abcam

ab181020

Anti-CXCR4/CD184 antibody [EPUMBR3]

Anti-CXCR4/CD184 antibody [EPUMBR3] (ab181020) is a rabbit monoclonal antibody detecting CXCR4/CD184 in **Western Blot, Flow Cytometry (Intra), IHC-P, ICC/IF**. Suitable for **Human**.

- KO validated for confirmed specificity
- Biophysical QC for unrivalled batch-batch consistency
- Over 40 publications

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	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPUMBR3
Purification technique	Affinity purification Protein A
Specificity	This antibody recognizes only the non-phosphorylated C-terminus of CXCR4 (residues 341-352). Phosphorylation of S346/347 blocks antibody binding. PMID: 24154522, 25451233. We recommend dephosphorylation of samples using lambda phosphatase treatment. Please refer to application notes. Although some customers can get this ab to work in mouse and rat successfully, we cannot reproduce this in house in IHC so cannot guarantee it. We would recommend antibody Anti-CXCR4 antibody [UMB2] (ab124824) for use in mouse IHC.
Concentration	1.545 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IP

Not recommended

Species	Mouse, Human, Recombinant fragment - Human
Dilution info	-
Notes	-

WB

Tested

Species	Recombinant fragment - Human
Dilution info	1/1000 - 1/10000
Notes	We recommend lambda protein phosphatase treatment of the membrane prior to primary antibody incubation (PMID 24154522). Use 800U for 1 hr at RT then rinse in wash buffer three times.

Species	Human
Dilution info	1/1000 - 1/10000
Notes	We recommend lambda protein phosphatase treatment of the membrane prior to primary antibody incubation (PMID 24154522). Use 800U for 1 hr at RT then rinse in wash buffer three times.

Not recommended

Species	Mouse
Dilution info	-
Notes	-

IHC-P

Tested

Species	Human

Dilution info	-
Notes	We recommend lambda protein phosphatase treatment prior to IHC processing (PMID 24154522). Use 800U for 1 hr at RT then rinse in PBS three times. Perform heat-mediated antigen retrieval via the microwave method before commencing with IHC staining protocol. Boil slides seven times for five minutes each in pH 6 citrate buffer.

Not recommended

Species	Mouse
Dilution info	-
Notes	Perform heat-mediated antigen retrieval via the microwave method before commencing with IHC staining protocol. Boil slides seven times for five minutes each in pH 6 citrate buffer.

Species	Recombinant fragment - Human
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/500
Notes	**For unpurified use at 5 µg/mL.**

Not recommended

Species	Mouse, Recombinant fragment - Human
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human

Dilution info	-
Notes	-

Not recommended

Species	Mouse, Recombinant fragment - Human
Dilution info	-
Notes	-

Target data

See full target information CXCR4

Function

Receptor for the C-X-C chemokine CXCL12/SDF-1 that transduces a signal by increasing intracellular calcium ion levels and enhancing MAPK1/MAPK3 activation (PubMed:10074102, PubMed:10452968, PubMed:10644702, PubMed:10825158, PubMed:18799424, PubMed:20048153, PubMed:20505072, PubMed:24912431, PubMed:28978524, PubMed:8752280, PubMed:8752281). Ligand binding causes a conformation change that triggers signaling via guanine nucleotide-binding proteins (G proteins) and modulates the activity of downstream effectors, such as adenylate cyclase (PubMed:16725153, PubMed:17197449, PubMed:18799424, PubMed:39093700). CXCR4 is coupled to G(i) G alpha proteins and mediates inhibition of adenylate cyclase (PubMed:17197449, PubMed:39093700). Involved in the AKT signaling cascade (PubMed:24912431). Plays a role in regulation of cell migration, e.g. during wound healing (PubMed:28978524). Also acts as a receptor for extracellular ubiquitin; leading to enhanced intracellular calcium ions and reduced cellular cAMP levels (PubMed:20228059). Binds bacterial lipopolysaccharide (LPS) et mediates LPS-induced inflammatory response, including TNF secretion by monocytes (PubMed:11276205). Involved in hematopoiesis and in cardiac ventricular septum formation (By similarity). Also plays an essential role in vascularization of the gastrointestinal tract, probably by regulating vascular branching and/or remodeling processes in endothelial cells (By similarity). Involved in cerebellar development; in the CNS, could mediate hippocampal-neuron surviva (By similarity). (Microbial infection) Acts as a coreceptor (CD4 being the primary receptor) for human immunodeficiency virus-1/HIV-1 X4 isolates and as a primary receptor for some HIV-2 isolates. Promotes Env-mediated fusion of the virus (PubMed:10074122, PubMed:10756055, PubMed:8849450, PubMed:8929542, PubMed:9427609).

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

What is this antibody validated in?
Anti-CXCR4 antibody [EPUMBR3] (ab181020) is a rabbit recombinant monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Intra), Immunohistochemistry (IHC-P), Immunocytochemistry/immunofluorescence (ICC/IF) in Human, samples.

What is the molecular weight of CXCR4?
Anti-CXCR4 [EPUMBR3] (ab181020) specifically detects a band for CXCR4 (UniProt: P61073) at a molecular weight of 39kDa.

Trusted by the scientific community
Anti-CXCR4 [EPUMBR3] (ab181020) was first used in a scientific publication in 2014 and has been cited over 40 times in peer-reviewed journals.

Specificity confirmed
The specificity of Anti-CXCR4 antibody [EPUMBR3] (ab181020) has been confirmed by Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) testing in CXCR4 Knockout mouse embryo samples.

Other related products
We have a range of other formats of antibody clone [EPUMBR3] also available for your convenience: ab181020, Alexa Fluor® 488 - ab216390, Alexa Fluor® 647 - ab216548, Alexa Fluor® 594 - ab216735, Alexa Fluor® 555 - ab216926, Carrier free - ab222223, Carrier free - ab271934

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.

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	CXCR4 also known as C-X-C chemokine receptor type 4 is a G protein-coupled receptor that is involved in signal transduction. It has a molecular weight of approximately 41 kDa. CXCR4 is ubiquitously expressed across various tissues including immune cells like T and B lymphocytes as well as in bone marrow brain and heart. It binds specifically with the ligand CXCL12 also known as stromal cell-derived factor 1 (SDF-1) facilitating responses such as cell migration and proliferation.
Biological function summary	CXCR4 plays an important role in the immune system hematopoiesis and angiogenesis. It does not function alone and is often part of a larger protein complex where it recruits and activates other G proteins. The receptor mediates chemotactic responses directing cells to sites of inflammation or injury. Its interaction with CXCL12 is critical for maintaining immune surveillance aiding in the movement and positioning of immune cells.
Pathways	CXCR4 integrates into significant cellular signaling pathways such as the PI3K/AKT pathway and the MAPK pathway. It collaborates closely with signaling proteins like AKT1 and MAPK1 impacting cell survival and growth. These pathways are essential for various cellular functions including cell cycle progression and apoptosis regulation. The cross-talk between CXCR4 and these pathways underlines its influence on cell fate decisions.
Associated diseases and disorders	CXCR4 is implicated in cancer metastasis and HIV entry into cells. Overexpression of CXCR4 is observed in several cancers contributing to tumor growth and metastasis. The interaction between CXCR4 and CXCL12 facilitates the infiltration and spread of cancer cells. Additionally in HIV CXCR4 serves as a coreceptor along with CD4 allowing the virus to enter and infect host cells. Both cancer and HIV illustrate CXCR4's central role in disease progression and pathogenesis.

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.

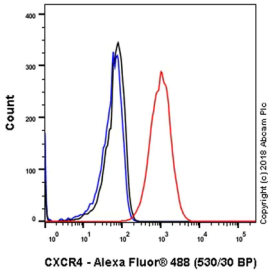
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

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8 product images

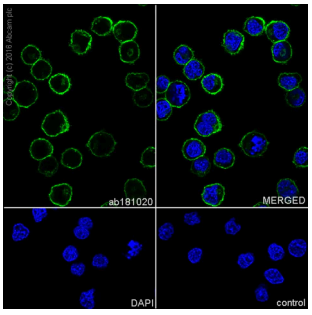


Flow Cytometry (Intracellular) - Anti-CXCR4/CD184 antibody [EPUMBR3] (ab181020)

CXCR4/CD184 Flow Cytometry (Intracellular) staining using rabbit Anti-CXCR4/CD184 antibody

Intracellular Flow Cytometry analysis of Jurkat (human T cell leukemia T lymphocyte) cells labeling CXCR4 with purified ab181020 at 1/200 dilution (10.23 µg/ml) - Red. Cells were fixed with 4% paraformaldehyde . A Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) secondary antibody was used at 1/2000 dilution. Isotype control - Rabbit monoclonal IgG (ab172730) - Black. Unlabeled control - Blue. Untreated cells - Green

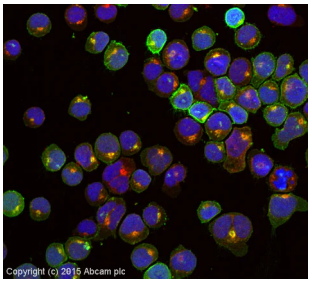
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Immunocytochemistry/ Immunofluorescence - Anti-CXCR4/CD184 antibody [EPUMBR3] (ab181020)

CXCR4/CD184 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-CXCR4/CD184 antibody

Immunocytochemistry/Immunofluorescence analysis of Ramos (Human Burkitt's lymphoma cell line) labeling CXCR4 with purified ab181020 at 1/500 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.

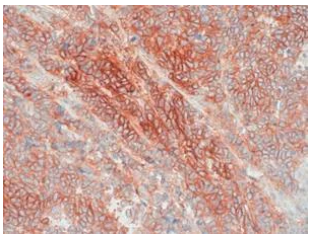


Immunocytochemistry/ Immunofluorescence - Anti-CXCR4/CD184 antibody [EPUMBR3] (ab181020)

CXCR4/CD184 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-CXCR4/CD184 antibody

ab181020 stained Jurkat cells. The cells were 100% methanol fixed for 5 minutes at -20°C and then incubated in 1%BSA / 10% normal goat serum / 0.3M glycine in 0.1% PBS-Tween for 1hour at room temperature to permeabilise the cells and block non-specific protein-protein interactions. The cells were then incubated with the antibody (ab181020 at 5µg/ml) overnight at +4°C. The secondary antibody (pseudo-colored green) was Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed (ab150081) used at a 1/1000 dilution for 1hour at room temperature. Alexa Fluor® 594 WGA was used to label plasma membranes (pseudo-colored red) at a 1/200 dilution for 1hour at

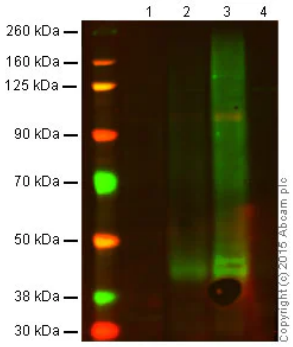
room temperature. DAPI was used to stain the cell nuclei (pseudo-colored blue) at a concentration of 1.43µM for 1hour at room temperature.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CXCR4/CD184 antibody [EPUMBR3] (ab181020)

CXCR4/CD184 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-CXCR4/CD184 antibody

Immunohistochemical analysis of paraffin embedded Human small cell lung carcinoma tissue labeling CXCR4 using ab181020.



Western blot - Anti-CXCR4/CD184 antibody [EPUMBR3] (ab181020)

CXCR4/CD184 Western blot staining using rabbit Anti-CXCR4/CD184 antibody

Running buffer: MOPS.
Conditions: denatured/reduced.

This blot was produced using a 4-12% Bis-Tris gel under the MOPS buffer system. The gel was run at 200V for 60 minutes before being transferred onto a Nitrocellulose membrane at 30V for 70 minutes. The membrane was then blocked for an hour before being incubated with ab181020 (anti-CXCR4) and ab7671 (loading ctrl), overnight at 4°C. Before imaging, antibody binding was detected using labelled goat anti-rabbit (H+L; green) and labelled goat anti-mouse (H+L; red) at 1:10,000 dilutions for 1hr at room temperature.

All lanes:
Western blot - Anti-CXCR4/CD184 antibody [EPUMBR3] (ab181020)

Lane 1:
CHO (chinese hamster ovary cell line) whole cell lysate (negative control) at 20 µg

Lane 2:
Jurkat whole cell at 20 µg

Lane 3:
Jurkat membrane at 20 µg

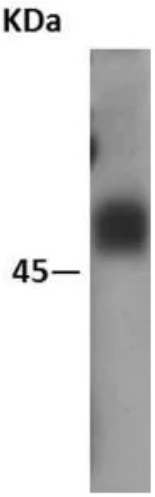
Lane 4:
Jurkat nuclear (negative control) at 20 µg

Secondary

All lanes:
Goat anti-rabbit at 1/10000 dilution

Predicted band size: 39 kDa

Observed band size: 43 kDa



Western blot - Anti-CXCR4/CD184 antibody [EPUMBR3] (ab181020)

CXCR4/CD184 Western blot staining of CXCR4 stably expressed in HEK293 cells using rabbit Anti-CXCR4/CD184 antibody

All lanes:
Western blot - Anti-CXCR4/CD184 antibody [EPUMBR3] (ab181020) at 1/1000 dilution

All lanes:
CXCR4 stably expressed in HEK293 cells

Predicted band size: 39 kDa

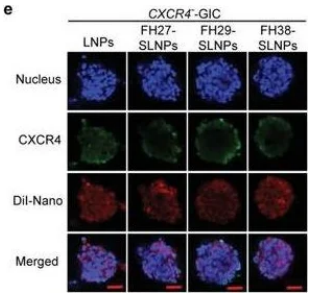


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Immunocytochemistry/ Immunofluorescence - Anti-CXCR4/CD184 antibody [EPUMBR3] (ab181020)

CXCR4/CD184 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-CXCR4/CD184 antibody

Immunocytochemistry-immunofluorescence using Anti-CXCR4 antibody [EPUMBR3], ab181020. Publication image from Jiang, G. et al., 2020, Adv Sci (Weinh), 32154087. Legend direct from paper.

Patient⊠derived GICs efficiently captured SLNPs via CXCR4⊠stimulated macropinocytosis. a) SDF1 mimic peptides (FH27/FH29/FH38) modification enhanced the cellular uptake of DiI⊠labeled SLNPs. SLNPs were prepared at the peptides: DMPC, molar ratio 1:100, and incubated with GICs at 37 °C for 3.5 h at the DMPC concentration of 20 μg mL−1 (n = 3). The significance of the differences was evaluated by one⊠way ANOVA followed by Bonferroni test (*p < 0.05, ****p < 0.0001). b) Cellular uptake of DiI⊠SLNPs and colocalization of SLNPs to CXCR4. Scale bar, 100 μm. c) The FH38⊠DiI⊠SLNPs showed the highest percentage of colocalization with CXCR4. d) Knockdown of CXCR4 led to a reduction in the cellular uptake of DiI⊠LNPs and DiI⊠SLNPs (n = 3). The significance of the differences between two groups (**p < 0.01, ****p < 0.0001) was evaluated by two⊠tailed Student's t⊠test. e) Qualitative analysis of the GICs uptake of LNPs and SLNPs after knocking down CXCR4. Scale bar, 100 μm. f) Colocalization of DiI⊠LNPs and DiI⊠SLNPs to macropinocytosis marker FITC⊠70 kDa dextran in GICs in the absence/presence of EIPA (150 x 10−6m). Scale bar, 100 μm.

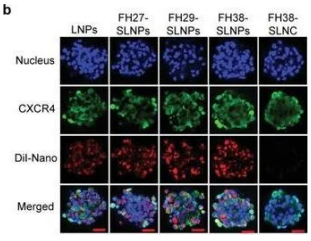


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Immunocytochemistry/ Immunofluorescence - Anti-CXCR4/CD184 antibody [EPUMBR3] (ab181020)

CXCR4/CD184 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-CXCR4/CD184 antibody

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