

# Na<sup>+</sup>/K<sup>+</sup>-ATPase α3 (F-1): sc-374050

## BACKGROUND

The ubiquitously expressed sodium/potassium-ATPase (Na<sup>+</sup>/K<sup>+</sup>-ATPase) exists as a oligomeric plasma membrane complex that couples the hydrolysis of one molecule of ATP to the importation of three Na<sup>+</sup> ions and two K<sup>+</sup> ions against their respective electrochemical gradients. As a member of the P-type family of ion motives, Na<sup>+</sup>/K<sup>+</sup>-ATPase plays a critical role in maintaining cellular volume, resting membrane potential and Na<sup>+</sup>-coupled solute transport. Multiple isoforms of three subunits, α, β and γ, comprise the Na<sup>+</sup>/K<sup>+</sup>-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<sup>+</sup>/K<sup>+</sup>-ATPase for ATP. The β subunit, but not the γ subunit, is essential for normal activity of Na<sup>+</sup>/K<sup>+</sup>-ATPase.

## CHROMOSOMAL LOCATION

Genetic locus: ATP1A3 (human) mapping to 19q13.2; Atp1a3 (mouse) mapping to 7 A3.

## SOURCE

Na<sup>+</sup>/K<sup>+</sup>-ATPase α3 (F-1) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 419-446 within an internal region of Na<sup>+</sup>/K<sup>+</sup>-ATPase α3 of human origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>3</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-374050 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

## APPLICATIONS

Na<sup>+</sup>/K<sup>+</sup>-ATPase α3 (F-1) is recommended for detection of Na<sup>+</sup>/K<sup>+</sup>-ATPase α3 of mouse, rat and human 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Na<sup>+</sup>/K<sup>+</sup>-ATPase α3 (F-1) is also recommended for detection of Na<sup>+</sup>/K<sup>+</sup>-ATPase α3 in additional species, including equine, canine and porcine.

Suitable for use as control antibody for Na<sup>+</sup>/K<sup>+</sup>-ATPase α3 siRNA (h): sc-36012, Na<sup>+</sup>/K<sup>+</sup>-ATPase α3 siRNA (m): sc-36013, Na<sup>+</sup>/K<sup>+</sup>-ATPase α3 shRNA Plasmid (h): sc-36012-SH, Na<sup>+</sup>/K<sup>+</sup>-ATPase α3 shRNA Plasmid (m): sc-36013-SH, Na<sup>+</sup>/K<sup>+</sup>-ATPase α3 shRNA (h) Lentiviral Particles: sc-36012-V and Na<sup>+</sup>/K<sup>+</sup>-ATPase α3 shRNA (m) Lentiviral Particles: sc-36013-V.

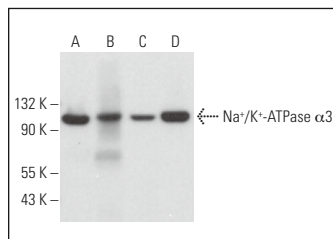
Molecular Weight of Na<sup>+</sup>/K<sup>+</sup>-ATPase α3: 113 kDa.

Positive Controls: mouse brain extract: sc-2253, rat brain extract: sc-2392 or human brain extract: sc-364375.

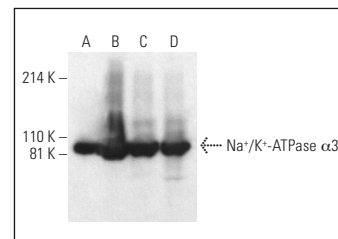
## STORAGE

Store at 4° C, **\*\*DO NOT FREEZE\*\***. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## DATA



Na<sup>+</sup>/K<sup>+</sup>-ATPase α3 (F-1): sc-374050. Western blot analysis of Na<sup>+</sup>/K<sup>+</sup>-ATPase α3 expression in rat brain (A), mouse brain (B), human brain (C) and human cerebellum (D) tissue extracts.



Na<sup>+</sup>/K<sup>+</sup>-ATPase α3 (F-1): sc-374050. Western blot analysis of Na<sup>+</sup>/K<sup>+</sup>-ATPase α3 expression in human brain (A), mouse brain (B), rat cerebellum (C) and rat brain (D) tissue extracts. Detection reagent used: m-IgG<sub>3</sub> BP-HRP: sc-533670.

## SELECT PRODUCT CITATIONS

- Heinzen, E.L., et al. 2012. *De novo* mutations in ATP1A3 cause alternating hemiplegia of childhood. Nat. Genet. 44: 1030-1034.
- Müller, L.G., et al. 2015. Effects of diene valepotriates from *Valeriana glechomifolia* on Na<sup>+</sup>/K<sup>+</sup>-ATPase activity in the cortex and hippocampus of mice. Planta Med. 81: 200-207.
- Paciorkowski, A.R., et al. 2015. Novel mutations in ATP1A3 associated with catastrophic early life epilepsy, episodic prolonged apnea, and postnatal microcephaly. Epilepsia 56: 422-430.
- Liu, M., et al. 2016. A novel bufalin derivative exhibited stronger apoptosis-inducing effect than bufalin in A549 lung cancer cells and lower acute toxicity in mice. PLoS ONE 11: e0159789.
- Lazarov, E., et al. 2020. Comparative analysis of alternating hemiplegia of childhood and rapid-onset dystonia-parkinsonism ATP1A3 mutations reveals functional deficits, which do not correlate with disease severity. Neurobiol. Dis. 143: 105012.
- Arystarkhova, E., et al. 2021. Misfolding, altered membrane distributions, and the unfolded protein response contribute to pathogenicity differences in Na,K-ATPase ATP1A3 mutations. J. Biol. Chem. 296: 100019.

## RESEARCH USE

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



See **Na<sup>+</sup>/K<sup>+</sup>-ATPase α (M7-PB-E9): sc-58628** for Na<sup>+</sup>/K<sup>+</sup>-ATPase α antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.