abcam

ab320749

Anti-SERCA2 ATPase antibody [RM1176]

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	Multiclonal
Immunogens	The exact immunogen used to generate this antibody is proprietary information.
Clone number	RM1176
Purification technique	Affinity purification Protein A
Concentration	0.504 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-Fr

Tested

Species	Mouse
Dilution info	1/100
Notes	-

Species	Rat

Dilution info	1/100
Notes	-

Expected

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

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	1/2000
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Species	Mouse
Dilution info	1/2000
Notes	

	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Species	Rat
Dilution info	1/2000
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/10
Notes	-

Species	Mouse
Dilution info	1/10
Notes	-

Species	Rat
Dilution info	1/10
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/100
Notes	-

Species	Mouse
Dilution info	1/100
Notes	-

Species	Rat
Dilution info	1/100

Notes	-

IP

Tested

Species	Human
Dilution info	1/30
Notes	-

Species	Mouse
Dilution info	1/30
Notes	-

Species	Rat
Dilution info	1/30
Notes	-

Target data

See full target information ATP2A2

Function

This magnesium-dependent enzyme catalyzes the hydrolysis of ATP coupled with the translocation of calcium from the cytosol to the sarcoplasmic reticulum lumen (PubMed:12542527, PubMed:16402920). Involved in autophagy in response to starvation. Upon interaction with VMP1 and activation, controls ER-isolation membrane contacts for autophagosome formation (PubMed:28890335). Also modulates ER contacts with lipid droplets, mitochondria and endosomes (PubMed:28890335). In coordination with FLVCR2 mediates heme-stimulated switching from mitochondrial ATP synthesis to thermogenesis (By similarity). Isoform 2. Involved in the regulation of the contraction/relaxation cycle. Acts as a regulator of TNFSF11-mediated Ca(2+) signaling pathways via its interaction with TMEM64 which is critical for the TNFSF11-induced CREB1 activation and mitochondrial ROS generation necessary for proper osteoclast generation. Association between TMEM64 and SERCA2 in the ER leads to cytosolic Ca(2+) spiking for activation of NFATC1 and production of mitochondrial ROS, thereby triggering Ca(2+) signaling cascades that promote osteoclast differentiation and activation.

Storage

Shipped at conditions	Blue Ice

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

What are recombinant multiclonals?
Recombinant multiclonals are a mixture of recombinant antibodies co-expressed from a library of heavy and light chains. They offer several advantages including:

- The sensitivity of polyclonal antibodies by recognising multiple epitopes
- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

View our range of recombinant multiclonal antibodies.

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.

Supplementary info

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

Activity summary	SERCA2 ATPase also known as sarco/endoplasmic reticulum Ca^{2+}-ATPase 2 or ATP2A2 is an important pump responsible for the active transport of calcium ions from the cytosol into the sarcoplasmic or endoplasmic reticulum. This protein has a molecular weight of 110 kDa. It plays an important role in maintaining calcium homeostasis in muscle cells and is expressed in various tissues but particularly in cardiac and skeletal muscle. This pump uses energy from ATP hydrolysis to move calcium ions against their concentration gradient.
Biological function summary	The proper regulation of calcium ion levels by SERCA2 ATPase is essential for muscle contraction and relaxation cycles. SERCA2 exists as a part of the complex machinery in muscle cells closely interacting with phospholamban in the cardiac muscle to regulate its activity. Efficient functioning of SERCA2 directly influences calcium ion storage in the sarcoplasmic reticulum affecting muscle physiology and performance.

Pathways	The involvement of SERCA2 ATPase in the calcium signaling pathway and excitation-contraction coupling is significant. The protein's function is intimately linked with RYR2 (ryanodine receptor 2) as they both participate in the regulation of calcium ion flow in muscle cells. This interaction is necessary for the proper release and uptake of calcium ions during muscle contraction and relaxation cycles.
Associated diseases and disorders	SERCA2 ATPase mutations or dysregulation can lead to cardiac diseases such as heart failure and muscle disorders like Brody myopathy. Heart failure often results from impaired calcium handling due to disruptions in the interaction between SERCA2 and associated proteins like phospholamban. Abnormalities in SERCA2 expression or function can lead to either excessive storage or insufficient release of calcium contributing to the pathological state of these conditions.

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

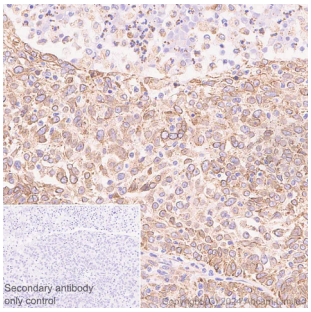
We do not recommend this combination. It is not covered by our product promise.

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.

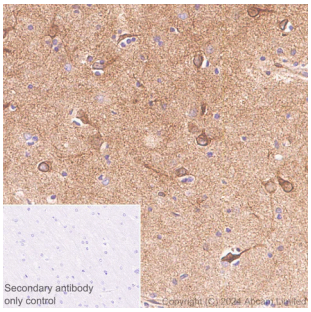
Full details and terms and conditions can be found here:
Terms & Conditions.

21 product images



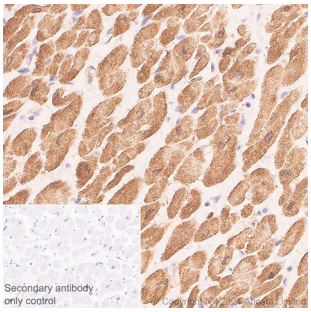
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Immunohistochemical analysis of paraffin-embedded Human lung carcinoma tissue labeling SERCA2 ATPase with ab320749 at 1/5000 (0.101 ug/ml) dilution, followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Positive staining on human lung carcinoma. The section was incubated with ab320749 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). Heat mediated antigen retrieval was performed with Citrate buffer (pH 6.0, Epitope Retrieval Solution 1) for 10 mins



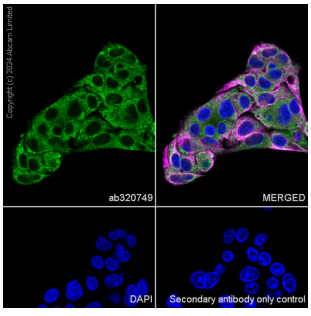
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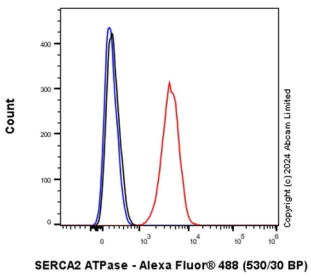
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Immunohistochemical analysis of paraffin-embedded Human cardiac muscle tissue labeling SERCA2 ATPase with ab320749 at 1/5000 (0.101 ug/ml) dilution, followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Positive staining on human cardiac muscle. The section was incubated with ab320749 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). Heat mediated antigen retrieval was performed with Citrate buffer (pH 6.0, Epitope Retrieval Solution 1) for 10 mins



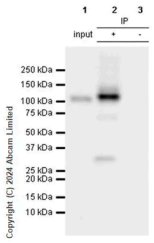
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Flow Cytometry (Intracellular) - Anti-SERCA2 ATPase antibody [RM1176] (ab320749)

Flow cytometric analysis of 4% paraformaldehyde fixed 90% methanol permeabilized HepG2 (human hepatocellular carcinoma epithelial cell) cells labelling SERCA2 ATPase with ab320749 at 1/10 dilution (0.01ug) (Red) compared with a Rabbit monoclonal IgG (ab172730) (Black) isotype control and an unlabelled control (cells without incubation with primary antibody and secondary antibody) (Blue). Goat Anti-Rabbit IgG (Alexa Fluor® 488, ab150081) at 1/5000 dilution was used as the secondary antibody.



Immunoprecipitation - Anti-SERCA2 ATPase antibody [RM1176] (ab320749)

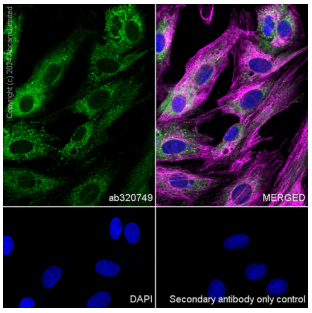
SERCA2 ATPase was immunoprecipitated from 0.35 mg HepG2 (human hepatocellular carcinoma epithelial cell) whole cell lysate with ab320749 at 1/30 dilution (2ug in 0.35mg lysates). Western blot was performed on the immunoprecipitate using ab320749 at 1/1000 dilution. VeriBlot for IP secondary antibody(HRP)(ab131366) was used at 1/5000 dilution. Lane 1: HepG2 whole cell lysate Lane 2: ab320749 IP in HepG2 whole cell lysate Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab320749 in HepG2 whole cell lysate Blocking and dilution buffer and concentration: 5% NFDM/TBST. Exposure time: 3 seconds. Samples are non-boiled as boiling may cause protein aggregation.
All lanes:
Immunoprecipitation - Anti-SERCA2 ATPase antibody [RM1176] (ab320749) at 1/30 dilution

All lanes:
HepG2 (human hepatocellular carcinoma epithelial cell) whole cell lysate

Secondary

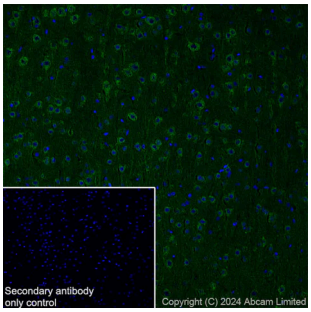
All lanes:
Immunoprecipitation - VeriBlot for IP Detection Reagent (HRP) (ab131366) at 1/5000 dilution

Exposure time: 3s



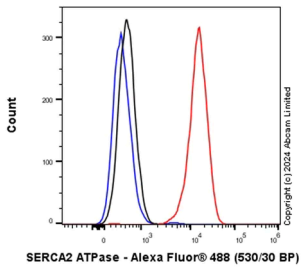
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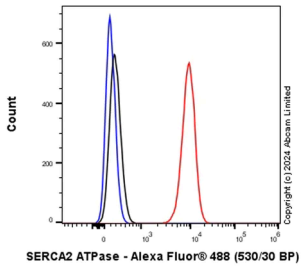
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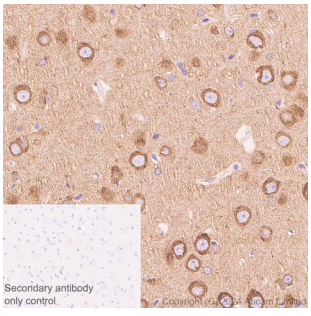
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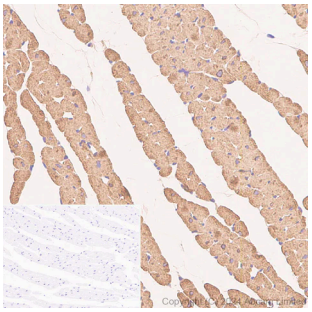
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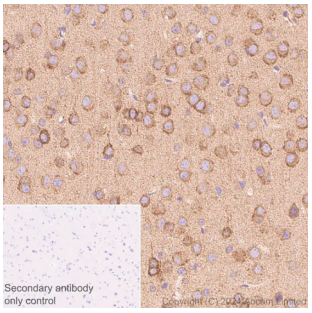
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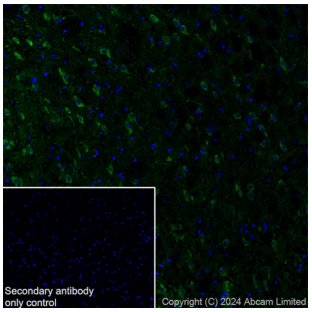
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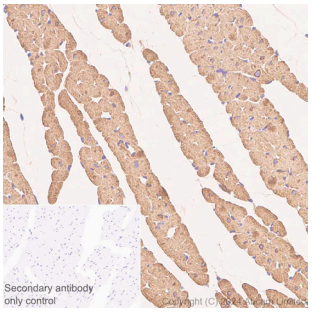
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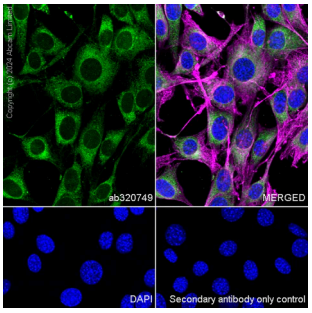
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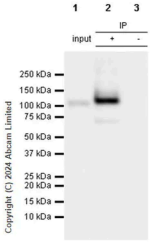
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Immunoprecipitation - Anti-SERCA2 ATPase antibody [RM1176] (ab320749)

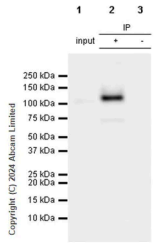
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All lanes:
Immunoprecipitation - Anti-SERCA2 ATPase antibody [RM1176] (ab320749) at 1/30 dilution

All lanes:
NIH/3T3 (mouse embryonic fibroblast) whole cell lysate

Secondary

All lanes:
Immunoprecipitation - VeriBlot for IP Detection Reagent (HRP) (ab131366) at 1/5000 dilution

Exposure time: 3s



Immunoprecipitation - Anti-SERCA2 ATPase antibody [RM1176] (ab320749)

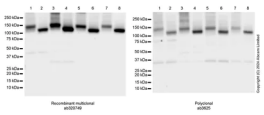
SERCA2 ATPase was immunoprecipitated from 0.35 mg H9c2 (2-1) (rat cardiomyoblast) whole cell lysate with ab320749 at 1/30 dilution (2ug in 0.35mg lysates). Western blot was performed on the immunoprecipitate using ab320749 at 1/1000 dilution. VeriBlot for IP secondary antibody(HRP) (ab131366) was used at 1/5000 dilution. Lane 1: H9c2 (2-1) whole cell lysate Lane 2: ab320749 IP in H9c2 (2-1) whole cell lysate Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab320749 in H9c2 (2-1) whole cell lysate Blocking and dilution buffer and concentration: 5% NFDM/TBST. Exposure time: 3 seconds. Samples are non-boiled as boiling may cause protein aggregation.
All lanes:
Immunoprecipitation - Anti-SERCA2 ATPase antibody [RM1176] (ab320749) at 1/30 dilution

All lanes:
H9c2 (2-1) (rat cardiomyoblast) whole cell lysate

Secondary

All lanes:
Immunoprecipitation - VeriBlot for IP Detection Reagent (HRP) (ab131366) at 1/5000 dilution

Exposure time: 3s



Western blot - Anti-SERCA2 ATPase antibody [RM1176] (ab320749)

Blocking and diluting buffer and concentration: 5% NFDM/TBST. Anti-SERCA2 ATPase antibody (ab320749, Left) staining at 1/1000 dilution showed similar expression profile/ molecular weight with Anti-SERCA2 ATPase antibody (ab3625, Right) at 1/1000 dilution. Suggest to use non-boiled samples, as boiling process could cause membrane protein aggregates (PMID: 16023741 and PMID: 8670158).
All lanes:
Western blot - Anti-SERCA2 ATPase antibody [RM1176] (ab320749) at 1/1000 dilution

Lane 1:
HeLa (human cervical adenocarcinoma epithelial cell) whole cell lysate boiled at 20 µg

Lane 2:
HeLa (human cervical adenocarcinoma epithelial cell) whole cell lysate unboiled at 20 µg

Lane 3:
HepG2 (human hepatocellular carcinoma epithelial cell) whole cell lysate boiled at 20 µg

Lane 4:
HepG2 (human hepatocellular carcinoma epithelial cell) whole cell lysate unboiled at 20 µg

Lane 5:
NIH/3T3 (mouse embryonic fibroblast) whole cell lysate boiled at 20 µg

Lane 6:
NIH/3T3 (mouse embryonic fibroblast) whole cell lysate unboiled at 20 µg

Lane 7:
H9c2 (2-1) (rat cardiomyoblast) whole cell lysate boiled at 20 µg

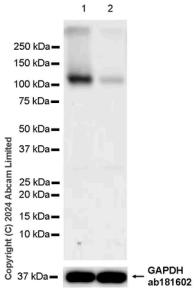
Lane 8:
H9c2 (2-1) (rat cardiomyoblast) whole cell lysate unboiled at 20 µg

Secondary

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

Observed band size: 115 kDa, 140 kDa

Exposure time: 26s



Western blot - Anti-SERCA2 ATPase antibody [RM1176] (ab320749)

Blocking and diluting buffer and concentration: 5% NFDM/TBST. In Western blot, Anti-GAPDH antibody [EPR16891] - Loading Control (ab181602) staining at 1/200000 dilution
All lanes:
Western blot - Anti-SERCA2 ATPase antibody [RM1176] (ab320749) at 1/1000 dilution

Lane 1:
HepG2 (human hepatocellar carcinoma epithelial cell) transfected with scrambled siRNA control, whole cell lysate at 20 µg

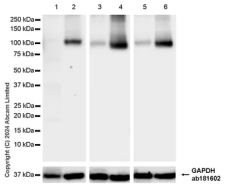
Lane 2:
HepG transfected with siRNA specifically targeting ATPA, whole cell lysate at 20 µg

Secondary

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

Observed band size: 115 kDa, 36 kDa

Exposure time: 37s



Western blot - Anti-SERCA2 ATPase antibody [RM1176] (ab320749)

Blocking and diluting buffer and concentration: 5% NFDM/TBST. Low expression: liver (PMID: 10080178). Samples are non-boiled as boiling may cause protein aggregates. In Western blot, Anti-GAPDH antibody [EPR16891] - Loading Control (ab181602) staining at 1/200000 dilution.
All lanes:
Western blot - Anti-SERCA2 ATPase antibody [RM1176] (ab320749) at 1/1000 dilution

Lane 1:
Human liver tissue lysate at 20 µg

Lane 2:
Human heart tissue lysate at 5 µg

Lane 3:
Mouse liver tissue lysate at 20 µg

Lane 4:
Mouse heart tissue lysate at 5 µg

Lane 5:
Rat liver tissue lysate at 20 µg

Lane 6:
Rat heart tissue lysate at 5 µg

Secondary

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

Observed band size: 115 kDa, 36 kDa

Exposure time: 26s

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