abcam

ab235385

Anti-cAMP Protein Kinase Catalytic subunit antibody [EP2102Y] - 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	EP2102Y
Purification technique	Affinity purification Protein A
Specificity	The immunogen used for this product shares 92% homology with PKA C-beta and PKA C-gamma. Cross-reactivity with these proteins have not been confirmed experimentally.
Concentration	1.063 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	-
Notes	Use of HRP-conjugated or polymerized HRP secondary antibodies recommended, stronger signals have been found using the polymerized HRP secondary.

Predicted

Species	Mouse, Rat
Dilution info	-
Notes	-

IP

Tested

Species	Human
Dilution info	-
Notes	-

Predicted

Species	Mouse, Rat
Dilution info	-
Notes	-

WB

Expected

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

ICC/IF

Tested

Species	Human
Dilution info	-
Notes	-

Predicted

Species	Mouse, Rat
Dilution info	-
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 PRKACA

Function Phosphorylates a large number of substrates in the cytoplasm and the nucleus (PubMed:15642694, PubMed:15905176, PubMed:16387847, PubMed:17333334, PubMed:17565987, PubMed:17693412, PubMed:18836454, PubMed:19949837, PubMed:20356841, PubMed:21085490, PubMed:21514275, PubMed:21812984, PubMed:21852232, PubMed:31112131). Phosphorylates CDC25B, ABL1, NFKB1, CLDN3, histone H1.4 (H1-4), PSMC5/RPT6, PJA2, RYR2, RORA, SOX9, UHRF1 and VASP (PubMed:15178447, PubMed:15642694, PubMed:15905176, PubMed:16387847, PubMed:17333334, PubMed:17565987, PubMed:17693412, PubMed:18836454, PubMed:19949837, PubMed:20356841, PubMed:21085490, PubMed:21514275, PubMed:21812984). Regulates the abundance of compartmentalized pools of its regulatory subunits through phosphorylation of

PJA2 which binds and ubiquitinates these subunits, leading to their subsequent proteolysis (PubMed:21423175). RORA is activated by phosphorylation (PubMed:21514275). Required for glucose-mediated adipogenic differentiation increase and osteogenic differentiation inhibition from osteoblasts (PubMed:19949837). Involved in chondrogenesis by mediating phosphorylation of SOX9 (By similarity). Involved in the regulation of platelets in response to thrombin and collagen; maintains circulating platelets in a resting state by phosphorylating proteins in numerous platelet inhibitory pathways when in complex with NF-kappa-B (NFKB1 and NFKB2) and I-kappa-B-alpha (NFKBIA), but thrombin and collagen disrupt these complexes and free active PRKACA stimulates platelets and leads to platelet aggregation by phosphorylating VASP (PubMed:15642694, PubMed:20356841). Prevents the antiproliferative and anti-invasive effects of alpha-difluoromethylornithine in breast cancer cells when activated (PubMed:17333334). RYR2 channel activity is potentiated by phosphorylation in presence of luminal Ca(2+), leading to reduced amplitude and increased frequency of store overload-induced Ca(2+) release (SOICR) characterized by an increased rate of Ca(2+) release and propagation velocity of spontaneous Ca(2+) waves, despite reduced wave amplitude and resting cytosolic Ca(2+) (PubMed:17693412). PSMC5/RPT6 activation by phosphorylation stimulates proteasome (PubMed:17565987). Negatively regulates tight junctions (TJs) in ovarian cancer cells via CLDN3 phosphorylation (PubMed:15905176). NFKB1 phosphorylation promotes NF-kappa-B p50-p50 DNA binding (PubMed:15642694). Required for phosphorylation of GLI transcription factors which inhibits them and prevents transcriptional activation of Hedgehog signaling pathway target genes (By similarity). GLI transcription factor phosphorylation is inhibited by interaction of PRKACA with SMO which sequesters PRKACA at the cell membrane (By similarity). Involved in embryonic development by down-regulating the Hedgehog (Hh) signaling pathway that determines embryo pattern formation and morphogenesis most probably through the regulation of OFD1 in ciliogenesis (PubMed:33934390). Prevents meiosis resumption in prophase-arrested oocytes via CDC25B inactivation by phosphorylation (By similarity). May also regulate rapid eye movement (REM) sleep in the pedunculopontine tegmental (PPT) (By similarity). Phosphorylates APOBEC3G and AICDA (PubMed:16387847, PubMed:18836454). Phosphorylates HSF1; this phosphorylation promotes HSF1 nuclear localization and transcriptional activity upon heat shock (PubMed:21085490). Acts as a negative regulator of mTORC1 by mediating phosphorylation of RPTOR (PubMed:31112131). Phosphorylates AKAP19 (PubMed:27028580). Isoform 2. Phosphorylates and activates ABL1 in sperm flagellum to promote spermatozoa capacitation.

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

ab235385 is the carrier-free version of ab76238.

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	The cAMP Protein Kinase Catalytic subunit also known as protein kinase A (PKA) catalytic subunit plays an important role as an enzyme that phosphorylates various target proteins. This is an important component of the protein kinase A signaling pathway. The subunit has an approximate mass of 40 kDa and is widely expressed in multiple tissues across the body allowing it to affect numerous physiological functions. As a catalytic subunit of cAMP-dependent protein kinase it forms part of the larger enzyme complex that is activated by the binding of cAMP.
Biological function summary	The catalytic subunit of protein kinase A modulates cellular processes by transferring a phosphate group from ATP to specific serine/threonine residues on substrates. It is part of a holoenzyme complex composed of two regulatory and two catalytic subunits; when cAMP binds to the regulatory subunits it releases the catalytic subunits allowing them to execute their activity. This release and activation result in the regulation of glycogen sugar and lipid metabolism among others.
Pathways	The cAMP Protein Kinase integrates deeply into the cAMP signaling and MAPK/ERK pathways. These pathways regulate various processes like cell growth

differentiation and apoptosis. The catalytic subunit acts downstream of cAMP generation by adenylyl cyclase interacting with other proteins such as CREB (cAMP response element-binding protein) which directly affects transcription and gene expression.

Associated diseases and disorders

The cAMP Protein Kinase catalytic subunit has been linked to conditions including Carney complex and Cushing's syndrome. Mutations affecting this subunit can lead to dysregulated cAMP signaling impacting proteins like regulatory subunit PRKAR1A that are important in controlling PKA activity. Conditions such as these often arise from aberrations in cAMP signaling pathways reflecting the extensive influence of the cAMP Protein Kinase on homeostasis and disease.

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

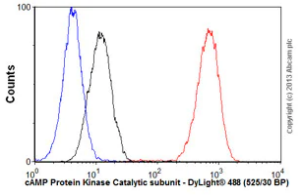
We do not recommend this combination. It is not covered by our product promise.

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.

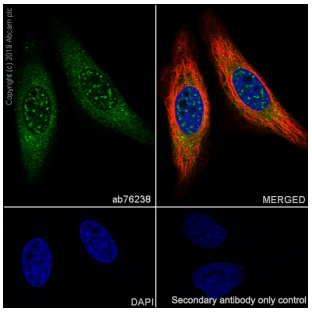
7 product images



Flow Cytometry (Intracellular) - Anti-cAMP Protein Kinase Catalytic subunit antibody [EP2102Y] - BSA and Azide free (ab235385)

CAMP Protein Kinase Catalytic subunit Flow Cytometry (Intracellular) staining using rabbit Anti-cAMP Protein Kinase Catalytic subunit antibody

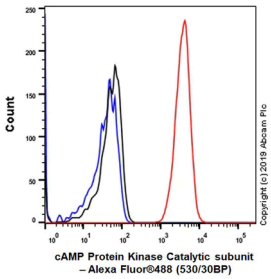
Overlay histogram showing HeLa cells stained with ab76238 (unpurified) (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab76238, 1/100 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) (1µg/1x10^6 cells) used under the same conditions. Unlabelled sample (blue line). 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 HeLa cells fixed with 4% paraformaldehyde (10 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 (ab76238).



Immunocytochemistry/ Immunofluorescence - Anti-cAMP Protein Kinase Catalytic subunit antibody [EP2102Y] - BSA and Azide free (ab235385)

CAMP Protein Kinase Catalytic subunit Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-cAMP Protein Kinase Catalytic subunit antibody

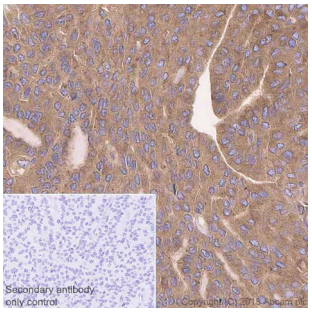
Immunocytochemistry/ Immunofluorescence analysis of HeLa (Human cervix adenocarcinoma epithelial cell) cells labeling cAMP Protein Kinase Catalytic subunit with purified ab76238 at 1:100 dilution (8.0 µg/ml). Cells were fixed in 4% Paraformaldehyde and permeabilized with 0.1% tritonX-100. Cells were counterstained with ab195889 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) 1:200 (2.5 µg/ml). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) was used as the secondary antibody at 1:1000 (2 µg/ml) dilution. DAPI (blue) was used as nuclear counterstain. PBS instead of the primary antibody was used as the secondary antibody only control.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (anti camp protein kinase catalytic subunit antibody ep2102y immunocytochemistry hela human)



Flow Cytometry (Intracellular) - Anti-cAMP Protein Kinase Catalytic subunit antibody [EP2102Y] - BSA and Azide free (ab235385)

CAMP Protein Kinase Catalytic subunit Flow Cytometry (Intracellular) staining using rabbit Anti-cAMP Protein Kinase Catalytic subunit antibody

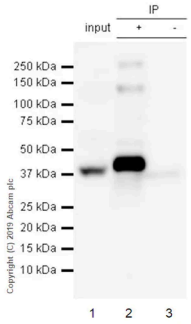
Intracellular Flow Cytometry analysis of MCF-7 (Human breast adenocarcinoma epithelial cell) cells labeling cAMP Protein Kinase Catalytic subunit with purified ab76238 at 1/80 dilution (10 µg/ml) (Red). Cells were fixed with 4% Paraformaldehyde and permeabilised with 90% Methanol. A Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) secondary antibody was used at 1/2000. Isotype control - Rabbit monoclonal IgG (Black). Unlabeled control - Cell without incubation with primary antibody and secondary antibody (Blue). This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab76238)



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-cAMP Protein Kinase Catalytic subunit antibody [EP2102Y] - BSA and Azide free (ab235385)

CAMP Protein Kinase Catalytic subunit Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-cAMP Protein Kinase Catalytic subunit antibody

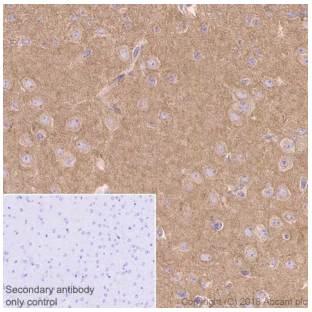
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of human thyroid carcinoma tissue sections labeling cAMP Protein Kinase Catalytic subunit with purified ab76238 at 1/750 dilution. Heat mediated antigen retrieval was performed Perform heat mediated antigen retrieval using ab93684 (Tris/EDTA buffer, pH 9.0). ImmunoHistoProbe one step HRP Polymer (ready to use) was used as the secondary antibody. Negative control: PBS instead of the primary antibody. Hematoxylin was used as a counterstain. This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab76238)



Immunoprecipitation - Anti-cAMP Protein Kinase Catalytic subunit antibody [EP2102Y] - BSA and Azide free (ab235385)

ab76238 (purified) at 1/40 dilution (2 µg) immunoprecipitating cAMP Protein Kinase Catalytic subunit in MCF-7 whole cell lysate.
Lane 1 (input): MCF-7 (Human breast adenocarcinoma epithelial cell) whole cell lysate 10 µg
Lane 2 (+): ab76238 & MCF-7 whole cell lysate
Lane 3 (-): Rabbit monoclonal IgG (ab172730) instead of ab76238 in MCF-7 whole cell lysate
For western blotting, VeriBlot for IP Detection Reagent (HRP) (ab131366) was used at 1/1000 dilution.
Blocking and diluting buffer: 5% NFDM/TBST. This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab76238)
All lanes:
Immunoprecipitation - Anti-cAMP Protein Kinase Catalytic subunit antibody [EP2102Y] (ab76238)

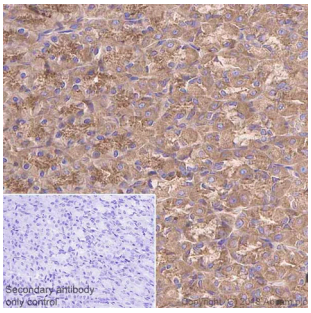
Predicted band size: 41 kDa



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-cAMP Protein Kinase Catalytic subunit antibody [EP2102Y] - BSA and Azide free (ab235385)

CAMP Protein Kinase Catalytic subunit Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-cAMP Protein Kinase Catalytic subunit antibody

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of mouse cerebrum tissue sections labeling cAMP Protein Kinase Catalytic subunit with purified ab76238 at 1/750 dilution. Heat mediated antigen retrieval was performed Perform heat mediated antigen retrieval using ab93684 (Tris/EDTA buffer, pH 9.0). ImmunoHistoProbe one step HRP Polymer (ready to use) was used as the secondary antibody. Negative control: PBS instead of the primary antibody. Hematoxylin was used as a counterstain. This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab76238)



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-cAMP Protein Kinase Catalytic subunit antibody [EP2102Y] - BSA and Azide free (ab235385)

CAMP Protein Kinase Catalytic subunit Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-cAMP Protein Kinase Catalytic subunit antibody

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of rat stomach tissue sections labeling cAMP Protein Kinase Catalytic subunit with purified ab76238 at 1/750 dilution. Heat mediated antigen retrieval was performed Perform heat mediated antigen retrieval using ab93684 (Tris/EDTA buffer, pH 9.0). ImmunoHistoProbe one step HRP Polymer (ready to use) was used as the secondary antibody. Negative control: PBS instead of the primary antibody. Hematoxylin was used as a counterstain. This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab76238)

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