

PKA α / β / γ cat (B-4): sc-365615

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 C α , C β and C γ , that each represent specific gene products. C α and C β are closely related (93% amino acid sequence similarity), whereas C γ displays 83% and 79% similarity to C α and C β , 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. 1979. Phosphorylation and dephosphorylation of enzymes. *Annu. Rev. Biochem.* 48: 923-959.

SOURCE

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

PRODUCT

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

PKA α / β / γ cat (B-4) is available conjugated to agarose (sc-365615 AC), 500 μ g/0.25 ml agarose in 1 ml, for IP; to HRP (sc-365615 HRP), 200 μ g/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 μ g/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 μ g/ml, for Near-Infrared (NIR) WB, IF and FCM.

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APPLICATIONS

PKA α / β / γ cat (B-4) is recommended for detection of PKA α cat, PKA β cat and PKA γ cat of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 μ g per 100-500 μ g 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).

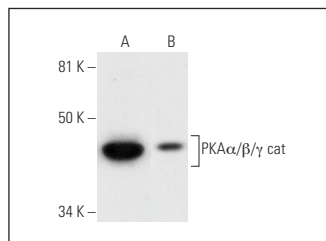
Molecular Weight of PKA α / β / γ cat: 40 kDa.

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

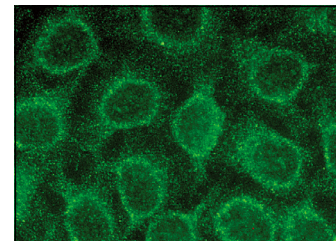
STORAGE

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

DATA



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



PKA α / 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. Oláh, T., et al. 2016. Cannabinoid signalling inhibits sarcoplasmic Ca²⁺ release and regulates excitation-contraction coupling in mammalian skeletal muscle. *J. Physiol.* 594: 7381-7398.
3. Nystoriak, M.A., et al. 2017. Ser¹⁹²⁸ phosphorylation by PKA stimulates the L-type Ca²⁺ channel Ca_v1.2 and vasoconstriction during acute hyperglycemia and diabetes. *Sci. Signal.* 10: eaaf9647.
4. Dzierlenga, A.L. and Cherrington, N.J. 2018. Misregulation of membrane trafficking processes in human nonalcoholic steatohepatitis. *J. Biochem. Mol. Toxicol.* 32: e22035.
5. 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.
6. Tibenská, V., et al. 2020. Gradual cold acclimation induces cardioprotection without affecting β -adrenergic receptor-mediated adenylyl cyclase signaling. *J. Appl. Physiol.* 128: 1023-1032.
7. Zhang, D., et al. 2021. Photobiomodulation therapy ameliorates glutamatergic dysfunction in mice with chronic unpredictable mild stress-induced depression. *Oxid. Med. Cell. Longev.* 2021: 6678276.
8. Jung, H.J., et al. 2021. New benzimidazothiazolone derivatives as tyrosinase inhibitors with potential anti-melanogenesis and reactive oxygen species scavenging activities. *Antioxidants* 10: 1078.
9. Sherpa, R.T., et al. 2021. Mitochondrial A-kinase anchoring proteins in cardiac ventricular myocytes. *Physiol. Rep.* 9: e15015.

RESEARCH USE

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