abcam

ab156302

Anti-muscle Actin antibody [EPR8484] - Loading Control

Recombinant RabMAb

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	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	EPR8484
Purification technique	Affinity purification Protein A
Specificity	ab156302 will detect alpha and gamma specific actin from skeletal, cardiac and smooth muscle.
Concentration	0.268 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Mouse

Dilution info	1/250
Notes	The mouse and rat recommendation is based on the WB results. We do not guarantee IHC-P for mouse and rat. For unpurified use at 1/50-1/100 Perform heat-mediated antigen retrieval before commencing with IHC staining protocol.

Species	Rat
Dilution info	1/250
Notes	The mouse and rat recommendation is based on the WB results. We do not guarantee IHC-P for mouse and rat. For unpurified use at 1/50-1/100 Perform heat-mediated antigen retrieval before commencing with IHC staining protocol.

Species	Human
Dilution info	1/250
Notes	The mouse and rat recommendation is based on the WB results. We do not guarantee IHC-P for mouse and rat. For unpurified use at 1/50-1/100 Perform heat-mediated antigen retrieval before commencing with IHC staining protocol.

IP

Tested

Species	Mouse
Dilution info	1/10 - 1/100
Notes	-

Expected

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

WB

Tested

Species	Mouse
Dilution info	1/1000 - 1/10000
Notes	-

Species	Human
Dilution info	1/1000 - 1/10000
Notes	-

Expected

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

ICC/IF

Tested

Species	Mouse
Dilution info	1/100 - 1/250
Notes	-

Species	Human
Dilution info	1/100 - 1/250
Notes	-

Expected

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

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/10 - 1/100
Notes	ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Expected

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

Target data

See full target information ACTA1

Function	Actins are highly conserved proteins that are involved in various types of cell motility and are ubiquitously expressed in all eukaryotic cells.

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	Muscle Actin also known as ACTA1 is a protein that plays a significant role in muscle contraction. It has a molecular weight of approximately 42 kDa. This protein is primarily found in skeletal muscle tissues. Muscle Actin exists in two forms: G-actin a globular monomer and F-actin a filamentous polymer that forms actin filaments. These filaments provide structural support and are involved in muscle contraction through their interaction with myosin.
Biological function summary	Muscle Actin interacts with myosin to facilitate muscle contraction. It is an important component of the thin filament within the sarcomere the basic unit of muscle fiber. Muscle Actin is part of a complex and this complex includes other important proteins like tropomyosin and troponin. These proteins regulate the interaction between actin and myosin enabling the muscle contraction process. Muscle Actin's polymerization and depolymerization dynamics are important for the regulation of cellular movement and structural integrity.
Pathways	Muscle Actin is essential for the actin-myosin contractile machinery in muscle cells which is part of the sarcomere assembly pathway. This process involves other proteins such as myosin heavy chain and tropomyosin which are important for muscle contraction. Another important pathway is the Rho GTPase signaling pathway which controls actin filament assembly and is involved in a variety of cellular processes including muscle contraction and cell motility.
Associated diseases and disorders	Muscle Actin mutations link to certain muscle-related diseases such as nemaline myopathy and congenital myopathies. Nemaline myopathy involves the presence of rod-like structures in muscle fibers and it results from anomalies in actin filaments. Muscle Actin also associates with cardiac muscle conditions when there are mutations affecting cardiac actin structure or function. This reveals the connection between Muscle Actin tropomyosin and troponin in muscle contraction efficiency and structural integrity contributing to these diseases' pathogenesis.

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.

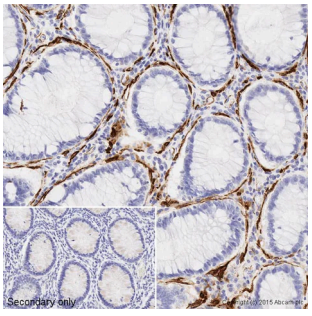
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

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.

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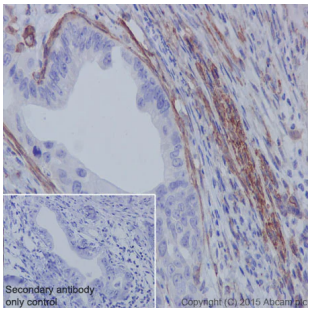
20 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302)

Muscle Actin Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-muscle Actin antibody

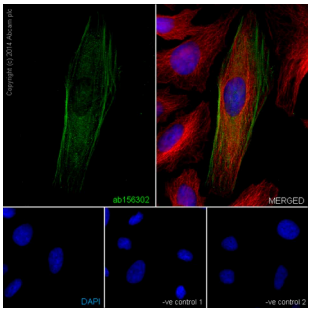
IHC image of unpurified ab156302 staining muscle Actin in human colon* formalin fixed paraffin embedded tissue sections performed on a Leica Bond. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH6 epitope retrieval solution 1) for 20 mins. The section was then incubated with unpurified ab156302 5µg/ml working concentration for 15 mins at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX. No primary antibody was used in the secondary only control (shown on the inset).
For other IHC staining systems (automated and non-automated) customers should optimize variable parameters such as antigen retrieval conditions primary antibody concentration and antibody incubation times.
*Tissue obtained from the Human Research Tissue Bank supported by the NIHR Cambridge Biomedical Research Centre.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302)

Muscle Actin Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-muscle Actin antibody

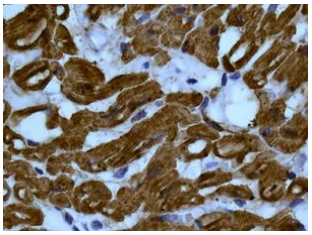
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of human cervical carcinoma tissue labelling muscle Actin with purified ab156302 at a dilution of 1/250. Heat mediated antigen retrieval was performed using Tris/EDTA buffer pH 9. ab97051 a HRP-conjugated goat anti-rabbit IgG (H+L) was used as the secondary antibody (1/500). Negative control using PBS instead of primary antibody. Counterstained with hematoxylin.



Immunocytochemistry/ Immunofluorescence - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302)

Muscle Actin Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-muscle Actin antibody

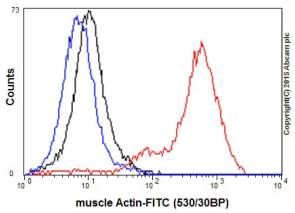
Unpurified ab156302 staining Actin in HeLa cells. The cells were fixed with 100% methanol (5min) and then blocked in 1% BSA/10% normal goat serum/0.3M glycine in 0.1% PBS-Tween for 1h. The cells were then incubated with unpurified ab156302 at 10µg/ml and ab7291 at 1µg/ml overnight at +4°C followed by a further incubation at room temperature for 1h with an goat anti-rabbit Alexa Fluor® 488 secondary (ab150081) at 2 µg/ml (shown in green) and goat anti-mouse Alexa Fluor® 594 secondary (ab150120) at 2 µg/ml (shown in pseudo color red). Nuclear DNA was labelled in blue with DAPI.
Negative controls: 1 – Rabbit primary and anti-mouse secondary antibody; 2 – Mouse primary antibody and anti-rabbit secondary antibody. Controls 1 and 2 indicate that there is no unspecific reaction between primary and secondary antibodies used.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302)

Muscle Actin Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-muscle Actin antibody

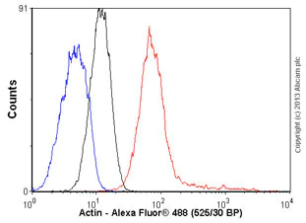
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of human heart muscle tissue labelling muscle Actin with unpurified ab156302 at a dilution of 1/1000.
Heat mediated antigen retrieval was performed before commencing with IHC staining protocol.



Flow Cytometry (Intracellular) - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302)

Muscle Actin Flow Cytometry (Intracellular) staining using rabbit Anti-muscle Actin antibody

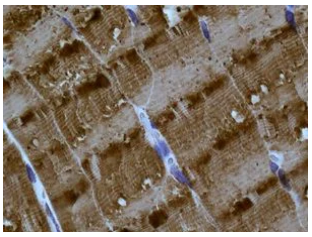
Overlay histogram showing HeLa cells fixed in 4% PFA and stained with purified ab156302 at a dilution of 1 in 50 (red line). The secondary antibody used was FITC goat anti-rabbit at a dilution of 1 in 500. Rabbit monoclonal IgG was used as an isotype control (black line) and cells incubated in the absence of both primary and secondary antibody were used as a negative control (blue line).



Flow Cytometry (Intracellular) - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302)

Muscle Actin Flow Cytometry (Intracellular) staining using rabbit Anti-muscle Actin antibody

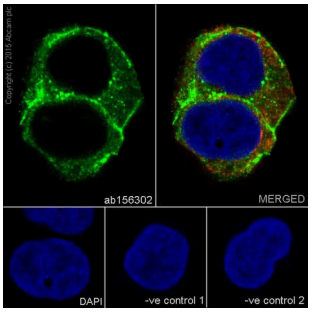
Overlay histogram showing HeLa cells stained with unpurified ab156302 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Triton X-100 for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (unpurified ab156302 1/100 dilution) for 30 min at 22°C. The secondary antibody used was goat anti-rabbit Alexa Fluor® 488 (IgG H&L) (ab150077) at 1/2000 dilution for 30 min at 22°C. Isotype control antibody (black line) was rabbit IgG (monoclonal) (1µg/1x10^6 cells) used under the same conditions. Unlabelled sample (blue line) was also used as a control. Acquisition of >5000 events were collected using a 20mW Argon ion laser (488nm) and 525/30 bandpass filter.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302)

Muscle Actin Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-muscle Actin antibody

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of human skeletal muscle tissue labelling muscle Actin with unpurified ab156302 at a dilution of 1/1000. Heat mediated antigen retrieval was performed before commencing with IHC staining protocol.

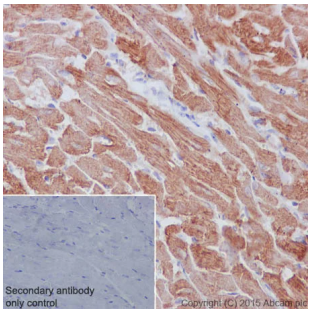


Immunocytochemistry/ Immunofluorescence - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302)

Muscle Actin Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-muscle Actin antibody

Immunocytochemistry/Immunofluorescence analysis of A673 cells labelling muscle Actin with purified ab156302 at 1/100. Cells were fixed with 100% methanol and permeabilized with 0.1% Triton X-100. ab150077 an Alexa Fluor® 488-conjugated goat anti-rabbit IgG (1/1000) was used as the secondary antibody. DAPI (blue) was used as the nuclear counterstain. ab7291 a mouse anti-tubulin (1/1000) and ab150120 an Alexa Fluor® 594-conjugated goat anti-mouse IgG (1/1000) were also used.
Control 1: primary antibody (1/100) and secondary antibody ab150120 an Alexa Fluor® 594-conjugated goat anti-mouse IgG (1/1000).

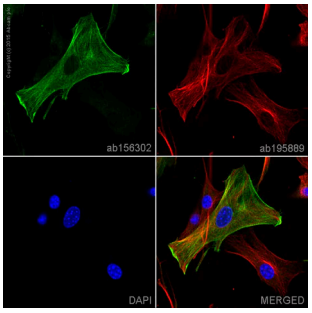
Control 2: ab7291 (1/1000) and secondary antibody ab150077 an Alexa Fluor® 488-conjugated goat anti-rabbit IgG (1/1000).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302)

Muscle Actin Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-muscle Actin antibody

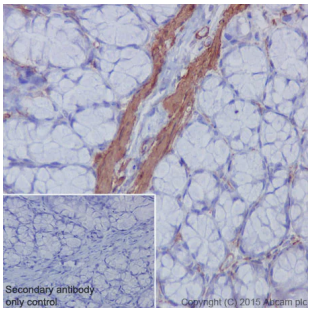
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of mouse cardiac muscle tissue labelling muscle Actin with purified ab156302 at a dilution of 1/250. Heat mediated antigen retrieval was performed using Tris/EDTA buffer pH 9. ab97051 a HRP-conjugated goat anti-rabbit IgG (H+L) was used as the secondary antibody (1/500). Negative control using PBS instead of primary antibody. Counterstained with hematoxylin.



Immunocytochemistry/ Immunofluorescence - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302)

Muscle Actin Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-muscle Actin antibody

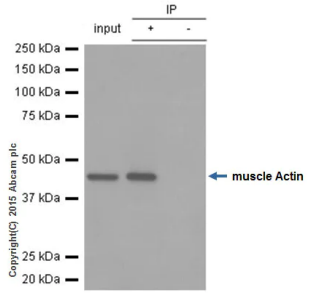
Unpurified ab156302 staining Actin in NIH3T3 cells. The cells were fixed with 100% methanol (5min) permeabilized with 0.1% Triton X-100 for 5 minutes and then blocked in 1% BSA/10% normal goat serum/0.3M glycine in 0.1% PBS-Tween for 1h. The cells were then incubated with unpurified ab156302 at 5µg/ml and ab195889 at 1/250 dilution (shown in pseudo color red) overnight at +4°C followed by a further incubation at room temperature for 1h with an goat anti-rabbit Alexa Fluor® 488 secondary (ab150081) at 2 µg/ml (shown in green). Nuclear DNA was labelled in blue with DAPI.
Image was taken with a confocal microscope (Leica-Microsystems TCS SP8).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302)

Muscle Actin Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-muscle Actin antibody

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of rat colon tissue labelling muscle Actin with purified ab156302 at a dilution of 1/250. Heat mediated antigen retrieval was performed using Tris/EDTA buffer pH 9. ab97051 a HRP-conjugated goat anti-rabbit IgG (H+L) was used as the secondary antibody (1/500). Negative control using PBS instead of primary antibody. Counterstained with hematoxylin.



Immunoprecipitation - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302)

ab156302 (purified) at 1/20 immunoprecipitating muscle Actin in NIH/3T3 whole cell lysate.
Lane 1 (input): NIH/3T3 whole cell lysate (10µg)

Lane 2 (+): ab156302 + NIH/3T3 whole cell lysate.

Lane 3 (-): Rabbit monoclonal IgG (ab172730) instead of ab156302 in NIH/3T3 whole cell lysate.

For western blotting, VeriBlot for IP Detection Reagent (HRP) (ab131366), was used for detection at 1/10,000 dilution.

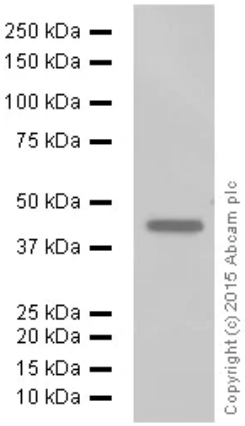
Blocking buffer and concentration: 5% NFDM/TBST.

Diluting buffer and concentration: 5% NFDM /TBST.

All lanes:
Immunoprecipitation - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302)

Predicted band size: 42 kDa

Observed band size: 42 kDa



Western blot - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302)

Muscle Actin Western blot staining of Human stomach tissue lysate using rabbit Anti-muscle Actin antibody

Blocking and dilution buffer: 5% NFDM /TBST.
All lanes:
Western blot - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302) at 1/10000 dilution

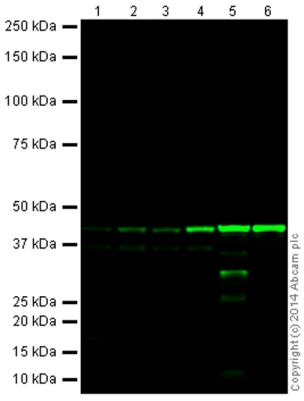
All lanes:
Human stomach tissue lysate at 10 µg

Secondary

All lanes:
HRP-conjugated goat anti-rabbit IgG (specific to the non-reduced form of IgG) at 1/10000 dilution

Predicted band size: 42 kDa

Observed band size: 42 kDa



Western blot - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302)

Muscle Actin Western blot staining using rabbit Anti-muscle Actin antibody

This blot was produced using a 4-12% Bis-tris gel under the MOPS buffer system. The gel was run at 200V for 50 minutes before being transferred onto a Nitrocellulose membrane at 30V for 70 minutes. The membrane was then blocked for an hour using Licor blocking buffer before being incubated with ab156302 overnight at 4°C. Antibody binding was detected using ab175781 at a 1/10,000 dilution for 1hr at room temperature and then imaged using the Licor Odyssey CLx. Secondary antibody - goat anti-rabbit Alexa Fluor® 790 (ab175781).

All lanes:
Western blot - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302) at 1/1000 dilution

Lane 1:
A431 (Human epithelial carcinoma cell line) Whole Cell Lysate at 20 µg

Lane 2:
HEK293 (Human embryonic kidney cell line) Whole Cell Lysate at 20 µg

Lane 3:
MCF7 (Human breast adenocarcinoma cell line) Whole Cell Lysate at 20 µg

Lane 4:
HeLa (Human epithelial carcinoma cell line) Whole Cell Lysate at 20 µg

Lane 5:
Skeletal Muscle (Human) Tissue Lysate - adult normal tissue at 20 µg

Lane 6:

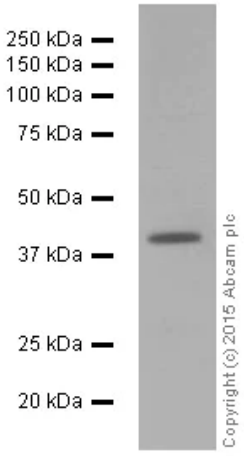
NIH 3T3 (Mouse embryonic fibroblast cell line) Whole Cell Lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (Alexa Fluor® 790) (ab175781) at 1/10000 dilution

Predicted band size: 42 kDa

Observed band size: 42 kDa



Western blot - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302)

Muscle Actin Western blot staining of A673 whole cell lysate using rabbit Anti-muscle Actin antibody

Blocking and dilution buffer: 5% NFDM /TBST.
All lanes:
Western blot - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302) at 1/1000 dilution

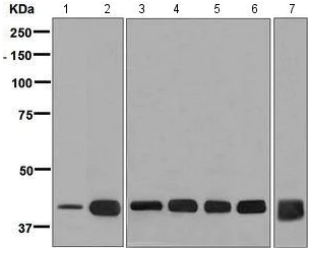
All lanes:
A673 whole cell lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/10000 dilution

Predicted band size: 42 kDa

Observed band size: 42 kDa



Western blot - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302)

Muscle Actin Western blot staining using rabbit Anti-muscle Actin antibody

All lanes:
Western blot - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302) at 1/1000 dilution

Lane 1:
NIH 3T3 lysate at 10 µg

Lane 2:
Human fetal artery lysate at 10 µg

Lane 3:
Human fetal kidney lysate at 10 µg

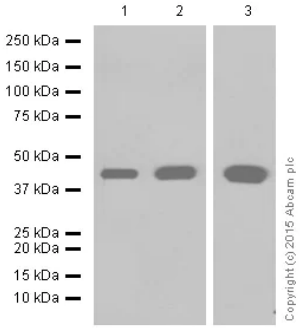
Lane 4:
Human uterus lysate at 10 µg

Lane 5:
Human stomach lysate at 10 µg

Lane 6:
Human fetal heart lysate at 10 µg

Lane 7:
Human skeletal muscle lysate at 10 µg

Predicted band size: 42 kDa



Western blot - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302)

Muscle Actin Western blot staining using rabbit Anti-muscle Actin antibody

Blocking and dilution buffer: 5% NFDM /TBST.
All lanes:
Western blot - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302) at 1/10000 dilution

Lane 1:
NIH/3T3 whole cell lysate at 10 µg

Lane 2:
Rat spleen tissue lysate at 10 µg

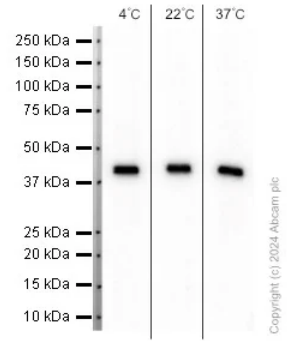
Lane 3:
L6 whole cell lysate at 10 µg

Secondary

All lanes:
HRP-conjugated goat anti-rabbit IgG (specific to the non-reduced form of IgG) at 1/10000 dilution

Predicted band size: 42 kDa

Observed band size: 42 kDa



Western blot - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302)

Muscle Actin Western blot staining of L6 whole cell lysate using rabbit Anti-muscle Actin antibody

This blot was produced using 4-20% SDS-PAGE containing 15 µg of L6 whole cell lysate per lane at 150V for 1hr before being transferred onto a 0.45 µm PVDF membrane at 75V for 1hr. The membrane was then blocked for 1hr using 5% NFDM/TBST, then incubated with ab156302 (1/10,000) at room temperature for 1hr. After being washed three times in TBST, the membrane was incubated with Peroxidase conjugated goat anti-rabbit IgG (H+L) (ab97051) at 1/20,000 dilution for 1hr at room temperature. The membrane was washed three times again. Then the signal was developed using the ECL technique.

ab156302 was stored at a range of temperatures (+4°C, +22°C, +37°C) for 1 week before being tested in WB. The image shows the band intensity remains relatively constant across all storage temperatures, demonstrating that antibody activity is not affected under these conditions. This data was generated as part of a structured antibody stability study supporting Abcam’ s transition from cold⊠chain to ambient shipping.

All lanes:

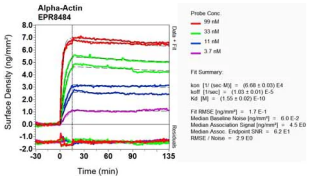
Western blot - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302) at 1/10000 dilution

All lanes:
L6 whole cell lysate at 15 µg with NDFM/TBST

Secondary

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

Exposure time: 20s



OI-RD Scanning - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302)

We have systematically measured KD (the equilibrium dissociation constant between the antibody and its antigen), of more than 840 recombinant antibodies to assess not only their individual KD values but also to see the average affinity of antibody. Based on the comparison with published literature values for mouse monoclonal antibodies, Recombinant antibodies appear to be on average 1-2 order of magnitude higher affinity.

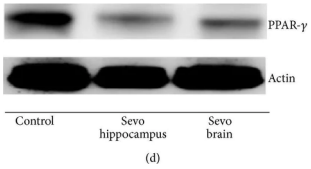


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Western blot - Anti-muscle Actin antibody [EPR8484] - Loading Control (ab156302)

Muscle Actin Western blot staining using rabbit Anti-muscle Actin antibody

muscle Actin western blot using anti-muscle Actin antibody [EPR8484] ab156302. Publication image and figure legend from Zhao, Y., Chen, K., et al., 2015, Biomed Res Int, PubMed 26236713.

ab156302 was used in this publication in western blot. This may not be the same as the application(s) guaranteed by Abcam. For a full list of applications guaranteed by Abcam for ab156302 please see the product overview.

Sevoflurane downregulated PPAR-γ expression. (a-b) Gene Set Enrichment Analysis plots for the peroxisome proliferator-activated receptor- (PPAR-) γ target gene set and PPAR signaling gene set in the microarray dataset are shown. The PPAR-γ target gene signature and PPAR signaling pathway signature were highly enriched in control samples than in sevoflurane-treated samples, thus indicating that PPAR-γ signaling is downregulated by sevoflurane. (c) The heat map of PPAR-γ target genes in control and sevoflurane-treated samples is shown. (d) Exposure to 3% sevoflurane for 2 h daily from P6 to P8 downregulated the expression of PPAR-γ in the brain tissue of mice and the hippocampal tissues of mice. (e) Quantification of western blots (n = 6) confirmed that sevoflurane downregulated the expression of PPAR-γ. (f) Quantification of western blots (n = 6) confirmed that sevoflurane downregulated the expression of PPAR-γ. NES: normalized enrichment scores; FWER: familywise error rate; RXRA: Rerinoid X receptor alpha.

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