abcam

ab248185

Anti-CaMKII antibody [EPR6685(B)] - 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	EPR6685(B)
Purification technique	Affinity purification
Specificity	The peptide immunogen shares a 100% homology with CaMKII alpha, gamma and delta therefore we believe cross-reactivity is highly likely but this has not been experimentally assessed.
Dissociation constant	2.6×10^{-11} M

Reactivity data

IP

Not recommended

Species	Rat, Human, Mouse

Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

Predicted

Species	Mouse
Dilution info	-
Notes	-

IHC-P

Not recommended

Species	Rat, Human, Mouse
Dilution info	-
Notes	-

ICC/IF

Not recommended

Species	Rat, Human, Mouse
Dilution info	-

Notes	-

Flow Cyt (Intra)

Tested

Species	Rat
Dilution info	-
Notes	-

Expected

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

Predicted

Species	Mouse
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

ab248185 is the carrier-free version of ab126789.

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 also known as calcium/calmodulin-dependent protein kinase II is an enzyme functioning critically in cellular signaling. It consists of multiple isoforms including alpha beta gamma and delta with the delta isoform Delta 1829 frequently highlighted for its specific roles. The molecular weight of CaMKII is approximately 50 to 60 kDa varying slightly between isoforms. CaMKII is widely expressed in the brain but is also present in the heart skeletal muscle and other tissues. Its structure includes a catalytic domain regulatory segment and association domain which allows auto-regulation and interaction with other molecules.
Biological function summary	CaMKII plays a vital role in cellular processes such as learning memory and muscle contraction. It can form a complex structure involving multiple subunits which allows for its unique ability to signal in response to calcium influx and calmodulin binding. This causes autophosphorylation of CaMKII allowing it to remain active even when calcium levels diminish. This property makes CaMKII essential for long-term potentiation (LTP) in neuron synapses influencing cognitive functions deeply.
Pathways	CaMKII is an important component of both the calcium signaling and synaptic plasticity pathways. In the calcium signaling pathway CaMKII interacts with calmodulin and other kinases to modulate calcium entry and signaling. In synaptic plasticity CaMKII works closely with proteins like NMDA receptors which regulate synaptic strength and modulation essential for encoding learning and memory. These interactions highlight its significance as a mediator between signaling cascades and cellular responses.
Associated diseases and disorders	Abnormal regulation or expression of CaMKII links to Alzheimer's disease and cardiac arrhythmias. In Alzheimer's the dysregulation of CaMKII affects synaptic integrity and memory formation involving interaction with beta-amyloid plaques. In cardiac arrhythmias CaMKII dysfunction leads to improper cardiac muscle contractions often linked to the protein phospholamban. These associations highlight the clinical relevance of CaMKII in addressing and understanding mechanisms underpinning these diseases.

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

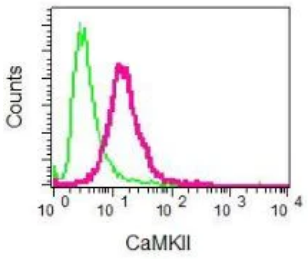
We do not recommend this combination. It is not covered by our product promise.

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.

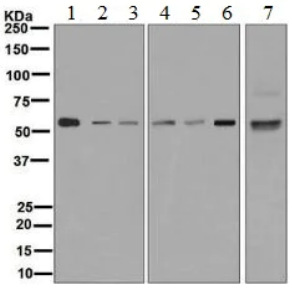
3 product images



Flow Cytometry (Intracellular) - Anti-CaMKII antibody [EPR6685(B)] - BSA and Azide free (ab248185)

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

This data was developed using ab126789, the same antibody clone in a different buffer formulation.
ab126789 at 1/10 dilution staining CaMKII in permeabilized C6 cells by intracellular flow cytometry (red) compared with a rabbit IgG negative control (green).



Western blot - Anti-CaMKII antibody [EPR6685(B)] - BSA and Azide free (ab248185)

This data was developed using ab126789, the same antibody clone in a different buffer formulation.
All lanes:
Western blot - Anti-CaMKII antibody [EPR6685(B)] (ab126789) at 1/1000 dilution

Lane 1:
Human pancreas lysate at 10 µg

Lane 2:
Human fetal kidney tissue lysate at 10 µg

Lane 3:
HeLa cell lysate at 10 µg

Lane 4:
Jurkat lysate at 10 µg

Lane 5:
SH-SY5Y cell lysate at 10 µg

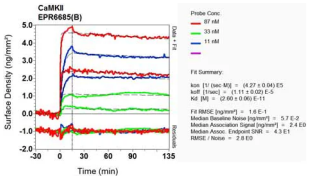
Lane 6:
BxPC-3 cell lysate at 10 µg

Lane 7:
C6 lysate at 10 µg

Secondary

All lanes:
HRP labelled goat anti-rabbit at 1/2000 dilution

Predicted band size: 54 kDa



OI-RD Scanning - Anti-CaMKII antibody [EPR6685(B)] - BSA and Azide free (ab248185)

We have systematically measured KD (the equilibrium dissociation constant between the antibody and its antigen), of more than 840 recombinant antibodies to assess not only their individual KD values but also to see the average affinity of antibody. Based on the comparison with published literature values for mouse monoclonal antibodies, Recombinant antibodies appear to be on average 1-2 order of magnitude higher affinity.

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