abcam

ab21703

Anti-CD3 epsilon antibody [SP7], prediluted

Lab Essentials | Recombinant | RabMAb | Advanced Validation

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.1% Sodium azide Constituents: PBS, 1% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	SP7
Purification technique	Affinity purification Protein A
Specificity	ab21703 recognises CD3 epsilon chain. This antibody reacts with the intracytoplasmic portion of the CD3 antigen expressed by T cells. It stains human T cells in both the cortex and medulla of the thymus and in peripheral lymphoid tissues.
Concentration	0.01 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	1/150

Notes	Use neat. Perform high temperature antigen unmasking with 10 mM citrate buffer, pH 6.0.

Expected

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

Predicted

Species	Rabbit, Dog, Pig, Cynomolgus monkey, Macaque monkey, Woodchuck
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

Predicted

Species	Rabbit, Dog, Pig, Cynomolgus monkey, Macaque monkey, Woodchuck
Dilution info	-
Notes	-

WB

Tested

Species	Mouse, Rat, Human
Dilution info	-
Notes	-

Predicted

Species	Rabbit, Dog, Pig, Cynomolgus monkey, Macaque monkey, Woodchuck
Dilution info	-
Notes	-

mIHC

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

Predicted

Species	Rabbit, Dog, Pig, Cynomolgus monkey, Macaque monkey, Woodchuck
Dilution info	-
Notes	-

Target data

See full target information CD3E

Function	Part of the TCR-CD3 complex present on T-lymphocyte cell surface that plays an essential role in adaptive immune response (PubMed:15294938, PubMed:15546002, PubMed:2470098, PubMed:40592325, PubMed:8490660). When antigen presenting cells (APCs) activate T-cell receptor (TCR), TCR-mediated signals are transmitted across the cell membrane by the CD3 chains CD3D, CD3E, CD3G and CD247/CD3Z (PubMed:2470098, PubMed:40592325). All CD3 chains contain immunoreceptor tyrosine-based activation motifs (ITAMs) in their cytoplasmic domain (PubMed:2470098, PubMed:40592325). Upon TCR engagement, these motifs become phosphorylated by Src family protein tyrosine kinases LCK and FYN, resulting in the activation of downstream signaling pathways (PubMed:2470098, PubMed:40592325). CD3E ITAM phosphorylation creates docking sites for the protein kinase ZAP70 leading to ZAP70 phosphorylation and its conversion into a catalytically active enzyme (By similarity). In addition of this role of signal transduction in T-cell activation, CD3E plays an essential role in correct T-cell development (By similarity). Also participates in internalization and cell surface down-regulation of TCR-CD3 complexes via endocytosis sequences present in CD3E cytosolic region (PubMed:10384095, PubMed:26507128). In addition to its role as a TCR coreceptor, it serves as a receptor for ITPRIPL1 (PubMed:38614099). Ligand recognition inhibits T-cell activation by promoting interaction with NCK1, which prevents CD3E-ZAP70 interaction and blocks the ERK-NFkB signaling cascade and calcium influx (PubMed:12110186, PubMed:38614099).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C

Notes

This antibody is suitable for staining normal and neoplastic T cells.

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.

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.

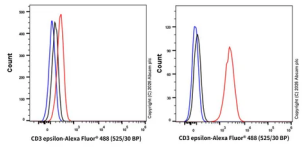
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

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.

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9 product images



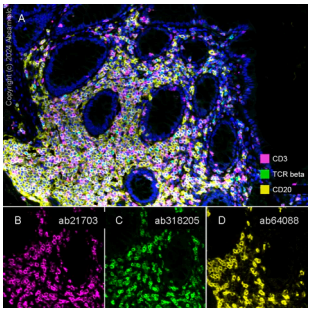
Flow Cytometry (Intracellular) - Anti-CD3 epsilon antibody [SP7], prediluted (ab21703)

CD3 epsilon Flow Cytometry (Intracellular) staining using rabbit Anti-CD3 epsilon antibody

This data was developed using ab16669, the same antibody clone in a different buffer formulation. Flow cytometric analysis of 4% paraformaldehyde fixed 90% methanol permeabilized Left: U-937 (Human histiocytic lymphoma monocyte) / Right: Jurkat (Human T cell leukemia T lymphocyte) cells labelling CD3 epsilon with ab16669 at 1/100 dilution / Red compared with an isotype control Rabbit monoclonal IgG (ab172730) / Black and unlabelled control cell without incubation with primary antibody and secondary antibody / Blue.

Goat anti-Rabbit IgG H&L (Alexa Fluor® 488, ab150081) preadsorbed at 1/5000 dilution was used as the secondary antibody.

Negative control: U-937 (PMID: 40579234)



Multiplex immunohistochemistry - Anti-CD3 epsilon antibody [SP7], prediluted (ab21703)

CD3 epsilon Multiplex immunohistochemistry staining of Human colon using rabbit Anti-CD3 epsilon antibody

Multiplex immunohistochemistry analysis of formalin/PFA-fixed paraffin-embedded human colon tissue staining CD3 with ab21703 at a 1/150 (0.06 ug/ml) dilution, ab318205 anti-TCR beta used at 1/500 (1.036 ug/ml) dilution and ab64088 anti-CD20 used at a 1/50 (0.2 ug/ml) dilution.

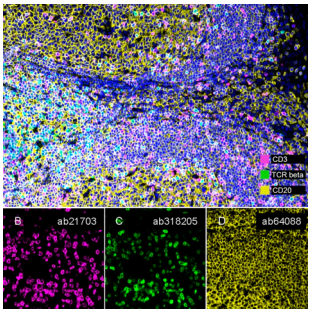
Panel A: merged staining of anti-CD3 (magenta; Opal™690), anti-TCR beta (green; Opal™520) and anti-CD20 (yellow; Opal™570) on human colon.
Panel B: anti-CD3 staining T lymphocytes in human colon.
Panel C: anti-TCR beta staining T lymphocytes in human colon.
Panel D: anti-CD20 staining B lymphocytes in human colon.
Nuclear DNA was labeled with DAPI (shown in blue).

The section was incubated in three rounds of staining: in the order of ab21703, ab318205 and ab64088 for 30 mins at room temperature. Each round was followed by a separate fluorescent tyramide signal amplification system.

The immunostaining was performed on a Leica Biosystems BOND® RX instrument with an Opal™ 4-color kit. Image acquisition was performed with Leica SP8 confocal microscope.

Nuclear counter stain with DAPI.

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



Multiplex immunohistochemistry - Anti-CD3 epsilon antibody [SP7], prediluted (ab21703)

CD3 epsilon Multiplex immunohistochemistry staining of Human tonsil using rabbit Anti-CD3 epsilon antibody

Multiplex immunohistochemistry analysis of formalin/PFA-fixed paraffin-embedded human tonsil tissue staining CD3 with ab21703 at a 1/150 (0.06 ug/ml) dilution, ab318205 anti-TCR beta used at 1/500 (1.036 ug/ml) dilution and ab64088 anti-CD20 used at a 1/50 (0.2 ug/ml) dilution.

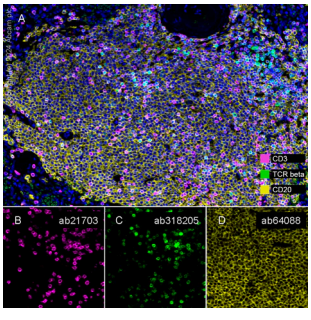
Panel A: merged staining of anti-CD3 (magenta; Opal™690), anti-TCR beta (green; Opal™520) and anti-CD20 (yellow; Opal™570) on human tonsil.
Panel B: anti-CD3 staining T lymphocytes in human tonsil.
Panel C: anti-TCR beta staining T lymphocytes in human tonsil.
Panel D: anti-CD20 staining B lymphocytes in human tonsil.
Nuclear DNA was labeled with DAPI (shown in blue).

The section was incubated in three rounds of staining: in the order of ab21703, ab318205 and ab64088 for 30 mins at room temperature. Each round was followed by a separate fluorescent tyramide signal amplification system.

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Nuclear counter stain with DAPI.

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



Multiplex immunohistochemistry - Anti-CD3 epsilon antibody [SP7], prediluted (ab21703)

CD3 epsilon Multiplex immunohistochemistry staining of Human spleen using rabbit Anti-CD3 epsilon antibody

Multiplex immunohistochemistry analysis of formalin/PFA-fixed paraffin-embedded human spleen tissue staining CD3 with ab21703 at a 1/150 (0.06 ug/ml) dilution, ab318205 anti-TCR beta used at 1/500 (1.036 ug/ml) dilution and ab64088 anti-CD20 used at a 1/50 (0.2 ug/ml) dilution.

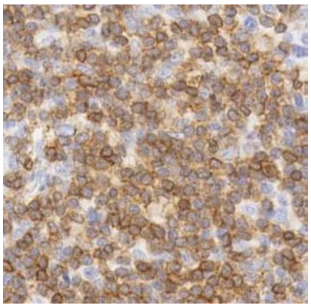
Panel A: merged staining of anti-CD3 (magenta; Opal™690), anti-TCR beta (green; Opal™520) and anti-CD20 (yellow; Opal™570) on human spleen.
Panel B: anti-CD3 staining T lymphocytes in human spleen.
Panel C: anti-TCR beta staining T lymphocytes in human spleen.
Panel D: anti-CD20 staining B lymphocytes in human spleen.
Nuclear DNA was labeled with DAPI (shown in blue).

The section was incubated in three rounds of staining: in the order of ab21703, ab318205 and ab64088 for 30 mins at room temperature. Each round was followed by a separate fluorescent tyramide signal amplification system.

The immunostaining was performed on a Leica Biosystems BOND® RX instrument with an Opal™ 4-color kit. Image acquisition was performed with Leica SP8 confocal microscope.

Nuclear counter stain with DAPI.

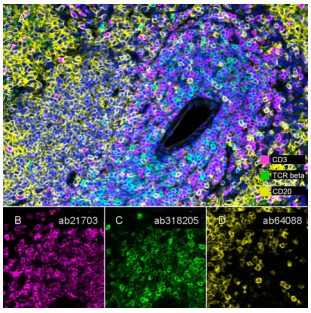
Heat mediated antigen retrieval with Tris-EDTA buffer (pH 9.0, epitope retrieval solution2) for 20 mins.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CD3 epsilon antibody [SP7], prediluted (ab21703)

CD3 epsilon Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-CD3 epsilon antibody

Immunohistochemical analysis of paraffin-embedded Human tonsil labeling CD3 epsilon with ab21703 at 1/150 (7 µg/ml). The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH 6.0, epitope retrieval solution 1) for 20 mins. The section was then incubated with ab21703 for 15 mins at room temperature and detected using an HRP conjugated compact polymer system. The immunostaining was performed on a Leica Biosystems BOND® RX instrument. DAB was used as the chromogen. Counterstained with Hematoxylin and mounted with DPX.



Multiplex immunohistochemistry - Anti-CD3 epsilon antibody [SP7], prediluted (ab21703)

CD3 epsilon Multiplex immunohistochemistry staining of Rat spleen using rabbit Anti-CD3 epsilon antibody

Multiplex immunohistochemistry analysis of formalin/PFA-fixed paraffin-embedded rat spleen tissue staining CD3 with ab21703 at a 1/150 (0.06 ug/ml) dilution, ab318205 anti-TCR beta used at 1/500 (1.036 ug/ml) dilution and ab64088 anti-CD20 used at a 1/50 (0.2 ug/ml) dilution.

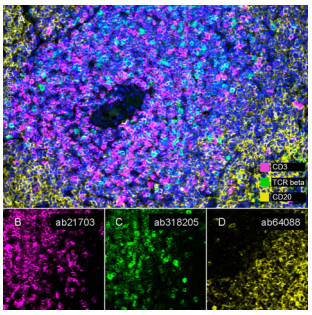
Panel A: merged staining of anti-CD3 (magenta; Opal™690), anti-TCR beta (green; Opal™520) and anti-CD20 (yellow; Opal™570) on rat spleen.
Panel B: anti-CD3 staining T lymphocytes in rat spleen.
Panel C: anti-TCR beta staining T lymphocytes in rat spleen.
Panel D: anti-CD20 staining B lymphocytes in rat spleen.
Nuclear DNA was labeled with DAPI (shown in blue).

The section was incubated in three rounds of staining: in the order of ab21703, ab318205 and ab64088 for 30 mins at room temperature. Each round was followed by a separate fluorescent tyramide signal amplification system.

The immunostaining was performed on a Leica Biosystems BOND® RX instrument with an Opal™ 4-color kit. Image acquisition was performed with Leica SP8 confocal microscope.

Nuclear counter stain with DAPI.

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



Multiplex immunohistochemistry - Anti-CD3 epsilon antibody [SP7], prediluted (ab21703)

CD3 epsilon Multiplex immunohistochemistry staining of Mouse spleen using rabbit Anti-CD3 epsilon antibody

Multiplex immunohistochemistry analysis of formalin/PFA-fixed paraffin-embedded mouse spleen tissue staining CD3 with ab21703 at a 1/150 (0.06 ug/ml) dilution, ab318205 anti-TCR beta used at 1/500 (1.036 ug/ml) dilution and ab64088 anti-CD20 used at a 1/50 (0.2 ug/ml) dilution.

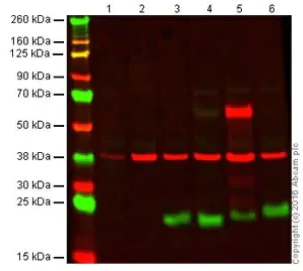
Panel A: merged staining of anti-CD3 (magenta; Opal™690), anti-TCR beta (green; Opal™520) and anti-CD20 (yellow; Opal™570) on mouse spleen.
Panel B: anti-CD3 staining T lymphocytes in mouse spleen.
Panel C: anti-TCR beta staining T lymphocytes in mouse spleen.
Panel D: anti-CD20 staining B lymphocytes in mouse spleen.
Nuclear DNA was labeled with DAPI (shown in blue).

The section was incubated in three rounds of staining: in the order of ab21703, ab318205 and ab64088 for 30 mins at room temperature. Each round was followed by a separate fluorescent tyramide signal amplification system.

The immunostaining was performed on a Leica Biosystems BOND® RX instrument with an Opal™ 4-color kit. Image acquisition was performed with Leica SP8 confocal microscope.

Nuclear counter stain with DAPI.

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



Western blot - Anti-CD3 epsilon antibody [SP7], prediluted (ab21703)

CD3 epsilon Western blot staining using rabbit Anti-CD3 epsilon antibody

This image was generated using a previous batch manufactured using hybridoma production method.
Lanes 1 - 6: Merged signal (red and green). Green – ab16669 observed at 23 kDa. Red - loading control, ab8245, observed at 37 kDa.

This blot was produced using a 4-12% Bis-tris gel under the MES buffer system. The gel was run at 200V for 50 minutes before being transferred onto a Nitrocellulose membrane at 30V for 70 minutes. The membrane was then blocked for an hour using Licor blocking buffer before being incubated with ab16669 and ab8245 (loading control) overnight at 4°C. Antibody binding was detected using Goat anti-Rabbit IgG H&L (IRDye® 800CW) preadsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye® 680RD) preadsorbed (ab216776) at a 1:10000 dilution for 1hr at room temperature and then imaged.

This data was developed using the undiluted version of this antibody (ab16669).

All lanes:
Western blot - Anti-CD3 epsilon antibody [SP7], prediluted (ab21703) at 1/25 dilution

Lane 1:

THP1 whole cell lysate (-ve control) at 15 µg

Lane 2:
Raji whole cell lysate (-ve control) at 15 µg

Lane 3:
Jurkat whole cell lysate at 15 µg

Lane 4:
Human Thymus tissue lysate at 15 µg

Lane 5:
Mouse Thymus tissue lysate at 15 µg

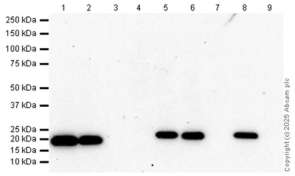
Lane 6:
Rat Thymus tissue lysate at 15 µg

Secondary

All lanes:
Western blot - Goat anti-Rabbit IgG H&L (IRDye® 800CW) preadsorbed (ab216773) at 1/10000 dilution

Predicted band size: 19 kDa

Observed band size: 23 kDa



Western blot - Anti-CD3 epsilon antibody [SP7], prediluted (ab21703)

This data was developed using ab16669, the same antibody clone in a different buffer formulation.
Negative control: U-937, Raji, brain.

All lanes:
Western blot - Anti-CD3 epsilon antibody [SP7] (ab16669) at 1/1000 dilution

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

Lane 2:
MOLT-4 (Human lymphoblastic leukemia T lymphoblast) whole cell lysate at 20 µg

Lane 3:
U-937 (Human histiocytic lymphoma monocyte) whole cell lysate at 20 µg

Lane 4:
Raji (Human Burkitt's lymphoma B lymphocyte) whole cell lysate at 20 µg

Lane 5:
EL4.IL-2 (mouse lymphoma T lymphocyte) whole cell lysate at 20 µg

Lane 6:
Mouse thymus lysate at 20 µg

Lane 7:
Mouse brain lysate at 20 µg

Lane 8:
Rat thymus lysate at 20 µg

Lane 9:
Rat brain lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Observed band size: 23 kDa

Exposure time: 180s

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