abcam

ab309193

Anti-Arc antibody [EPR24093-90]

Recombinant | RabMAb | KO Validated | 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	EPR24093-90
Purification technique	Affinity purification Protein A
Concentration	0.505 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

WB

Tested

Species	Mouse
Dilution info	1/1000
Notes	-

Species	Rat

Dilution info	1/1000
Notes	-

Not recommended

Species	Human
Dilution info	-
Notes	-

IHC-P

Tested

Species	Mouse
Dilution info	1/500
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Species	Rat
Dilution info	1/500
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Not recommended

Species	Human
Dilution info	-
Notes	-

IHC-Fr

Tested

Species	Mouse
Dilution info	1/50
Notes	-

Species	Rat
Dilution info	1/50
Notes	-

Not recommended

Species	Human
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Rat
Dilution info	1/50
Notes	-

Expected

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

Not recommended

Species	Human
Dilution info	-
Notes	-

ICC/IF

Not recommended

Species	Mouse, Rat, Human
Dilution info	-

Notes	-

Target data

See full target information ARC

Function	Master regulator of synaptic plasticity that self-assembles into virion-like capsids that encapsulate RNAs and mediate intercellular RNA transfer in the nervous system. ARC protein is released from neurons in extracellular vesicles that mediate the transfer of ARC mRNA into new target cells, where ARC mRNA can undergo activity-dependent translation. ARC capsids are endocytosed and are able to transfer ARC mRNA into the cytoplasm of neurons. Acts as a key regulator of synaptic plasticity: required for protein synthesis-dependent forms of long-term potentiation (LTP) and depression (LTD) and for the formation of long-term memory. Regulates synaptic plasticity by promoting endocytosis of AMPA receptors (AMPARs) in response to synaptic activity: this endocytic pathway maintains levels of surface AMPARs in response to chronic changes in neuronal activity through synaptic scaling, thereby contributing to neuronal homeostasis. Acts as a postsynaptic mediator of activity-dependent synapse elimination in the developing cerebellum by mediating elimination of surplus climbing fiber synapses. Accumulates at weaker synapses, probably to prevent their undesired enhancement. This suggests that ARC-containing virion-like capsids may be required to eliminate synaptic material. Required to transduce experience into long-lasting changes in visual cortex plasticity and for long-term memory (By similarity). Involved in postsynaptic trafficking and processing of amyloid-beta A4 (APP) via interaction with PSEN1 (By similarity). In addition to its role in synapses, also involved in the regulation of the immune system: specifically expressed in skin-migratory dendritic cells and regulates fast dendritic cell migration, thereby regulating T-cell activation (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 Arc protein also known as Activity-regulated cytoskeleton-associated protein weighs approximately 45 kDa. This protein expresses mainly in the brain specifically in the neurons. It is particularly active in the synaptic regions where it plays a role in synaptic plasticity. The Arc protein belongs to an emerging class of proteins that show similarities with viral proteins. Its structural and functional properties help facilitate the dynamic regulation of synapses and neuronal activity.
Biological function summary	The Arc protein influences synaptic plasticity and memory formation. It does not operate alone; instead it interacts within complexes that regulate synaptic strength. These complexes contain other proteins critical for actin cytoskeleton remodeling which impacts synaptic efficacy. Through these interactions Arc supports the internalization of AMPA receptors playing a role in long-term depression (LTD) and long-term potentiation (LTP) of synapses essential mechanisms for learning and memory.
Pathways	The Arc protein forms integral parts of the synaptic signaling pathways. It connects with the BDNF-TrkB signaling pathway which is important for neuronal development and synaptic modulation. Arc also relates to the mTOR signaling pathway which governs cellular growth and protein synthesis. Through these pathways Arc interacts with proteins like Neuro2a and SynGAP highlighting its comprehensive role in synaptic regulation and plasticity.
Associated diseases and disorders	Arc protein has a connection to neurological disorders such as Alzheimer's disease and schizophrenia. Researchers found altered Arc expression and function in the brains of affected individuals. These disorders show a link to disrupted synaptic plasticity where Arc plays a significant role. Arc connects to other proteins like Neuro-2a and Caspase-3 in the pathology of these conditions indicating potential targets for therapeutic intervention.

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

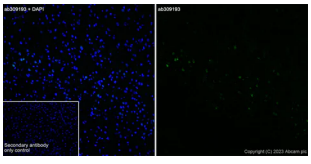
We do not recommend this combination. It is not covered by our product promise.

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.

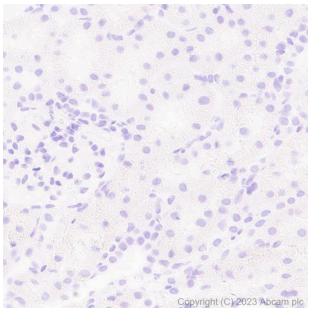
Full details and terms and conditions can be found here:
Terms & Conditions.

12 product images



Immunohistochemistry (Frozen sections) - Anti-Arc antibody [EPR24093-90] (ab309193)

Immunohistochemical analysis of 4% PFA-fixed, 0.2% Triton X-100 permeabilized frozen Mouse cortex (fresh) tissue labeling Arc with ab309193 at 1/50 (10.1 ug/ml) dilution followed by ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 2 ug/mL dilution (Green). Confocal image showing positive staining on mouse cortex. The nuclear counterstain was DAPI (Blue). The section was incubated with ab309193 for 60 mins at room temperature. The section was then mounted using Fluoromount®. The immunostaining was performed on a Leica Biosystems BOND® RX instrument. The image was taken with a confocal microscope (Leica-Microsystems, TCS SP8). 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.

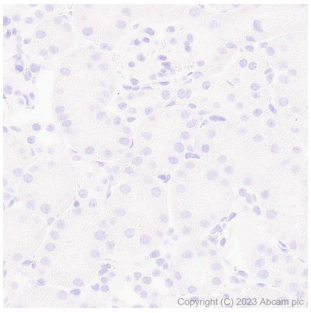


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Arc antibody [EPR24093-90] (ab309193)

Arc Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Rat kidney using rabbit Anti-Arc antibody

Immunohistochemical analysis of paraffin-embedded Rat kidney tissue labeling Arc with ab309193 at 1/500 (1.01 ug/ml) followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Negative control: no staining on rat kidney. The section was incubated with ab309193 for 30 mins at room temperature. The immunostaining was performed on a Leica Biosystems

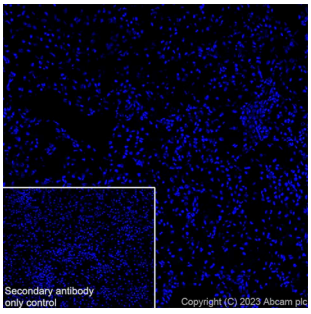
BOND® RX instrument incubate slides with 3% Hydrogen Peroxide for 10 mins at room temperature after secondary antibody incubation to reduce the background Counterstained with Hematoxylin. Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Heat mediated antigen retrieval was performed with Tris-EDTA buffer (pH 9.0, Epitope Retrieval Solution2) for 20 mins.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Arc antibody [EPR24093-90] (ab309193)

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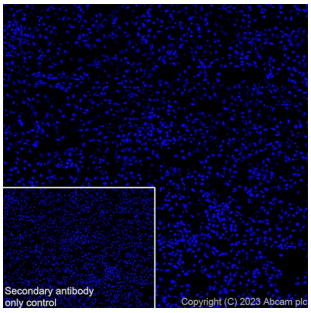
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Immunohistochemistry (Frozen sections) - Anti-Arc antibody [EPR24093-90] (ab309193)

Arc Immunohistochemistry (Frozen sections) staining of Rat kidney (fresh) using rabbit Anti-Arc antibody

Immunohistochemical analysis of 4% PFA-fixed, 0.2% Triton X-100 permeabilized frozen Rat kidney (fresh) tissue labeling Arc with ab309193 at 1/50 (10.1 ug/ml) dilution followed by ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 2 ug/mL dilution (Green). Negative control: confocal image showing no staining on rat kidney (PMID: 12493697). The nuclear counterstain was DAPI (Blue). The section was incubated with ab309193 for 60 mins at room temperature. The section was then mounted using Fluoromount®. The immunostaining was performed on a Leica Biosystems BOND® RX instrument. The image was taken with a confocal microscope (Leica-Microsystems, TCS SP8). 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.

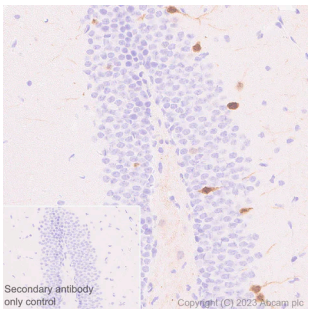


Immunohistochemistry (Frozen sections) - Anti-Arc antibody [EPR24093-90] (ab309193)

Arc Immunohistochemistry (Frozen sections) staining of Mouse kidney (fresh) using rabbit Anti-Arc antibody

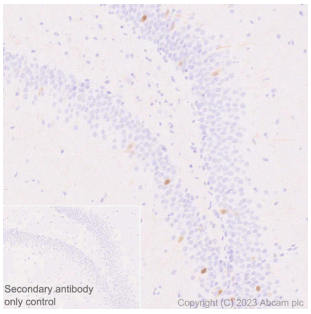
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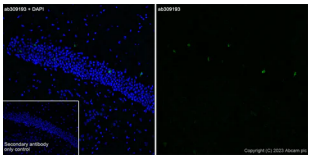
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Arc antibody [EPR24093-90] (ab309193)

Immunohistochemical analysis of paraffin-embedded Mouse hippocampus tissue labeling Arc with ab309193 at 1/500 (1.01 ug/ml) followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Positive staining on mouse hippocampus. The section was incubated with ab309193 for 30 mins at room temperature. The immunostaining was performed on a Leica Biosystems BOND® RX instrument incubate slides with 3% Hydrogen Peroxide for 10 mins at room temperature after secondary antibody incubation to reduce the background 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 Tris-EDTA buffer (pH 9.0, Epitope Retrieval Solution2) for 20 mins.



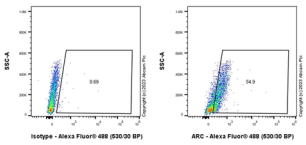
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Immunohistochemical analysis of paraffin-embedded Rat hippocampus tissue labeling Arc with ab309193 at 1/500 (1.01 ug/ml) followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Positive staining on rat hippocampus. The section was incubated with ab309193 for 30 mins at room temperature. The immunostaining was performed on a Leica Biosystems BOND® RX instrument incubate slides with 3% Hydrogen Peroxide for 10 mins at room temperature after secondary antibody incubation to reduce the background 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 Tris-EDTA buffer (pH 9.0, Epitope Retrieval Solution2) for 20 mins.



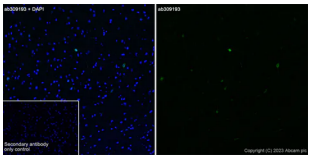
Immunohistochemistry (Frozen sections) - Anti-Arc antibody [EPR24093-90] (ab309193)

Immunohistochemical analysis of 4% PFA-fixed, 0.2% Triton X-100 permeabilized frozen Mouse hippocampus (fresh) tissue labeling Arc with ab309193 at 1/50 (10.1 ug/ml) dilution followed by ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 2 ug/mL dilution (Green). Confocal image showing positive staining on mouse hippocampus. The nuclear counterstain was DAPI (Blue). The section was incubated with ab309193 for 60 mins at room temperature. The section was then mounted using Fluoromount®. The immunostaining was performed on a Leica Biosystems BOND® RX instrument. The image was taken with a confocal microscope (Leica-Microsystems, TCS SP8). 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.



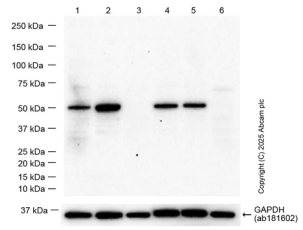
Flow Cytometry (Intracellular) - Anti-Arc antibody [EPR24093-90] (ab309193)

Flow cytometric analysis of 4% paraformaldehyde fixed 90% methanol permeabilized Rat cortex primary neuron cells labeling Arc with ab309193 at 1/50 dilution (1ug)/ Right (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). A Goat Anti-Rabbit IgG (Alexa Fluor® 488, ab150081) at 1/5000 dilution was used as the secondary antibody.



Immunohistochemistry (Frozen sections) - Anti-Arc antibody [EPR24093-90] (ab309193)

Immunohistochemical analysis of 4% PFA-fixed, 0.2% Triton X-100 permeabilized frozen Rat cortex (fresh) tissue labeling Arc with ab309193 at 1/50 (10.1 ug/ml) dilution followed by ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 2 ug/mL dilution (Green). Confocal image showing positive staining on rat cortex. The nuclear counterstain was DAPI (Blue). The section was incubated with ab309193 for 60 mins at room temperature. The section was then mounted using Fluoromount®. The immunostaining was performed on a Leica Biosystems BOND® RX instrument. The image was taken with a confocal microscope (Leica-Microsystems, TCS SP8). 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.



Western blot - Anti-Arc antibody [EPR24093-90] (ab309193)

Arc Western blot staining using rabbit Anti-Arc antibody

Blocking and diluting buffer and concentration: 5% NFDM /TBST

ab181602 was used as a GAPDH loading control at a 1/1000000 dilution.

Negative control: kidney tissue (PMID: 7857651, PMID: 12493697).

All lanes:
Western blot - Anti-Arc antibody [EPR24093-90] (ab309193) at 1/1000 dilution

Lane 1:
Neuro-2a (Mouse neuroblastoma neuroblast) whole cell lysate at 20 µg

Lane 2:
Mouse brain tissue lysate at 20 µg

Lane 3:
Mouse kidney tissue lysate at 20 µg

Lane 4:
Rat brain tissue lysate at 20 µg

Lane 5:
Rat hippocampus tissue lysate at 20 µg

Lane 6:
Rat kidney tissue lysate at 20 µg

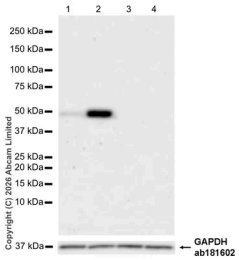
Secondary

All lanes:

Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Observed band size: 45 kDa

Exposure time: 180s



Western blot - Anti-Arc antibody [EPR24093-90] (ab309193)

Arc Western blot staining using rabbit Anti-Arc antibody

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

In Western blot, ab309193 was shown to bind specifically to ARC. Target of interest was observed at 45 kDa in Wild-type Neuro-2a cell lysate (lane 1 and 2) with no signal observed at this size in untreated knockout cell line (lane 3 and 4).

All lanes:
Western blot - Anti-Arc antibody [EPR24093-90] (ab309193) at 1/1000 dilution

Lane 1:
Untreated wild-type Neuro-2a (mouse neuroblastoma neuroblast), whole cell lysate at 20 µg

Lane 2:
Wild-type Neuro-2a treated with heat shock at 45 ☒ for 40minutes then recovery for 9 hours, whole cell lysate at 20 µg

Lane 3:
Untreated ARC knockout Neuro-2a, whole cell lysate at 20 µg

Lane 4:
ARC knockout Neuro-2a treated with heat shock at 45 ☒ for 40minutes then recovery for 9 hours, 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: 45 kDa, 36 kDa

Exposure time: 85s

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