

**PKA C-alpha/PKA C-beta Antibody (N-term) Blocking peptide**  
**Synthetic peptide**  
**Catalog # BP7013a****Specification**

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**PKA C-alpha/PKA C-beta Antibody (N-term) Blocking peptide - Product Information**Primary Accession [P17612](#)**PKA C-alpha/PKA C-beta Antibody (N-term) Blocking peptide - Additional Information**

Gene ID 5566

**Other Names**

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

**Target/Specificity**

The synthetic peptide sequence used to generate the antibody -AP7013a was selected from the N-term region of human PKA C-alpha. A 10 to 100 fold molar excess to antibody is recommended. Precise conditions should be optimized for a particular assay.

**Format**

Peptides are lyophilized in a solid powder format. Peptides can be reconstituted in solution using the appropriate buffer as needed.

**Storage**

Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store at -20°C.

**Precautions**

This product is for research use only. Not for use in diagnostic or therapeutic procedures.

**PKA C-alpha/PKA C-beta Antibody (N-term) Blocking peptide - Protein Information**

Name PRKACA

Synonyms PKACA

**Function**

Phosphorylates a large number of substrates in the cytoplasm and the nucleus (PubMed:<a href="http://www.uniprot.org/citations/15642694" target="\_blank">15642694</a>, PubMed:<a href="http://www.uniprot.org/citations/15905176" target="\_blank">15905176</a>, PubMed:<a href="http://www.uniprot.org/citations/16387847" target="\_blank">16387847</a>, PubMed:<a href="http://www.uniprot.org/citations/17333334" target="\_blank">17333334</a>, PubMed:<a href="http://www.uniprot.org/citations/17565987" target="\_blank">17565987</a>, PubMed:<a href="http://www.uniprot.org/citations/17693412" target="\_blank">17693412</a>, PubMed:<a href="http://www.uniprot.org/citations/18836454" target="\_blank">18836454</a>, PubMed:<a href="http://www.uniprot.org/citations/19949837" target="\_blank">19949837</a>, PubMed:<a href="http://www.uniprot.org/citations/20356841" target="\_blank">20356841</a>, PubMed:<a href="http://www.uniprot.org/citations/21085490" target="\_blank">21085490</a>, PubMed:<a

href="http://www.uniprot.org/citations/21514275" target="\_blank">21514275</a>, PubMed:<a href="http://www.uniprot.org/citations/21812984" target="\_blank">21812984</a>, PubMed:<a href="http://www.uniprot.org/citations/31112131" target="\_blank">31112131</a>). Phosphorylates CDC25B, ABL1, NFKB1, CLDN3, PSMC5/RPT6, PJA2, RYR2, RORA, SOX9 and VASP (PubMed:<a href="http://www.uniprot.org/citations/15642694" target="\_blank">15642694</a>, PubMed:<a href="http://www.uniprot.org/citations/15905176" target="\_blank">15905176</a>, PubMed:<a href="http://www.uniprot.org/citations/16387847" target="\_blank">16387847</a>, PubMed:<a href="http://www.uniprot.org/citations/17333334" target="\_blank">17333334</a>, PubMed:<a href="http://www.uniprot.org/citations/17565987" target="\_blank">17565987</a>, PubMed:<a href="http://www.uniprot.org/citations/17693412" target="\_blank">17693412</a>, PubMed:<a href="http://www.uniprot.org/citations/18836454" target="\_blank">18836454</a>, PubMed:<a href="http://www.uniprot.org/citations/19949837" target="\_blank">19949837</a>, PubMed:<a href="http://www.uniprot.org/citations/20356841" target="\_blank">20356841</a>, PubMed:<a href="http://www.uniprot.org/citations/21085490" target="\_blank">21085490</a>, PubMed:<a href="http://www.uniprot.org/citations/21514275" target="\_blank">21514275</a>, PubMed:<a href="http://www.uniprot.org/citations/21812984" target="\_blank">21812984</a>). 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:<a href="http://www.uniprot.org/citations/21423175" target="\_blank">21423175</a>). RORA is activated by phosphorylation (PubMed:<a href="http://www.uniprot.org/citations/21514275" target="\_blank">21514275</a>). Required for glucose-mediated adipogenic differentiation increase and osteogenic differentiation inhibition from osteoblasts (PubMed:<a href="http://www.uniprot.org/citations/19949837" target="\_blank">19949837</a>). 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:<a href="http://www.uniprot.org/citations/15642694" target="\_blank">15642694</a>, PubMed:<a href="http://www.uniprot.org/citations/20356841" target="\_blank">20356841</a>). Prevents the antiproliferative and anti-invasive effects of alpha-difluoromethylornithine in breast cancer cells when activated (PubMed:<a href="http://www.uniprot.org/citations/17333334" target="\_blank">17333334</a>). 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:<a href="http://www.uniprot.org/citations/17693412" target="\_blank">17693412</a>). PSMC5/RPT6 activation by phosphorylation stimulates proteasome (PubMed:<a href="http://www.uniprot.org/citations/17565987" target="\_blank">17565987</a>). Negatively regulates tight junctions (TJs) in ovarian cancer cells via CLDN3 phosphorylation (PubMed:<a href="http://www.uniprot.org/citations/15905176" target="\_blank">15905176</a>). NFKB1 phosphorylation promotes NF-kappa-B p50-p50 DNA binding (PubMed:<a href="http://www.uniprot.org/citations/15642694" target="\_blank">15642694</a>). 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:<a href="http://www.uniprot.org/citations/33934390" target="\_blank">33934390</a>). Prevents meiosis resumption in prophase-arrested oocytes via CDC25B inactivation by phosphorylation (By similarity). May also regulate rapid eye movement (REM) sleep in the pedunculo-pontine tegmental (PPT) (By similarity). Phosphorylates APOBEC3G and AICDA (PubMed:<a href="http://www.uniprot.org/citations/16387847" target="\_blank">16387847</a>, PubMed:<a href="http://www.uniprot.org/citations/18836454" target="\_blank">18836454</a>). Phosphorylates HSF1; this phosphorylation promotes HSF1

nuclear localization and transcriptional activity upon heat shock (PubMed:<a href="http://www.uniprot.org/citations/21085490" target="\_blank">21085490</a>). Acts as a negative regulator of mTORC1 by mediating phosphorylation of RPTOR (PubMed:<a href="http://www.uniprot.org/citations/31112131" target="\_blank">31112131</a>).

#### **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.

### **PKA C-alpha/PKA C-beta Antibody (N-term) Blocking peptide - Protocols**

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

- [Blocking Peptides](#)

### **PKA C-alpha/PKA C-beta Antibody (N-term) Blocking peptide - Images**

### **PKA C-alpha/PKA C-beta Antibody (N-term) Blocking peptide - Background**

cAMP is a signaling molecule important for a variety of cellular functions. cAMP exerts its effects by activating the cAMP-dependent protein kinase (AMPK), which transduces the signal through phosphorylation of different target proteins. The inactive holoenzyme of AMPK is a tetramer composed of two regulatory and two catalytic subunits. cAMP causes the dissociation of the inactive holoenzyme into a dimer of regulatory subunits bound to four cAMP and two free monomeric catalytic subunits. Four different regulatory subunits and three catalytic subunits of AMPK have been identified in humans. This protein, the alpha-catalytic subunit of AMPK, is a member of the Ser/Thr protein kinase family.

### **PKA C-alpha/PKA C-beta Antibody (N-term) Blocking peptide - References**

Tateyama, M., et al., J. Biol. Chem. 278(47):46718-46726 (2003).Cartier, C., et al., J. Biol. Chem. 278(37):35211-35219 (2003).Libersan, D., et al., Thromb. Haemost. 89(2):310-317 (2003).Yasuda, H., et al., Nat. Neurosci. 6(1):15-16 (2003).Kaneider, N.C., et al., J. Bone Miner. Res. 17(10):1872-1882 (2002).