abcam

ab30470

Anti-CD45 antibody [F10-89-4] - Hematopoietic Stem Cell Marker

Anti-CD45 antibody [F10-89-4] - Hematopoietic Stem Cell Marker (ab30470) is a mouse monoclonal antibody detecting CD45 in **Flow Cytometry, ICC/IF**. Suitable for **Human**.

- Over 10 publications
- Trusted since 2006

Lab Essentials

Key facts

Isotype	IgG2a
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	F10-89-4
Purification technique	Affinity purification
Specificity	Clone F10-89-4 reacts with all forms of CD45 expressed by all haematopoietic cells, except erythrocytes, having a higher level of expression on lymphocytes than on granulocytes.
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Not recommended

Species	Human
Dilution info	-
Notes	Perform heat-mediated antigen retrieval before commencing with IHC staining protocol.

Flow Cyt

Tested

Species	Human
Dilution info	1/10 - 1/50
Notes	ab170191 - Mouse monoclonal IgG2a, is suitable for use as an isotype control with this antibody.

ICC/IF

Tested

Species	Human
Dilution info	5-10 µg/mL
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 [F10-89-4] - Hematopoietic Stem Cell Marker (ab30470) is a mouse monoclonal antibody and is validated for use in Flow Cytometry (Flow Cyt), Immunocytochemistry/immunofluorescence (ICC/IF) in Human samples.

Trusted by the scientific community
Anti-CD45 [F10-89-4] - Hematopoietic Stem Cell Marker (ab30470) was first used in a scientific publication in 2006 and has been cited over 10 times in peer-reviewed journals.

Other related products
We have a range of other formats of antibody clone [F10-89-4] also available for your convenience: ab30470, Alexa Fluor® 488 - ab197730, Carrier free - ab230296

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	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

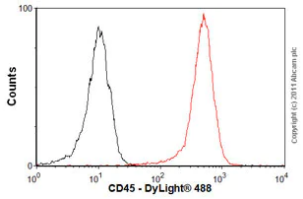
We do not recommend this combination. It is not covered by our product promise.

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.

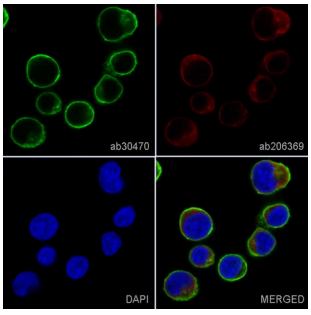
3 product images



Flow Cytometry - Anti-CD45 antibody [F10-89-4] - Hematopoietic Stem Cell Marker (ab30470)

CD45 Flow Cytometry staining using mouse Anti-CD45 antibody

Overlay histogram showing Jurkat (Human T cell leukemia cell line from peripheral blood) cells stained with ab30470 (red line). The cells were fixed with 4% paraformaldehyde (10 minutes) and incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions. The cells were then incubated with the antibody (ab30470, 1 µg/1 x 10^6 cells) for 30 minutes at 22°C. The secondary antibody used was DyLight® 488 goat anti-mouse IgG (H+L) (ab96879) at 1/500 dilution for 30 minutes at 22°C. Isotype control antibody (black line) was mouse IgG2a [ICIGG2A] (ab91361, 1 µg/1 x 10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed. This antibody gave a positive signal in Jurkat cells fixed with 80% methanol (5 minutes) used under the same conditions.
Please note that Abcam do not have any data for use of this antibody on non-fixed cells. We welcome any customer feedback.

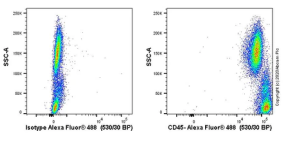


Immunocytochemistry/ Immunofluorescence - Anti-CD45 antibody [F10-89-4] - Hematopoietic Stem Cell Marker (ab30470)

CD45 Immunocytochemistry/ Immunofluorescence staining of Jurkat (Human T cell leukemia cell line from peripheral blood) cells using mouse Anti-CD45 antibody

ab30470 staining CD45 in Jurkat (Human T cell leukemia cell line from peripheral blood) cells. The cells were fixed with 4% formaldehyde (10 minutes), then blocked with 1% BSA/10% normal goat serum/0.3M glycine in 0.1% PBS-Tween for 1 hour. The cells were then incubated overnight at +4°C with ab30470 at 5 µg/ml (shown in green) and ab206369, Rabbit monoclonal to beta Tubulin (Alexa Fluor® 594), at 1/250 dilution (shown in red). This was followed by an incubation at room temperature for 1 hour with ab150117, Goat Anti-Mouse IgG H&L (Alexa Fluor® 488) preadsorbed, at 1 µg/ml (shown in green). Nuclear DNA was labelled with DAPI (shown in blue).
Image was taken with a confocal microscope (Leica-Microsystems, TCS SP8).

This product also gave a positive signal under the same testing conditions in Jurkat cells fixed with 80% methanol (5 minutes).



Flow Cytometry - Anti-CD45 antibody [F10-89-4] - Hematopoietic Stem Cell Marker (ab30470)

CD45 Flow Cytometry staining using mouse Anti-CD45 antibody

Flow cytometry staining of human whole blood with ab30470 (right) or mouse IgG2aκ; (ab18413) isotype (left). Red blood cells of 200 µL blood were lysed, then cells were incubated for 30 min on ice in 1x PBS containing 10 µg/ml human IgG and 10 % normal goat serum to block FC receptors and non-specific protein-protein interaction followed by the antibody (ab30470) or mouse IgG2aκ; (ab18413) isotype ($1x10^6$ in 100 µL at 0.2 µg/ml) for 30 min on ice.
The secondary antibody Goat anti-mouse IgG H&L (Alexa Fluor ® 488, pre-adsorbed) (ab150117) was used at 1/2000 dilution for 30 min on ice.

Acquisition of >30000 events were collected using a 50 mW Blue laser (488nm) and 530/30 bandpass filter. Events were gated on alive cells.

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