abcam

ab30394

Anti-Integrin beta-1/CD29 antibody [12G10]

Anti-Integrin beta-1/CD29 antibody [12G10] (ab30394) is a mouse monoclonal antibody detecting Integrin beta-1/CD29 in **Flow Cytometry, ICC/IF**. Suitable for **Human**.

- KO validated for confirmed specificity
- Over 100 publications
- Trusted since 2006

KO Validated

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	pH: 7.4 Preservative: 0.02% Sodium azide Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	12G10
Purification technique	Affinity purification
Epitope	The 12G10 epitope has been identified to be within the von Willebrand factor type A domain of the ß-subunit (PubMed ID: 15632175).
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	Purified from tissue culture supernatant.

Reactivity data

Flow Cyt

Tested

Species	Human
Dilution info	1 µg/mL
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

Not recommended

Species	Mouse
Dilution info	-
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

Species	Rat
Dilution info	-
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

WB

Not recommended

Species	Mouse, Rat, Human
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1-10 µg/mL
Notes	-

Not recommended

Species	Mouse, Rat
Dilution info	-
Notes	-

Target data

See full target information Integrin beta-1/CD29

Function

Integrins alpha-1/beta-1, alpha-2/beta-1, alpha-10/beta-1 and alpha-11/beta-1 are receptors for collagen. Integrins alpha-1/beta-1 and alpha-2/beta-2 recognize the proline-hydroxylated sequence G-F-P-G-E-R in collagen. Integrins alpha-2/beta-1, alpha-3/beta-1, alpha-4/beta-1, alpha-5/beta-1, alpha-8/beta-1, alpha-10/beta-1, alpha-11/beta-1 and alpha-V/beta-1 are receptors for fibronectin. Alpha-4/beta-1 recognizes one or more domains within the alternatively spliced CS-1 and CS-5 regions of fibronectin. Integrin alpha-5/beta-1 is a receptor for fibrinogen. Integrin alpha-1/beta-1, alpha-2/beta-1, alpha-6/beta-1 and alpha-7/beta-1 are receptors for lamimin. Integrin alpha-6/beta-1 (ITGA6:ITGB1) is present in oocytes and is involved in sperm-egg fusion (By similarity). Integrin alpha-4/beta-1 is a receptor for VCAM1. It recognizes the sequence Q-I-D-S in VCAM1. Integrin alpha-9/beta-1 is a receptor for VCAM1, cytotactin and osteopontin. It recognizes the sequence A-E-I-D-G-I-E-L in cytotactin. Integrin alpha-3/beta-1 is a receptor for epiligrin, thrombospondin and CSPG4. Alpha-3/beta-1 may mediate with LGALS3 the stimulation by CSPG4 of endothelial cells migration. Integrin alpha-V/beta-1 is a receptor for vitronectin. Beta-1 integrins recognize the sequence R-G-D in a wide array of ligands. When associated with alpha-7 integrin, regulates cell adhesion and laminin matrix deposition. Involved in promoting endothelial cell motility and angiogenesis. Involved in osteoblast compaction through the fibronectin fibrillogenesis cell-mediated matrix assembly process and the formation of mineralized bone nodules. May be involved in up-regulation of the activity of kinases such as PKC via binding to KRT1. Together with KRT1 and RACK1, serves as a platform for SRC activation or inactivation. Plays a mechanistic adhesive role during telophase, required for the successful completion of cytokinesis. Integrin alpha-3/beta-1 provides a docking site for FAP (seprase) at invadopodia plasma membranes in a collagen-dependent manner and hence may participate in the adhesion, formation of invadopodia and matrix degradation processes, promoting cell invasion. ITGA4:ITGB1 binds to fractalkine (CX3CL1) and may act as its coreceptor in CX3CR1-dependent fractalkine signaling (PubMed:23125415, PubMed:24789099). ITGA4:ITGB1 and ITGA5:ITGB1 bind to PLA2G2A via a site (site 2) which is distinct from the classical ligand-binding site (site 1) and this induces integrin conformational changes and enhanced ligand binding to site 1 (PubMed:18635536, PubMed:25398877). ITGA5:ITGB1 acts as a receptor for fibrillin-1 (FBN1) and mediates R-G-D-dependent cell adhesion to FBN1 (PubMed:12807887, PubMed:17158881). ITGA5:ITGB1 acts as a receptor for fibronectin FN1 and mediates R-G-D-dependent cell adhesion to FN1 (PubMed:33962943). ITGA5:ITGB1 is a receptor for IL1B and binding is essential for IL1B signaling (PubMed:29030430). ITGA5:ITGB3 is a receptor for soluble CD40LG and is required for CD40/CD40LG signaling (PubMed:31331973). ITGA5:ITGB1 acts as a receptor for SNED1 and mediates R-G-D-dependent cell adhesion to SNED1 (PubMed:39713860). Plays an important role in myoblast differentiation and fusion during skeletal myogenesis (By similarity). ITGA9:ITGB1 may play a crucial role in

SVEP1/polydom-mediated myoblast cell adhesion (By similarity). Integrins ITGA9:ITGB1 and ITGA4:ITGB1 repress PRKCA-mediated L-type voltage-gated channel Ca(2+) influx and ROCK-mediated calcium sensitivity in vascular smooth muscle cells via their interaction with SVEP1, thereby inhibit vasocontraction (PubMed:35802072). Isoform 2. Interferes with isoform 1 resulting in a dominant negative effect on cell adhesion and migration (in vitro). Isoform 5. Isoform 5 displaces isoform 1 in striated muscles. (Microbial infection) Integrin ITGA2:ITGB1 acts as a receptor for Human echoviruses 1 and 8. (Microbial infection) Acts as a receptor for Cytomegalovirus/HHV-5. (Microbial infection) Acts as a receptor for Epstein-Barr virus/HHV-4. (Microbial infection) Integrin ITGA5:ITGB1 acts as a receptor for Human parvovirus B19. (Microbial infection) Integrin ITGA2:ITGB1 acts as a receptor for Human rotavirus. (Microbial infection) Acts as a receptor for Mammalian reovirus. (Microbial infection) In case of HIV-1 infection, integrin ITGA5:ITGB1 binding to extracellular viral Tat protein seems to enhance angiogenesis in Kaposi's sarcoma lesions. (Microbial infection) Interacts with CotH proteins expressed by fungi of the order mucorales, the causative agent of mucormycosis, which plays an important role in epithelial cell invasion by the fungi (PubMed:32487760). Integrin ITGA3:ITGB1 may act as a receptor for R.delemar CotH7 in alveolar epithelial cells, which may be an early step in pulmonary mucormycosis disease progression (PubMed:32487760). (Microbial infection) May serve as a receptor for adhesin A (nadA) of N.meningitidis. (Microbial infection) Facilitates rabies infection in a fibronectin-dependent manner and participates in rabies virus traffic after internalization.

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

Product Specifications

Anti-Integrin beta 1 antibody [12G10] (ab30394) is a mouse monoclonal antibody and is validated for use in Flow Cyt and ICC/IF in human samples.
Anti-Integrin beta 1 antibody [12G10] (ab30394) specifically detects Integrin beta 1 (UniProt ID: P05556; Molecular weight: 86kDa) and is sold in 100 µg selling sizes.

Quality and Validation

Abcam's high quality validation processes ensure Anti-Integrin beta 1 antibody [12G10] (ab30394) has high sensitivity and specificity.
The specificity of Anti-Integrin beta 1 antibody [12G10] (ab30394) has been confirmed by testing in knockout samples.
Anti-Integrin beta 1 antibody [12G10] (ab30394) has been cited over 109 times in peer reviewed journals and is trusted by the scientific community.
Anti-Integrin beta 1 antibody [12G10] (ab30394) has 7 independent reviews from customers.

Related Products

Conjugation-ready, carrier free format available for antibody clone 12G10 - ab230291.
Antibody clone 12G10 is also available pre-conjugated to a variety of labels for your convenience - FITC, Alexa Fluor® 488, Alexa Fluor® 647 (ab150002, ab202641, ab202643).

This monoclonal antibody to integrin beta 1 has been knockout validated in ICC/IF and flow cytometry. The expected signal was observed in wild type cells and was not seen in knockout cells.

The 12G10 monoclonal has been shown to increase ligand binding and enhances α5β1 integrin-fibronectin interactions (PubMed ID: 7537221). The antibody promotes cell attachment and spreading when binding to α5β1 integrin but inhibits these processes when binding to α4β1 integrin (PubMed ID: 15632175).

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

Supplementary info

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

Activity summary	Integrin beta 1 also known as CD29 ITGB1 or integrin β1 is a part of the integrin family of cell surface receptors. This protein plays a role in cell adhesion and signal transduction processes. Integrin beta 1 weighs around 88 kDa and typically expresses on the surface of various cell types including epithelial endothelial and certain blood cells. As a transmembrane receptor it interacts with extracellular matrix components such as fibronectin collagen and laminin facilitating cell-matrix adhesion which is key in maintaining cellular structure and function.
Biological function summary	Integrin beta 1 functions in cells as a component of heterodimeric complexes with alpha integrin subunits forming adhesion receptors that mediate cellular signaling. These integrins are important for processes like cell migration differentiation proliferation and apoptosis. As they interact with various extracellular ligands integrin beta 1 influences numerous cellular responses particularly in tissue remodeling wound healing and embryonic development.
Pathways	Integrin beta 1 plays significant roles in the MAPK/ERK and PI3K/Akt signaling pathways both of which are essential for cellular growth and survival signals. It forms connections with associated proteins including focal adhesion kinase (FAK) and talin which participate in mechanotransduction and signal propagation. These

	interactions influence cellular responses to environmental changes impacting processes such as tissue repair and immune response modulation.
Associated diseases and disorders	Integrin beta 1 associates with cancer progression and fibrosis disorders. Abnormal expression or function of integrin beta 1 can promote tumor invasion and metastasis making it a target for cancer research and potential therapeutic interventions. Furthermore in fibrosis integrin beta 1 interacts with transforming growth factor-beta (TGF-β) signaling contributing to excessive extracellular matrix production and scarring. Understanding these relationships helps in developing targeted treatments for conditions where integrin beta 1 plays a critical role.

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

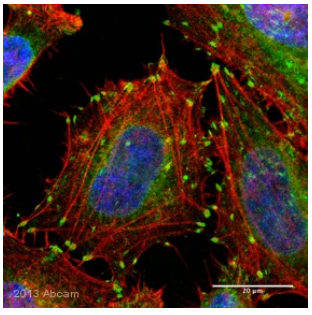
We do not recommend this combination. It is not covered by our product promise.

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.

7 product images



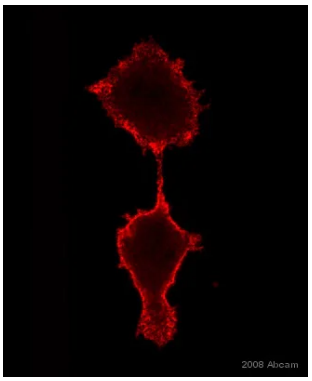
Immunocytochemistry/ Immunofluorescence - Anti-Integrin beta-1/CD29 antibody [12G10] (ab30394)

Integrin beta-1/CD29 Immunocytochemistry/ Immunofluorescence staining using mouse Anti-Integrin beta-1/CD29 antibody

ab30394 at 1/500 staining Integrin beta 1 in HeLa (Human epithelial cell line from cervix adenocarcinoma) cells by Immunocytochemistry/ Immunofluorescence.

This image is courtesy of an anonymous customer review.

Cells were fixed in paraformaldehyde. The secondary used was an Alexa Fluor® 488 Goat anti mouse (H + L), used at a 1/500 dilution. Actin filaments (Phalloidin-TRITC) and DNA (DAPI, blue) are also shown

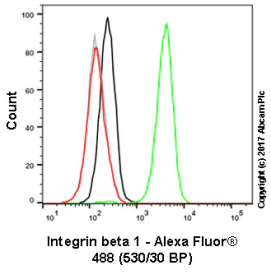


Immunocytochemistry/ Immunofluorescence - Anti-Integrin beta-1/CD29 antibody [12G10] (ab30394)

Integrin beta-1/CD29 Immunocytochemistry/ Immunofluorescence staining using mouse Anti-Integrin beta-1/CD29 antibody

ab30394 at 10 µg/ml staining Integrin beta 1 in HT1080 (Human fibrosarcoma cell line) cells by Immunocytochemistry/ Immunofluorescence.
Cells were fixed in paraformaldehyde. The secondary used was an Alexa Fluor® 555 Donkey anti mouse (H + L), used at a 1/500 dilution.

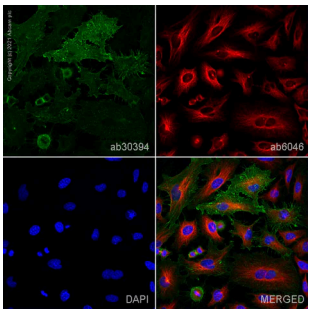
This image is courtesy of an anonymous customer review.



Flow Cytometry - Anti-Integrin beta-1/CD29 antibody [12G10] (ab30394)

Integrin beta-1/CD29 Flow Cytometry staining using mouse Anti-Integrin beta-1/CD29 antibody

Overlay histogram showing HAP1 wildtype (green line) and HAP1-ITGB1 knockout cells (red line) stained with ab30394.
Live HAP1 wildtype and HAP1-ITGB1 knockout cells were incubated in 1x PBS / 10% normal goat serum to block non-specific protein-protein interactions followed by the antibody (ab30394, 1µg/0.5x10^6 cells) for 30 min at 22°C. A mouse IgG1 isotype control antibody (ab170190) was used at the same concentration and conditions as the primary antibody (HAP1 wildtype - black line, HAP1-ITGB1 knockout - grey line). Unlabeled sample was also used as a control (this line is not shown for the purpose of simplicity). Acquisition of >5,000 events were collected using a 50 mW Blue laser (488nm) and 530/30 bandpass filter.

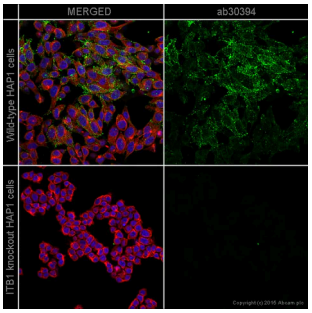


Immunocytochemistry/ Immunofluorescence - Anti-Integrin beta-1/CD29 antibody [12G10] (ab30394)

Integrin beta-1/CD29 Immunocytochemistry/ Immunofluorescence staining using mouse Anti-Integrin beta-1/CD29 antibody

ab30394 staining Integrin beta 1 in HeLa cells. The cells were fixed with 100% methanol (5 min), permeabilized with 0.1% PBS-Tween 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 overnight at 4°C with ab30394 at 5µg/ml and ab6046, Rabbit polyclonal to beta Tubulin - Loading Control. Cells were then incubated with ab150117, Goat polyclonal Secondary Antibody to Mouse IgG H&L (Alexa Fluor® 488) preadsorbed at 1/1000 dilution (shown in green) and ab150080, Goat polyclonal Secondary Antibody to Rabbit IgG - H&L (Alexa Fluor® 594) at 1/1000 dilution (shown in pseudocolour red). Nuclear DNA was labelled with DAPI (shown in blue).
Also suitable in cells fixed with 4% paraformaldehyde (10 min).

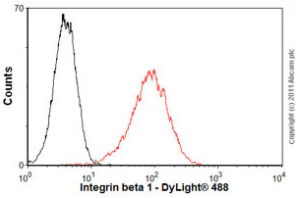
Image was acquired with a confocal microscope (Leica-Microsystems TCS SP8) and a single confocal section is shown.



Immunocytochemistry/ Immunofluorescence - Anti-Integrin beta-1/CD29 antibody [12G10] (ab30394)

Integrin beta-1/CD29 Immunocytochemistry/ Immunofluorescence staining using mouse Anti-Integrin beta-1/CD29 antibody

ab30394 staining Integrin beta 1 in wild-type HAP1 cells (top panel) and Integrin beta 1 knockout HAP1 cells (bottom panel).
The cells were fixed with 4% formaldehyde (10min), 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 ab30394 at 10µg/ml concentration and ab202272 at 1/250 dilution (shown in pseudo colour red) 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). Nuclear DNA was labeled in blue with DAPI.



Flow Cytometry - Anti-Integrin beta-1/CD29 antibody [12G10] (ab30394)

Integrin beta-1/CD29 Flow Cytometry staining using mouse Anti-Integrin beta-1/CD29 antibody

Overlay histogram showing HeLa (Human epithelial cell line from cervix adenocarcinoma) cells stained with ab30394 (red line).
The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab30394, 1µg/1x10^6 cells) for 30 min at 22°C. The secondary antibody used was a goat anti-mouse DyLight® 488 (IgG; H+L) ab96879 at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was mouse IgG1 [ICIGG1] (ab91353, 2µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed.

This antibody gave a positive signal in HeLa cells fixed with 4% paraformaldehyde (10 min)/permeabilized with 0.1% PBS-Tween for 20 min used under the same conditions.

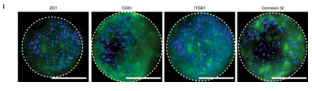


Image collected and cropped by CiteAb under a CC-BY license from the publication

Immunocytochemistry/ Immunofluorescence - Anti-Integrin beta-1/CD29 antibody [12G10] (ab30394)

Integrin beta-1/CD29 Immunocytochemistry/ Immunofluorescence staining using mouse Anti-Integrin beta-1/CD29 antibody

Immunocytochemistry-immunofluorescence using Anti-Integrin beta 1 antibody [12G10], ab30394. Publication image from Dorner, M. et al., 2018, Nat Commun, 29445209. Legend direct from paper.

3D PHH cultures are metabolically stable and exhibit functional tissue formation. a Comparison of cytochrome P450 gene (HNMT, CYP2A6, SLC22A1, CYP2A13, and GSTP1) mRNA expression between static 2D PHH cultures, 3D spheroid cultures, SACC PHH cultures, and 3D PHH cultures following 14 days of culture as well as freshly thawed PHH and HepG2 cells. b Longitudinal comparison of the mRNA expression profile of HNMT, CYP2A6, ABCB11, SLC22A17, CYP2A13, and GSTP1 as well as HBV receptors (NTCP, ASGPR) in HepG2 cells and freshly thawed PHH as well as static 2D and 3D PHH cultures. c Determination of CYP3A activity in six different hepatocyte donors 7 days following seeding in 3D PHH cultures as determined by CYP3A-Glo assay. d CYP450 activity in 3D PHH following 7, 14, or 21 days of culture time as determined by quantification of metabolites of Tacrine (CYP1A2), Diclofenac (CYP2C9), and Midazolam (CYP3A4) by quadrupole linear ion trap mass spectrometry. e Stable maintenance of the bile canaliculi marker DPPIV/CD26 in 3D PHH

cultures as determined by Luminex. f Functionality of bile canaliculi as determined by CDFDA staining. g, h Ultrastructural analysis of 3D PHH by transmission electron microscopy after 20 days of culture. (Filled arrows: bile canaliculi, open arrows: hepatic microvilli, asterisk: tight junctions, L: lipid droplet). i Immunofluorescence microscopy of tight junction and hepatocyte markers (ZO-1, CD81, ITGB1, Connexin 32) in 3D PHH cultures following 26 days of culture. All data shown are mean ± SD of three to six independent experiments. Scale bars: white (200 µm), gray (2 nm), black (500 nm)

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