abcam

ab224207

Anti-muscle Actin antibody [EPR8484] - BSA and Azide free

Recombinant RabMAb

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Carrier free	Yes
Clone number	EPR8484
Purification technique	Affinity purification Protein A
Specificity	This antibody will detect alpha and gamma specific actin from skeletal, cardiac and smooth muscle.
Concentration	1.006 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Mouse, Rat, Human
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Mouse, Human
Dilution info	-
Notes	-

Expected

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

IP

Tested

Species	Mouse
Dilution info	-
Notes	-

Expected

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

WB

Tested

Species	Mouse, Human

Dilution info	-
Notes	-

Expected

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

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	-
Notes	-

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	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C

Storage information	Do Not Freeze

Notes

ab224207 is the carrier-free version of ab156302.

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.

Conjugation ready

Our carrier-free antibodies are typically supplied in a PBS-only formulation, purified and free of BSA, sodium azide and glycerol. This conjugation-ready format is designed for use with fluorochromes, metal isotopes, oligonucleotides, and enzymes, which makes them ideal for antibody labelling, functional and cell-based assays, flow-based assays (e.g. mass cytometry) and Multiplex Imaging applications.

Use our conjugation kits for antibody conjugates that are ready-to-use in as little as 20 minutes with 1 minute hands-on-time and 100% antibody recovery: available for fluorescent dyes, HRP, biotin and gold.

Compatibility

This product is compatible with the Maxpar® Antibody Labeling Kit from Fluidigm, without the need for antibody preparation. Maxpar® is a trademark of Fluidigm Canada Inc.

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

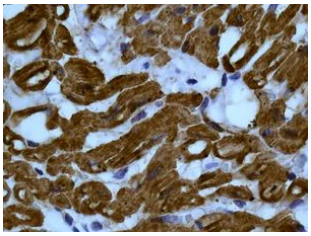
We do not recommend this combination. It is not covered by our product promise.

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.

20 product images

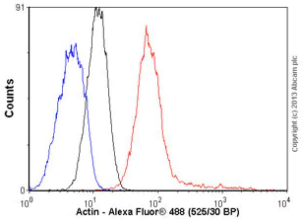


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-muscle Actin antibody [EPR8484] - BSA and Azide free (ab224207)

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

This data was developed using ab156302, the same antibody clone in a different buffer formulation.
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.

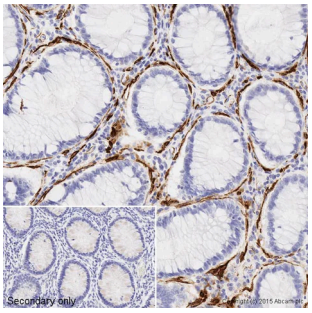
Heat mediated antigen retrieval was performed before commencing with IHC staining protocol.



Flow Cytometry (Intracellular) - Anti-muscle Actin antibody [EPR8484] - BSA and Azide free (ab224207)

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

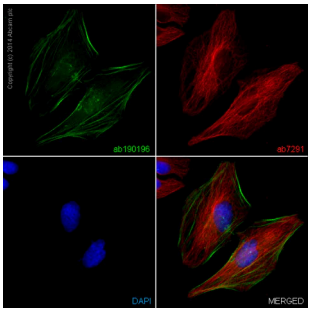
This data was developed using ab156302, the same antibody clone in a different buffer formulation.
Overlay histogram showing HeLa cells stained with unpurified ab156302 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Triton X-100 for 20 min. The cells were 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 >5,000 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] - BSA and Azide free (ab224207)

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

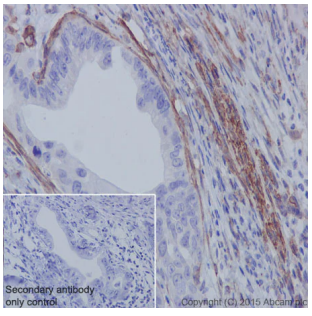
This data was developed using ab156302, the same antibody clone in a different buffer formulation.
IHC image of unpurified ab156302 staining muscle Actin in human colon* formalin fixed paraffin embedded tissue sections, performed on a Leica Bond. The section was pre-treated using heat mediated antigen 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.



Immunocytochemistry/ Immunofluorescence - Anti-muscle Actin antibody [EPR8484] - BSA and Azide free (ab224207)

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

Clone EPR8484 (ab224207) has been successfully conjugated by Abcam. This image was generated using Anti-muscle Actin antibody [EPR8484] (Alexa Fluor® 488). Please refer to ab190196 for protocol details.
ab190196 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 ab190196 at 1/50 dilution and ab7291 at 1µg/ml overnight at +4°C, followed by a further incubation at room temperature for 1h with a goat anti-mouse AlexaFluor®594 (ab150120) at 2 µg/ml (shown in red). Nuclear DNA was labelled in blue with DAPI.

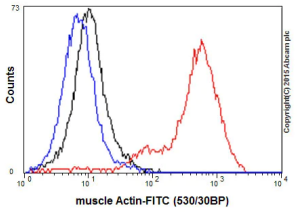


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-muscle Actin antibody [EPR8484] - BSA and Azide free (ab224207)

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

This data was developed using ab156302, the same antibody clone in a different buffer formulation.
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

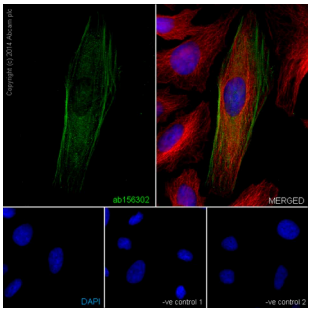
goat anti-rabbit IgG (H+L) was used as the secondary antibody (1/500). Negative control using PBS instead of primary antibody. Counterstained with hematoxylin.



Flow Cytometry (Intracellular) - Anti-muscle Actin antibody [EPR8484] - BSA and Azide free (ab224207)

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

This data was developed using ab156302, the same antibody clone in a different buffer formulation.
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).

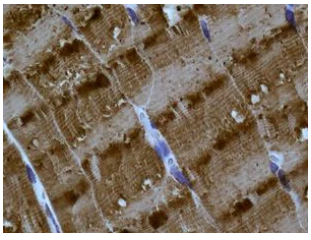


Immunocytochemistry/ Immunofluorescence - Anti-muscle Actin antibody [EPR8484] - BSA and Azide free (ab224207)

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

This data was developed using ab156302, the same antibody clone in a different buffer formulation.
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.

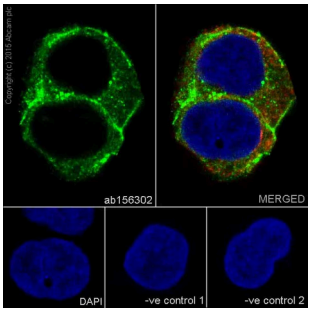


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-muscle Actin antibody [EPR8484] - BSA and Azide free (ab224207)

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

This data was developed using ab156302, the same antibody clone in a different buffer formulation.
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.



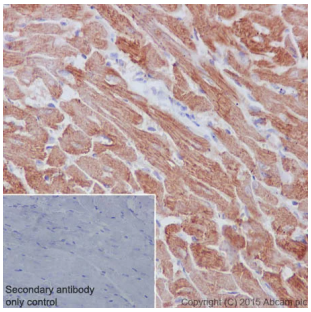
Immunocytochemistry/ Immunofluorescence - Anti-muscle Actin antibody [EPR8484] - BSA and Azide free (ab224207)

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

This data was developed using ab156302, the same antibody clone in a different buffer formulation.
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).

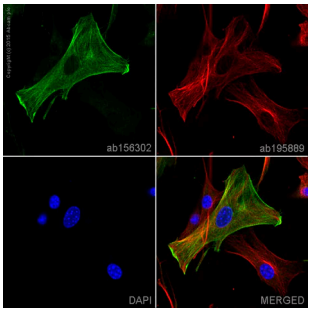
Control 2: ab7291 (1/1000) and secondary antibody, ab150077, an Alexa Fluor® 488-conjugated goat anti-rabbit IgG (1/1000).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-muscle Actin antibody [EPR8484] - BSA and Azide free (ab224207)

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

This data was developed using ab156302, the same antibody clone in a different buffer formulation.
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.

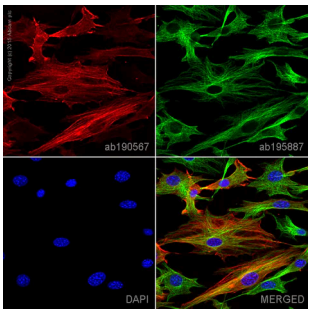


Immunocytochemistry/ Immunofluorescence - Anti-muscle Actin antibody [EPR8484] - BSA and Azide free (ab224207)

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

This data was developed using ab156302, the same antibody clone in a different buffer formulation.
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).



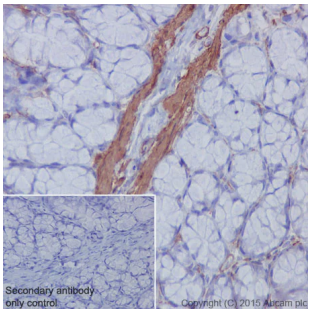
Immunocytochemistry/ Immunofluorescence - Anti-muscle Actin antibody [EPR8484] - BSA and Azide free (ab224207)

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

Clone EPR8484 (ab224207) has been successfully conjugated by Abcam. This image was generated using Anti-muscle Actin antibody [EPR8484] (Alexa Fluor® 647). Please refer to ab190567 for protocol details.
ab190567 staining Actin in NIH3T3 cells. The cells were fixed with 100% methanol (5 min), permeabilized with 0.1% Triton X-100 for 5 minutes and then blocked with 1% BSA/10% normal goat serum/0.3M glycine in 0.1% PBS-Tween for 1h. The cells were then incubated overnight at +4°C with ab190567 at a 1/50 dilution (shown in red) and ab195887, Mouse monoclonal to alpha Tubulin (Alexa Fluor® 488), at a 1/250 dilution (shown in green). Nuclear DNA was labelled with DAPI (shown in blue).

Image was taken with a confocal microscope (Leica-Microsystems, TCS SP8).

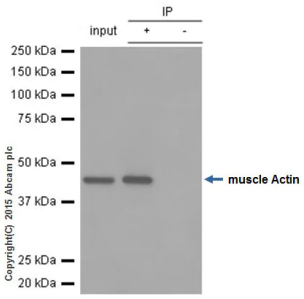
This product also gave a positive signal under the same testing conditions in NIH3T3 cells fixed with 4% formaldehyde (10 min).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-muscle Actin antibody [EPR8484] - BSA and Azide free (ab224207)

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

This data was developed using ab156302, the same antibody clone in a different buffer formulation.
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] - BSA and Azide free (ab224207)

This data was developed using ab156302, the same antibody clone in a different buffer formulation.
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.

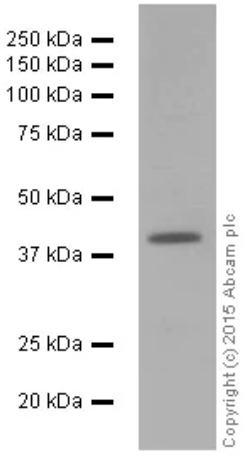
For western blotting, VeriBlot for IP Detection Reagent (HRP) (ab131366), was used for detection at 1/10,000 dilution.

Blocking and dilution buffer: 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] - BSA and Azide free (ab224207)

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

This data was developed using ab156302, the same antibody clone in a different buffer formulation.
Blocking and dilution buffer: 5% NFDM/TBST.

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

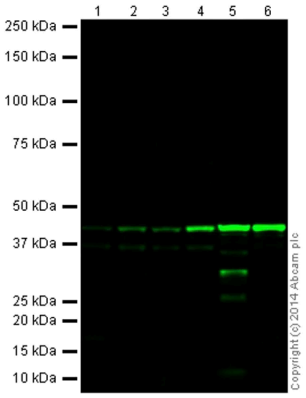
All lanes:
A673 whole cell lysate at 20 µg

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] - BSA and Azide free (ab224207)

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

This data was developed using ab156302, the same antibody clone in a different buffer formulation.
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

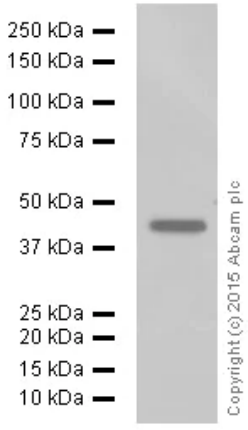
Lane 6:
NIH 3T3 (Mouse embryonic fibroblast cell line) Whole Cell Lysate at 20 µg

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] - BSA and Azide free (ab224207)

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

This data was developed using ab156302, the same antibody clone in a different buffer formulation.
Blocking and dilution buffer: 5% NFDM/TBST.

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

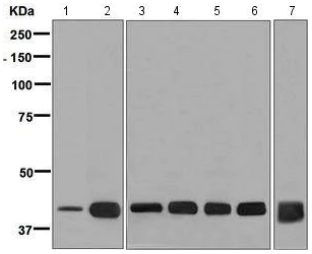
All lanes:
Human stomach tissue lysate at 10 µg

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] - BSA and Azide free (ab224207)

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

This data was developed using ab156302, the same antibody clone in a different buffer formulation.
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

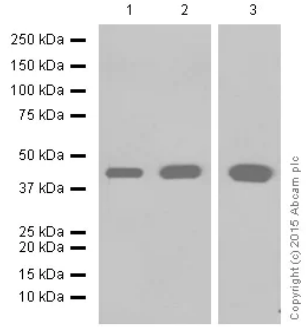
Lane 4:
Human uterus lysate at 10 µg

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] - BSA and Azide free (ab224207)

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

This data was developed using ab156302, the same antibody clone in a different buffer formulation.
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

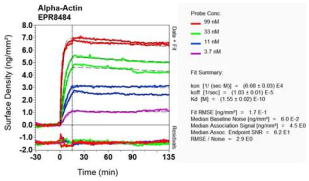
Lane 3:
L6 whole cell lysate at 10 µg

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



OI-RD Scanning - Anti-muscle Actin antibody [EPR8484] - BSA and Azide free (ab224207)

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.

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