abcam

ab240654

Anti-alpha smooth muscle Actin antibody [1A4] - BSA and Azide free

Anti-alpha smooth muscle Actin antibody [1A4] - BSA and Azide free (ab240654) is a mouse recombinant monoclonal antibody for **Western Blot, Flow Cytometry (Intra), IHC-P, ICC/IF**. Suitable for **Human, Mouse, Rat**.

- KO validated for confirmed specificity
- BSA, sodium azide, and glycerol-free for easy conjugation
- Biophysical QC for unrivalled batch-batch consistency

Recombinant | KO Validated

Key facts

Isotype	IgG2a
Host species	Mouse
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	1A4
Purification technique	Affinity purification Protein A
Light chain type	kappa
Concentration	1.048 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

Predicted

Species	Rabbit, Cow, Pig, Mammals, Baboon, Sheep
Dilution info	-
Notes	-

WB

Tested

Species	Mouse, Human, Rat
Dilution info	-
Notes	-

Predicted

Species	Rabbit, Cow, Pig, Mammals, Baboon, Sheep
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Mouse, Rat, Human
Dilution info	-
Notes	-

Predicted

Species	Rabbit, Cow, Pig, Mammals, Baboon, Sheep
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Rat
Dilution info	-
Notes	-

Expected

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

Predicted

Species	Rabbit, Cow, Pig, Mammals, Baboon, Sheep
Dilution info	-
Notes	-

Target data

See full target information ACTA2

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 duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C
Aliquoting information	Upon delivery aliquot
Storage information	Do Not Freeze

Notes

What is this antibody validated in?
Anti-alpha smooth muscle Actin antibody [1A4] - BSA and Azide free (ab240654) is a mouse recombinant monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Intra), Flow Cytometry (Flow Cyt), Immunohistochemistry (IHC-P), Immunocytochemistry/immunofluorescence (ICC/IF) in Human, Mouse, Rat samples.

What is the molecular weight of alpha smooth muscle Actin?
Anti-alpha smooth muscle Actin [1A4] - BSA and Azide free (ab240654) specifically detects a band for alpha smooth muscle Actin (UniProt: P62736) at a molecular weight of 42kDa.

Specificity confirmed
The specificity of Anti-alpha smooth muscle Actin antibody [1A4] - BSA and Azide free (ab240654) has been confirmed by Immunocytochemistry/ Immunofluorescence testing in ACTA2 Knockout HeLa cells, ab264014.

Other related products
We have a range of other formats of antibody clone [1A4] also available for your convenience: ab7817, FITC - ab8211, Biotin - ab125057, Alexa Fluor® 488 - ab184675, Alexa Fluor® 594 - ab202368, HRP - ab203696, Carrier free - ab240654

Want a custom formulation?
This antibody clone is manufactured by Abcam. If you require a custom buffer formulation or conjugation for your experiments, please contact orders@abcam.com

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	Alpha smooth muscle actin (α-SMA) also known as ACTA2 is an actin isoform with a specific role in the contractile function of smooth muscle cells. The molecular weight of α-SMA is approximately 42 kDa. This protein is expressed widely in vascular smooth muscle cells the peritoneal lining and myofibroblasts. It often serves as a marker for these cell types. The expression of α-SMA is critical for the mechanical attributes of cells contributing to the rigidity and contractility of tissues where it is present.
Biological function summary	Alpha smooth muscle actin aids in maintaining the structural integrity of tissues by forming part of the actin cytoskeleton an important element in cellular support. It exists in high concentration in stress fibers contributing to cellular movements and shape maintenance. These actions are essential in various dynamic cellular processes such as cell migration and adhesion. Alpha smooth muscle actin does not typically form complexes but it associates with other components of the actin cytoskeleton to ensure cell stability and function.
Pathways	Alpha smooth muscle actin functions significantly within the TGF-beta signaling pathway which influences cell proliferation differentiation and apoptosis. It interacts closely with proteins such as myosin to facilitate cellular contractility and motility. Additionally α-SMA plays a part in the RhoA/Rho kinase (ROCK) pathway connecting with regulators of actin filament organization. These pathways are essential for modulation of smooth muscle contraction and actin filament assembly contributing to vascular development and wound healing.
Associated diseases and disorders	Alpha smooth muscle actin is importantly involved in fibrotic diseases and vascular diseases like arteriosclerosis. Increased expression of α-SMA is often observed in fibrotic tissues contributing to pathogenesis due to excessive extracellular matrix deposition. In the context of vascular disorders overexpression of α-SMA can lead to abnormal vascular remodeling often seen in diseases like hypertension. Interactions with proteins such as fibronectin and collagens facilitate these pathological changes highlighting the importance of α-SMA in disease development.

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.

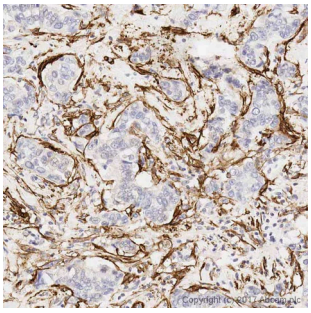
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

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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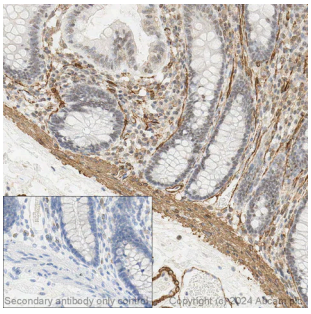
12 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-alpha smooth muscle Actin antibody [1A4] - BSA and Azide free (ab240654)

Alpha smooth muscle Actin Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Human breast ductal carcinoma using mouse Anti-alpha smooth muscle Actin antibody

This data was developed using the same antibody clone in a different buffer formulation (ab7817). IHC image of alpha smooth muscle actin staining in a human breast ductal carcinoma formalin fixed paraffin embedded tissue section*, performed on a Leica Bond™ system using the standard protocol F. 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 ab7817, 0.034µg/ml, 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.



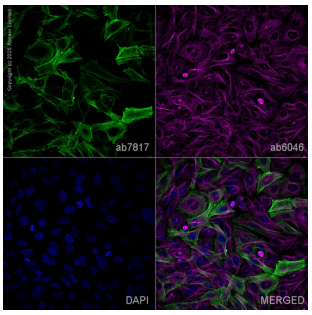
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-alpha smooth muscle Actin antibody [1A4] - BSA and Azide free (ab240654)

Alpha smooth muscle Actin Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of human colon using mouse Anti-alpha smooth muscle Actin antibody

This data was developed using the same antibody clone in a different buffer formulation (ab7817).

Immunohistochemical analysis of formalin fixed paraffin embedded human colon labelling alpha smooth muscle actin with ab7817 at a concentration of 0.01 µg/ml. The immunostaining was performed on a Ventana DISCOVERY ULTRA (Roche Tissue Diagnostics) instrument with an

OptiView DAB IHC Detection Kit. Heat mediated antigen retrieval was conducted for 32 mins at 100°C with ULTRA cell conditioning solution (CC1, pH 8.5). ab7817 anti-alpha smooth muscle actin antibody [1A4] was incubated at 37°C for 16 mins. Sections were counterstained with Hematoxylin II. Image inset shows absence of staining in secondary antibody only control.



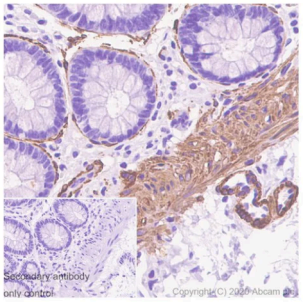
Immunocytochemistry/ Immunofluorescence - Anti-alpha smooth muscle Actin antibody [1A4] - BSA and Azide free (ab240654)

Alpha smooth muscle Actin Immunocytochemistry/ Immunofluorescence staining of SaOS-2 cells using mouse Anti-alpha smooth muscle Actin antibody

This data was developed using the same antibody clone in a different buffer formulation (ab7817).

ab7817 staining ACTA2 in SaOS-2 cells. The cells were fixed with 100% methanol (5 min), permeabilized with 0.1% PBS-Triton X-100 for 5 minutes and then blocked with 1% BSA/10% normal rabbit serum/0.3M glycine in 0.1%PBS-Tween for 1h. The cells were then incubated overnight at 4°C with ab7817 at 1µg/ml (shown in green) and Rabbit polyclonal to beta Tubulin - Loading Control (ab6046) (shown in pseudocolour magenta). Cells were then incubated with ab150117, Goat polyclonal Secondary Antibody to Mouse IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 dilution. Nuclear DNA was labelled with DAPI (shown in blue).

Image was acquired with a high-content analyser (Operetta CLS, Perkin Elmer) and a maximum intensity projection of confocal sections is shown.

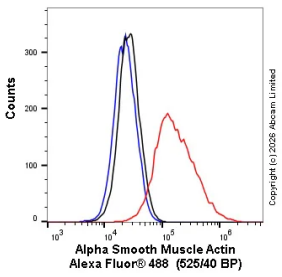


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-alpha smooth muscle Actin antibody [1A4] - BSA and Azide free (ab240654)

Alpha smooth muscle Actin Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-alpha smooth muscle Actin antibody

Immunohistochemical analysis of Human colon tissue labelling alpha smooth muscle Actin with ab7817 at 1/50000 dilution and ready to use LeicaDS9800 (Bond™ Polymer Refine Detection) Secondary antibody. Positive cytoplasmic staining on Human colon tissue is observed. Counterstained with Hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody was ready to use LeicaDS9800 (Bond™ Polymer Refine Detection).

This image is produced using the same clone but in a different formulation ab7817.

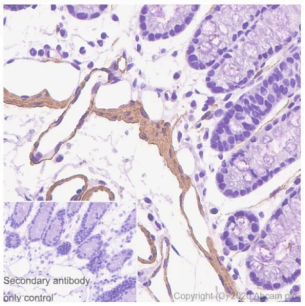


Flow Cytometry (Intracellular) - Anti-alpha smooth muscle Actin antibody [1A4] - BSA and Azide free (ab240654)

Alpha smooth muscle Actin Flow Cytometry (Intracellular) staining of SV40LT-SMC cells using mouse Anti-alpha smooth muscle Actin antibody

This data was developed using ab7817, the same antibody clone in a different buffer formulation. Overlay histogram showing SV40LT-SMC cells stained with ab7817 (red line). The cells were fixed with 4% formaldehyde (10 min) and then permeabilized with 0.1% PBS-Triton X-100 for 15 min. The cells were then incubated in 1x PBS / 10% normal goat serum to block non-specific protein-protein interactions followed by the antibody (ab7817, 5µg/ml) for 30 min at 22°C. The secondary antibody used was Goat Anti-Mouse IgG H&L - preadsorbed (Alexa Fluor® 488) (ab150117) at 1/4000 dilution for 30 min at 22°C. Isotype control antibody (black line) was mouse IgG2a [MOPC-173]

(ab18413) used at the same concentration and conditions as the primary antibody. Unlabelled sample (blue line) was also used as a control. Acquisition of >5000 events were collected using a 50 mW Blue laser (488nm) and 525/40 bandpass filter.

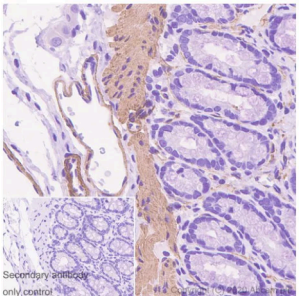


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-alpha smooth muscle Actin antibody [1A4] - BSA and Azide free (ab240654)

Alpha smooth muscle Actin Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-alpha smooth muscle Actin antibody

Immunohistochemical analysis of Mouse colon tissue labelling alpha smooth muscle Actin with ab7817 at 1/50000 dilution and ready to use LeicaDS9800 (Bond™ Polymer Refine Detection) Secondary antibody. Positive cytoplasmic staining on Mouse colon tissue is observed. Counterstained with Hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody was ready to use LeicaDS9800 (Bond™ Polymer Refine Detection).

This image is produced using the same clone but in a different formulation ab7817.

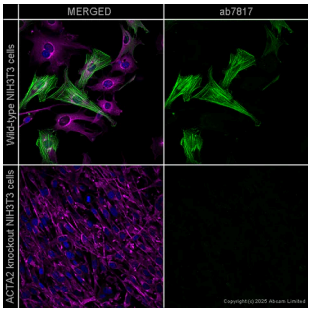


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-alpha smooth muscle Actin antibody [1A4] - BSA and Azide free (ab240654)

Alpha smooth muscle Actin Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-alpha smooth muscle Actin antibody

Immunohistochemical analysis of Rat colon tissue labelling alpha smooth muscle Actin with ab7817 at 1/50000 dilution and ready to use LeicaDS9800 (Bond™ Polymer Refine Detection) Secondary antibody. Positive cytoplasmic staining on Rat colon tissue is observed. Counterstained with Hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody was ready to use LeicaDS9800 (Bond™ Polymer Refine Detection).

This image is produced using the same clone but in a different formulation ab7817.



Immunocytochemistry/ Immunofluorescence - Anti-alpha smooth muscle Actin antibody [1A4] - BSA and Azide free (ab240654)

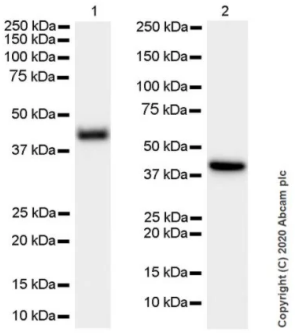
Alpha smooth muscle Actin Immunocytochemistry/ Immunofluorescence staining using mouse Anti-alpha smooth muscle Actin antibody

This data was developed using the same antibody clone in a different buffer formulation (ab7817).

ab7817 staining ACTA2 in NIH3T3 WT and NIH3T3-ACTA2 KO cells. The cells were fixed with 4% paraformaldehyde (10 min), permeabilized with 0.1% PBS-Triton X-100 for 5 minutes and then blocked with 1% BSA/10% normal rabbit serum/0.3M glycine in 0.1%PBS-Tween for 1h. The cells were then incubated overnight at 4°C with ab7817 at 1µg/ml (shown in green) and Rabbit polyclonal to beta Tubulin - Loading Control (ab6046) (shown in pseudocolour magenta). Cells were then incubated with ab150117, Goat polyclonal Secondary Antibody to Mouse IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 dilution. Nuclear DNA was labelled with DAPI (shown in blue).

Also suitable in cells fixed with 100% methanol (5 min).

Image was acquired with a high-content analyser (Operetta CLS, Perkin Elmer) and a maximum intensity projection of confocal sections is shown.



Western blot - Anti-alpha smooth muscle Actin antibody [1A4] - BSA and Azide free (ab240654)

Alpha smooth muscle Actin Western blot staining using mouse Anti-alpha smooth muscle Actin antibody

This image is produced using the same clone but in a different formulation ab7817.
Blocking and diluting buffer and concentration: 5% NFDM/TBST.

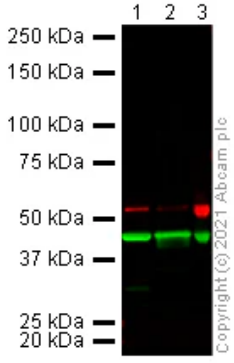
All lanes:
Western blot - Anti-alpha smooth muscle Actin antibody [1A4] (ab7817) at 1/1000 dilution

Lane 1:
NIH 3T3 (mouse embryonic fibroblast) whole cell lysate at 20 µg

Lane 2:
IMR-90 (human lung fibroblast), whole cell lysate at 20 µg

Secondary

All lanes:
Peroxidase-Conjugated Goat anti-Mouse IgG (H+L) at 1/10000 dilution



Western blot - Anti-alpha smooth muscle Actin antibody [1A4] - BSA and Azide free (ab240654)

Alpha smooth muscle Actin Western blot staining using mouse Anti-alpha smooth muscle Actin antibody

This data was developed using ab7817, the same antibody clone in a different buffer formulation.
Gel type: MOPS

Blocking buffer: 3% milk

Loading control: alpha tubulin (ab52866), secondary Goat anti-Rabbit IgG H&L (IRDye® 680CW) preadsorbed (1:10000 dilution)

All lanes:
Western blot - Anti-alpha smooth muscle Actin antibody [1A4] (ab7817) at 1 µg/mL

Lane 1:
Human colon tissue lysate at 20 µg

Lane 2:
Mouse colon tissue lysate at 20 µg

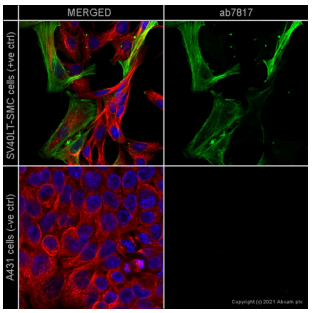
Lane 3:
Human Foreskin Fibroblast Whole Cell Lysate at 20 µg

Secondary

All lanes:
Goat anti-Mouse IgG H&L (IRDye® 800RD) at 1/10000 dilution

Predicted band size: 42 kDa

Observed band size: 42 kDa

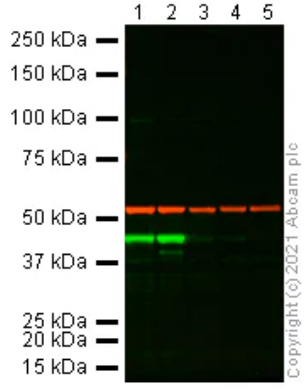


Immunocytochemistry/ Immunofluorescence - Anti-alpha smooth muscle Actin antibody [1A4] - BSA and Azide free (ab240654)

Alpha smooth muscle Actin Immunocytochemistry/ Immunofluorescence staining of SV40LT-SMC cells using mouse Anti-alpha smooth muscle Actin antibody

This data was developed using the same antibody clone in a different buffer formulation (ab7817).

ab7817 staining alpha smooth muscle Actin in SV40LT-SMC cells (positive control top panel) and A431 cells (negative control bottom panel). The cells were fixed with 100% methanol (5 min) then 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 with ab7817 at 1µg/ml concentration and ab6046 (Rabbit polyclonal to beta Tubulin) at 1/1000 dilution overnight at 4°C followed by a further incubation at room temperature for 1h with a goat secondary antibody to mouse IgG (Alexa Fluor® 488) (ab150117) at 2 µg/ml (shown in green) and a goat secondary antibody to rabbit IgG (Alexa Fluor® 594) (ab150080) at 2 µg/ml (shown in red). Nuclear DNA was labelled in blue with DAPI.
Image was taken with a confocal microscope (Leica-Microsystems TCS SP8).



Western blot - Anti-alpha smooth muscle Actin antibody [1A4] - BSA and Azide free (ab240654)

Alpha smooth muscle Actin Western blot staining using mouse Anti-alpha smooth muscle Actin antibody

This data was developed using ab7817, the same antibody clone in a different buffer formulation.
Gel type: MOPS

Blocking buffer: 3% milk

Loading control: alpha tubulin (ab52866), secondary Goat anti-Rabbit IgG H&L (IRDye® 680CW) preadsorbed (1:10000 dilution)

All lanes:
Western blot - Anti-alpha smooth muscle Actin antibody [1A4] (ab7817) at 1 µg/mL

Lane 1:
NIH 3T3 whole cell lysate at 20 µg

Lane 2:
SV40LT-SMC whole cell lysate at 20 µg

Lane 3:
A431 whole cell lysate at 20 µg

Lane 4:
A549 whole cell lysate at 20 µg

Lane 5:
Jurkat whole cell lysate at 20 µg

Secondary

All lanes:

Goat anti-Mouse IgG H&L (IRDye® 800RD) at 1/10000 dilution

Predicted band size: 42 kDa

Observed band size: 42 kDa

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