

**PRKACA Antibody (N-term K22) Blocking Peptide**  
**Synthetic peptide**  
**Catalog # BP6822b****Specification**

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**PRKACA Antibody (N-term K22) Blocking Peptide - Product Information**Primary Accession [P17612](#)**PRKACA Antibody (N-term K22) Blocking Peptide - Additional Information****Gene ID** 5566**Other Names**

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

**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.

**PRKACA Antibody (N-term K22) 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.

**PRKACA Antibody (N-term K22) Blocking Peptide - Protocols**

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

- [Blocking Peptides](#)

**PRKACA Antibody (N-term K22) Blocking Peptide - Images****PRKACA Antibody (N-term K22) Blocking Peptide - Background**

PRKACA is a signaling molecule important for a variety of cellular functions. cAMP exerts its effects by activating the cAMP-dependent protein kinase, which transduces the signal through phosphorylation of different target proteins. The inactive kinase holoenzyme 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 have been identified in humans. PRKACA is a member of the Ser/Thr protein kinase family and is a catalytic subunit of cAMP-dependent protein kinase.

**PRKACA Antibody (N-term K22) Blocking Peptide - References**

Steichen, J.M., et al. J. Biol. Chem. 285(6):3825-3832(2010)MacPherson, M.R., et al. Mol. Biol. Cell 21(2):244-253(2010)Gu, L., et al. Clin. Cancer Res. 15(23):7196-7206(2009)