abcam

ab240949

Anti-SHP1 antibody [EPR5519] - BSA and Azide free

Recombinant | RabMAb | KO Validated

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	EPR5519
Purification technique	Affinity purification Protein A
Dissociation constant	4.95 x 10^{-11} M
Concentration	0.98 - 1.013 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	-

Notes	-

Not recommended

Species	Mouse, Rat
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	-
Notes	-

Not recommended

Species	Mouse, Rat
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	-
Notes	-

Not recommended

Species	Mouse, Rat
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	-
Notes	ab199376 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Not recommended

Species	Mouse
Dilution info	-
Notes	ab199376 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Species	Rat
Dilution info	-
Notes	ab199376 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Target data

See full target information PTPN6

Function

Tyrosine phosphatase enzyme that plays important roles in controlling immune signaling pathways and fundamental physiological processes such as hematopoiesis (PubMed:14739280, PubMed:29925997). Dephosphorylates and negatively regulate several receptor tyrosine kinases (RTKs) such as EGFR, PDGFR and FGFR, thereby modulating their signaling activities (PubMed:21258366, PubMed:9733788). When recruited to immunoreceptor tyrosine-based inhibitory motif (ITIM)-containing receptors such as immunoglobulin-like transcript 2/LILRB1, programmed cell death protein 1/PDCD1, CD3D, CD22, CLEC12A and other receptors involved in immune regulation, initiates their dephosphorylation and subsequently inhibits downstream signaling events (PubMed:11907092, PubMed:14739280, PubMed:37932456, PubMed:38166031). Modulates the signaling of several cytokine receptors including IL-4 receptor (PubMed:9065461). Additionally, targets multiple cytoplasmic signaling molecules including STING1, LCK or STAT1 among others involved in diverse cellular processes including modulation of T-cell activation or cGAS-STING signaling (PubMed:34811497, PubMed:38532423). Within the nucleus, negatively regulates the activity of some transcription factors such as NFAT5 via direct dephosphorylation. Also acts as a key transcriptional regulator of hepatic gluconeogenesis by controlling recruitment of RNA polymerase II to the PCK1 promoter together with STAT5A (PubMed:37595871).

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

ab240949 is the carrier-free version of ab124942.

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.

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	SHP1 also known as PTPN6 belongs to the family of protein tyrosine phosphatases and has a protein mass of approximately 68 kDa. It plays a critical role in cell signaling by dephosphorylating specific targets leading to the modulation of

	signal transduction pathways. SHP1 is ubiquitously expressed with high levels observed in hematopoietic cells suggesting a specialized function in the immune system.
Biological function summary	SHP1 influences cell proliferation survival and differentiation by acting as a negative regulator of signaling pathways. It is not a part of a larger protein complex but it associates transiently with different receptors and substrates. It plays an important role in the immune response by regulating cytokine signaling which is important for maintaining the balance between immune activation and tolerance.
Pathways	SHP1 significantly impacts the JAK/STAT and B cell receptor signaling pathways. In the JAK/STAT pathway SHP1 interacts with JAK kinases contributing to the downregulation of cytokine signaling. In B cell receptor signaling it associates with Syk influencing immune cell activation and function.
Associated diseases and disorders	SHP1 has a role in autoimmune diseases such as rheumatoid arthritis and certain types of leukemia. In rheumatoid arthritis defective regulation by SHP1 can lead to excessive inflammation while in leukemia its altered activity impacts cell growth and survival. It interacts with proteins such as STATs and SOCS which are important in these pathologies.

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

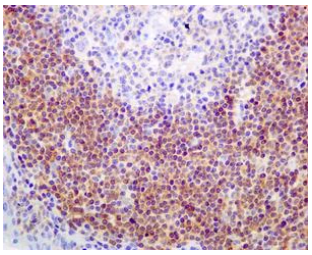
We do not recommend this combination. It is not covered by our product promise.

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.

6 product images

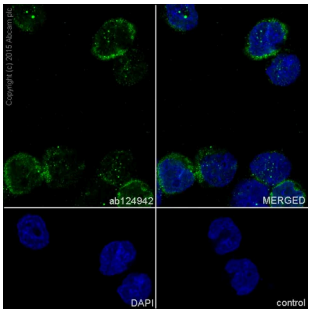


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-SHP1 antibody [EPR5519] - BSA and Azide free (ab240949)

SHP1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-SHP1 antibody

ab124942, at a 1/1000 dilution, staining SHP1 in paraffin-embedded human tonsil tissue by immunohistochemistry.
This data was developed using the same antibody clone in a different buffer formulation containing tissue culture supernatant, PBS, BSA, glycerol, and sodium azide (ab124942)

Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

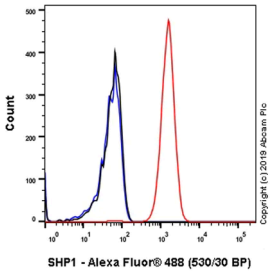


Immunocytochemistry/ Immunofluorescence - Anti-SHP1 antibody [EPR5519] - BSA and Azide free (ab240949)

SHP1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-SHP1 antibody

Immunocytochemistry/Immunofluorescence analysis of Raji (human Burkitt's lymphoma) cells labeling SHP1 with purified ab124942 at a dilution of 1/500. Cells were fixed with 4% paraformaldehyde and permeabilized with 0.1% Triton X-100. An Alexa-Fluor® 488-conjugated goat anti-rabbit IgG (ab150077) at dilution of 1/1000 was used as the secondary antibody. Nuclei counterstained with DAPI (blue).
Secondary Only Control: PBS was used instead of the primary antibody as the negative control.

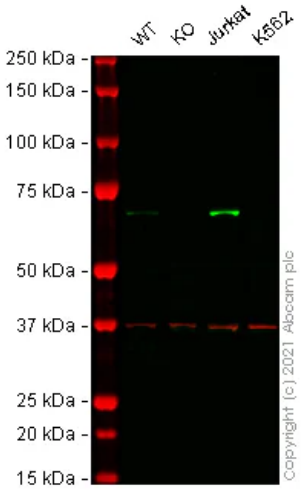
This data was developed using the same antibody clone in a different buffer formulation containing tissue culture supernatant, PBS, BSA, glycerol, and sodium azide (ab124942)



Flow Cytometry (Intracellular) - Anti-SHP1 antibody [EPR5519] - BSA and Azide free (ab240949)

SHP1 Flow Cytometry (Intracellular) staining using rabbit Anti-SHP1 antibody

This data was developed using ab124942, the same antibody clone in a different buffer formulation.Intracellular Flow Cytometry analysis of Jurkat (Human T cell leukemia T lymphocyte) cells labeling SHP1 with purified ab124942 at 1/100 dilution (10µg/mL) (Red). Cells were fixed with 4% Paraformaldehyde and permeabilised with 90% Methanol. A Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) secondary antibody was used at 1/2000. Isotype control - Rabbit monoclonal IgG (Black). Unlabeled control - Cells without incubation with primary antibody and secondary antibody (Blue).



Western blot - Anti-SHP1 antibody [EPR5519] - BSA and Azide free (ab240949)

SHP1 Western blot staining using rabbit Anti-SHP1 antibody

This data was developed using the same antibody clone in a different buffer formulation (ab124942).
Lanes 1 - 4: Merged signal (red and green). Green - ab124942 observed at 70 kDa. Red - loading control ab8245 (Mouse anti-GAPDH antibody [6C5]) observed at 37 kDa.

ab124942 was shown to react with SHP1 in wild-type THP-1 cells in Western blot with loss of signal observed in PTPN6 knockout sample. Wild-type THP-1 and PTPN6 knockout cell lysates were subjected to SDS-PAGE. Membranes were blocked in 3 % milk in TBS-T (0.1 % Tween®) before incubation with ab124942 and ab8245 (Mouse anti-GAPDH antibody [6C5]) overnight at 4 °C at a 1 in 1000 dilution and a 1 in 20000 dilution respectively. Blots were incubated with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preabsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye® 680RD) preabsorbed (ab216776) secondary antibodies at 1 in 20000 dilution for 1 h at room temperature before imaging.

All lanes:
Western blot - Anti-SHP1 antibody [EPR5519] (ab124942) at 1/1000 dilution

Lane 1:
Wild-type THP-1 cell lysate at 20 µg

Lane 2:
PTPN6 knockout THP-1 cell lysate at 20 µg

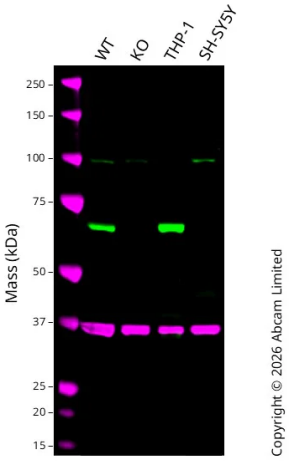
Lane 3:
Jurkat cell lysate at 20 µg

Lane 4:
K562 cell lysate at 20 µg

Performed under reducing conditions.

Predicted band size: 68 kDa

Observed band size: 70 kDa



Western blot - Anti-SHP1 antibody [EPR5519] - BSA and Azide free (ab240949)

SHP1 Western blot staining using rabbit Anti-SHP1 antibody

This data was developed using ab124942, the same antibody clone in a different buffer formulation.

Western blot: Anti-SHP1 antibody [EPR5519] ab124942 staining at 1/1000 dilution, shown in green; Mouse anti GAPDH ab8245 loading control staining at 1/20000 dilution, shown in magenta. A band was observed at 68 kDa in Wild-type MCF7 cell lysates with no signal observed at this size in PTPN6 CRISPR-Cas9 Edited MCF7 cell line. To generate this image, samples were run on an SDS-PAGE gel then transferred onto a nitrocellulose membrane. Membranes were blocked in 3pc Milk in TBS-0.1 % Tween 20 (TBS-T) before incubation with primary antibodies overnight at 4 C. Blots were washed four times in TBS-T, incubated with secondary antibodies for 1 h at room temperature, washed again four times then imaged. Secondary antibodies used were Goat anti-Rabbit 800CW and Goat anti-Mouse 680RD at 1/20,000 dilution.
All lanes:
Western blot - Anti-SHP1 antibody [EPR5519] (ab124942) at 1/1000 dilution

Lane 1:
Wild-type MCF7 at 20 µg

Lane 2:
Western blot - Human PTPN6 knockout MCF7 cell line (ab287732) at 20 µg

Lane 3:
THP-1 at 20 µg

Lane 4:
SH-SY5Y at 20 µg

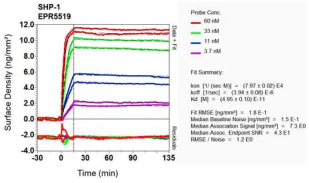
Secondary

All lanes:
Goat anti-Rabbit 800CW & Goat anti-Mouse 680RD at 1/20000 dilution

Performed under reducing conditions.

Predicted band size: 68 kDa

Observed band size: 68 kDa



OI-RD Scanning - Anti-SHP1 antibody [EPR5519] - BSA and Azide free (ab240949)

We have systematically measured KD (the equilibrium dissociation constant between the antibody and its antigen), of more than 840 recombinant antibodies to assess not only their individual KD values but also to see the average affinity of antibody. Based on the comparison with published literature values for mouse monoclonal antibodies, Recombinant antibodies appear to be on average 1-2 order of magnitude higher affinity.

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