abcam

ab281586

Anti-CD45 antibody [RM1007]

Anti-CD45 antibody [RM1007] (ab281586) is a rabbit recombinant multiclonal antibody detecting CD45 in **Western Blot, Flow Cytometry (Intra), IP, IHC-P**. Suitable for **Human, Mouse, Rat**.

- Biophysical QC for unrivalled batch-batch consistency

Recombinant | RabMAb | 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	Multiclonal
Immunogens	The exact immunogen used to generate this antibody is proprietary information.
Clone number	RM1007
Purification technique	Affinity purification Protein A
Concentration	0.554 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

ICC

Tested

Species	Human
Dilution info	1/50

Notes	-

Expected

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

IP

Tested

Species	Human
Dilution info	1/50
Notes	-

Expected

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

WB

Tested

Species	Mouse
Dilution info	1/1000
Notes	-

Species	Rat
Dilution info	1/1000
Notes	-

Species	Human
Dilution info	1/1000

Notes	-

IHC-Fr

Not recommended

Species	Mouse, Rat, Human
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Mouse
Dilution info	1/50
Notes	-

Species	Human
Dilution info	1/50
Notes	-

Expected

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

IHC-P

Tested

Species	Mouse
Dilution info	1/2000
Notes	-

Species	Rat

Dilution info	1/2000
Notes	-

Species	Human
Dilution info	1/2000
Notes	-

Target data

See full target information PTPRC

Function	Protein tyrosine-protein phosphatase required for T-cell activation through the antigen receptor (PubMed:35767951). Acts as a positive regulator of T-cell coactivation upon binding to DPP4. The first PTPase domain has enzymatic activity, while the second one seems to affect the substrate specificity of the first one. Upon T-cell activation, recruits and dephosphorylates SKAP1 and FYN. Dephosphorylates LYN, and thereby modulates LYN activity (By similarity). Interacts with CLEC10A at antigen presenting cell-T cell contact; CLEC10A on immature dendritic cells recognizes Tn antigen-carrying PTPRC/CD45 receptor on effector T cells and modulates T cell activation threshold to limit autoreactivity. (Microbial infection) Acts as a receptor for human cytomegalovirus protein UL11 and mediates binding of UL11 to T-cells, leading to reduced induction of tyrosine phosphorylation of multiple signaling proteins upon T-cell receptor stimulation and impaired T-cell proliferation.

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

What is this antibody validated in?
Anti-CD45 antibody [RM1007] (ab281586) is a rabbit recombinant recombinant multiclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Intra), Immunoprecipitation (IP), Immunohistochemistry (IHC-P) in Human, Mouse, Rat samples.

What is the molecular weight of CD45?
Anti-CD45 [RM1007] (ab281586) specifically detects a band for CD45 (UniProt: P08575) at a molecular weight of 147kDa.

Other related products
We have a range of other formats of antibody clone [RM1007] also available for your convenience: ab281586, Carrier free - ab282747

What are recombinant multiclonals?
Recombinant multiclonals are a mixture of recombinant antibodies co-expressed from a library of heavy and light chains. They offer several advantages including:

- The sensitivity of polyclonal antibodies by recognising multiple epitopes
- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

View our range of recombinant multiclonal antibodies.

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.

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	CD45 also known as Protein tyrosine phosphatase receptor type C (PTPRC) is a transmembrane glycoprotein with a molecular mass ranging between 180-240 kDa depending on its isoform. It is expressed on the surface of almost all hematopoietic cells except for mature erythrocytes and platelets. CD45 has a critical role in regulating antigen receptor signaling by modifying kinases involved in signal transduction and it is essential in lymphocyte development and activation. Because of its broad expression on immune cells CD45 is a valuable marker for differentiating various immune cell types in assays like flow cytometry and immunohistochemistry (IHC) often referred to as CD45 stain.
Biological function summary	CD45 acts by regulating tyrosine phosphorylation in the immune cell signaling context participating directly in signal transduction. It functions by dephosphorylating specific phosphotyrosine residues on various proteins modulating the signaling threshold required for lymphocyte activation. Although

	not known to be part of a protein complex CD45 itself shows isoform variation that associates with specific immune cell types impacting their function. Importantly CD45 interacts with multiple signaling molecules to affect cell growth and differentiation.
Pathways	Scientists associate CD45 with signaling pathways such as the T-cell receptor (TCR) and B-cell receptor (BCR) signaling. CD45 modulates the activity of Src family kinases important elements in these pathways making it essential for effective immune response and tolerance. Furthermore interactions between CD45 and proteins like Lck in T-cells or Lyn in B-cells highlight its pivotal role in executing its signaling functions.
Associated diseases and disorders	Scientists often link CD45 to immune-related conditions including autoimmunity and leukemia. In autoimmune diseases altered CD45 expression or activity can disrupt normal immune function contributing to pathogenesis. In leukemia CD45 expression levels can assist in disease classification and prognosis as it interacts with proteins involved in cell cycle regulation. The anti-CD45 antibodies can provide diagnostic and therapeutic avenues highlighting their utility in disease management.

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

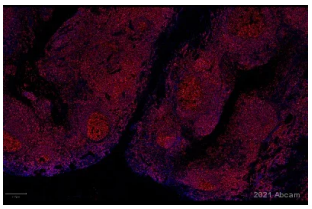
We do not recommend this combination. It is not covered by our product promise.

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.

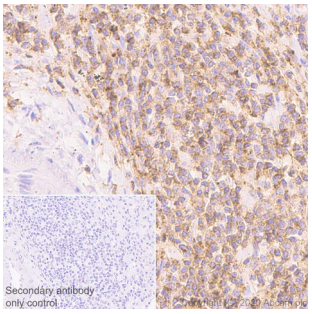
13 product images



This image is courtesy of a customer review submitted by Dylan Windell

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CD45 antibody [RM1007] (ab281586)

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of paraformaldehyde-fixed 0.3% Triton X-100 permeabilized human tonsil tissue staining with ab281586 at 10 µg/ml concentration. Samples were incubated with the primary antibody for 1 hour at 20°C. Blocking was done using Donkey Serum 10% + 3% BSA for 24 hours at 4°C. Heat mediated antigen retrieval with Citrate pH 6 & TRIS pH 9.

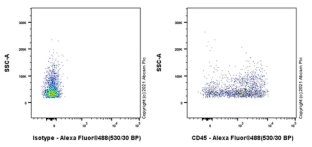


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CD45 antibody [RM1007] (ab281586)

CD45 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-CD45 antibody

Immunohistochemical analysis of paraffin-embedded Human spleen tissue labelling CD45 with ab281586 at 1/4000 (0.138 ug/ml) dilution followed by a ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101). Positive staining on human spleen. The section was incubated with ab281586 for 30 mins at room temperature.The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin.
Secondary antibody only control: Secondary antibody is a ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101).

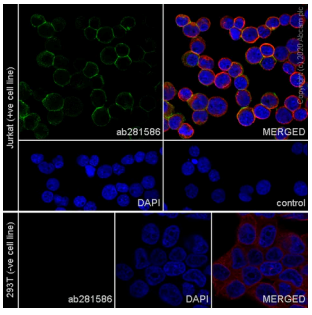
Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution2) for 20 mins.



Flow Cytometry (Intracellular) - Anti-CD45 antibody [RM1007] (ab281586)

CD45 Flow Cytometry (Intracellular) staining using rabbit Anti-CD45 antibody

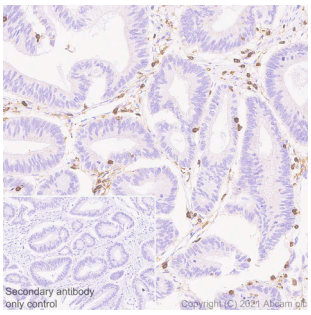
Flow cytometric analysis of 4% paraformaldehyde fixed 90% methanol permeabilized Human peripheral blood mononuclear cell (PBMC) cells labelling CD45 with ab281586 at 1/500 dilution (0.1ug). Right compared with a Rabbit monoclonal IgG (ab172730)/ Left isotype control. A Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) at 1/2000 dilution was used as the secondary antibody.



Immunocytochemistry - Anti-CD45 antibody [RM1007] (ab281586)

CD45 Immunocytochemistry staining using rabbit Anti-CD45 antibody

Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% TritonX-100 permeabilized Jurkat cells labelling CD45 with ab281586 at 1/50 (11.0 ug/ml) dilution, followed by ab150077 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) antibody at 1/1000 dilution (Green) Confocal image showing membranouse staining in Jurkat cells and no staining in 293T cells is observed. ab195889 Anti-alpha Tubulin mouse monoclonal antibody - Microtubule Marker (Alexa Fluor® 594) was used to counterstain tubulin at 1/200 dilution (Red). The Nuclear counterstain was DAPI (Blue).
Secondary antibody only control: Secondary antibody is ab150077 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) at 1/1000 dilution.

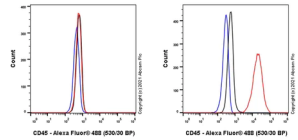


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CD45 antibody [RM1007] (ab281586)

CD45 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-CD45 antibody

Immunohistochemical analysis of paraffin-embedded Human colon cancer tissue labelling CD45 with ab281586 at 1/4000 (0.138 ug/ml) dilution followed by a ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101). Positive staining on stromal cells of human colon cancer (PMID: 30713795). The section was incubated with ab281586 for 30 mins at room temperature.The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin.
Secondary antibody only control: Secondary antibody is a ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101).

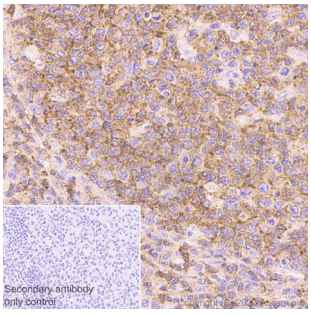
Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution2) for 20 mins.



Flow Cytometry (Intracellular) - Anti-CD45 antibody [RM1007] (ab281586)

CD45 Flow Cytometry (Intracellular) staining using rabbit Anti-CD45 antibody

Flow cytometric analysis of 4% paraformaldehyde fixed 90% methanol permeabilized 293T (Human embryonic kidney epithelial cell, Left) / Jurkat (Human T cell leukemia T lymphocyte, Right) cells labelling CD45 with ab281586 at 1/500 dilution (0.1ug) (Red) compared with a Rabbit monoclonal IgG (ab172730) (Black) isotype control and an unlabelled control (cells without incubation with primary antibody and secondary antibody) (Blue). A Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) at 1/2000 dilution was used as the secondary antibody. Negative control: 293T. (PMID: 16005866)

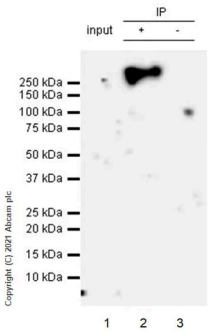


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CD45 antibody [RM1007] (ab281586)

CD45 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-CD45 antibody

Immunohistochemical analysis of paraffin-embedded Human tonsil tissue labelling CD45 with ab281586 at 1/4000 (0.138 ug/ml) dilution followed by a ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101). Positive staining on human tonsil. The section was incubated with ab281586 for 30 mins at room temperature.The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin.
Secondary antibody only control: Secondary antibody is a ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101).

Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution2) for 20 mins.



Immunoprecipitation - Anti-CD45 antibody [RM1007] (ab281586)

CD45 was immunoprecipitated from 0.35 mg Jurkat (human T cell leukemia T lymphocyte), whole cell lysate 10 ug with ab281586 at 1/30 dilution (2ug in 0.35mg lysates). Western blot was performed on the immunoprecipitate using ab281586 at 1/1000 dilution. VeriBlot for IP Detection Reagent (HRP)(ab131366) was used at 1/5000 dilution.
Lane 1: Jurkat (human T cell leukemia T lymphocyte), whole cell lysate 10 ug

Lane 2: ab281586 IP in Jurkat whole cell lysate

Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab281586 in Jurkat whole cell lysate

Blocking and dilution buffer and concentration: 5% NFDM/TBST.

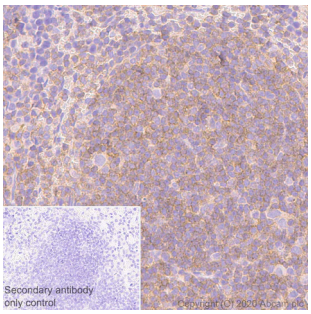
Exposure time: 3 minutes

All lanes:
Immunoprecipitation - Anti-CD45 antibody [RM1007] (ab281586)

Predicted band size: 147 kDa

Observed band size: 180 kDa, 240 kDa

Exposure time: 3min

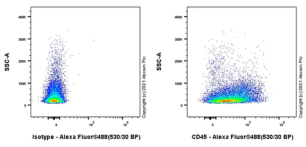


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CD45 antibody [RM1007] (ab281586)

CD45 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-CD45 antibody

Immunohistochemical analysis of paraffin-embedded Mouse spleen tissue labelling CD45 with ab281586 at 1/2000 (0.275 ug/ml) dilution followed by a ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101). Positive staining on mouse spleen. The section was incubated with ab281586 for 30 mins at room temperature.The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin.
Secondary antibody only control: Secondary antibody is a ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101).

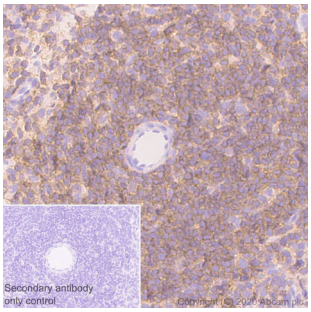
Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution2) for 20 mins.



Flow Cytometry (Intracellular) - Anti-CD45 antibody [RM1007] (ab281586)

CD45 Flow Cytometry (Intracellular) staining using rabbit Anti-CD45 antibody

Flow cytometric analysis of 4% paraformaldehyde fixed 90% methanol permeabilized Mouse peripheral blood mononuclear cell (PBMC) cells labelling CD45 with ab281586 at 1/50 dilution (1ug). Right compared with a Rabbit monoclonal IgG (ab172730) / Left isotype control. A Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) at 1/2000 dilution was used as the secondary antibody.

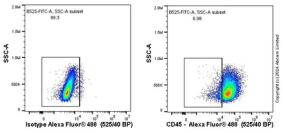


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CD45 antibody [RM1007] (ab281586)

CD45 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-CD45 antibody

Immunohistochemical analysis of paraffin-embedded Rat spleen tissue labelling CD45 with ab281586 at 1/2000 (0.275 ug/ml) dilution followed by a ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101). Positive staining on rat spleen. The section was incubated with ab281586 for 30 mins at room temperature.The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin.
Secondary antibody only control: Secondary antibody is a ready to use Rabbit specific IHC polymer detection kit HRP/DAB (ab209101).

Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution2) for 20 mins.



Flow Cytometry (Intracellular) - Anti-CD45 antibody [RM1007] (ab281586)

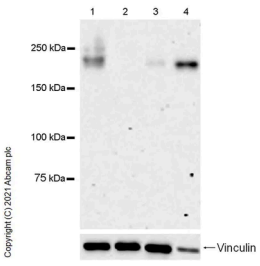
CD45 Flow Cytometry (Intracellular) staining of Mouse splenocytes using rabbit Anti-CD45 antibody

Flow cytometry overlay histogram showing mouse splenocytes stained with ab281586 (right), and isotype control antibody Recombinant Rabbit IgG, monoclonal [EPR25A] - Isotype Control (left), used at the same concentration and conditions as the primary antibody.

The cells were incubated in 1x PBS containing 10µg/ml anti CD16/CD32 and 10% normal goat serum to block FC receptors and non-specific protein-protein interactions followed by fixation and permeabilisation with BD Cytofix/Cytoperm™. The primary antibody (ab281586.0) was then added (1x 10^6 in 100µl at 0.04 µg/ml (1/2,500)) for 30min at 22°C.

The secondary antibody Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed was incubated at 1/4000 for 30min at 22°C.

Acquisition of >5000 events were collected using a 50 mW Blue laser (488nm) and 525/40 bandpass filter.



Western blot - Anti-CD45 antibody [RM1007] (ab281586)

CD45 Western blot staining using rabbit Anti-CD45 antibody

Blocking and diluting buffer and concentration: 5% NFDM/TBST
The MW observed is consistent with the literature (PMID: 14715639).

Negative control: 293T (PMID: 22978632).

This blot was developed using a higher sensitivity ECL substrate.

Exposure time: 3 minutes.

All lanes:
Western blot - Anti-CD45 antibody [RM1007] (ab281586) at 1/1000 dilution

Lane 1:
Jurkat (human T cell leukemia T lymphocyte), whole cell lysate at 20 µg

Lane 2:
293T (human embryonic kidney epithelial cell) whole cell lysate at 20 µg

Lane 3:
Mouse thymus tissue lysate at 20 µg

Lane 4:
Rat thymus tissue lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Predicted band size: 147 kDa

Observed band size: 180 kDa, 240 kDa

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