SANTA CRUZ BIOTECHNOLOGY, INC.

PKAα/β/γ cat (B-4): sc-365615

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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. Three catalytic (C) subunits have been identified, designated Cα, Cβ and Cγ, that each represent specific gene products. Cα and Cβ are closely related (93% amino acid sequence similarity), whereas Cγ displays 83% and 79% similarity to Cα and Cβ, respectively. Activation of transcription upon elevation of cAMP levels results from translocation of PKA to the nucleus where it phosphorylates the transcription factor cAMP response element binding protein (CREB) on serine 133 which in turn leads to TFIIB binding to TATA-box-binding protein TBP1, thus linking phospho-CREB to the pol II transcription initiation complex.

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., et al. 1980. Phosphorylation and dephosphorylation of enzymes. Annu. Rev. Biochem. 48: 923-959.

SOURCE

PKAα/β/γ cat (B-4) is a mouse monoclonal antibody raised against amino acids 226-320 mapping near the C-terminus of PKAα cat of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2b} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

PKAα/β/γ cat (B-4) is available conjugated to agarose (sc-365615 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-365615 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-365615 PE), fluorescein (sc-365615 FITC), Alexa Fluor® 488 (sc-365615 AF488), Alexa Fluor® 546 (sc-365615 AF546), Alexa Fluor® 594 (sc-365615 AF594) or Alexa Fluor® 647 (sc-365615 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-365615 AF680) or Alexa Fluor® 790 (sc-365615 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

PKAα/β/γ cat (B-4) is recommended for detection of PKAα cat, PKAβ cat and PKAγ cat of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

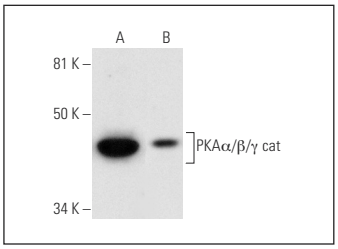
Molecular Weight of PKAα/β/γ cat: 40 kDa.

Positive Controls: MCF7 whole cell lysate: sc-2206, PC-3 cell lysate: sc-2220 or NIH/3T3 whole cell lysate: sc-2210.

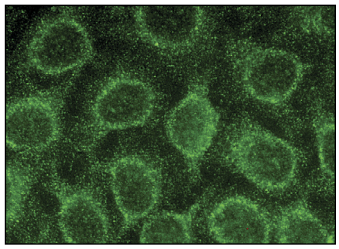
STORAGE

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

DATA



PKAα/β/γ cat (B-4): sc-365615. Western blot analysis of PKAα/β/γ cat expression in MCF7 (**A**) and PC-3 (**B**) whole cell lysates.



PKAα/β/γ cat (B-4): sc-365615. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization.

SELECT PRODUCT CITATIONS

1. Pérez-Gómez, A., et al. 2013. Transient domoic acid excitotoxicity increases BDNF expression and activates both MEK- and PKA-dependent neurogenesis in organotypic hippocampal slices. BMC Neurosci. 14: 72.
2. Seward, M.E., et al. 2013. Amyloid-β signals through Tau to drive ectopic neuronal cell cycle re-entry in Alzheimer's disease. J. Cell Sci. 126: 1278-1286.
3. Oláh, T., et al. 2016. Cannabinoid signalling inhibits sarcoplasmic Ca^{2+} release and regulates excitation-contraction coupling in mammalian skeletal muscle. J. Physiol. 594: 7381-7398.
4. Dzierlenga, A.L., et al. 2016. Nonalcoholic steatohepatitis modulates membrane protein retrieval and insertion processes. Drug Metab. Dispos. 44: 1799-1807.
5. Nystoriak, M.A., et al. 2017. Ser^{1928} phosphorylation by PKA stimulates the L-type Ca^{2+} channel $Ca_V1.2$ and vasoconstriction during acute hyperglycemia and diabetes. Sci. Signal. 10 pii: eaaf9647.
6. Wu, X., et al. 2017. Fucoidan elevates surface organic cation transporter 2 expression via upregulation of protein kinase A in uric acid nephropathy. Exp. Ther. Med. 14: 4153-4159.
7. Dzierlenga, A.L. and Cherrington, N.J. 2018. Misregulation of membrane trafficking processes in human nonalcoholic steatohepatitis. J. Biochem. Mol. Toxicol. 32: e22035.
8. 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.
9. Hu, S., et al. 2019. Caffeine programs hepatic SIRT1-related cholesterol synthesis and hypercholesterolemia via A2AR/cAMP/PKA pathway in adult male offspring rats. Toxicology 418: 11-21.

RESEARCH USE

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