SANTA CRUZ BIOTECHNOLOGY, INC.

# $Na^+/K^+$-ATPase α1 (C-20): sc-16043

SANTA CRUZ BIOTECHNOLOGY

*The Power to Question*

## BACKGROUND

The ubiquitously expressed sodium/potassium-ATPase ($Na^+/K^+$-ATPase) exists as an 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 to form 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. Ackermann, U., et al. 1990. Mutual dependence of $Na^+/K^+$-ATPase α and β subunits for correct post-translational processing and intracellular transport. FEBS Lett. 269: 105-108.
3. McDonough, A.A., et al. 1990. The sodium pump needs its β subunit. FASEB J. 4: 1598-1605.
4. Pedemonte, C.H., et al. 1990. Chemical modification as an approach to elucidation of sodium pump structure-function relations. Am. J. Physiol. 258: C1-C23.


## CHROMOSOMAL LOCATION

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

## SOURCE

$Na^+/K^+$-ATPase α1 (C-20) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of $Na^+/K^+$-ATPase α1 of human origin.

## PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-16043 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## 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.

## APPLICATIONS

$Na^+/K^+$-ATPase α1 (C-20) is recommended for detection of $Na^+/K^+$-ATPase α1 of mouse, rat and 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), 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).

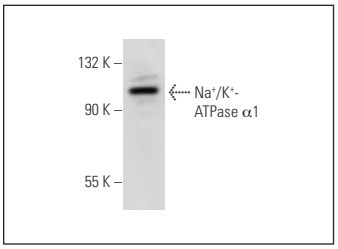
$Na^+/K^+$-ATPase α1 (C-20) is also recommended for detection of $Na^+/K^+$-ATPase α1 in additional species, including equine, canine, bovine and porcine.

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 α1shRNA 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.

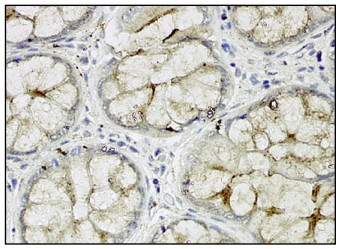
Molecular Weight of $Na^+/K^+$-ATPase α1: 100 kDa.

Positive Controls: Hep G2 cell lysate: sc-2227, KNRK whole cell lysate: sc-2214 or NIH/3T3 whole cell lysate: sc-2210.

## DATA




$Na^+/K^+$-ATPase α1 (C-20): sc-16043. Western blot analysis of $Na^+/K^+$-ATPase α1 expression in Hep G2 whole cell lysate.



$Na^+/K^+$-ATPase α1 (C-20): sc-16043. Immunoperoxidase staining of formalin fixed, paraffin-embedded human colon tumor showing membrane localization.

## SELECT PRODUCT CITATIONS


1. Alonso, A., et al. 2009. 17-β estradiol treatment is unable to reproduce p85α redistribution associated with gestational Insulin resistance in rats. J. Steroid Biochem. Mol. Biol. 116: 160-170.
2. Fujigaki, Y., et al. 2009. Cell division and phenotypic regression of proximal tubular cells in response to uranyl acetate insult in rats. Nephrol. Dial. Transplant. 24: 2686-2692.
3. Park, K.M., et al. 2010. Exocyst Sec10 protects epithelial barrier integrity and enhances recovery following oxidative stress, by activation of the MAPK pathway. Am. J. Physiol. Renal Physiol. 298: F818-F826.
4. Xu, Z.W., et al. 2010. Targeting the $Na^+/K^+$-ATPase α1 subunit of hepatoma HepG2 cell line to induce apoptosis and cell cycle arresting. Biol. Pharm. Bull. 33: 743-751.
5. Haddock, R.E., et al. 2011. Diet-induced obesity impairs endothelium-derived hyperpolarization via altered potassium channel signaling mechanisms. PLoS ONE 6: e16423.