abcam

ab300507

Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody [EPR25414-249]

Recombinant | RabMAb | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPR25414-249
Purification technique	Affinity purification Protein A
Concentration	0.497 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

WB

Tested

Species	Human
Dilution info	1/1000
Notes	-

Species	Mouse
Dilution info	1/1000
Notes	-

Species	Rat
Dilution info	1/1000
Notes	-

IHC-P

Tested

Species	Human
Dilution info	1/5000
Notes	-

Species	Mouse
Dilution info	1/5000
Notes	-

Species	Rat
Dilution info	1/5000
Notes	-

IHC-Fr

Tested

Species	Mouse
Dilution info	1/500
Notes	-

Species	Rat
Dilution info	1/500
Notes	-

Expected

Species	Human
Dilution info	Use at an assay dependent concentration.
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/50
Notes	-

Species	Mouse
Dilution info	1/50
Notes	-

Expected

Species	Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/500
Notes	-

Species	Mouse
Dilution info	1/500
Notes	-

Expected

Species	Rat
Dilution info	Use at an assay dependent concentration.
Notes	-

IP

Not recommended

Species	Human, Mouse, Rat
Dilution info	-
Notes	-

Target data

See full target information ATP1A1

Function	This is the catalytic component of the active enzyme, which catalyzes the hydrolysis of ATP coupled with the exchange of sodium and potassium ions across the plasma membrane. This action creates the electrochemical gradient of sodium and potassium ions, providing the energy for active transport of various nutrients (PubMed:29499166, PubMed:30388404). Could also be part of an osmosensory signaling pathway that senses body-fluid sodium levels and controls salt intake behavior as well as voluntary water intake to regulate sodium homeostasis (By similarity).

Storage

Shipped at conditions	Conditional Ambient
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Notes

Patented technology
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	The sodium/potassium-transporting ATPase also known as Na+/K+ ATPase or the pan alpha subunit functions as an essential pump that exchanges three sodium ions out of the cell for two potassium ions into the cell using ATP as the energy source. This process maintains the electrochemical gradients of sodium and potassium across the plasma membrane. The ATPase has a molecular mass of approximately 112 kDa and consists of multiple isoforms including ATP1A1 ATP1A2 ATP1A3 and ATP1A4 expressed in various tissues such as the brain kidney and heart.
Biological function summary	The Na+/K+ ATPase is part of a larger complex that influences numerous cellular activities including cell volume regulation and secondary active transport. It helps maintain the resting potential of cells and facilitates transport of nutrients and other molecules across cell membranes. This pump's activity is critical for nerve impulse transmission muscle contraction and kidney function tying it to several essential physiological processes.
Pathways	The Na+/K+ ATPase plays a role in key pathways like the cardiac contractility pathway and the neural activity pathway. In the cardiac contractility pathway it influences heart muscle contraction and is functionally related to proteins such as phospholamban and SERCA. In neural activity it helps generate action potentials and is closely related to the function of voltage-gated sodium channels.
Associated diseases and disorders	Mutations or malfunctions in the Na+/K+ ATPase can relate to conditions like familial hemiplegic migraine and cardiac arrhythmias. In familial hemiplegic migraine changes in ATP1A2 have been implicated influencing ion homeostasis in neurons. In cardiac arrhythmias ATP1A1 has connections to abnormal ion gradients affecting the rhythm of heartbeats and linking it to other proteins involved in cardiac excitability.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

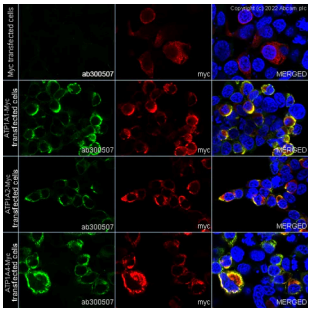
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

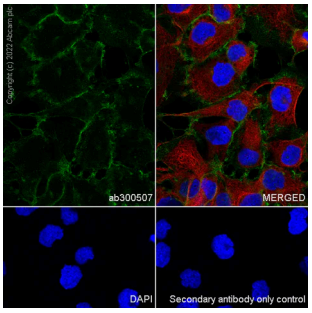
16 product images



Immunocytochemistry/ Immunofluorescence - Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody [EPR25414-249] (ab300507)

Sodium/potassium-transporting ATPase (pan alpha subunit) Immunocytochemistry/ Immunofluorescence staining of HEK293T (human embryonic kidney epithelial cell) using rabbit Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody

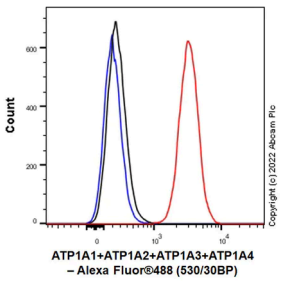
Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% TritonX-100 permeabilized HEK293T (human embryonic kidney epithelial cell) cells labelling ATP1A1+ATP1A2+ATP1A3+ATP1A4 with ab300507 at 1/500 (1.076 ug/ml) dilution, followed by ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed antibody at 1/1000 2ug/mL dilution (Green). Confocal image showing cytoplasmic and membranous staining in HEK-293T cells transfected with human ATP1A1 or ATP1A2 or ATP1A4 expression vector containing a myc tag. is observed. Myc-Tag Mouse mAb (Alexa Fluor® 647) was used to counterstain tubulin at 1/100 0.38ug/ml dilution (Red). The Nuclear counterstain was DAPI (Blue).
Secondary antibody only control: Secondary antibody is ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 2ug/mL dilution.



Immunocytochemistry/ Immunofluorescence - Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody [EPR25414-249] (ab300507)

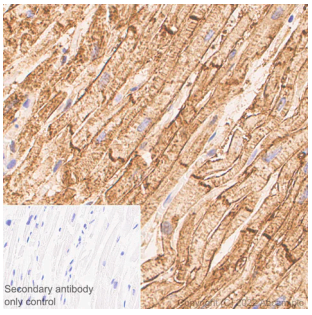
Sodium/potassium-transporting ATPase (pan alpha subunit) Immunocytochemistry/ Immunofluorescence staining of A-172 (human brain glioblastoma) using rabbit Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody

Immunofluorescent analysis of 100% methanol-fixed, 0.1% TritonX-100 permeabilized A-172 (human brain glioblastoma) cells labelling ATP1A1+ATP1A2+ATP1A3+ATP1A4 with ab300507 at 1/50 (10.76 ug/ml) dilution, followed by ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed antibody at 1/1000 2ug/mL dilution (Green). Confocal image showing membranous and weak cytoplasmic staining in A-172 cell line is observed. ab195889 Anti-alpha Tubulin mouse monoclonal antibody - Microtubule Marker (Alexa Fluor® 594) was used to counterstain tubulin at 1/200 2.5ug/ml dilution (Red). The Nuclear counterstain was DAPI (Blue).
Secondary antibody only control: Secondary antibody is ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 2ug/mL dilution.



Flow Cytometry (Intracellular) - Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody [EPR25414-249] (ab300507)

Sodium/potassium-transporting ATPase (pan alpha subunit) Flow Cytometry (Intracellular) staining using rabbit Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody

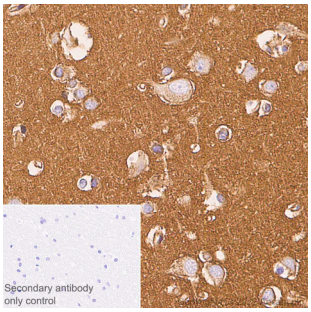


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody [EPR25414-249] - Plasma Membrane Loading Control (ab300507)

Sodium/potassium-transporting ATPase (pan alpha subunit) Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Human cardiac muscle using rabbit Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody

Immunohistochemical analysis of paraffin-embedded Human cardiac muscle tissue labeling ATP1A1+ATP1A2+ATP1A3+ATP1A4 with ab300507 at 1/5000 (0.108 ug/ml) followed by a ready to use LeicaDS9800 (Bond☒ Polymer Refine Detection) was used. Positive staining on human cardiac muscle, particularly on the intercalated discs (PMID: 26109061).The section was incubated with ab300507 for 30 mins at room temperature. The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin.
Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond☒ Polymer Refine Detection) was used.

Heat mediated antigen retrieval with Citrate buffer (pH 6.0, epitope retrieval solution 1) for 20 mins



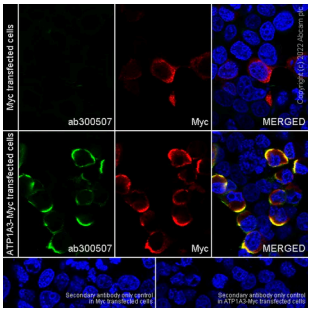
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody [EPR25414-249] - Plasma Membrane Loading Control (ab300507)

Sodium/potassium-transporting ATPase (pan alpha subunit) Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Human cerebrum using rabbit Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody

Immunohistochemical analysis of paraffin-embedded Human cerebrum tissue labeling ATP1A1+ATP1A2+ATP1A3+ATP1A4 with ab300507 at 1/5000 (0.108 ug/ml) followed by a ready to use LeicaDS9800 (Bond☒ Polymer Refine Detection) was used. Positive staining on human cerebrum.The section was incubated with ab300507 for 30 mins at room temperature.The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin.
Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond☒ Polymer Refine Detection) was used.

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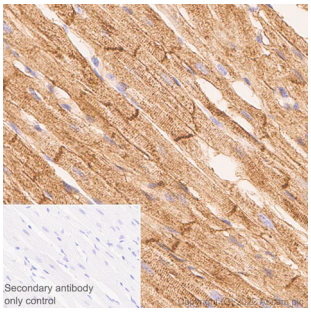
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Immunocytochemistry/ Immunofluorescence - Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody [EPR25414-249] (ab300507)

Sodium/potassium-transporting ATPase (pan alpha subunit) Immunocytochemistry/ Immunofluorescence staining of HEK293T (human embryonic kidney epithelial cell) using rabbit Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody

Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% TritonX-100 permeabilized HEK293T (human embryonic kidney epithelial cell) cells labelling ATP1A1+ATP1A2+ATP1A3+ATP1A4 with ab300507 at 1/500 (1.076 ug/ml) dilution, followed by ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed antibody at 1/1000 2ug/mL dilution (Green). Confocal image showing cytoplasmic and membranous staining in HEK-293T cells transfected with human ATP1A3 expression vector containing a myc tag. is observed. Myc-Tag Mouse mAb (Alexa Fluor® 647) was used to counterstain tubulin at 1/100 0.38ug/ml dilution (Red). The Nuclear counterstain was DAPI (Blue).
Secondary antibody only control: Secondary antibody is ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 2ug/mL dilution.



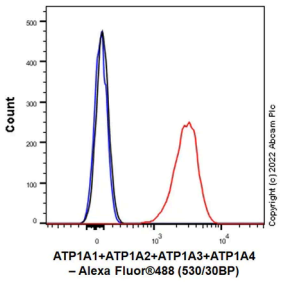
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody [EPR25414-249] - Plasma Membrane Loading Control (ab300507)

Sodium/potassium-transporting ATPase (pan alpha subunit) Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Rat cardiac muscle using rabbit Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody

Immunohistochemical analysis of paraffin-embedded Rat cardiac muscle tissue labeling ATP1A1+ATP1A2+ATP1A3+ATP1A4 with ab300507 at 1/5000 (0.108 ug/ml) followed by a ready to use LeicaDS9800 (Bond☒ Polymer Refine Detection) was used. Positive staining on rat cardiac muscle, particularly on the intercalated discs. The section was incubated with ab300507 for 30

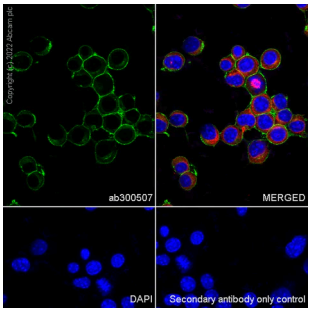
mins at room temperature. The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin.
Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond☒ Polymer Refine Detection) was used.

Heat mediated antigen retrieval with Citrate buffer (pH 6.0, epitope retrieval solution 1) for 20 mins



Flow Cytometry (Intracellular) - Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody [EPR25414-249] (ab300507)

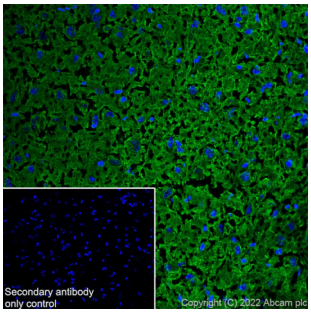
Sodium/potassium-transporting ATPase (pan alpha subunit) Flow Cytometry (Intracellular) staining using rabbit Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody



Immunocytochemistry/ Immunofluorescence - Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody [EPR25414-249] (ab300507)

Sodium/potassium-transporting ATPase (pan alpha subunit) Immunocytochemistry/ Immunofluorescence staining of Neuro-2a (mouse neuroblastoma neuroblast) using rabbit Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody

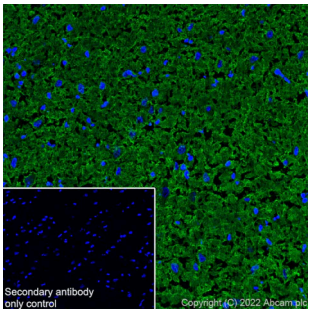
Immunofluorescent analysis of 100% methanol-fixed, 0.1% TritonX-100 permeabilized Neuro-2a (mouse neuroblastoma neuroblast) cells labelling ATP1A1+ATP1A2+ATP1A3+ATP1A4 with ab300507 at 1/50 (10.76 ug/ml) dilution, followed by ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed antibody at 1/1000 2ug/mL dilution (Green). Confocal image showing membrane and weak cytoplasm staining in Neuro-2a cell line is observed. ab195889 Anti-alpha Tubulin mouse monoclonal antibody - Microtubule Marker (Alexa Fluor® 594) was used to counterstain tubulin at 1/200 2.5ug/ml dilution (Red). The Nuclear counterstain was DAPI (Blue).
Secondary antibody only control: Secondary antibody is ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 2ug/mL dilution.



Immunohistochemistry (Frozen sections) - Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody [EPR25414-249] (ab300507)

Sodium/potassium-transporting ATPase (pan alpha subunit) Immunohistochemistry (Frozen sections) staining of Mouse cerebrum (fresh) using rabbit Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody

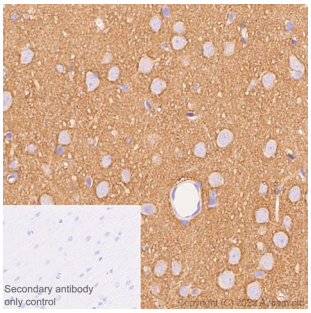
Immunohistochemical analysis of 4% PFA-fixed, 0.2% Triton X-100 permeabilized frozen Mouse cerebrum (fresh) tissue labeling ATP1A1+ATP1A2+ATP1A3+ATP1A4 with ab300507 at 1/500 (1.076 ug/ml) dilution followed by ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 2 ug/mL dilution (Green). Positive staining on mouse cerebrum is observed. The nuclear counterstain was DAPI (Blue).
Secondary antibody control: Secondary antibody is ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 2 ug/mL dilution.



Immunohistochemistry (Frozen sections) - Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody [EPR25414-249] (ab300507)

Sodium/potassium-transporting ATPase (pan alpha subunit) Immunohistochemistry (Frozen sections) staining of Rat cerebrum (fresh) using rabbit Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody

Immunohistochemical analysis of 4% PFA-fixed, 0.2% Triton X-100 permeabilized frozen Rat cerebrum (fresh) tissue labeling ATP1A1+ATP1A2+ATP1A3+ATP1A4 with ab300507 at 1/500 (1.076 ug/ml) dilution followed by ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 2 ug/mL dilution (Green). Positive staining on rat cerebrum is observed. The nuclear counterstain was DAPI (Blue).
Secondary antibody control: Secondary antibody is ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 2 ug/mL dilution.



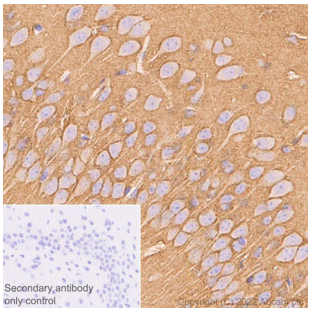
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody [EPR25414-249] - Plasma Membrane Loading Control (ab300507)

Sodium/potassium-transporting ATPase (pan alpha subunit) Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of rat cerebrum using rabbit Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody

Immunohistochemical analysis of paraffin-embedded Rat cerebrum tissue labeling ATP1A1+ATP1A2+ATP1A3+ATP1A4 with ab300507 at 1/5000 (0.108 ug/ml) followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection) was used. Positive staining on rat cerebrum. The section was incubated with ab300507 for 30 mins at room temperature. The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin.

Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection) was used.

Heat mediated antigen retrieval with Citrate buffer (pH 6.0, epitope retrieval solution 1) for 20 mins.



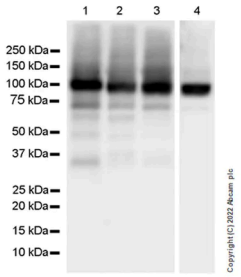
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Sodium/potassium-transporting ATPase (pan alpha subunit) Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Mouse cerebrum using rabbit Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody

Immunohistochemical analysis of paraffin-embedded Mouse cerebrum tissue labeling ATP1A1+ATP1A2+ATP1A3+ATP1A4 with ab300507 at 1/5000 (0.108 ug/ml) followed by a ready to use LeicaDS9800 (Bond☒ Polymer Refine Detection) was used. Positive staining on mouse cerebrum (PMID: 32301109).The section was incubated with ab300507 for 30 mins at room temperature. The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin.

Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond☒ Polymer Refine Detection) was used.

Heat mediated antigen retrieval with Citrate buffer (pH 6.0, epitope retrieval solution 1) for 20 mins



Western blot - Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody [EPR25414-249] (ab300507)

Sodium/potassium-transporting ATPase (pan alpha subunit) Western blot staining using rabbit Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody

Blocking and diluting buffer and concentration: 5% NFDM/TBST The samples are unboiled.
All lanes:
Western blot - Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody [EPR25414-249] (ab300507) at 1/5000 dilution

Lane 1:
Human cerebellum tissue lysate

Lane 2:
Mouse brain tissue lysate

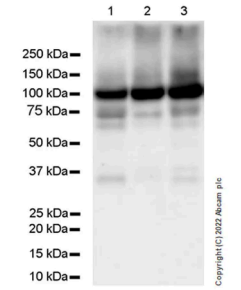
Lane 3:
Rat brain tissue lysate

Lane 4:
Neuro-2a (mouse neuroblastoma neuroblast) whole cell lysate

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Observed band size: 110 kDa



Western blot - Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody [EPR25414-249] (ab300507)

Sodium/potassium-transporting ATPase (pan alpha subunit) Western blot staining using rabbit Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody

Blocking and diluting buffer and concentration: 5% NFDM/TBST The samples are unboiled.
All lanes:
Western blot - Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody [EPR25414-249] (ab300507) at 1/1000 dilution

Lane 1:
A-172 (human brain glioblastoma) whole cell lysate

Lane 2:
SH-SY5Y (human neuroblastoma epithelial cell) whole cell lysate

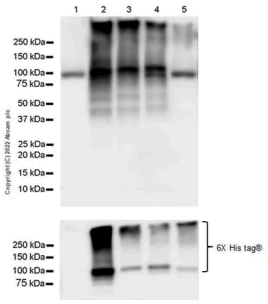
Lane 3:
U-87 MG (human glioblastoma-astrocytoma epithelial cell) whole cell lysate

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Observed band size: 110 kDa

Exposure time: 48s



Western blot - Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody [EPR25414-249] (ab300507)

Sodium/potassium-transporting ATPase (pan alpha subunit) Western blot staining using rabbit Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody

Blocking and diluting buffer and concentration: 5% NFDM/TBST The samples are unboiled.Bands above 110 kDa are aggregates of Na+/K+-ATPase alpha subunits.
All lanes:
Western blot - Anti-Sodium/potassium-transporting ATPase (pan alpha subunit) antibody [EPR25414-249] (ab300507) at 1/1000 dilution

Lane 1:
HEK-293 (human embryonic kidney) transfected with an empty vector (vector control), containi a myc-His-tag®, whole cell lysate 10

Lane 2:
HEK-293 transfected with ATP1A1 (WT) expression vector containi a myc-His-tag®, whole cell lysate 10

Lane 3:
HEK-293 transfected with ATP1A2 (WT) expression vector containi a myc-His-tag®, whole cell lysate 10

Lane 4:
HEK-293 transfected with ATP1A3 (WT) expression vector containi a myc-His-tag®, whole cell lysate 10

Lane 5:
HEK-293 transfected with ATP1A4 (WT) expression vector containi a myc-His-tag®, whole cell lysate 10

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Observed band size: 110 kDa

Exposure time: 3s

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.