SANTA CRUZ BIOTECHNOLOGY, INC.

Na^+/K^+-ATPase α1 (F-2): sc-514614

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The ubiquitously expressed sodium/potassium-ATPase (Na^+/K^+-ATPase) exists as a oligomeric plasma membrane complex that couples the hydrolysis of one molecule of ATP to the importation of three Na^+ ions and two K^+ ions against their respective electrochemical gradients. As a member of the P-type family of ion motives, Na^+/K^+-ATPase plays a critical role in maintaining cellular volume, resting membrane potential and Na^+-coupled solute transport. Multiple isoforms of three subunits, α, β and γ, comprise the Na^+/K^+-ATPase oligomer. The α subunit contains the binding sites for ATP and the cations; the glycosylated β subunit ensures correct folding and membrane insertion of the α subunits. The small γ subunit co-localizes with the α subunit in nephron segments, where it increases the affinity of Na^+/K^+-ATPase for ATP. The β subunit, but not the γ subunit, is essential for normal activity of Na^+/K^+-ATPase.

REFERENCES

1. Hardwicke, P.M., et al. 1981. A proteolipid associated with Na,K-ATPase is not essential for ATPase activity. Biochem. Biophys. Res. Commun. 102: 250-257.
2. McDonough, A.A., et al. 1990. The sodium pump needs its β subunit. FASEB J. 4: 1598-1605.

CHROMOSOMAL LOCATION

Genetic locus: ATP1A1 (human) mapping to 1p13.1; Atp1a1 (mouse) mapping to 3 F2.2.

SOURCE

Na^+/K^+-ATPase α1 (F-2) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 54-76 near the N-terminus of Na^+/K^+-ATPase α1 of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Na^+/K^+-ATPase α1 (F-2) is available conjugated to agarose (sc-514614 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-514614 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-514614 PE), fluorescein (sc-514614 FITC), Alexa Fluor® 488 (sc-514614 AF488), Alexa Fluor® 546 (sc-514614 AF546), Alexa Fluor® 594 (sc-514614 AF594) or Alexa Fluor® 647 (sc-514614 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-514614 AF680) or Alexa Fluor® 790 (sc-514614 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-514614 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

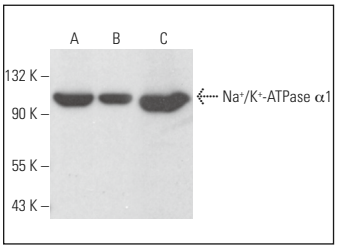
Na^+/K^+-ATPase α1 (F-2) is recommended for detection of Na^+/K^+-ATPase α1 of mouse, rat, human and monkey origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), 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 Na^+/K^+-ATPase α1 siRNA (h): sc-36010, Na^+/K^+-ATPase α1 siRNA (m): sc-36011, Na^+/K^+-ATPase α1 shRNA Plasmid (h): sc-36010-SH, Na^+/K^+-ATPase α1 shRNA Plasmid (m): sc-36011-SH, Na^+/K^+-ATPase α1 shRNA (h) Lentiviral Particles: sc-36010-V and Na^+/K^+-ATPase α1 shRNA (m) Lentiviral Particles: sc-36011-V.

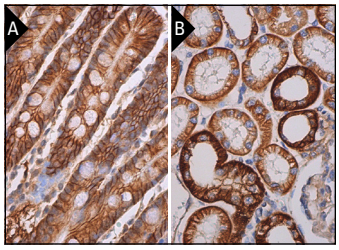
Molecular Weight of Na^+/K^+-ATPase α1: 100 kDa.

Positive Controls: Jurkat whole cell lysate: sc-2204, HeLa whole cell lysate: sc-2200 or SK-MEL-24 whole cell lysate: sc-364259.

DATA



Na^+/K^+-ATPase α1 (F-2): sc-514614. Western blot analysis of Na^+/K^+-ATPase α1 expression in HeLa (**A**), Jurkat (**B**) and SK-MEL-24 (**C**) whole cell lysates.



Na^+/K^+-ATPase α1 (F-2): sc-514614. Immunoperoxidase staining of formalin fixed, paraffin-embedded human duodenum tissue showing membrane and cytoplasmic staining of glandular cells (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human kidney tissue showing cytoplasmic staining of cells in glomeruli and membrane and cytoplasmic staining of cells in tubules (**B**).

SELECT PRODUCT CITATIONS

1. Yue, Q., et al. 2016. Proteasome inhibition contributed to the cytotoxicity of arenobufagin after its binding with Na, K-ATPase in human cervical carcinoma HeLa cells. PLoS ONE 11: e0159034.
2. Shin, S.M., et al. 2021. Piezo2 mechanosensitive ion channel is located to sensory neurons and nonneuronal cells in rat peripheral sensory pathway: implications in pain. Pain 162: 2750-2768.
3. Ghosh, B., et al. 2022. Epithelial plasticity in COPD results in cellular unjamming due to an increase in polymerized Actin. J. Cell Sci. 135: jcs258513.
4. Bezzerri, V., et al. 2023. SARS-CoV-2 viral entry and replication is impaired in Cystic Fibrosis airways due to ACE2 downregulation. Nat. Commun. 14: 132.

RESEARCH USE

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