abcam

ab234904

Anti-STAT1 antibody [EPR21057-141] - 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	EPR21057-141
Purification technique	Affinity purification Protein A
Concentration	1.036 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IP

Tested

Species	Human
Dilution info	-

Notes	-

ChIP

Tested

Species	Human
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	-
Notes	-

IHC-P

Tested

Species	Human
Dilution info	-
Notes	-

Target data

See full target information STAT1

Function	Signal transducer and transcription activator that mediates cellular responses to interferons (IFNs), cytokine KITLG/SCF and other cytokines and other growth factors (PubMed:12764129, PubMed:12855578, PubMed:15322115, PubMed:23940278, PubMed:34508746, PubMed:35568036, PubMed:9724754). Following type I IFN (IFN-alpha and IFN-beta) binding to cell surface receptors, signaling via protein kinases leads to activation of Jak kinases (TYK2 and JAK1) and to tyrosine phosphorylation of STAT1 and STAT2. The phosphorylated STATs dimerize and associate with ISGF3G/IRF-9 to form a complex termed ISGF3 transcription factor, that enters the nucleus (PubMed:28753426, PubMed:35568036). ISGF3 binds to the IFN stimulated response element (ISRE) to activate the transcription of IFN-stimulated genes (ISG), which drive the cell in an antiviral state (PubMed:28753426, PubMed:35568036). In response to type II IFN (IFN-gamma), STAT1 is tyrosine- and serine-phosphorylated (PubMed:26479788). It then forms a homodimer termed IFN-gamma-activated factor (GAF), migrates into the nucleus and binds to the IFN gamma activated sequence (GAS) to drive the expression of the target genes, inducing a cellular antiviral state (PubMed:8156998). Becomes activated in response to KITLG/SCF and KIT signaling (PubMed:15526160). May mediate cellular responses to activated FGFR1, FGFR2, FGFR3 and FGFR4 (PubMed:19088846). Following bacterial lipopolysaccharide (LPS)-induced TLR4 endocytosis, phosphorylated at Thr-749 by IKBKB which promotes binding of STAT1 to the 5'-TTTGAGGC-3' sequence in the ARID5A promoter, resulting in transcriptional activation of ARID5A and subsequent ARID5A-mediated stabilization of IL6 (PubMed:32209697). Phosphorylation at Thr-749 also promotes binding of STAT1 to the 5'-TTTGAGTC-3' sequence in the IL12B promoter and activation of IL12B transcription (PubMed:32209697). Involved in food tolerance in small intestine: associates with the Gasdermin-D, p13 cleavage product (13 kDa GSDMD) and promotes transcription of CIITA, inducing type 1 regulatory T (Tr1) cells in upper small intestine (By similarity).

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

ab234904 is the carrier-free version of ab234400.

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	Signal Transducer and Activator of Transcription 1 (STAT1) is a protein of about 91 kDa commonly known simply as STAT1. It belongs to the STAT protein family which is involved in gene regulation. STAT1 expresses widely in many tissues including the immune system where it plays a major role. As an important player in cellular responses to cytokines and growth factors STAT1 becomes activated through phosphorylation often referred to as phospho-STAT1. This phosphorylation promotes dimerization an important step for its function.
Biological function summary	The STAT1 protein influences cell survival and immune responses. It functions as a transcription factor and participates in the interferon signaling pathway. In this setting it forms a complex with other STAT proteins such as STAT2 and STAT3 to regulate gene expression. By binding to specific DNA sequences in the nucleus STAT1 alters transcription in response to extracellular signals. It contributes to antiviral defense mechanisms and antiproliferative activities in various cells.
Pathways	The STAT1 protein plays essential roles in the JAK-STAT signaling pathway and interferon signaling pathway. It operates closely with proteins such as JAK1 and TYK2 which are involved in the phosphorylation process activating STAT1. During this activation STAT1 helps initiate cellular responses to interferons a type of signaling protein released during viral infections. The JAK-STAT pathway facilitates various physiological processes including immune responses and cell growth regulation.
Associated diseases and disorders	STAT1 dysregulation often connects to autoimmune diseases and infectious diseases. Elevated STAT1 activity associates with disorders like systemic lupus erythematosus where an imbalanced immune response occurs. Phosphorylation of STAT1 can also relate to chronic infections in cases where proper immune response activation becomes impaired. In certain cancers STAT1 interaction with proteins

like SOCS1 might contribute to tumor immune evasion highlighting its vital role in pathology.

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

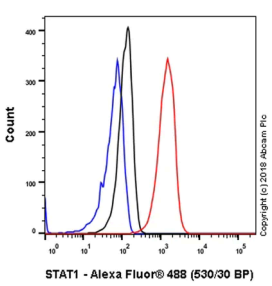
We do not recommend this combination. It is not covered by our product promise.

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.

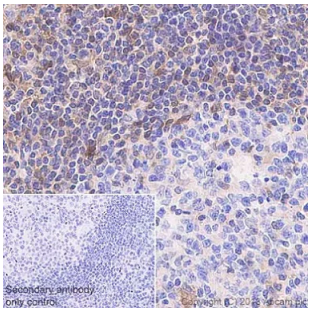
8 product images



Flow Cytometry (Intracellular) - Anti-STAT1 antibody [EPR21057-141] - BSA and Azide free (ab234904)

STAT1 Flow Cytometry (Intracellular) staining using rabbit Anti-STAT1 antibody

Intracellular flow cytometric analysis of 4% paraformaldehyde-fixed, 90% methanol permeabilized HeLa (human epithelial cell line from cervix adenocarcinoma) cells labeling STAT1 with ab234400 at 1/500 (Red) compared with Rabbit monoclonal IgG (ab172730) (Black) and an unlabelled control (cells without incubation with primary antibody and secondary antibody) (Blue). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) at 1/2000 dilution was used as the secondary antibody.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab234400).



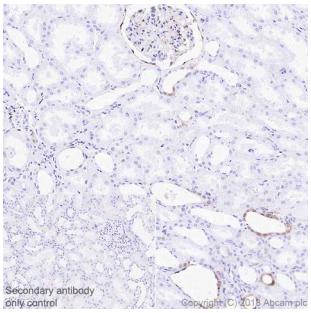
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-STAT1 antibody [EPR21057-141] - BSA and Azide free (ab234904)

STAT1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-STAT1 antibody

Immunohistochemical analysis of paraffin-embedded human tonsil tissue labeling STAT1 with ab234400 at 1/5000 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) ready to use. Positive staining mainly on interfollicular cells of human tonsil (PMID: 25336386; PMID: 25921060) is observed. Counter stained with hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) ready to use.

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab234400).

Heat mediated antigen retrieval was performed with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.



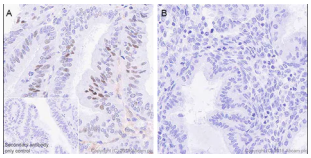
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-STAT1 antibody [EPR21057-141] - BSA and Azide free (ab234904)

STAT1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-STAT1 antibody

Immunohistochemical analysis of paraffin-embedded human kidney tissue labeling STAT1 with ab234400 at 1/5000 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) ready to use. Positive staining on glomerulus and some renal tubules of human kidney (PMID: 26678048) is observed. Counter stained with hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) ready to use.

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab234400).

Heat mediated antigen retrieval was performed with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.



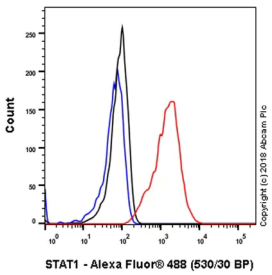
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-STAT1 antibody [EPR21057-141] - BSA and Azide free (ab234904)

STAT1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-STAT1 antibody

Immunohistochemical analysis of paraffin-embedded paired human endometrial cancer **(A)** and non-tumor endometrium tissue **(B)** labeling STAT1 with ab234400 at 1/5000 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) ready to use. Much higher staining intensity of endometrial cancer **(A)** than its paired non-tumor endometrium **(B)** (PMID: 25267067) is observed. Counter stained with hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) ready to use.

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab234400).

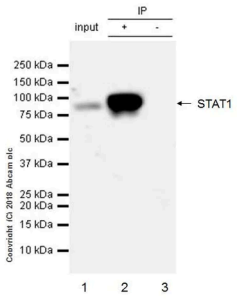
Heat mediated antigen retrieval was performed with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.



Flow Cytometry (Intracellular) - Anti-STAT1 antibody [EPR21057-141] - BSA and Azide free (ab234904)

STAT1 Flow Cytometry (Intracellular) staining using rabbit Anti-STAT1 antibody

Intracellular flow cytometric analysis of 4% paraformaldehyde-fixed, 90% methanol permeabilized MCF7 (human breast adenocarcinoma cell line) cells labeling STAT1 with ab234400 at 1/500 (Red) compared with Rabbit monoclonal IgG (ab172730) (Black) and an unlabelled control (cells without incubation with primary antibody and secondary antibody) (Blue). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) at 1/2000 dilution was used as the secondary antibody.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab234400).



Immunoprecipitation - Anti-STAT1 antibody [EPR21057-141] - BSA and Azide free (ab234904)

STAT1 was immunoprecipitated from 0.35 mg of MCF7 (human breast adenocarcinoma cell line) whole cell lysate with ab234400 at 1/30 dilution. Western blot was performed from the immunoprecipitate using ab234400 at 1/1000 dilution. VeriBlot for IP Detection Reagent (HRP) (ab131366) was used for detection at 1/5000 dilution.
Lane 1: MCF7 whole cell lysate 10 µg (input).
Lane 2: ab234400 IP in MCF7 whole cell lysate.
Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab234400 in MCF7 whole cell lysate.
Blocking and dilution buffer and concentration: 5% NFDM/TBST.
Exposure time: 3 minutes.

The doublet observed in some lanes likely represent the α and β isoforms of STAT1 (PMID: 8647800).

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab234400).

All lanes:
Immunoprecipitation - Anti-STAT1 antibody [EPR21057-141] - ChIP Grade (ab234400)

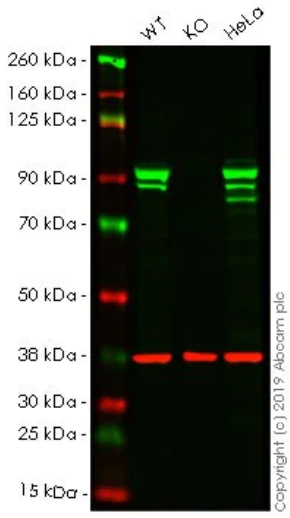
Predicted band size: 87 kDa



ChIP - Anti-STAT1 antibody [EPR21057-141] - BSA and Azide free (ab234904)

Chromatin was prepared from HeLa (starve overnight) + hIFN-α (serum-starved overnight) (1,000 units/ml,30 min) cells according to the Abcam X-ChIP protocol. Cells were fixed with formaldehyde for 10min. The ChIP was performed with 25 µg of chromatin, 2 µg of ab234400 (red), and 20 µl of protein A/G sepharose beads slurry (10 µl of sepharose A beads + 10 µl of sepharose G beads). 2 µg of rabbit normal IgG was added to the beads control (gray). The immunoprecipitated DNA was

quantified by real time PCR (SYBR approach).
ChIP results are consistent with the literature (PMID: 16319195).
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab234400).



Western blot - Anti-STAT1 antibody [EPR21057-141] - BSA and Azide free (ab234904)

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab234400).
Lanes 1 - 3: Merged signal (red and green). Green - ab234400 observed at 87 kDa. Red - loading control, ab8245, observed at 37 kDa.

ab234400 was shown to specifically react with STAT1 in wild-type HAP1 cells as signal was lost in STA1 knockout cells. Wild-type and STA1 knockout samples were subjected to SDS-PAGE. The membrane was blocked with 3% Milk. ab234400 and ab8245 (Mouse anti-GAPDH loading control) were incubated overnight at 4°C at 1/1000 dilution and 1/20000 dilution respectively. Blots were developed 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 1/20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-STAT1 antibody [EPR21057-141] - BSA and Azide free (ab234904) at 1/1000 dilution

Lane 1:
Wild-type HAP1 whole cell lysate at 20 µg

Lane 2:
STA1 knockout HAP1 whole cell lysate at 20 µg

Lane 3:
HeLa whole cell lysate at 20 µg

Predicted band size: 87 kDa

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