

ROPN1 (IW.63): sc-130455

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, designated A-kinase anchoring proteins (AKAP). AKAP 3, also known as AKAP 110, FSP95, PRKA3 and SOB1, binds both PKA and PDE4A and functions as a scaffolding protein in spermatozoa to regulate local cAMP concentrations and modulate sperm functions. Expression of AKAP 3 in normal tissues is restricted to the testis, where bicarbonate stimulates tyrosine phosphorylation of AKAP 3, thereby increasing its recruitment of PKA. AKAP 3 serves as an anchoring protein for ROPN1, also designated Ropporin. ROPN1 expression is limited to testis and fetal liver in normal tissues, but can also be detected in multiple myeloma, chronic lymphocytic leukemia and acute myeloid leukemia tumor cells. ROPN1 forms a complex with raphophilin in sperm flagella to mediate its function.

REFERENCES

1. Scott, J.D., et al. 1990. Type II regulatory subunit dimerization determines the subcellular localization of the cAMP-dependent protein kinase. *J. Biol. Chem.* 265: 21561-21566.
2. Coghlan, V.M., et al. 1993. A-kinase anchoring proteins: a key to selective activation of cAMP-responsive events? *Mol. Cell. Biochem.* 127: 309-319.
3. Coghlan, V.M., et al. 1995. Association of protein kinase A and protein phosphatase 2B with a common anchoring protein. *Science* 267: 108-111.
4. Fujita, A., et al. 2000. Ropporin, a sperm-specific binding protein of raphophilin, that is localized in the fibrous sheath of sperm flagella. *J. Cell Sci.* 113: 103-112.
5. Eddy, E.M., et al. 2003. Fibrous sheath of mammalian spermatozoa. *Microsc. Res. Tech.* 61: 103-115.
6. Li, Z., et al. 2007. A yeast two-hybrid system using Sp17 identified Ropporin as a novel cancer-testis antigen in hematologic malignancies. *Int. J. Cancer* 121: 1507-1511.
7. Newell, A.E., et al. 2008. Protein kinase A RII-like (R2D2) proteins exhibit differential localization and AKAP interaction. *Cell Motil. Cytoskeleton* 65: 539-552.

CHROMOSOMAL LOCATION

Genetic locus: ROPN1 (human) mapping to 3q21.1.

SOURCE

ROPN1 (IW.63) is a mouse monoclonal antibody raised against recombinant ROPN1 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

ROPN1 (IW.63) is recommended for detection of ROPN1 of human origin by 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).

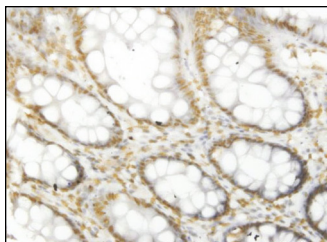
Suitable for use as control antibody for ROPN1 siRNA (h): sc-78553, ROPN1 shRNA Plasmid (h): sc-78553-SH and ROPN1 shRNA (h) Lentiviral Particles: sc-78553-V.

Molecular Weight of ROPN1: 24 kDa.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) 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. 2) Immunohistochemistry: use m-IgGκ BP-HRP: sc-516102 with DAB, 50X: sc-24982 and Immunohistomount: sc-45086, or Organo/Limonene Mount: sc-45087.

DATA



ROPN1 (IW.63): sc-130455. Immunoperoxidase staining of formalin-fixed, paraffin-embedded human colon tissue showing cytoplasmic and membrane localization.

SELECT PRODUCT CITATIONS

1. Shen, Y., et al. 2019. Loss-of-function mutations in QRICH2 cause male infertility with multiple morphological abnormalities of the sperm flagella. *Nat. Commun.* 10: 433.

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.