abcam

ab193591

Alexa Fluor® 488 Anti-Integrin beta-1/CD29 antibody [P5D2]

Anti-Integrin beta-1/CD29 antibody [P5D2] conjugated to Alexa Fluor® 488 - suitable for flow cytometry, ICC/IF, and reacts with human samples. Clone [P5D2] is a mouse monoclonal antibody cited in 62 publications.

KO Validated

Key facts

Isotype	IgG1
Host species	Mouse
Conjugation	Alexa Fluor® 488
Excitation/Emission	Ex: 495nm, Em: 519nm
Storage buffer	pH: 7.4 Preservative: 0.02% Sodium azide Constituents: PBS, 30% Glycerol (glycerin, glycerine), 1% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	P5D2
Purification technique	Affinity purification
Light chain type	kappa
Concentration	0.5 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

Flow Cyt

Tested

Species	Human
Dilution info	1/500
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/100
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, Stable for 12 months at -20°C, Store in the dark

Notes

This antibody inhibits the function of all beta 1 integrins. The antibody has been knockout validated in ICC/IF. The expected staining for integrin beta 1 was observed in wild type cells and the staining was not seen in knockout cells.Alexa Fluor® is a registered trademark of Molecular Probes, Inc, a Thermo Fisher Scientific Company. The Alexa Fluor® dye included in this product is provided under an intellectual property license from Life Technologies Corporation. As this product contains the Alexa Fluor® dye, the purchase of this product conveys to the buyer the non-transferable right to use the purchased product and components of the product only in research conducted by the buyer (whether the buyer is an academic or for-profit entity). As this product contains the Alexa Fluor® dye the sale of this product is expressly conditioned on the buyer not using the product or its components, or any materials made using the product or its components, in any activity to generate revenue, which may include, but is not limited to use of the product or its components: in manufacturing; (ii) to provide a service, information, or data in return for payment (iii) for therapeutic, diagnostic or prophylactic purposes; or (iv) for resale, regardless of whether they are sold for use in research. For information on purchasing a license to this product for purposes other than research, contact Life Technologies Corporation, 5781 Van Allen Way, Carlsbad, CA 92008 USA or outlicensing@thermofisher.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

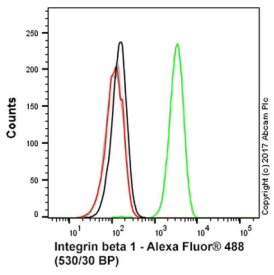
We do not recommend this combination. It is not covered by our product promise.

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.

4 product images



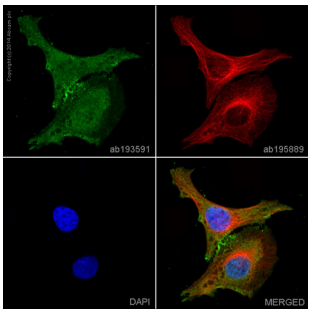
Flow Cytometry - Alexa Fluor® 488 Anti-Integrin beta-1/CD29 antibody [P5D2] (ab193591)

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 ab193591. 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 (ab193591, 0.1ug/ml) for 30 min at 4°C.

A mouse IgG1 isotype control antibody was used at the same concentration and conditions as the primary antibody (HAP1 wildtype - black line, HAP1-ITGB1 knockout - grey line). Unlabelled sample was also used as a control (this line is not shown for the purpose of simplicity).

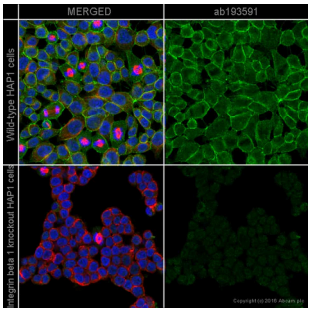
Acquisition of >5,000 events were collected using a 50 mW Blue laser (488nm) and 530/30 bandpass filter.



Immunocytochemistry/ Immunofluorescence - Alexa Fluor® 488 Anti-Integrin beta-1/CD29 antibody [P5D2] (ab193591)

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

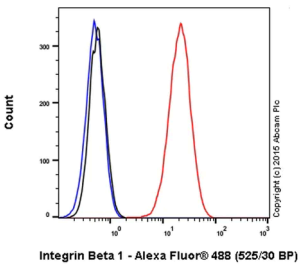
ab193591 staining Integrin beta 1 in HeLa cells. The cells were fixed with 4% formaldehyde (10 min), permeabilised in 0.1% Triton X-100 for 5 minutes and then blocked in 1% BSA/10% normal goat serum/0.3M glycine in 0.1%PBS-Tween for 1h. The cells were then incubated with ab193591 at a working dilution of 1 in 100 (shown in green) and ab195889, Mouse monoclonal [DM1A] to alpha Tubulin (Alexa Fluor® 594, shown in red) at 2µg/ml overnight at +4°C. Nuclear DNA was labelled in blue with DAPI.
Image was taken with a confocal microscope (Leica-Microsystems, TCS SP8).



Immunocytochemistry/ Immunofluorescence - Alexa Fluor® 488 Anti-Integrin beta-1/CD29 antibody [P5D2] (ab193591)

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

ab193591 staining Integrin β1 (coloured green) in wild-type HAP1 cells (top panel) and Integrin β1 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 ab193591 at 1/100 dilution and ab195889 at 1/250 dilution (shown in pseudo colour red) overnight at +4°C. Nuclear DNA was labelled in blue with DAPI.



Flow Cytometry - Alexa Fluor® 488 Anti-Integrin beta-1/CD29 antibody [P5D2] (ab193591)

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

Overlay histogram showing HeLa cells stained with ab193591 (red line). The cells were fixed with 4% formaldehyde (10 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 (ab193591, 1/500 dilution) for 30 min at 22°C. Isotype control antibody (black line) was mouse IgG1 (monoclonal) Alexa Fluor® 488 (ab171463) used at the same concentration and conditions as the primary antibody. Unlabelled sample (blue line) was also used as a control. Acquisition of >5,000 events were collected using a 20mW Argon ion laser (488nm) and 525/30 bandpass filter. This antibody gave a positive signal in HeLa cells fixed with 80% methanol (5 min)/permeabilized with 0.1% PBS-Tween for 20 min used under the same conditions.

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