SANTA CRUZ BIOTECHNOLOGY, INC.

AKAP 9 (7E12): sc-517030

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The Power to Question

BACKGROUND

The type II cAMP-dependent protein kinase (PKA) is a multifunctional kinase with a broad range of substrates. Specificity of PKA signaling is mediated by the compartmentalization of the kinase to specific sites within the cell. To maintain this specific localization, the R subunit (RII) of PKA interacts with specific RII-anchoring proteins. This family of proteins is designated A-kinase anchoring proteins (AKAP). AKAP 9, also designated AKAP 450, is a 3,911 amino acid protein which undergoes alternative splicing resulting in multiple isoforms including, AKAP 350 and Yotiao. Research has found AKAP 9 localized to both centrosomes and the Golgi apparatus throughout the cell cycle, and it is suggested that AKAP 9 may function as a scaffolding protein assembling protein kinases and phosphatases based on substrate-specific phosphorylation. An N-terminal sequence from amino acids 11,626 is identical between the AKAP 9 and Yotiao proteins. The unique C-terminus of the Yotiao isoform contains an additional 12 amino acid sequence not shared with AKAP 9. Yotiao is expressed primarily in pancreas and skeletal muscle. Yotiao interacts with the NR1 sub-unit of the NMDA receptor. Co-assembly of Yotiao/PKAII complexes with NR1 subunits promote cAMP-dependent modulation of NMDA receptor activity at synapses, thereby influencing brain development and synaptic plasticity.

REFERENCES

1. Takahashi, M., et al. 1999. Characterization of a novel giant scaffolding protein, CG-NAP, that anchors multiple signaling enzymes to centrosome and the golgi apparatus. J. Biol. Chem. 274: 17267-17274.
2. Feliciello, A., et al. 1999. Yotiao protein, a ligand for the NMDA receptor, binds and targets cAMP-dependent protein kinase II. FEBS Lett. 464: 174-178.
3. Marx, S.O., et al. 2002. Requirement of a macromolecular signaling complex for β_2 adrenergic receptor modulation of the KCNQ1-KCNE1 potassium channel. Science 295: 496-799.
4. Saucerman, J.J., et al. 2004. Proarrhythmic consequences of a KCNQ1 AKAP-binding domain mutation: computational models of whole cells and heterogeneous tissue. Circ. Res. 95: 1216-1224.
5. Kurokawa, J., et al. 2004. Regulatory actions of the A-kinase anchoring protein Yotiao on a heart potassium channel downstream of PKA phosphorylation. Proc. Natl. Acad. Sci. USA 101: 16374-16378.
6. Kanki, H., et al. 2004. A structural requirement for processing the cardiac K^+ channel KCNQ1. J. Biol. Chem. 279: 33976-33983.
7. Terrenoire, C., et al. 2005. Autonomic control of cardiac action potentials: role of potassium channel kinetics in response to sympathetic stimulation. Circ. Res. 96: e25-e34.

CHROMOSOMAL LOCATION

Genetic locus: AKAP9 (human) mapping to 7q21.2.

SOURCE

AKAP 9 (7E12) is a mouse monoclonal antibody raised against amino acids 3812-3911 representing partial length AKAP 9 of human origin.

PRODUCT

Each vial contains 100 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

AKAP 9 (7E12) is recommended for detection of AKAP 9 of human origin by Western Blotting (starting dilution 1:200, 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).

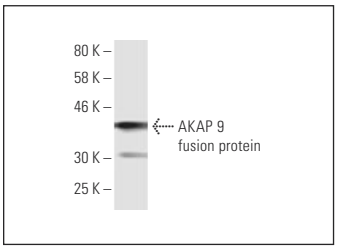
Suitable for use as control antibody for AKAP 9 siRNA (h): sc-45364, AKAP 9 shRNA Plasmid (h): sc-45364-SH and AKAP 9 shRNA (h) Lentiviral Particles: sc-45364-V.

Molecular Weight of full-length AKAP 9: 453 kDa.

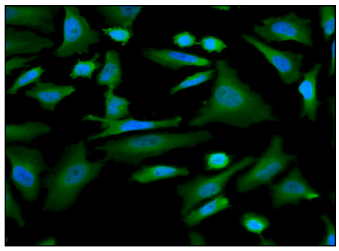
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



AKAP 9 (7E12): sc-517030. Western blot analysis of human recombinant AKAP 9 fusion protein.



AKAP 9 (7E12); sc-517030. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization.

STORAGE

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

RESEARCH USE

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

PROTOCOLS

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