Revision 1

#3060 Store at -20C

Phospho-Na,K-ATPase α1 (Tyr10) Antibody

Cell Signaling TECHNOLOGY®

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

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source:	UniProt ID:	Entrez-Gene Id:
WB, IP	H M	Endogenous	100	Rabbit	#P05023	476

Product Usage Information

Application	Dilution
Western Blotting	1:1000
Immunoprecipitation	1:100

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

Phospho-Na,K-ATPase α1 (Tyr10) Antibody recognizes endogenous levels of Na,K-ATPase α1 only when phosphorylated at Tyr10. The antibody cross-reacts with an induced 75-80 kDa doublet of unknown origin.

Species predicted to react based on 100% sequence homology:

Rat, Monkey, Bovine, Pig

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic phosphopeptide corresponding to residues surrounding Tyr10 of rat Na,K-ATPase α1. Antibodies are purified using protein A and 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

WB: Western Blotting **IP:** Immunoprecipitation

Cross-Reactivity Key

H: human **M:** mouse **R:** rat **Hm:** hamster **Mk:** monkey **Vir:** virus **Mi:** mink **C:** chicken **Dm:** D. melanogaster **X:** Xenopus **Z:** zebrafish **B:** bovine **Dg:** dog **Pg:** pig **Sc:** S. cerevisiae **Ce:** C. elegans **Hr:** horse **GP:** Guinea Pig **Rab:** rabbit **All:** all species expected

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Limited Uses