abcam

ab240987

Anti-CD21 antibody [SP186] - BSA and Azide free

Anti-CD21 antibody [SP186] - BSA and Azide free (ab240987) is a rabbit recombinant monoclonal antibody provided in a PBS only buffer for easy conjugation detecting CD21 in **Western Blot, Flow Cytometry (Intra), IHC-P, IHC-Fr**. Suitable for **Human, Mouse, Rat**.

- BSA, sodium azide, and glycerol-free for easy conjugation
- Biophysical QC for unrivalled batch-batch consistency

Recombinant | RabMAb

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Carrier free	Yes
Clone number	SP186
Purification technique	Affinity purification Protein A/G
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	Purified from TCS by protein A/G.

Reactivity data

IHC-P

Tested

Species	Rat
Dilution info	-
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Species	Human
Dilution info	-
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Species	Mouse
Dilution info	-
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Species	Cat
Dilution info	-
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Species	Dog
Dilution info	-
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Species	Horse
Dilution info	-
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Species	Pig
Dilution info	-
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Species	Llama
Dilution info	-
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Flow Cyt (Intra)

Tested

Species	Rat, Human
Dilution info	-
Notes	-

Expected

Species	Mouse, Cat, Dog, Horse, Pig, Llama
Dilution info	Use at an assay dependent concentration.
Notes	-

WB

Tested

Species	Human
Dilution info	-
Notes	-

Expected

Species	Rat, Cat, Dog, Horse, Pig, Llama
Dilution info	Use at an assay dependent concentration.
Notes	-

Not recommended

Species	Mouse

Dilution info	-
Notes	-

IHC-Fr

Tested

Species	Mouse
Dilution info	-
Notes	-

Expected

Species	Rat, Human, Cat, Dog, Horse, Pig, Llama
Dilution info	Use at an assay dependent concentration.
Notes	-

Target data

See full target information CR2

Function

Serves as a receptor for various ligands including complement component CD3d, HNRNPU OR IFNA1 (PubMed:1849076, PubMed:21527715, PubMed:7753047). When C3d is bound to antigens, attaches to C3d on B-cell surface and thereby facilitates the recognition and uptake of antigens by B-cells (PubMed:21527715). This interaction enhances B-cell activation and subsequent immune responses. Forms a complex with several partners on the surface of B-cells including CD19, FCRL5 and CD81, to form the B-cell coreceptor complex that plays a crucial role in B-cell activation and signaling (PubMed:1383329, PubMed:30107486). Also induces specific intracellular signaling separately from the BCR and CD19 by activating the tyrosine kinase SRC, which then phosphorylates nucleolin/NCL and triggers AKT and GSK3 kinase activities in a SYK/CD19-independent manner (PubMed:12938232). Acts as a ligand for CD23 (FcepsilonRII), a low-affinity receptor for IgE, which is expressed on B-cells and other immune cells, and thus participates in the regulation of IgE production (PubMed:1386409). (Microbial infection) Acts as a receptor for Epstein-Barr virus.

Storage

Shipped at conditions	Blue Ice

Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C
Storage information	Do Not Freeze

Notes

What is this antibody validated in?
Anti-CD21 antibody [SP186] - BSA and Azide free (ab240987) is a rabbit recombinant monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Intra), Flow Cytometry (Flow Cyt), Immunohistochemistry (IHC-P), Immunohistochemistry (IHC-Fr) in Human, Mouse, Rat samples.

What is the molecular weight of CD21?
Anti-CD21 [SP186] - BSA and Azide free (ab240987) specifically detects a band for CD21 (UniProt: P20023) at a molecular weight of 113kDa.

Collaboration
Anti-CD21 [SP186] - BSA and Azide free (ab240987) is a clone from the portfolio of Spring Bioscience (Roche) SP clones which have been optimised for immunohistochemistry (IHC).

Other related products
We have a range of other formats of antibody clone [SP186] also available for your convenience: ab227662, Carrier free - ab240987, ab279465, PE - ab306325, APC - ab306326, HRP - ab306327, Alkaline Phosphatase - ab308986, Alexa Fluor® 488 - ab309929, Alexa Fluor® 647 - ab310296, Alexa Fluor® 594 - ab310758, Alexa Fluor® 555 - ab312285, Alexa Fluor® 568 - ab312780, Alexa Fluor® 750 - ab321441

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.

Conjugation ready
Our carrier-free antibodies are typically supplied in a PBS-only formulation, purified and free of BSA, sodium azide and glycerol. This conjugation-ready format is designed for use with fluorochromes, metal isotopes, oligonucleotides, and enzymes, which makes them ideal for antibody labelling, functional and cell-based assays, flow-based assays (e.g. mass cytometry) and Multiplex Imaging applications.

Use our conjugation kits for antibody conjugates that are ready-to-use in as little as 20 minutes with 1 minute hands-on-time and 100% antibody recovery: available for fluorescent dyes, HRP, biotin and gold.

Compatibility
This product is compatible with the Maxpar® Antibody Labeling Kit from Fluidigm, without the need for antibody preparation. Maxpar® is a trademark of Fluidigm Canada Inc.

Supplementary info

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

Activity summary	CD21 also known as complement receptor type 2 (CR2) or BU32 is a protein primarily expressed on the surface of B cells and some T cells. It functions as a receptor for complement component C3d EBV (Epstein-Barr Virus) and IFN-α. CD21 weighs approximately 145 kDa and belongs to the membrane protein family. Detection of CD21 can be done via immunohistochemistry (IHC) and blood tests. This marker is valuable for identifying cell populations that have roles in immune responses.
Biological function summary	Complement receptor type 2 is key in the immune system by facilitating B cell activation and proliferation. CD21 forms complexes with CD19 and CD81 increasing the sensitivity of B cells to antigens. This interaction enhances signal transduction enabling B lymphocytes to respond effectively to pathogens. The protein also plays a role in regulating immune tolerance and maintaining humoral immunity being important not only in immune defense but also in preventing autoimmunity.
Pathways	CD21 interacts with complement activation and immune response pathways. It connects with CD19 in a pivotal role where it further amplifies signaling in B lymphocytes. This interaction strengthens the downstream signaling of BCR (B cell receptor) important for antibody production. CD21 contributes to bridging the innate and adaptive immunological pathways by engaging components like C3d.
Associated diseases and disorders	CD21 shows significant relevance in systemic lupus erythematosus (SLE) and some B cell lymphomas. Deficiencies or mutations in CD21 can lead to defective immune responses and increased susceptibility to autoimmune conditions such as SLE where CD19 is also implicated. Furthermore in Epstein-Barr Virus infections CD21 serves as an entry receptor facilitating pathogen establishment which can result in chronic conditions or even malignancies.

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

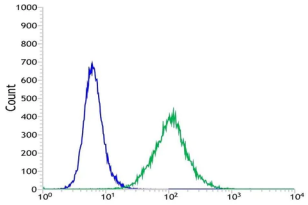
We do not recommend this combination. It is not covered by our product promise.

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.

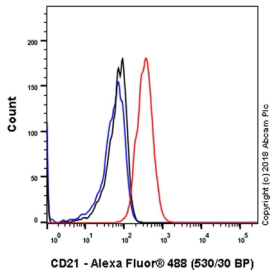
16 product images



Flow Cytometry (Intracellular) - Anti-CD21 antibody [SP186] - BSA and Azide free (ab240987)

CD21 Flow Cytometry (Intracellular) staining using rabbit Anti-CD21 antibody

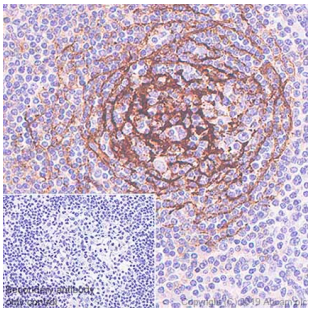
Flow cytometric analysis of Raji (human Burkitt's lymphoma cell line) cell line labeling CD21 with ab227662 at 1/100 dilution (green) compared with a Rabbit IgG negative control (blue).
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, and sodium azide (ab227662).



Flow Cytometry (Intracellular) - Anti-CD21 antibody [SP186] - BSA and Azide free (ab240987)

CD21 Flow Cytometry (Intracellular) staining using rabbit Anti-CD21 antibody

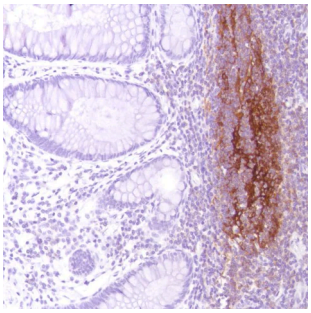
Flow Cytometry analysis of Raji (human Burkitt's lymphoma B lymphocyte) cells labeling CD21 with purified ab227662 at 1:20 dilution (5.3 µg/ml) - Red. Cells were fixed with 4% paraformaldehyde . A Goat anti rabbit IgG (Alexa Fluor® 488, ab150081) secondary antibody was used at 1:2000 dilution. Isotype control - Rabbit monoclonal IgG (ab172730) - Black. Unlabeled control - Blue.This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab240987)



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CD21 antibody [SP186] - BSA and Azide free (ab240987)

CD21 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-CD21 antibody

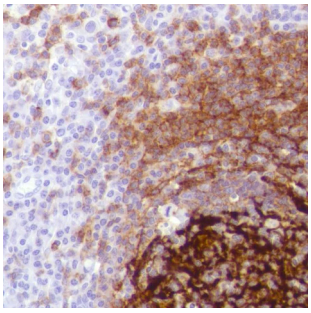
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Human tonsil tissue sections labeling CD21 with ab227662 at 1/100 dilution (1.06 µg/ml). Heat mediated antigen retrieval with Citrate buffer (pH 6.0, epitope retrieval solution 1) for 10mins. Goat Anti-Rabbit & Mouse IgG (HRP) was used as the secondary antibody. Hematoxylin was used as a counterstain. Positive staining on the human tonsil, performed on a Leica Biosystems BOND™RX instrument. The section was incubated with ab227662 for 10 mins at room temperature.
This image was generated using ab227662, the same clone, but with a different buffer formulation.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CD21 antibody [SP186] - BSA and Azide free (ab240987)

CD21 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-CD21 antibody

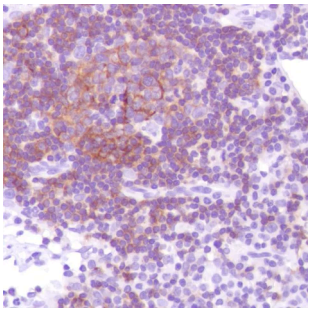
Formalin-fixed, paraffin-embedded human colon tissue stained for CD21 using ab227662 at 1/100 dilution in immunohistochemical analysis.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, and sodium azide (ab227662).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CD21 antibody [SP186] - BSA and Azide free (ab240987)

CD21 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-CD21 antibody

Formalin-fixed, paraffin-embedded human tonsil tissue stained for CD21 using ab227662 at 1/100 dilution in immunohistochemical analysis.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, and sodium azide (ab227662).

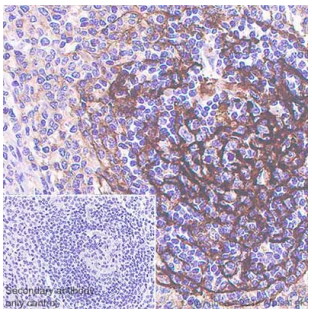


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CD21 antibody [SP186] - BSA and Azide free (ab240987)

CD21 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-CD21 antibody

Formalin-fixed, paraffin-embedded human reactive lymph node tissue stained for CD21 using ab227662 at 1/100 dilution in immunohistochemical analysis.

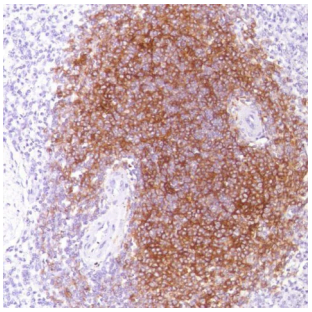
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, and sodium azide (ab227662).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CD21 antibody [SP186] - BSA and Azide free (ab240987)

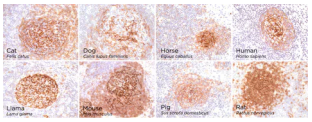
CD21 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-CD21 antibody

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Human spleen tissue sections labeling CD21 with ab227662 at 1/100 dilution (1.06 µg/ml). Heat mediated antigen retrieval with Citrate buffer (pH 6.0, epitope retrieval solution 1) for 10mins. Goat Anti-Rabbit & Mouse IgG (HRP) was used as the secondary antibody. Hematoxylin was used as a counterstain. Positive staining on the human spleen, performed on a Leica Biosystems BOND™ RX instrument.
The section was incubated with ab227662 for 10 mins at room temperature.
This image was generated using ab227662, the same clone, but with a different buffer formulation.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CD21 antibody [SP186] - BSA and Azide free (ab240987)

Formalin-fixed, paraffin-embedded human spleen tissue stained for CD21 using ab227662 at 1/100 dilution in immunohistochemical analysis.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, and sodium azide (ab227662).



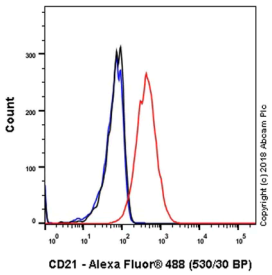
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CD21 antibody [SP186] - BSA and Azide free (ab240987)

CD21 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-CD21 antibody

This data was developed using ab227662, the same antibody clone in a different buffer formulation
The BOND™ Polymer Refine Detection System on the BOND RX Automated Stainer (DS9800, Leica Biosystems, Wetzlar, Germany) was used for immunohistochemical labelling of formalin-fixed, paraffin-embedded (FFPE) tissues. The protocol includes a peroxide block, post-primary reagent, polymer detection, DAB chromogen, and haematoxylin counterstain, all automated to minimize variability. Antigen retrieval was performed by heat-induced epitope retrieval (HIER) for 20 minutes in Tris-EDTA buffer (BOND Epitope Retrieval Solution 2, AR9640, Leica Biosystems, Wetzlar, Germany). For mouse and rabbit antibodies, the sequence comprised peroxide block (10 min), primary antibody incubation (30 min), post-primary (10 min), polymer (10 min), DAB (10 min), and haematoxylin (8 min). For rat antibodies, an anti-rat step (1:300 dilution, Vector Laboratories, California, USA; 20 min) was included prior to polymer application (15 min).

For mouse tissues, antigen retrieval was performed using high pH buffers (Dako, Agilent), followed by blocking of endogenous peroxidase activity with 3% hydrogen peroxide. Slides were then incubated with the primary antibody. Antigen/antibody complexes detection was carried out using a horseradish peroxidase-conjugated visualization system (Novolink Polymer, Leica). Staining was

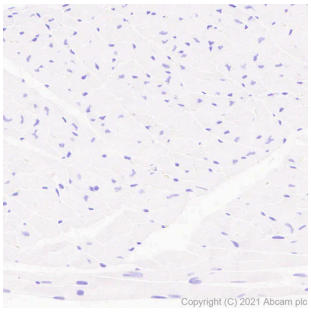
developed with 3,3′-diaminobenzidine (EnVision FLEX DAB Enhancer, Dako, Agilent), and nuclei were counterstained with hematoxylin (FLEX Hematoxylin, SM806, Dako, Agilent). Images were acquired using an Axiocam CCD camera (Zeiss) and processed with ZEN 2.1 software and Photoshop 9.0.



Flow Cytometry (Intracellular) - Anti-CD21 antibody [SP186] - BSA and Azide free (ab240987)

CD21 Flow Cytometry (Intracellular) staining using rabbit Anti-CD21 antibody

Flow Cytometry analysis of 2.4G2 (rat B cell lymphoma B lymphocyte) cells labeling CD21 with purified ab227662 at 1:200 dilution (0.53 µg/ml) - Red. Cells were fixed with 4% paraformaldehyde . A Goat anti rabbit IgG (Alexa Fluor® 488, ab150081) secondary antibody was used at 1:2000 dilution. Isotype control - Rabbit monoclonal IgG (ab172730) - Black. Unlabeled control - Blue.This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab240987)



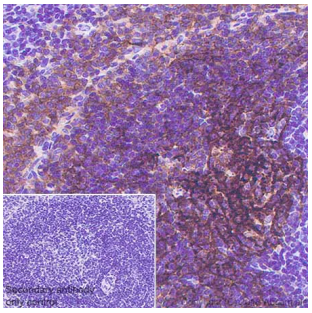
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CD21 antibody [SP186] - BSA and Azide free (ab240987)

CD21 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-CD21 antibody

This data was developed using ab227662, the same antibody clone in a different buffer formµlation.
Immunohistochemical analysis of paraffin-embedded Mouse cardiac muscle tissue labeling CD21 with ab227662 at 1/100 (0.28 µg/ml) dilution followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Negative control: no staining on mouse cardiac muscle. The section was incubated with ab227662 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 LeicaDS9800 (Bond™ Polymer Refine Detection).

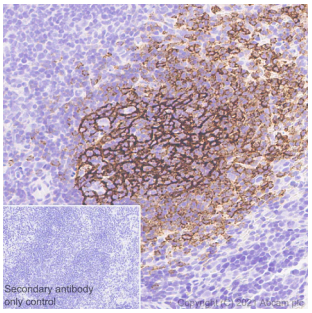
Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution) for 20 mins



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CD21 antibody [SP186] - BSA and Azide free (ab240987)

CD21 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-CD21 antibody

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Rat spleen tissue sections labeling CD21 with ab227662 at 1/100 dilution (1.06 µg/ml). Heat mediated antigen retrieval with Citrate buffer (pH 6.0, epitope retrieval solution 1) for 10mins. Goat Anti-Rabbit & Mouse IgG (HRP) was used as the secondary antibody. Hematoxylin was used as a counterstain. Positive staining on the rat spleen, performed on a Leica Biosystems BOND™ RX instrument.
The section was incubated with ab227662 for 10 mins at room temperature.
This image was generated using ab227662, the same clone, but with a different buffer formulation.



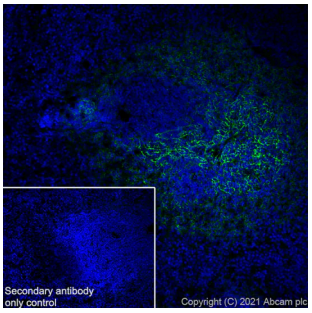
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CD21 antibody [SP186] - BSA and Azide free (ab240987)

CD21 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-CD21 antibody

This data was developed using ab227662, the same antibody clone in a different buffer formµlation.
Immunohistochemical analysis of paraffin-embedded Mouse spleen tissue labeling CD21 with ab227662 at 1/100 (0.28 µg/ml) dilution followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Positive staining on mouse spleen. The section was incubated with ab227662 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 LeicaDS9800 (Bond™ Polymer Refine Detection).

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



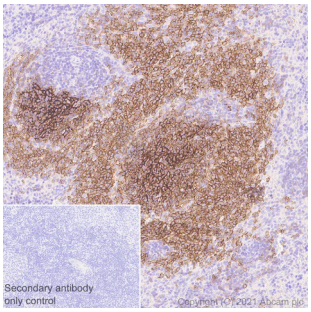
Immunohistochemistry (Frozen sections) - Anti-CD21 antibody [SP186] - BSA and Azide free (ab240987)

CD21 Immunohistochemistry (Frozen sections) staining using rabbit Anti-CD21 antibody

This data was developed using ab227662, the same antibody clone in a different buffer formµlation.
Immunohistochemical analysis of 4% PFA-fixed, 0.2% Triton X-100 permeabilized frozen mouse spleen tissue labeling CD21 with ab227662 at 1/100 (0.28 µg/ml) dilution followed by ab150077 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) at 1/1000 2 µg/ml dilution (Green). membranous staining on mouse spleen is observed. The nuclear counterstain was DAPI (Blue).

Secondary antibody control: Secondary antibody is ab150077 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) at 1000 2 µg/ml dilution.

Heat mediated antigen retrieval using sodium citrate buffer (10mM citrate pH 6.0 + 0.05% Tween-20).



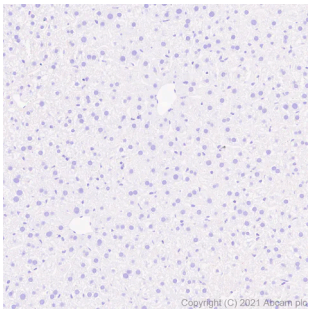
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CD21 antibody [SP186] - BSA and Azide free (ab240987)

CD21 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-CD21 antibody

This data was developed using ab227662, the same antibody clone in a different buffer formµlation.
Immunohistochemical analysis of paraffin-embedded Rat spleen tissue labeling CD21 with ab227662 at 1/100 (0.28 µg/ml) dilution followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Positive staining on rat spleen. The section was incubated with ab227662 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 LeicaDS9800 (Bond™ Polymer Refine Detection).

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



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CD21 antibody [SP186] - BSA and Azide free (ab240987)

CD21 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-CD21 antibody

This data was developed using ab227662, the same antibody clone in a different buffer formµlation.
Immunohistochemical analysis of paraffin-embedded Mouse liver tissue labeling CD21 with ab227662 at 1/100 (0.28 µg/mL) dilution followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Negative control: no staining on mouse liver. The section was incubated with ab227662 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 LeicaDS9800 (Bond™ Polymer Refine Detection).

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

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