Revision 3

Store at -20C

#3010

Na,K-ATPase Antibody

Cell Signaling TECHNOLOGY®

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For Research Use Only. Not for Use in Diagnostic Procedures.

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W	H M R Mk Z	Endogenous	100	Rabbit	#P05023	476

Product Usage Information

Application	Dilution
Western Blotting	1:1000

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA and 50% glycerol. Store at –20°C. Do not aliquot the antibody.

Specificity/Sensitivity

Na,K-ATPase α Antibody detects endogenous levels of total Na,K-ATPase α1 protein. Based on sequence homology, the antibody is likely to cross-react with α2 and α3 isoforms. A doublet may form if samples are boiled.

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to residues near the amino terminus of human Na,K-ATPase α1 subunit. Antibodies are purified using peptide affinity chromatography.

Background

The Na,K-ATPase is an integral membrane heterodimer belonging to the P-type ATPase family. This ion channel uses the energy derived from ATP hydrolysis to maintain membrane potential by driving sodium export and potassium import across the plasma membrane against their electrochemical gradients. It is composed of a catalytic α subunit and a β subunit (reviewed in 1). Several phosphorylation sites have been identified for the α1 subunit. Tyr10 is phosphorylated by an as yet undetermined kinase (2), Ser16 and Ser23 are phosphorylated by PKC, and Ser943 is phosphorylated by PKA (3-5). All of these sites have been implicated in the regulation of enzyme activity in response to hormones and neurotransmitters, altering trafficking and kinetic properties of Na,K-ATPase. Altered phosphorylation in response to angiotensin II stimulates activity in the rat proximal tubule (6). Na,K-ATPase is also involved in other signal transduction pathways. Insulin regulates its localization in differentiated primary human skeletal muscle cells, and this regulation is dependent on ERK1/2 phosphorylation of the α subunit (7). Na,K-ATPase and Src form a signaling receptor complex that affects regulation of Src kinase activity and, subsequently, its downstream effectors (8,9).

Background References

1. Therien, A.G. and Blostein, R. (2000) *Am J Physiol Cell Physiol* 279, C541-66.
2. Féraille, E. et al. (1999) *Mol Biol Cell* 10, 2847-59.
3. Fisone, G. et al. (1994) *J Biol Chem* 269, 9368-73.
4. Feschenko, M.S. and Sweadner, K.J. (1995) *J Biol Chem* 270, 14072-7.
5. Beguin, P. et al. (1994) *J Biol Chem* 269, 24437-45.
6. Yingst, D.R. et al. (2004) *Am J Physiol Renal Physiol* 287, F713-21.
7. Al-Khalili, L. et al. (2004) *J Biol Chem* 279, 25211-8.
8. Tian, J. et al. (2006) *Mol Biol Cell* 17, 317-26.
9. Liang, M. et al. (2006) *J Biol Chem* 281, 19709-19.

Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

W: Western Blotting

Cross-Reactivity Key

H: Human **M:** Mouse **R:** Rat **Mk:** Monkey **Z:** Zebrafish

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