SANTA CRUZ BIOTECHNOLOGY, INC.

band 3 (BIII 136): sc-58695

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Band 3, also designated AE1, is an erythrocyte membrane glycoprotein that contributes to cell stuctural integrity and mediates exchange of chloride and bicarbonate across the phospholipid bilayer. The diverse functions of the approximately 900 amino acid protein are mediated by two distinct domains. The amino terminal domain, also known as cdb3 for cytoplasmic domain of erthrocyte membrane band 3, acts as an attachment site for the erythrocyte skeleton by binding ankyrin. The carboxy-terminal, membrane-associated domain carries out exchange transport of anions. Degradation of band 3 can generate an aging antigen known as senescent cell antigen, or SCA, which is expressed on old cells and marks them for removal by the immune system. An isoform of band 3, which lacks the first 65 amino acids and does not bind ankryin, is expressed in kidney.

REFERENCES

1. Brock, C.J., et al. 1983. The human erythrocyte anion-transport protein. Partial amino acid sequence, conformation and a possible molecular mechanism for anion exchange. Biochem. J. 213: 577-586.
2. Czerwinski, M., et al. 1988. Degradation of the human erythrocyte membrane band 3 studied with monoclonal antibody directed against an epitope on the cytoplasmic fragment of band 3. Eur. J. Biochem. 174: 647-654.
3. Kollert-Jons, A., et al. 1993. Anion exchanger 1 in human kidney and oncocytoma differs from erythroid AE1 in its NH_2-terminus. Am. J. Physiol. 265: F813-F821.
4. Jay, D.G. 1996. Role of band 3 in homeostasis and cell shape. Cell 86: 853-854.
5. Motais, R., et al. 1997. Association of the band 3 protein with a volume-activated, anion and amino acid channel: a molecular approach. J. Exp. Biol. 200: 361-367.
6. Tanner, M.J. 1997. The structure and function of band 3(AE1): recent developments (review). Mol. Membr. Biol. 14: 155-165.
7. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 109270. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
8. Mandal, D., et al. 2003. Caspase 3-mediated proteolysis of the N-terminal cytoplasmic domain of the human erythroid anion exchanger 1 (band 3). J. Biol. Chem. 278: 52551-52558.

CHROMOSOMAL LOCATION

Genetic locus: SLC4A1 (human) mapping to 17q21.31.

SOURCE

band 3 (BIII 136) is a mouse monoclonal antibody raised against full length purified band 3 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.

APPLICATIONS

band 3 (BIII 136) is recommended for detection of band 3 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 band 3 siRNA (h): sc-42735, band 3 shRNA Plasmid (h): sc-42735-SH and band 3 shRNA (h) Lentiviral Particles: sc-42735-V.

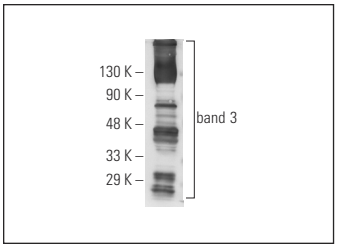
Molecular Weight of band 3: 95 kDa.

Positive Controls: Caki-1 cell lysate: sc-2224, HeLa whole cell lysate: sc-2200 or human erythrocyte membrane extract.

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, UltraCruz® Blocking Reagent: sc-516214 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



band 3 (BIII 136): sc-58695. Western blot analysis of band 3 expression in human erythrocyte membrane extract. Kindly provided by Dr. Marcin Czerwinski, Ludwik Hirszfeld Institute of Immunology and Experimental Therapy.

SELECT PRODUCT CITATIONS

1. Chen, J., et al. 2016. Systemic localization of seven major types of carbohydrates on cell membranes by dSTORM imaging. Sci. Rep. 6: 30247.

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.