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KD-Validated Anti-cAMP Protein Kinase Catalytic Subunit Rabbit Monoclonal Antibody

Rabbit monoclonal antibody
Catalog # AGI2378

Specification

KD-Validated Anti-cAMP Protein Kinase Catalytic Subunit Rabbit Monoclonal Antibody - Product Information

Application	**WB, FC, ICC**
Primary Accession	P17612
Reactivity	**Rat, Human, Mouse**
Clonality	**Monoclonal**
Isotype	**Rabbit IgG**
Calculated MW	**Predicted , 41 kDa ; Observed , 41 kDa KDa**
Gene Name	**PRKACA**
Aliases	**Protein Kinase; CAMP-Dependent; Catalytic; Alpha; CAMP-Dependent Protein Kinase Catalytic Subunit Alpha; PKACA; Protein Kinase A Catalytic Subunit; PKA C-Alpha; EC 2.7.11; EC 2.7.11.11**
Immunogen	**A synthesized peptide derived from human cAMP Protein Kinase Catalytic subunit**

KD-Validated Anti-cAMP Protein Kinase Catalytic Subunit Rabbit Monoclonal Antibody - Additional Information

Gene ID	**5566**

Other Names
cAMP-dependent protein kinase catalytic subunit alpha, PKA C-alpha, 2.7.11.11, PRKACA, PKACA

KD-Validated Anti-cAMP Protein Kinase Catalytic Subunit Rabbit Monoclonal Antibody - Protein Information

Name PRKACA

Synonyms PKACA

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:<a

href="http://www.uniprot.org/citations/21085490" target="_blank">21085490, PubMed:21514275, PubMed:21812984, PubMed:31112131). Phosphorylates CDC25B, ABL1, NFKB1, CLDN3, PSMC5/RPT6, PJA2, RYR2, RORA, SOX9 and VASP (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:<a href="http://www.uniprot.org/citations/18836454"

target="_blank">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).

Cellular Location
Cytoplasm. Cell membrane. Membrane; Lipid-anchor. Nucleus. Mitochondrion {ECO:0000250|UniProtKB:P05132}. Note=Translocates into the nucleus (monomeric catalytic subunit). The inactive holoenzyme is found in the cytoplasm. Distributed throughout the cytoplasm in meiotically incompetent oocytes. Associated to mitochondrion as meiotic competence is acquired. Aggregates around the germinal vesicles (GV) at the immature GV stage oocytes (By similarity). Colocalizes with HSF1 in nuclear stress bodies (nSBs) upon heat shock (PubMed:21085490) Recruited to the cell membrane through interaction with SMO (By similarity). {ECO:0000250|UniProtKB:P05132, ECO:0000269|PubMed:21085490}

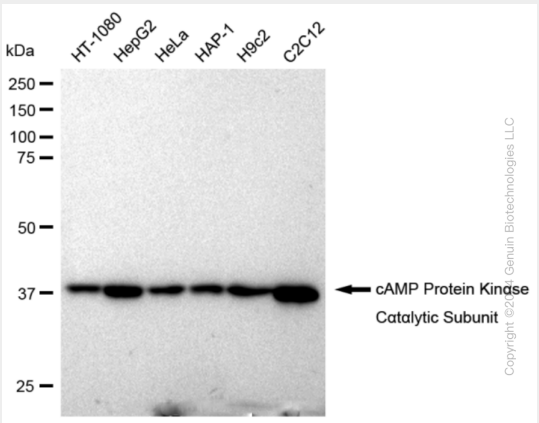
Tissue Location
Isoform 1 is ubiquitous. Isoform 2 is sperm- specific and is enriched in pachytene spermatocytes but is not detected in round spermatids.

KD-Validated Anti-cAMP Protein Kinase Catalytic Subunit Rabbit Monoclonal Antibody - Protocols

Provided below are standard protocols that you may find useful for product applications.

- Western Blot
- Blocking Peptides
- Dot Blot
- Immunohistochemistry
- Immunofluorescence
- Immunoprecipitation
- Flow Cytomety
- Cell Culture

KD-Validated Anti-cAMP Protein Kinase Catalytic Subunit Rabbit Monoclonal Antibody - Images



Western blotting analysis using anti-cAMP Protein Kinase Catalytic Subunit antibody (Cat#AGI2378). Total cell lysates (30 µg) from various cell lines were loaded and separated by SDS-PAGE. The blot was incubated with anti-cAMP Protein Kinase Catalytic Subunit antibody

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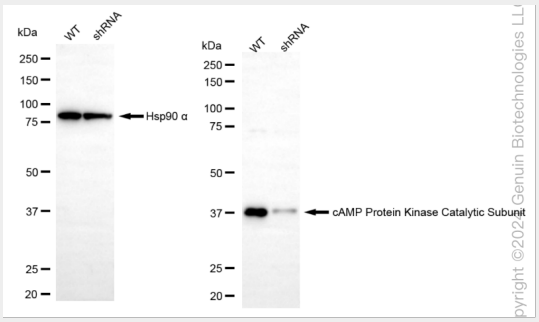
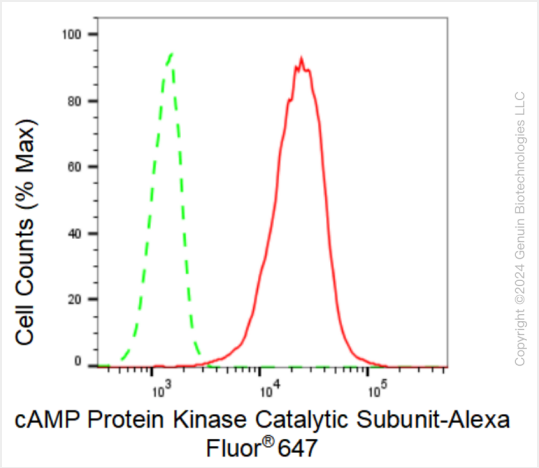
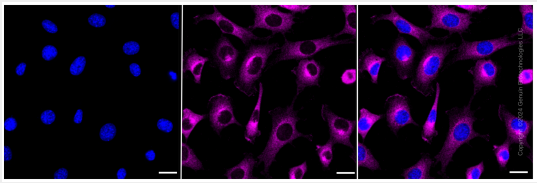
(Cat#AGI2378, 1:5,000) and HRP-conjugated goat anti-rabbit secondary antibody respectively.



Western blotting analysis using anti-cAMP Protein Kinase Catalytic Subunit antibody (Cat#AGI2378). cAMP Protein Kinase Catalytic Subunit expression in wild type (WT) and cAMP Protein Kinase Catalytic Subunit shRNA knockdown (KD) HT-1080 cells with 30 µg of total cell lysates. β-Tubulin serves as a loading control. The blot was incubated with anti-cAMP Protein Kinase Catalytic Subunit antibody (Cat#AGI2378, 1:5,000) and HRP-conjugated goat anti-rabbit secondary antibody respectively.



Flow cytometric analysis of cAMP Protein Kinase Catalytic Subunit expression in C2C12 cells using cAMP Protein Kinase Catalytic Subunit antibody (Cat#AGI2378, 1:2,000). Green, isotype control; red, cAMP Protein Kinase Catalytic Subunit.



Immunocytochemical staining of HeLa cells with cAMP Protein Kinase Catalytic Subunit antibody (Cat#AGI2378, 1:1,000). Nuclei were stained blue with DAPI; cAMP Protein Kinase Catalytic Subunit was stained magenta with Alexa Fluor® 647. Images were taken using Leica stellaris 5. Protein abundance based on laser Intensity and smart gain: High. Scale bar: 20 µm.