abcam

ab126761

Anti-Smad1 antibody [EPR5522]

Recombinant | RabMAb | KO Validated | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPR5522
Purification technique	Affinity purification Protein A
Dissociation constant	2.56 x 10^{-11} M
Concentration	0.469 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	1/50 - 1/100
Notes	

Perform heat-mediated antigen retrieval before commencing with IHC staining protocol.

IP

Not recommended

Species	Human
Dilution info	-
Notes	-

WB

Tested

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

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/400
Notes	ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Target data

See full target information SMAD1

Function Transcriptional modulator that plays a role in various cellular processes, including embryonic development, cell differentiation, and tissue homeostasis (PubMed:9335504). Upon BMP ligand binding to their receptors at the cell surface, is phosphorylated by activated type I BMP receptors (BMPRIs) and associates with SMAD4 to form a heteromeric complex which translocates into the nucleus acting as transcription factor (PubMed:33667543). In turn, the hetero-trimeric complex recognizes cis-regulatory elements containing Smad Binding Elements (SBEs) to modulate the outcome of the signaling network (PubMed:33667543). SMAD1/OAZ1/PSMB4 complex mediates the degradation of the CREBBP/EP300 repressor SNIP1. Positively regulates BMP4-induced expression of odontogenic

development regulator MSX1 following IPO7-mediated nuclear import (By similarity).

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	Stable for 12 months at -20°C

Notes

Patented technology
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Supplementary info

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

Activity summary	Smad1 also known as Mothers against decapentaplegic homolog 1 (MADH1) is a protein encoded by the SMAD1 gene in humans. It has a molecular mass of approximately 53 kDa and functions as a receptor-regulated Smad protein. Smad1 primarily transmits signals from the bone morphogenetic proteins (BMPs) a group of growth factors and cytokines. Expression of Smad1 occurs in various tissues including the lung heart and kidney. It plays an important role in mediating signaling pathways within different cellular environments.

Biological function summary	Smad1 participates in the transmission of BMP signals from the cell surface to the nucleus ensuring transcriptional regulation of target genes. In the presence of BMPs Smad1 forms complexes with Smad4 upon activation. These Smad complexes then translocate to the nucleus where they regulate gene expression. Smad1 influences cellular responses such as proliferation differentiation and apoptosis. In particular it plays a significant role in bone development and osteogenesis.
Pathways	Smad1 plays an important role within the BMP signaling pathway which is important for early development and tissue homeostasis. Within this pathway BMPs trigger the phosphorylation of Smad1 which then associates with Smad4 to propagate downstream signaling. Another associated pathway includes the TGF-beta signaling pathway where Smads like Smad2 and Smad3 show functional similarities and differences with Smad1. The interactions of Smad1 with related proteins like Smad4 highlight its significant contribution to cellular processes regulated by these pathways.
Associated diseases and disorders	Smad1 associates with various pathological conditions. For instance aberrant Smad1 signaling has implications in cancer particularly in processes like tumor progression and metastasis. Disruptions in the BMP pathway involving Smad1 and Smad4 can influence the onset and development of disorders such as pulmonary hypertension where inappropriate cell growth and remodeling occur. Understanding Smad1's role in these contexts provides insights into potential therapeutic avenues for treatment and management of these conditions.

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

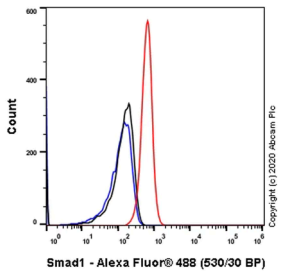
We do not recommend this combination. It is not covered by our product promise.

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:

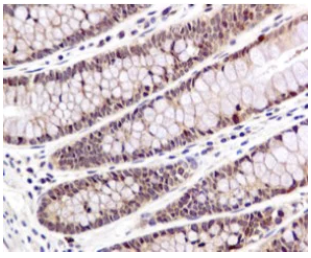
6 product images



Flow Cytometry (Intracellular) - Anti-Smad1 antibody [EPR5522] (ab126761)

Smad1 Flow Cytometry (Intracellular) staining using rabbit Anti-Smad1 antibody

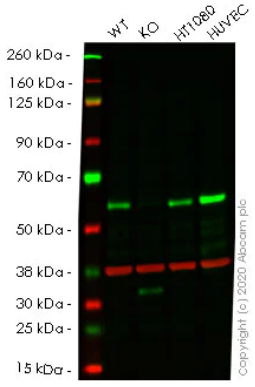
Flow Cytometry analysis of HeLa (Human cervix adenocarcinoma epithelial cell) cells labeling Smad1 with purified ab126761 at 1/400 dilution (1 µg/mL) (Red). Cells were fixed with 4% Paraformaldehyde and permeabilised with 90% Methanol. A Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) secondary antibody was used at 1/2000. Isotype control - Rabbit monoclonal IgG (Black). Unlabeled control - Cell without incubation with primary antibody and secondary antibody (Blue).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Smad1 antibody [EPR5522] (ab126761)

Smad1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Smad1 antibody

ab126761, at 1/50 dilution, staining Smad1 in paraffin-embedded Human colon tissue by Immunohistochemistry.
Perform heat mediated antigen retrieval before commencing with IHC staining protocol.



Western blot - Anti-Smad1 antibody [EPR5522] (ab126761)

Smad1 Western blot staining using rabbit Anti-Smad1 antibody

Lanes 1- 4: Merged signal (red and green). Green - ab126761 observed at 52 kDa. Red - Anti-GAPDH antibody [6C5] - Loading Control (ab8245) observed at 37 kDa.
ab126761 was shown to react with Smad1 in wild-type HeLa cells in western blot. Loss of signal was observed when knockout cell line ab265400 (knockout cell lysate ab257686) was used. Wild-type HeLa and SMAD1 knockout HeLa cell lysates were subjected to SDS-PAGE. ab126761 and Anti-GAPDH antibody [6C5] - Loading Control (ab8245) were incubated overnight at 4°C at a 1 in 1000 Dilution and a 1 in 20000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye®800CW) preadsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye®680RD) preadsorbed (ab216776) secondary antibodies at 1 in 20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-Smad1 antibody [EPR5522] (ab126761) at 1/1000 dilution

Lane 1:
Wild-type HeLa cell lysate at 20 µg

Lane 2:
Western blot - Human SMAD1 knockout HeLa cell lysate (ab257686) at 20 µg

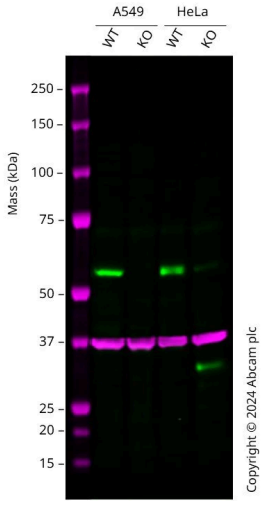
Lane 3:
HT1080 cell lysate at 20 µg

Lane 4:
Huvec cell lysate at 20 µg

Performed under reducing conditions.

Predicted band size: 52 kDa

Observed band size: 52 kDa



Western blot - Anti-Smad1 antibody [EPR5522] (ab126761)

Smad1 Western blot staining using rabbit Anti-Smad1 antibody

Western blot: Anti-SMAD1 antibody [EPR5522] (ab126761) staining at 1/1000 dilution, shown in green; Mouse anti-GAPDH antibody [6C5] (ab8245) loading control staining at 1/20000 dilution, shown in magenta. In Western blot, ab126761 was shown to bind specifically to SMAD1. A band was observed at 52 kDa in wild-type A549 cell lysates with no signal observed at this size in SMAD1 knockout cell line. To generate this image, wild-type and SMAD1 knockout A549 cell lysates were analysed. First, samples were run on an SDS-PAGE gel then transferred onto a nitrocellulose membrane. Membranes were blocked in 3 % milk in TBS-0.1 % Tween® 20 (TBS-T) before incubation with primary antibodies overnight at 4 °C. Blots were washed four times in TBS-T, incubated with secondary antibodies for 1 h at room temperature, washed again four times then imaged. Secondary antibodies used were Goat anti-Rabbit IgG H&L 800CW and Goat anti-Mouse IgG H&L 680RD at 1/20000 dilution.
All lanes:
Western blot - Anti-Smad1 antibody [EPR5522] (ab126761) at 1/1000 dilution

Lane 1:
Wild-type A549 cell lysate at 20 µg

Lane 2:
SMAD1 knockout A549 cell lysate at 20 µg

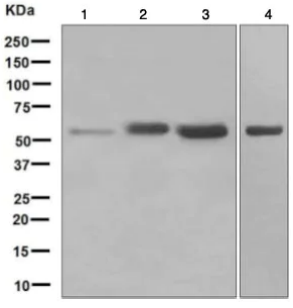
Lane 3:
Wild-type HeLa ab255929 cell lysate at 20 µg

Lane 4:
SMAD1 knockout HeLa ab265400 cell lysate at 20 µg

Secondary

All lanes:
Goat anti-Rabbit IgG H&L 800CW and Goat anti-Mouse IgG H&L 680RD at 1/20000 dilution

Performed under reducing conditions.



Western blot - Anti-Smad1 antibody [EPR5522] (ab126761)

All lanes:
Western blot - Anti-Smad1 antibody [EPR5522] (ab126761) at 1/1000 dilution

Lane 1:
HeLa cell lysate at 10 µg

Lane 2:
A673 cell lysate at 10 µg

Lane 3:

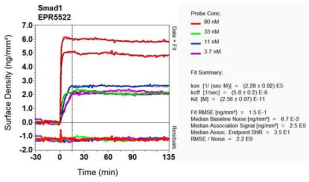
HepG2 cell lysate at 10 µg

Lane 4:
293T cell lysate at 10 µg

Secondary

All lanes:
HRP-conjugated goat anti-rabbit at 1/2000 dilution

Predicted band size: 52 kDa



OI-RD Scanning - Anti-Smad1 antibody [EPR5522] (ab126761)

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'.