SANTA CRUZ BIOTECHNOLOGY, INC.

PKAα cat (A-2): sc-28315

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 A (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 PKAα cat (Cα), PKAβ cat (Cβ) and PKAγ cat (Cγ). Each subunit represents specific gene products. PKAα cat and PKAβ cat are closely related (93% amino acid sequence similarity), whereas PKAγ cat displays 83% and 79% similarity to PKAα cat and PKAβ cat, 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.

CHROMOSOMAL LOCATION

Genetic locus: PRKACA (human) mapping to 19p13.12; Prkaca (mouse) mapping to 8 C3.

SOURCE

PKAα cat (A-2) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 322-351 at the C-terminus of PKAα of human origin.

PRODUCT

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

PKAα cat (A-2) is available conjugated to agarose (sc-28315 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-28315 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-28315 PE), fluorescein (sc-28315 FITC), Alexa Fluor® 488 (sc-28315 AF488), Alexa Fluor® 546 (sc-28315 AF546), Alexa Fluor® 594 (sc-28315 AF594) or Alexa Fluor® 647 (sc-28315 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-28315 AF680) or Alexa Fluor® 790 (sc-28315 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-28315 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

STORAGE

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

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

APPLICATIONS

PKAα cat (A-2) is recommended for detection of PKAα catalytic subunit of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1,000), 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), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000); may cross-react with with β and γ subunits.

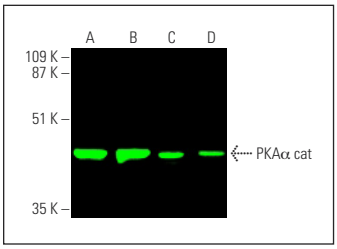
PKAα cat (A-2) is also recommended for detection of PKAα catalytic subunit in additional species, including equine, bovine and porcine.

Suitable for use as control antibody for PKAα cat siRNA (h): sc-36240, PKAα cat siRNA (m): sc-36241, PKAα cat siRNA (r): sc-156094, PKAα cat shRNA Plasmid (h): sc-36240-SH, PKAα cat shRNA Plasmid (m): sc-36241-SH, PKAα cat shRNA Plasmid (r): sc-156094-SH, PKAα cat shRNA (h) Lentiviral Particles: sc-36240-V, PKAα cat shRNA (m) Lentiviral Particles: sc-36241-V and PKAα cat shRNA (r) Lentiviral Particles: sc-156094-V.

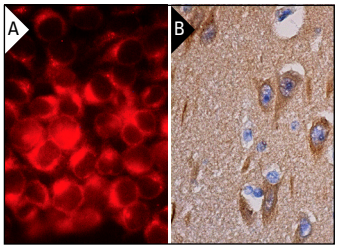
Molecular Weight of PKAα cat: 40 kDa.

Positive Controls: MCF7 whole cell lysate: sc-2206, NIH/3T3 whole cell lysate: sc-2210 or KNRK whole cell lysate: sc-2214.

DATA



PKAα cat (A-2): sc-28315. Near-infrared western blot analysis of PKAα cat expression in MCF7 (**A**), PC-3 (**B**), NIH/3T3 (**C**) and KNRK (**D**) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214. Detection reagent used: m-IgGκ BP-CFL 680: sc-516180.



PKAα cat (A-2): sc-28315. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization (**A**). PKAα cat (A-2) HRP: sc-28315 HRP. Direct immunoperoxidase staining of formalin fixed, paraffin-embedded human cerebral cortex tissue showing cytoplasmic staining of neuronal cells. Blocked with 0.25X UltraCruz® Blocking Reagent: sc-516214 (**B**).

SELECT PRODUCT CITATIONS

1. Meyer, R.D., et al. 2011. PEST motif serine and tyrosine phosphorylation controls vascular endothelial growth factor receptor 2 stability and down-regulation. Mol. Cell. Biol. 31: 2010-2025.
2. Balta, E.A., et al. 2018. Phosphorylation of the neurogenic transcription factor SOX11 on serine 133 modulates neuronal morphogenesis. Sci. Rep. 8: 16196.
3. Sunilkumar, S., et al. 2019. Elevated glucose concentration in culture media decreases membrane trafficking of SGLT2 in LLC-PK1 cells via a cAMP/PKA dependent pathway. Am. J. Physiol., Cell Physiol. 316: C913-C924.

RESEARCH USE

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