abcam

ab150301

Anti-alpha smooth muscle Actin antibody [SP171]

Anti-alpha smooth muscle Actin antibody [SP171] (ab150301) is a rabbit monoclonal antibody detecting alpha smooth muscle Actin in **Flow Cytometry (Intra), IHC-P, ICC/IF, mIHC**. Suitable for **Human, Mouse, Rat**.

- KO validated for confirmed specificity
- Multiplex IHC validated on the Leica BOND® MAX using Opal reagents
- Biophysical QC for unrivalled batch-batch consistency
- Over 10 publications

Recombinant | RabMAb | Advanced Validation | KO Validated | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.6 Preservative: 0.1% Sodium azide Constituents: PBS, 1% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	SP171
Purification technique	Affinity purification Protein A/G
Purification notes	Purified from TCS by protein A/G.

Reactivity data

mIHC

Tested

Species	Human

Dilution info	1/200
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Expected

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

Predicted

Species	Rabbit, Chicken, Cow, Pig
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Mouse
Dilution info	1-5 µg/mL
Notes	-

Species	Rat
Dilution info	1-5 µg/mL
Notes	-

Species	Human
Dilution info	1-5 µg/mL
Notes	-

Predicted

Species	Rabbit, Chicken, Cow, Pig
Dilution info	-

Notes	-

Flow Cyt (Intra)

Tested

Species	Mouse, Rat, Human
Dilution info	-
Notes	-

Predicted

Species	Rabbit, Chicken, Cow, Pig
Dilution info	-
Notes	-

WB

Not recommended

Species	Human
Dilution info	-
Notes	Compared with ab150301, ab124964 has higher sensitivity, we recommend ab124964 as an alternative for testing alpha smooth muscle Actin in western blot.

Species	Mouse
Dilution info	-
Notes	-

Species	Rat
Dilution info	-
Notes	-

Species	Rabbit
Dilution info	-
Notes	-

Species	Chicken
Dilution info	-
Notes	-

Species	Cow
Dilution info	-
Notes	-

Species	Pig
Dilution info	-
Notes	-

IHC-P

Tested

Species	Mouse
Dilution info	1/500
Notes	For mouse IHC, antigen retrieval is not recommended as it may lead to nonspecific staining.

Species	Rat
Dilution info	1/200
Notes	-

Species	Human
Dilution info	1/200
Notes	-

Predicted

Species	Rabbit, Chicken, Cow, Pig
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	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

What is this antibody validated in?
Anti-alpha smooth muscle Actin antibody [SP171] (ab150301) is a rabbit recombinant monoclonal antibody and is validated for use in Flow Cytometry (Intra), Immunohistochemistry (IHC-P), Immunocytochemistry/immunofluorescence (ICC/IF), Multiplex IHC (mIHC) in Human, Mouse, Rat samples.

Collaboration
Anti-alpha smooth muscle Actin [SP171] (ab150301) is a clone from the portfolio of Spring Bioscience (Roche) SP clones which have been optimised for immunohistochemistry (IHC).

Trusted by the scientific community
Anti-alpha smooth muscle Actin [SP171] (ab150301) was first used in a scientific publication in 2012 and has been cited over 10 times in peer-reviewed journals.

Specificity confirmed
The specificity of Anti-alpha smooth muscle Actin antibody [SP171] (ab150301) has been confirmed by Western blot testing in ACTA2 Knockout HeLa cells.

Other related products
We have a range of other formats of antibody clone [SP171] also available for your convenience: ab150301, Carrier free - ab242395, Alexa Fluor® 488 - ab267536, Alexa Fluor® 647 - ab267537, ab279419, APC - ab310827, PE - ab310903, Alexa Fluor® 594 - ab311730, Alexa Fluor® 568 - ab313007, Alexa Fluor® 555 - ab313211, Alexa Fluor® 750 - ab321123

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.

Trial sizes available!
Test your antibody or perform pre-screening before committing to a larger quantity. Sold in 20µl. Discover our selection of trial-size antibodies.

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.

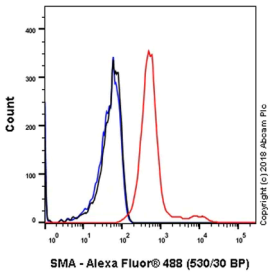
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

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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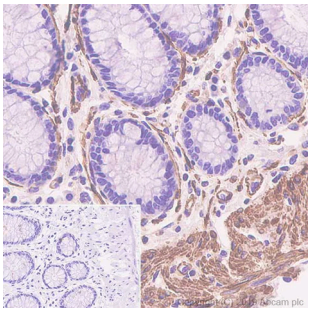
11 product images



Flow Cytometry (Intracellular) - Anti-alpha smooth muscle Actin antibody [SP171] (ab150301)

Alpha smooth muscle Actin Flow Cytometry (Intracellular) staining using rabbit Anti-alpha smooth muscle Actin antibody

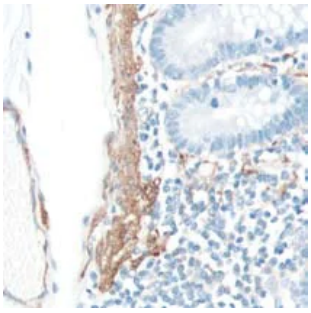
Flow Cytometry analysis of HeLa (human cervix adenocarcinoma epithelial cell) cells labeling alpha smooth muscle Actin with purified ab150301 (red). Cells were fixed with 4% paraformaldehyde and permeabilised with 90% methanol. A Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) was used as the secondary antibody. Isotype control - Rabbit monoclonal IgG (ab172730) / Black. Unlabeled control - Unlabelled cells / blue.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-alpha smooth muscle Actin antibody [SP171] (ab150301)

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

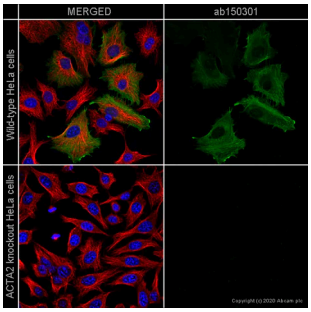
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Human colon tissue sections labeling alpha smooth muscle Actin with ab150301 at 1/200 dilution (0.26 µg/ml). Heat mediated antigen retrieval was performed Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution 2) for 10 mins. Goat Anti-Rabbit & Mouse IgG (HRP) was used as the secondary antibody. Negative control: PBS instead of the primary antibody. Hematoxylin was used as a counterstain.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-alpha smooth muscle Actin antibody [SP171] (ab150301)

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

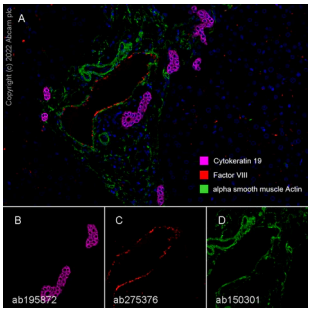
Immunohistochemical analysis of formalin fixed, paraffin embedded Human colon tissue labelling alpha smooth muscle Actin with ab150301 at 1/200 dilution.



Immunocytochemistry/ Immunofluorescence - Anti-alpha smooth muscle Actin antibody [SP171] (ab150301)

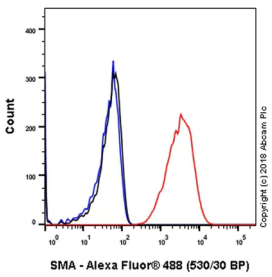
Alpha smooth muscle Actin Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-alpha smooth muscle Actin antibody

ab150301 staining alpha smooth muscle Actin in wild-type HeLa cells (top panel) and ACTA2 knockout HeLa cells (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 ab150301 at 5µg/ml concentration and ab7291 (Mouse monoclonal to alpha 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 rabbit IgG (Alexa Fluor® 488) (ab150081) at 2 µg/ml (shown in green) and a goat secondary antibody to mouse IgG (Alexa Fluor® 594) (ab150120) 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).



Multiplex immunohistochemistry - Anti-alpha smooth muscle Actin antibody [SP171] (ab150301)

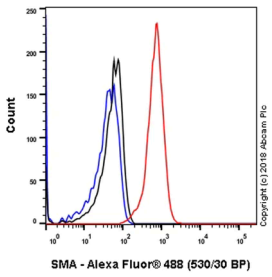
Fluorescence multiplex immunohistochemical analysis of human liver tissue (formalin-fixed paraffin-embedded section). Panel A shows merged staining of ab195872 anti-Cytokeratin 19 stained on branch of bile ducts (magenta; Opal™690) at 1:8000 (0.127 µg/ml) [Panel B], ab275376 anti-Factor VIII stained on endothelial cells (red; Opal™570) at 1:1000 (0.457 µg/ml) [Panel C], and ab150301 anti-alpha smooth muscle Actin stained on smooth muscles (green; Opal™520) at 1:200 (0.14 µg/ml) [Panel C] on human liver. DAPI was used as a nuclear counter stain. Followed by Opal Polymer HRP Ms + Rb secondary. The immunostaining was performed on a Leica Biosystems BOND® RX instrument with an Opal™ 4-color kit. Image acquisition was performed with Leica SP8 confocal microscope. The section was incubated in three rounds of staining: in the order of ab195872 for 30 mins, ab275376 for 30 mins and ab150301 for 10 mins at room temperature. Each round was followed by a separate fluorescent tyramide signal amplification system. Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution2) for 20 mins was used.



Flow Cytometry (Intracellular) - Anti-alpha smooth muscle Actin antibody [SP171] (ab150301)

Alpha smooth muscle Actin Flow Cytometry (Intracellular) staining using rabbit Anti-alpha smooth muscle Actin antibody

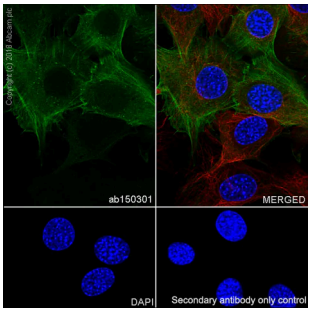
Flow Cytometry analysis of NIH/3T3 (Mouse embryonic fibroblast) cells labeling alpha smooth muscle Actin with purified ab150301 at 1/200 dilution (0.825 µg/ml) (red). Cells were fixed with 4% paraformaldehyde and permeabilised with 90% methanol. A Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) secondary antibody was used at 1/2000 dilution. Isotype control - Rabbit monoclonal IgG (ab172730) / Black. Unlabeled control - Unlabelled cells / blue.



Flow Cytometry (Intracellular) - Anti-alpha smooth muscle Actin antibody [SP171] (ab150301)

Alpha smooth muscle Actin Flow Cytometry (Intracellular) staining using rabbit Anti-alpha smooth muscle Actin antibody

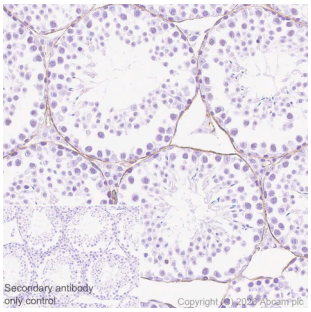
Flow Cytometry analysis of C6 (Rat glial tumor glial cell) cells labeling alpha smooth muscle Actin with purified ab150301 (red). Cells were fixed with 4% paraformaldehyde and permeabilised with 90% methanol. A Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) secondary antibody was used. Isotype control - Rabbit monoclonal IgG (ab172730) / Black. Unlabeled control - Unlabelled cells / blue.



Immunocytochemistry/ Immunofluorescence - Anti-alpha smooth muscle Actin antibody [SP171] (ab150301)

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

Immunocytochemistry/ Immunofluorescence analysis of NIH/3T3 (mouse embryonic fibroblast) cells labeling alpha smooth muscle Actin with purified ab150301. Cells were fixed in 4% paraformaldehyde and permeabilized with 0.1% Triton X-100. Cells were counterstained with ab195889 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) was used as the secondary antibody. DAPI (blue) was used as nuclear counterstain. PBS instead of the primary antibody was used as the secondary antibody only control.

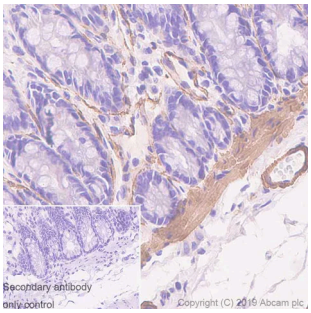


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-alpha smooth muscle Actin antibody [SP171] (ab150301)

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

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of mouse testis tissue sections labeling alpha smooth muscle Actin with ab150301 at 1/500 dilution (2 µg/ml). No antigen retrieval was performed. Rabbit specific IHC polymer detection kit HRP/DAB (ab209101) was used as the secondary antibody. Positive staining on mouse testis. The section was incubated with ab150301 for 15 mins at room temperature. Slides were incubated with 3% Hydrogen Peroxide for 10 mins at room temperature after secondary antibody incubation to reduce the background.
The immunostaining was performed on a Leica Biosystems BOND® RX instrument.

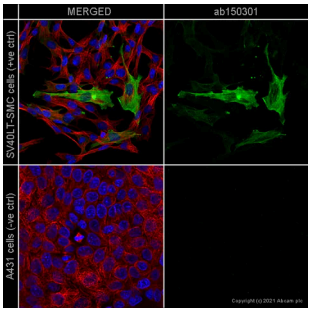
Negative control: PBS instead of the primary antibody. Hematoxylin was used as a counterstain.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-alpha smooth muscle Actin antibody [SP171] (ab150301)

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

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Rat colon tissue sections labeling alpha smooth muscle Actin with ab150301 at 1/200 dilution (0.26 µg/ml). Heat mediated antigen retrieval was performed Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution 2) for 10 mins. Goat Anti-Rabbit & Mouse IgG (HRP) was used as the secondary antibody. Negative control: PBS instead of the primary antibody. Hematoxylin was used as a counterstain.



Immunocytochemistry/ Immunofluorescence - Anti-alpha smooth muscle Actin antibody [SP171] (ab150301)

ab150301 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 ab150301 at 1µg/ml concentration and ab7291 (Mouse monoclonal to alpha 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 rabbit IgG (Alexa Fluor® 488) (ab150081) at 2 µg/ml (shown in green) and a goat secondary antibody to mouse IgG (Alexa Fluor® 594) (ab150120) 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).

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