

# PKA I $\alpha$ reg (20): sc-136231

## BACKGROUND

The second messenger cyclic AMP (cAMP) mediates diverse cellular responses to external signals such as proliferation, ion transport, regulation of metabolism and gene transcription by activation of the cAMP-dependent protein kinase (cAPK or PKA). Activation of PKA occurs when cAMP binds to the two regulatory subunits of the tetrameric PKA holoenzyme, resulting in release of active catalytic subunits. Four different PKA regulatory subunits have been identified, designated I $\alpha$ , I $\beta$ , II $\alpha$  and II $\beta$ . The PKA I $\alpha$  reg protein is a tissue-specific extinguisher that downregulates the expression of seven liver genes in hepatoma x fibroblast hybrids. Functional null mutations in the gene that codes for PKA I $\alpha$  reg cause Carney complex (CNC). CNC is an autosomal dominant multiple neoplasia syndrome. CNC is associated with a variety of characterized symptoms such as cardiac and other myxomas, spotty skin pigmentation, endocrine tumors and psammomatous melanotic schwannomas.

## REFERENCES

1. Beavo, J.A., et al. 1974. Activation of protein kinase by physiological concentrations of cyclic AMP. *Proc. Natl. Acad. Sci. USA* 71: 3580-3583.
2. Krebs, E.G. and Beavo, J.A. 1980. Phosphorylation and dephosphorylation of enzymes. *Annu. Rev. Biochem.* 48: 923-959.

## CHROMOSOMAL LOCATION

Genetic locus: PRKAR1A (human) mapping to 17q24.2; Prkar1a (mouse) mapping to 11 E1.

## SOURCE

PKA I $\alpha$  reg (20) is a mouse monoclonal antibody raised against amino acids 1-381 representing full length PKA I $\alpha$  reg of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG<sub>1</sub> in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-136231 P (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

## APPLICATIONS

PKA I $\alpha$  reg (20) is recommended for detection of PKA I $\alpha$  reg of mouse, rat, human and canine origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)].

Suitable for use as control antibody for PKA I $\alpha$  reg siRNA (h): sc-39162, PKA I $\alpha$  reg siRNA (m): sc-39163, PKA I $\alpha$  reg shRNA Plasmid (h): sc-39162-SH, PKA I $\alpha$  reg shRNA Plasmid (m): sc-39163-SH, PKA I $\alpha$  reg shRNA (h) Lentiviral Particles: sc-39162-V and PKA I $\alpha$  reg shRNA (m) Lentiviral Particles: sc-39163-V.

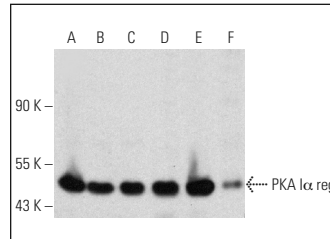
Molecular Weight of PKA I $\alpha$  reg: 43 kDa.

Positive Controls: CCRF-CEM cell lysate: sc-2225, SW-13 cell lysate: sc-24778 or PKA I $\alpha$  reg (m3): 293T Lysate: sc-110206.

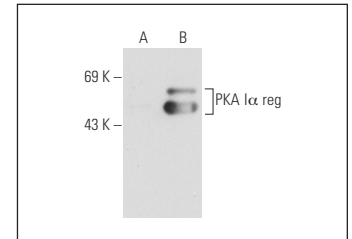
## STORAGE

Store at 4° C, **\*\*DO NOT FREEZE\*\***. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## DATA



PKA I $\alpha$  reg (20): sc-136231. Western blot analysis of PKA I $\alpha$  reg expression in CCRF-CEM (A), SW-13 (B), NCI-H1299 (C), U-87 MG (D) and Neuro-2A (E) whole cell lysates and mouse brain tissue extract (F).



PKA I $\alpha$  reg (20): sc-136231. Western blot analysis of PKA I $\alpha$  reg expression in non-transfected: sc-117752 (A) and mouse PKA I $\alpha$  reg transfected: sc-110206 (B) 293T whole cell lysates.

## SELECT PRODUCT CITATIONS

1. Hammerschmidt, A., et al. 2012. Binding of regulatory subunits of cyclic AMP-dependent protein kinase to cyclic CMP agarose. *PLoS ONE* 7: e39848.
2. Savitski, M.M., et al. 2014. Tracking cancer drugs in living cells by thermal profiling of the proteome. *Science* 346: 1255784.
3. Wolter, S., et al. 2015. cCMP causes caspase-dependent apoptosis in mouse lymphoma cell lines. *Biochem. Pharmacol.* 98: 119-131.
4. Xu, X., et al. 2018. Liraglutide regulates the viability of pancreatic  $\alpha$ -cells and pancreatic  $\beta$ -cells through cAMP-PKA signal pathway. *Life Sci.* 195: 87-94.
5. Chen, S.J., et al. 2019. Continuous exposure of isoprenaline inhibits myoblast differentiation and fusion through PKA/ERK1/2-FOXO1 signaling pathway. *Stem Cell Res. Ther.* 10: 70.
6. Just-Borràs, L., et al. 2020. Running and swimming prevent the deregulation of the BDNF/TrkB neurotrophic signalling at the neuromuscular junction in mice with amyotrophic lateral sclerosis. *Cell. Mol. Life Sci.* 77: 3027-3040.
7. Cilleros-Mañé, V., et al. 2020. The M<sub>2</sub> muscarinic receptor, in association to M<sub>1</sub>, regulates the neuromuscular PKA molecular dynamics. *FASEB J.* 34: 4934-4955.
8. Kiran, S., et al. 2022. Cannabinoid receptor 2 (CB2) inverse agonist SMM-189 induces expression of endogenous CB2 and protein kinase A that differentially modulates the immune response and suppresses experimental colitis. *Pharmaceutics* 14: 936.
9. Polishchuk, A., et al. 2023. Synaptic retrograde regulation of the PKA-induced SNAP-25 and Synapsin-1 phosphorylation. *Cell. Mol. Biol. Lett.* 28: 17.

## RESEARCH USE

For research use only, not for use in diagnostic procedures. Not for resale.