5Y cells fixed with 80% methanol (5 min)/permeabilized with 0.1% PBS-Tween for 20 min used under the same conditions. This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab92332).

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