abcam

ab192256

Anti-RUNX2 antibody [EPR14334]

Anti-RUNX2 antibody [EPR14334] (ab192256) is a rabbit monoclonal antibody detecting RUNX2 in **Western Blot, Flow Cytometry (Intra), IHC-P, ICC/IF**. Suitable for **Human, Mouse, Rat**.

- Biophysical QC for unrivalled batch-batch consistency
- Over 110 publications

Recombinant | RabMAb | Advanced Validation | 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	EPR14334
Purification technique	Affinity purification Protein A
Specificity	Below the target band, there are multi bands may be caused by protein degradation. We suggest customer to use freshly lysate to minimize protein degradation in western blot.
Concentration	0.533 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

ChIC/CUT&RUN-seq

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

ICC/IF

Tested

Species	Human
Dilution info	1/1000
Notes	**For unpurified use at 1/500.**

Expected

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

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/50
Notes	-

Expected

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

IHC-P

Tested

Species	Mouse
Dilution info	1/1000
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Species	Human
Dilution info	1/1000
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Expected

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

WB

Tested

Species	Human, Mouse, Rat
Dilution info	-
Notes	-

Target data

See full target information RUNX2

Function	Transcription factor involved in osteoblastic differentiation and skeletal morphogenesis (PubMed:28505335, PubMed:28703881, PubMed:28738062).

Essential for the maturation of osteoblasts and both intramembranous and endochondral ossification. CBF binds to the core site, 5'-PYGPYGGT-3', of a number of enhancers and promoters, including murine leukemia virus, polyomavirus enhancer, T-cell receptor enhancers, osteocalcin, osteopontin, bone sialoprotein, alpha 1(I) collagen, LCK, IL-3 and GM-CSF promoters. In osteoblasts, supports transcription activation: synergizes with SPEN/MINT to enhance FGFR2-mediated activation of the osteocalcin FGF-responsive element (OCFRE) (By similarity). Inhibits KAT6B-dependent transcriptional activation.

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

Product Specifications
Anti-RUNX2 antibody [EPR14334] (ab192256) was developed by Abcam using patented rabbit monoclonal antibody technology and is validated for use in ChIC/CUT&RUN-seq, Flow Cyt (Intra), ICC/IF, IHC-P and WB in human, mouse and rat samples.
Anti-RUNX2 antibody [EPR14334] (ab192256) specifically detects RUNX2 (UniProt ID: Q13950; Molecular weight: 57kDa) and is sold in 100 µL and 1 mL selling sizes.

Quality and Validation
Abcam's high quality manufacturing and validation processes ensure Anti-RUNX2 antibody [EPR14334] (ab192256) has high sensitivity and specificity alongside high lot-to-lot consistency and reproducibility.
Anti-RUNX2 antibody [EPR14334] (ab192256) has been cited over 114 times in peer reviewed journals and is trusted by the scientific community.
Anti-RUNX2 antibody [EPR14334] (ab192256) has 8 independent reviews from customers.

Related Products
Antibody clone EPR14334 is also available pre-conjugated to a variety of labels for your convenience - Alexa Fluor® 488, Alexa Fluor® 647 (ab215954, ab215955).

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	RUNX2 also known as core-binding factor subunit alpha-1 (CBFA1) is a transcription factor with a molecular weight of approximately 56 kDa. It plays a pivotal role in regulating osteoblast differentiation and skeletal morphogenesis. This protein resides mainly in the nucleus and shows a high expression in bone tissue. RUNX2 binds to DNA sequences to control transcription of genes essential for bone development and maturation. The protein also possesses a Runt-homology domain enabling it to attach to specific DNA sequences.
Biological function summary	This protein orchestrates bone formation by influencing the expression of genes involved in osteoblast differentiation. RUNX2 operates as part of the larger transcriptional complex that includes other proteins that modulate its activity. It maintains bone homeostasis by regulating the expression of osteogenic markers including bone sialoprotein and osteocalcin. The ability of RUNX2 to drive osteoblast lineage commitment highlights its importance in skeletal health and development.
Pathways	RUNX2 shows significant involvement in both the Wnt signaling and TGF-beta signaling pathways. Within the Wnt signaling pathway RUNX2 interacts with beta-catenin to facilitate osteoblastogenesis and support bone matrix deposition. In the TGF-beta signaling pathway RUNX2 modulates Smad-dependent transcriptional activity important for extracellular matrix production and bone remodeling. These interactions illustrate RUNX2's central role in mediating bone development and maintenance.
Associated diseases and disorders	RUNX2 mutations and dysregulation link to cleidocranial dysplasia a condition characterized by delayed closure of sutures in the skull and other skeletal anomalies. Additionally RUNX2 is related to osteosarcoma a type of bone cancer where its abnormal expression often contributes to tumor progression. In these contexts RUNX2 interacts with proteins like p53 an important regulator of cell cycle highlighting its influence on tumor suppressor networks and osteogenic pathways.

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.

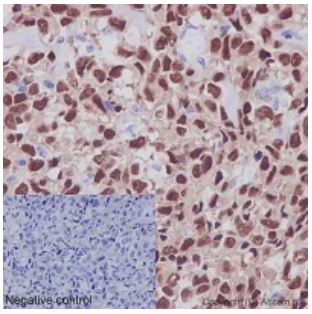
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

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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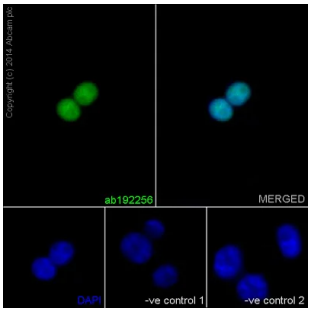
11 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-RUNX2 antibody [EPR14334] (ab192256)

RUNX2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-RUNX2 antibody

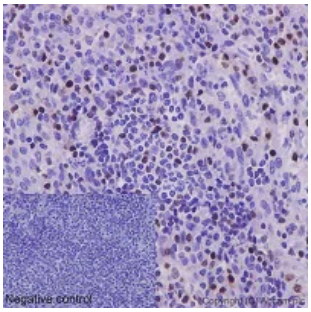
Immunohistochemical analysis of paraffin-embedded Human osteosarcoma tissue labeling RUNX2 with ab192256 at 1/1000 dilution. A ready to use HRP Polymer for Rabbit IgG was used as the secondary. Hematoxylin counterstain.
Perform heat mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.



Immunocytochemistry/ Immunofluorescence - Anti-RUNX2 antibody [EPR14334] (ab192256)

RUNX2 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-RUNX2 antibody

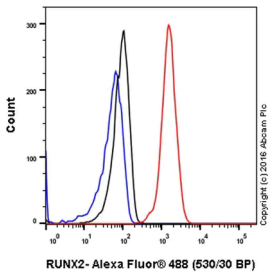
Immunofluorescent analysis of 4% formaldehyde fixed PC3 cells labeling RUNX2 using ab192256 at a 1/500 dilution. A Goat anti rabbit IgG (Alexa Fluor®488) ab150077 was used as the secondary at a 1/200 dilution. Counterstain DAPI. Permeabilized using 0.1% Triton X-100. The two negative controls: 1. Primary ab concentration (anti-RUNX2) is 1:500 dilution, Secondary ab (Goat anti mouse IgG (Alexa Fluor®594)) is 1:500 dilution; 2. Primary ab concentration (anti-RUNX2) is 1:500 dilution, Secondary ab (Goat anti mouse IgG (Alexa Fluor®594)) is 1:500 dilution.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-RUNX2 antibody [EPR14334] (ab192256)

RUNX2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-RUNX2 antibody

Immunohistochemical analysis of paraffin-embedded Human tonsil tissue labeling RUNX2 with ab192256 at 1/1000 dilution. A ready to use HRP Polymer for Rabbit IgG was used as the secondary. Hematoxylin counterstain.
Perform heat mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

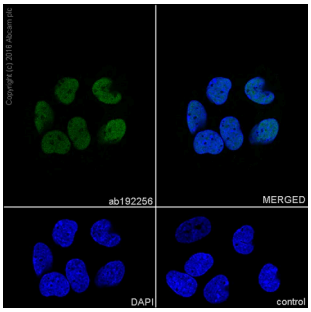


Flow Cytometry (Intracellular) - Anti-RUNX2 antibody [EPR14334] (ab192256)

RUNX2 Flow Cytometry (Intracellular) staining using rabbit Anti-RUNX2 antibody

ab192256 staining RUNX2 in PC-3 (human prostate adenocarcinoma) by intracellular flow cytometry. Cells were fixed with 4% paraformaldehyde, permabilised with 90% methanol and the sample was incubated with the primary antibody at a dilution of 1/50. A goat anti rabbit IgG (Alexa Fluorr® 488) at a dilution of 1/2000 was used as the secondary antibody.
Isoytype control: Rabbit monoclonal IgG (Black)

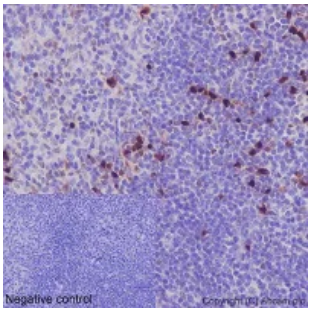
Unlabelled control: Cell without incubation with primary antibody and secondary antibody (Blue)



Immunocytochemistry/ Immunofluorescence - Anti-RUNX2 antibody [EPR14334] (ab192256)

RUNX2 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-RUNX2 antibody

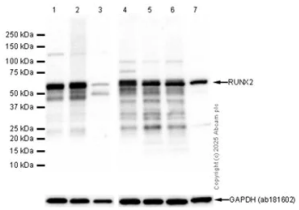
Immunocytochemistry/Immunofluorescence analysis of Saos-2 (Human osteosarcoma cell line) labeling RUNX2 with purified ab192256 at 1/1000 dilution. Cells were fixed with 4% PFA and permeabilized with 0.1% tritonX-100. ab150077 Goat anti rabbit IgG (Alexa Fluor®488) at 1/1000 was used as the secondary antibody. Nuclei were counterstained with DAPI. PBS was used instead of the primary antibody as the negative control.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-RUNX2 antibody [EPR14334] (ab192256)

RUNX2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-RUNX2 antibody

Immunohistochemical analysis of paraffin-embedded Mouse spleen tissue labeling RUNX2 with ab192256 at 1/1000 dilution. A ready to use HRP Polymer for Rabbit IgG was used as the secondary. Hematoxylin counterstain.
Perform heat mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.



Western blot - Anti-RUNX2 antibody [EPR14334] (ab192256)

RUNX2 Western blot staining using rabbit Anti-RUNX2 antibody

Blocking and diluting buffer and concentration: 5% NFDM/TBST

ab181602 was used as a GAPDH loading control

Below the target band, there are multi bands may be caused by protein degradation. We suggest customer to use freshly lysate to minimize protein degradation in western blot.
Low express: MCF-7 (PMID: 32509221, 16166639, 20591170)
All lanes:
Western blot - Anti-RUNX2 antibody [EPR14334] (ab192256) at 1/1000 dilution

Lane 1:
PC-3 (human prostate adenocarcinoma epithelial cell), whole cell lysate at 20 µg

Lane 2:
MDA-MB-231 (human breast adenocarcinoma epithelial cell), whole cell lysate at 20 µg

Lane 3:
MCF7 (human breast adenocarcinoma epithelial cell), whole cell lysate at 20 µg

Lane 4:
MEF (mouse embryonic fibroblast (immortalized)), whole cell lysate at 20 µg

Lane 5:
NIH/3T3 (Mouse embryonic fibroblast) whole cell lysate at 20 µg

Lane 6:
C2C12 (Mouse myoblasts myoblast) whole cell lysate at 20 µg

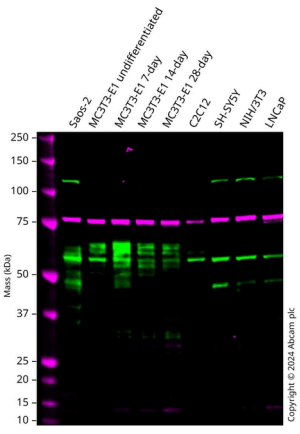
Lane 7:
C6 (rat glial tumor glial cell), whole cell lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Observed band size: 60 kDa

Exposure time: 10s



Western blot - Anti-RUNX2 antibody [EPR14334] (ab192256)

RUNX2 Western blot staining using rabbit Anti-RUNX2 antibody

Western blot: Anti-RUNX2 antibody [EPR14334] (ab192256) staining at 1/1000 dilution, shown in green; Mouse anti-CANX [CANX/1543] (ab238078) loading control staining at 1/20000 dilution, shown in magenta. In Western blot, ab192256 was shown to bind specifically to RUNX2. First, samples were run on an SDS-PAGE gel then transferred onto a nitrocellulose membrane. Membranes were blocked in 5 % 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-RUNX2 antibody [EPR14334] (ab192256)

Lane 1:
Saos-2 cell lysate

Lane 2:
MC3T3-E1 undifferentiated cell lysate

Lane 3:
MC3T3-E1 7-day Osteogenic differentiation cell lysate

Lane 4:
MC3T3-E1 14-day Osteogenic differentiation cell lysate

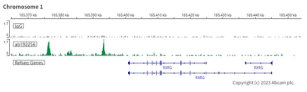
Lane 5:
MC3T3-E1 28-day Osteogenic differentiation cell lysate

Lane 6:
C2C12 cell lysate

Lane 7:
SH-SY5Y cell lysate

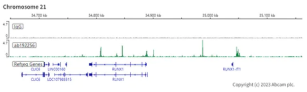
Lane 8:
NIH/3T3 cell lysate

Lane 9:
LNCaP cell lysate



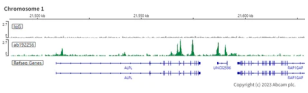
ChIC/CUT&RUN sequencing - Anti-RUNX2 antibody [EPR14334] (ab192256)

ChIC/CUT&RUN was performed using a pAG-MNAse at a final concentration of 700 ng/mL, 2.5 x 10^5 Saos-2 cells and 5 µg of ab192256 [EPR14334]. The resulting DNA was sequenced on the Illumina NovaSeq 6000 to a depth of 10 million reads. The negative IgG control ab172730 is also shown. The University of Geneva owns patents relevant to ChIC (Chromatin Immuno-Cleavage) methods.



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