

Anti-alpha smooth muscle Actin antibody [1A4]

Mouse anti-alpha smooth muscle Actin antibody 1A4 ab7817 is a mouse monoclonal antibody that is used in alpha smooth muscle Actin western blotting, IHC, immunofluorescence and flow cytometry. Suitable for human, mouse and rat samples.

Most widely cited alpha smooth muscle Actin monoclonal antibody clone on the market

Tried and trusted by researchers since 2002

Specificity confirmed with ACTA2 knockout cell line validation

Anti-alpha smooth muscle Actin antibody clone 1A4 is cited in over 10060 publications

Same trusted quality, New lower price!

KO Validated

Key facts

Isotype	IgG2a
Host species	Mouse
Storage buffer	pH: 7.4 Preservative: 0.02% Sodium azide Constituents: PBS, 6.97% L-Arginine
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	1A4
Purification technique	Affinity purification Protein G
Light chain type	kappa
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	0.034 µg/mL
Notes	Perform heat-mediated antigen retrieval before commencing with IHC staining protocol.

Expected

Species	Rat
Dilution info	-
Notes	-

Species	Mouse
Dilution info	-
Notes	Perform heat-mediated antigen retrieval before commencing with IHC staining protocol.

Predicted

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

ICC/IF

Tested

Species	Mouse
Dilution info	1 µg/mL
Notes	-

Species	Rat
Dilution info	1 µg/mL
Notes	-

Species Human
Dilution info 1 µg/mL
Notes -

Predicted

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

Flow Cyt (Intra)

Tested

Species Rat
Dilution info 1.137 µg/mL
Notes -

Expected

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

Predicted

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

WB

Tested

Species Human
Dilution info 1 µg/mL

Notes	-
Species	Mouse
Dilution info	1 µg/mL
Notes	-
Species	Rat
Dilution info	1 µg/mL
Notes	-
Predicted	
Species	Sheep, Rabbit, Cow, Pig, Mammals, Baboon
Dilution info	-
Notes	-

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Notes

This antibody clone [1A4] is manufactured by Abcam.

If you require this antibody in a particular buffer formulation or a particular conjugate for your experiments, please contact orders@abcam.com or you can find further information [here](#).

Abcam is leading the way to address reproducibility in scientific research with our highly validated recombinant monoclonal and recombinant multiclonal antibodies. Search & select one of Abcam's thousands of recombinant

alternatives to eliminate batch-variability and unnecessary animal use.

If you do not find a host species to meet your needs, our catalogue and custom Chimeric range provides scientists the specificity of Abcam's RabMAbs in the species backbone of your choice. Remember to also review our range of edited cell lines, proteins and biochemicals relevant to your target that may help you further your research goals.

Abcam antibodies are extensively validated in a wide range of species and applications, so please check the reagent specifications meet your scientific needs before purchasing. If you have any questions or bespoke requirements, simply visit the Contact Us page to send us an inquiry or contact our Support Team ahead of purchase.

Supplementary info

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

Activity summary

Alpha smooth muscle Actin also known as alpha-sma ACTA2 or anti alpha is a protein with a molecular weight of approximately 42 kDa. It is an important component of the cytoskeletal structure found in smooth muscle cells. This actin isoform is expressed predominantly in vascular smooth muscle uterine smooth muscle and gastrointestinal tissues. It plays an important role in the contractile function of these tissues contributing to the generation of force and maintenance of cell shape.

Biological function summary

The actin family of proteins including alpha smooth muscle Actin facilitate cellular movements and structural integrity. It is vital in cellular contraction and is a part of the actin-myosin complex which enables muscle cells to contract. Alpha smooth muscle Actin also participates in cell adhesion and morphology influencing the mechanical properties of tissues. Its expression indicates differentiation of smooth muscle tissue and can act as a marker for fibroblast to myofibroblast transformation often used in alpha sma staining.

Pathways

The regulation of alpha smooth muscle Actin expression serves a definitive role in the TGF-beta signaling pathway which influences cell migration proliferation and differentiation. This protein interacts with other actin isoforms and cytoskeletal components to modulate cellular responses to stimuli. Additionally it connects with proteins like caldesmon and tropomyosin during muscle contraction helping stabilize actin filaments within smooth muscle cells.

Associated diseases and disorders

Abnormalities in alpha smooth muscle Actin expression are associated with conditions such as pulmonary hypertension and liver fibrosis. The protein is often upregulated in fibrotic diseases with its presence directly linked to excessive extracellular matrix deposition and tissue stiffness. In these disorders its interaction with TGF-beta and other transforming growth factor family members enhances pathological tissue remodeling and constitutes a target of interest 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

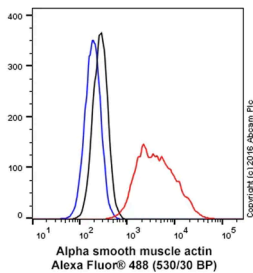
We do not recommend this combination. It is not covered by our product promise.

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.

13 product images



Flow Cytometry (Intracellular) - Anti-alpha smooth muscle Actin antibody [1A4] (ab7817)

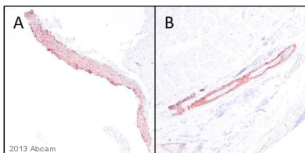
alpha smooth muscle Actin flow cytometry staining of SV40LT-SMC cells using mouse anti-alpha smooth muscle Actin antibody

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 1.137µg/ml) for 30 min at 22°C. The secondary antibody used was Goat Anti-Mouse IgG H&L (Alexa Fluor® 488) (ab150113) at 1/2000 dilution for 30 min at 22°C

Isotype control antibody (black line) was mouse IgG2a [18C8BC7AD10] (ab170191) 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 530/30 bandpass filter.

This antibody gave a positive signal in HeLa cells fixed with 80% methanol (5 min)/permeabilized with 0.1% PBS-Triton X-100 for 15 min used under the same conditions.



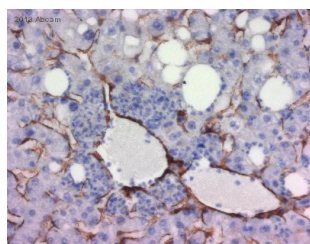
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-alpha smooth muscle Actin antibody [1A4] (ab7817)

This image is courtesy of an anonymous customer review

alpha smooth muscle Actin immunohistochemistry staining of mouse aorta and skin using mouse anti-alpha smooth muscle Actin antibody

Immunohistochemical analysis of mouse aorta (A) or skin (B) tissue staining alpha smooth muscle Actin with ab7817.

Tissue was fixed with 10% Neutral Buffered Formalin and blocked with 1% serum for 45 minutes 21°C; antigen retrieval was by enzymatic method in 0.0001% Trypsin-CaCl. Samples were incubated with primary antibody (0.034µg/ml in 0.3% Triton X-100 in PBS) for 1 hour at 21°C. A biotin-conjugated horse anti-mouse polyclonal IgG (1/50 dilution) was used as the secondary antibody.

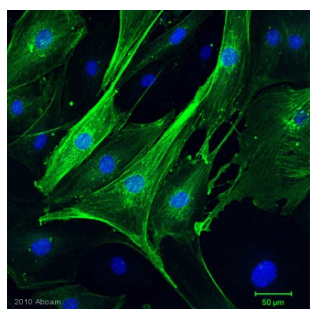


This image is courtesy of a customer review submitted by Rudolf Jung

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-alpha smooth muscle Actin antibody [1A4] (ab7817)

alpha smooth muscle Actin immunohistochemistry staining of human liver using mouse anti-alpha smooth muscle Actin antibody

ab7817 staining alpha smooth muscle actin in Human liver tissue sections by Immunohistochemistry (IHC-P - paraformaldehyde-fixed paraffin-embedded sections). Tissue was fixed with paraformaldehyde and permeabilized with wash buffer with tween; antigen retrieval was by heat mediation in Tris-EDTA buffer pH 9.0. Samples were incubated with primary antibody (0.034µg/ml in blocking buffer) for 30 minutes at 20°C. A HRP-conjugated Goat anti-mouse IgG polyclonal (undiluted) was used as the secondary antibody.

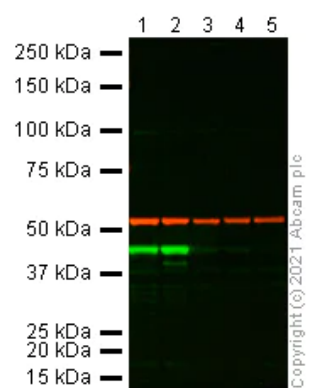


This image is courtesy of a customer review submitted by Dr. Ho-Jae Lee

Immunocytochemistry/ Immunofluorescence - Anti-alpha smooth muscle Actin antibody [1A4] (ab7817)

alpha smooth muscle Actin immunofluorescence staining of mouse heart cells using mouse anti-alpha smooth muscle Actin antibody

ab7817 staining alpha smooth muscle Actin in mouse heart cells by ICC/IF (Immunocytochemistry/immunofluorescence). Cells were fixed with paraformaldehyde permeabilized with TritonX-100 and blocked with 5% BSA for 30 minutes at room temperature. Samples were incubated with primary antibody 6.82µg/ml in blocking buffer for 2 hours. An Alexa Fluor® 488-conjugated Donkey monoclonal to mouse IgG dilution 1/200 was used as secondary antibody.



Western blot - Anti-alpha smooth muscle Actin antibody [1A4] (ab7817)

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

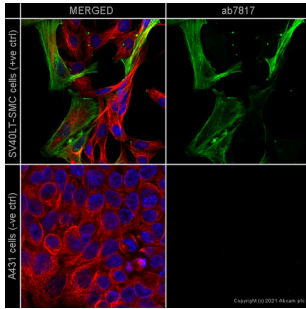
Secondary

All lanes:

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

Predicted band size: 42 kDa

Observed band size: 42 kDa

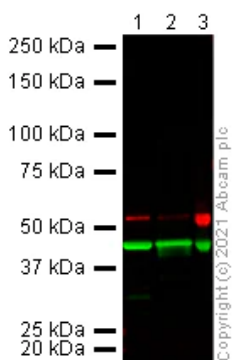


Immunocytochemistry/ Immunofluorescence - Anti-alpha smooth muscle Actin antibody [1A4] (ab7817)

alpha smooth muscle Actin immunofluorescence staining of SV40LT-SMC cells and A431 cells using mouse anti-alpha smooth muscle Actin antibody

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] (ab7817)

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:

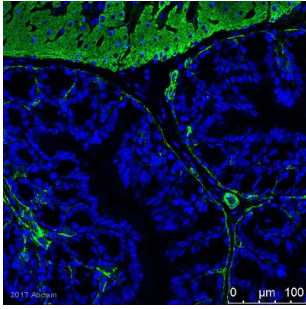
Mouse colon tissue lysate at 20 µg

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

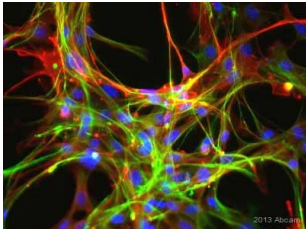


This image is courtesy of an anonymous customer review

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-alpha smooth muscle Actin antibody [1A4] (ab7817)

alpha smooth muscle Actin immunohistochemistry staining of mouse intestine using mouse anti-alpha smooth muscle Actin antibody

ab7817 staining alpha smooth muscle actin in Mouse intestine tissue by Immunohistochemistry-Immunofluorescence. Tissue was fixed with formaldehyde and blocked with 100% Cas-block for 30 minutes at room temperature; antigen retrieval was performed by heat mediated citrate buffer, pH6. The sample was incubated with primary antibody at 0.034µg/ml for 16 hours at 4°C. An Alexa Fluor® 488 Goat anti-mouse IgG was used as the secondary antibody at 1/400 dilution. Autofluorescence was blocked with 0.1% Sudan Black in 70% ethanol for 10 minutes at room temperature after antigen retrieval, and followed with 3X wash with PBS-T after antigen retrieval. Image was taken with confocal microscope.

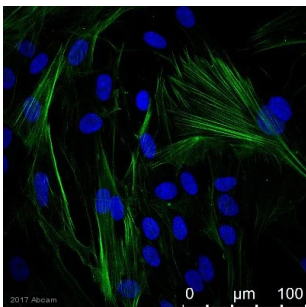


This image is courtesy of a customer review submitted by Charles Pallangyo

Immunocytochemistry/ Immunofluorescence - Anti-alpha smooth muscle Actin antibody [1A4] (ab7817)

alpha smooth muscle Actin immunofluorescence staining of mouse primary colon myofibroblasts using mouse anti-alpha smooth muscle Actin antibody

ab7817 staining alpha smooth muscle Actin (green) in Mouse primary colon myofibroblasts by ICC/IF (Immunocytochemistry/immunofluorescence). Cells were fixed with acetone and blocked with 5% BSA for 30 hours at 25°C. Samples were incubated with primary antibody (1/100 dilution in PBS + 5% BSA) for 2 hours at 25°C. Donkey Anti-Mouse IgG H&L (DyLight® 488) (ab96875) (1/1000 dilution) was used as the secondary antibody. Costained with ab92547 Rabbit anti-Vimentin (red).



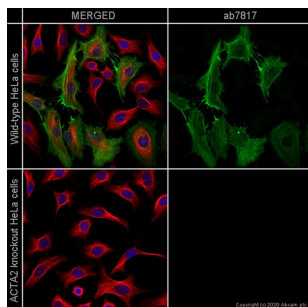
This image is courtesy of an anonymous customer review.

Immunocytochemistry/ Immunofluorescence - Anti-alpha smooth muscle Actin antibody [1A4] (ab7817)

alpha smooth muscle Actin immunofluorescence staining of IMR-90 cells using mouse anti-alpha smooth muscle Actin antibody

ab7817 staining alpha smooth muscle Actin in human IMR-90 (Human Lung Fibroblast Cell Line) cells by ICC/IF (Immunocytochemistry/immunofluorescence). Cells were fixed with paraformaldehyde permeabilized with 0.1% TritonX-100 and blocked with 100% Cad-Block for 30 minutes at room temperature. Samples were incubated with primary antibody 3.41µg/ml in

antibody diluent buffer for 16 hours at 4°C. An Alexa Fluor® 488-conjugated polyclonal Goat anti-mouse IgG dilution 1/400 was used as secondary antibody.

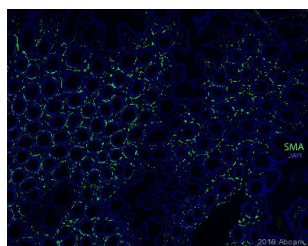


Immunocytochemistry/ Immunofluorescence - Anti-alpha smooth muscle Actin antibody [1A4] (ab7817)

alpha smooth muscle Actin immunofluorescence staining of HeLa cells using mouse anti-alpha smooth muscle Actin antibody

ab7817 staining alpha smooth muscle Actin in wild-type HeLa cells (top panel) and ACTA2 knockout HeLa cells ([ab264014](#)) (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 5ug/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 ug/ml (shown in green) and a goat secondary antibody to rabbit IgG (Alexa Fluor® 594) ([ab150080](#)) at 2 ug/ml (shown in red). Nuclear DNA was labelled in blue with DAPI.

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

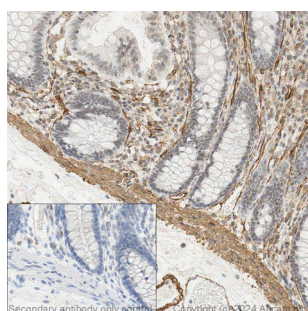


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-alpha smooth muscle Actin antibody [1A4] (ab7817)

alpha smooth muscle Actin immunohistochemistry staining of human colon using mouse anti-alpha smooth muscle Actin antibody

Immunohistochemistry analysis (Formalin/PFA-fixed paraffin-embedded sections) of 10% NBF-fixed human colon tissue permeabilized with 0.05% tween 20. Stained with ab7817 at 1/100 dilution. Secondary antibody used was Alexa fluor® 488 Donkey anti-Rabbit IgG at 1/300 dilution. Blocking was done with Sea Block for 30 minutes at 22°C. The sample was incubated with the primary antibody and Sea Block for 14 hours at 4°C. Antigen retrieval method was heat mediated, [ab94674](#) 100X Citrate Buffer pH 6.0.

This image is courtesy of a customer review submitted by David Ivancic



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-alpha smooth muscle Actin antibody [1A4] (ab7817)

alpha smooth muscle Actin immunohistochemistry staining of human colon using mouse anti-alpha smooth muscle Actin antibody

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.

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