SANTA CRUZ BIOTECHNOLOGY, INC.

4.1R (B-11): sc-166759

The Power to Question

BACKGROUND

The 4.1 gene family encodes a group of multifunctional cytoskeletal proteins (4.1R, 4.1G, 4.1N and 4.1B) which are predominantly expressed in the nervous system. 4.1G is a protein that stabilizes spectrin-Actin interactions and is associated with hereditary elliptocytosis. Red blood cell 4.1, designated 4.1R, is a multifunctional protein that is essential for maintaining erythrocyte shape and membrane mechanical properties. Both 4.1R and 4.1G are distributed in a unique pattern in the cerebellum and are believed to modulate the membrane mechanical properties of neuronal cells by promoting fodrin/Actin association. 4.1N and 4.1B, designated EPB41L1 and EPB41L3, respectively, are strongly expressed in the brain. Antibodies to 4.1N have been reported to detect mulitple forms, each enriched in postsynaptic density preparations relative to brain homogenate. Antibodies to 4.1B have been reported to detect two forms.

REFERENCES

1. Peters, L.L., et al. 1998. Four paralogous protein 4.1 genes map to distinct chromosomes in mouse and human. Genomics 54: 348-350.
2. Takakuwa, Y. 2000. Protein 4.1, a multifunctional protein of the erythrocyte membrane skeleton: structure and functions in erythrocytes and nonerythroid cells. Int. J. Hematol. 72: 298-309.

CHROMOSOMAL LOCATION

Genetic locus: EPB41 (human) mapping to 1p35.3; Epb4.1 (mouse) mapping to 4 D2.3.

SOURCE

4.1R (B-11) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 635-375 within an internal region of 4.1R 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.

4.1R (B-11) is available conjugated to agarose (sc-166759 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-166759 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-166759 PE), fluorescein (sc-166759 FITC), Alexa Fluor® 488 (sc-166759 AF488), Alexa Fluor® 546 (sc-166759 AF546), Alexa Fluor® 594 (sc-166759 AF594) or Alexa Fluor® 647 (sc-166759 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-166759 AF680) or Alexa Fluor® 790 (sc-166759 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-166759 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.

APPLICATIONS

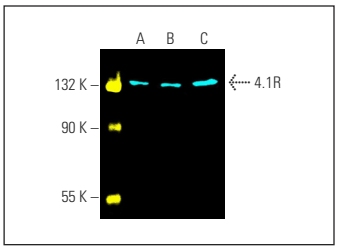
4.1R (B-11) is recommended for detection of 4.1R of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for 4.1R siRNA (h): sc-40295, 4.1R siRNA (m): sc-40296, 4.1R shRNA Plasmid (h): sc-40295-SH, 4.1R shRNA Plasmid (m): sc-40296-SH, 4.1R shRNA (h) Lentiviral Particles: sc-40295-V and 4.1R shRNA (m) Lentiviral Particles: sc-40296-V.

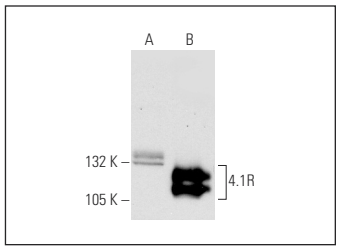
Molecular Weight of 4.1R isoforms: 80/135 kDa.

Positive Controls: 4.1R (h): 293T Lysate: sc-114567, CCRF-CEM Cell Lysate: sc-2225 or Jurkat whole cell lysate: sc-2204.

DATA



4.1R (B-11) Alexa Fluor® 647: sc-166759 AF647. Direct fluorescent western blot analysis of 4.1R expression in Jurkat (**A**), CCRF-CEM (**B**) and U266 (**C**) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214. Cruz Marker™ Molecular Weight Standards detected with Cruz Marker™ MW Tag-Alexa Fluor® 488: sc-516790.



4.1R (B-11): sc-166759. Western blot analysis of 4.1R expression in non-transfected: sc-117752 (**A**) and human 4.1R transfected: sc-114567 (**B**) 293T whole cell lysates.

SELECT PRODUCT CITATIONS

1. Wu, Z., et al. 2019. Antioxidant effects of Baoyuan decoction on dysfunctional erythrocytes in high-fat diet-induced hyperlipidemic ApoE$^{-/-}$ mice. Oxid. Med. Cell. Longev. 2019: 5172480.
2. Liang, T., et al. 2020. Cytoskeleton protein 4.1R regulates B cell fate by modulating the canonical NFκB pathway. Immunology 161: 314-324.
3. Ning, S., et al. 2021. Protein 4.1 family and ion channel proteins interact to regulate the process of heart failure in rats. Acta Histochem. 123: 151748.
4. Maurer, F., et al. 2022. Continuous Percoll gradient centrifugation of erythrocytes-explanation of cellular bands and compromised age separation. Cells 11: 1296.
5. Gomes, A.M., et al. 2022. Micronuclei from misaligned chromosomes that satisfy the spindle assembly checkpoint in cancer cells. Curr. Biol. 32: 4240-4254.e5.

RESEARCH USE

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