abcam

ab300640

Anti-CTCF antibody [RM1044] (BSA and Azide free)

Recombinant | RabMAb | Advanced Validation

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Constituents: PBS
Form	Liquid
Clonality	Multiclonal
Immunogens	The exact immunogen used to generate this antibody is proprietary information.
Carrier free	Yes
Clone number	RM1044
Purification technique	Affinity purification Protein A
Concentration	1.029 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

WB

Tested

Species	Human, Mouse, Rat
Dilution info	-
Notes	-

IHC-P

Tested

Species	Human, Mouse, Rat
Dilution info	-
Notes	-

IHC-Fr

Tested

Species	Mouse, Rat
Dilution info	-
Notes	-

Expected

Species	Human
Dilution info	Use at an assay dependent concentration.
Notes	-

ICC/IF

Tested

Species	Human, Mouse
Dilution info	-
Notes	-

Expected

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

ChIC/CUT&RUN-seq

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

Flow Cyt (Intra)

Tested

Species	Human, Mouse
Dilution info	-
Notes	-

Expected

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

IP

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

ChIP

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

Target data

See full target information CTCF

Function

Chromatin binding factor that binds to DNA sequence specific sites and regulates the 3D structure of chromatin (PubMed:16949368, PubMed:18347100, PubMed:18654629, PubMed:19322193). Binds together strands of DNA, thus forming chromatin loops, and anchors DNA to cellular structures, such as the nuclear lamina (PubMed:18347100, PubMed:18654629, PubMed:19322193). Defines the boundaries between active and heterochromatic DNA via binding to chromatin insulators, thereby preventing interaction between promoter and nearby enhancers and silencers (PubMed:18347100, PubMed:18654629, PubMed:19322193). Participates in the allele-specific gene expression at the imprinted IGF2/H19 gene locus (PubMed:16107875, PubMed:16815976, PubMed:17827499). On the maternal allele, binding within the H19 imprinting control region (ICR) mediates maternally inherited higher-order chromatin conformation to restrict enhancer access to IGF2 (By similarity). Mediates interchromosomal association between IGF2/H19 and WSB1/NF1 and may direct distant DNA segments to a common transcription factory (By similarity). Regulates asynchronous replication of IGF2/H19 (By similarity). Plays a critical role in gene silencing over considerable distances in the genome (By similarity). Preferentially interacts with unmethylated DNA, preventing spreading of CpG methylation and maintaining methylation-free zones (PubMed:18413740). Inversely, binding to target sites is prevented by CpG methylation (PubMed:18413740). Plays an important role in chromatin remodeling (PubMed:18413740). Can dimerize when it

is bound to different DNA sequences, mediating long-range chromatin looping (PubMed:12191639). Causes local loss of histone acetylation and gain of histone methylation in the beta-globin locus, without affecting transcription (PubMed:12191639). When bound to chromatin, it provides an anchor point for nucleosomes positioning (PubMed:12191639). Seems to be essential for homologous X-chromosome pairing (By similarity). May participate with Tsix in establishing a regulatable epigenetic switch for X chromosome inactivation (PubMed:11743158). May play a role in preventing the propagation of stable methylation at the escape genes from X-inactivation (PubMed:11743158). Involved in sister chromatid cohesion (PubMed:12191639). Associates with both centromeres and chromosomal arms during metaphase and required for cohesin localization to CTCF sites (PubMed:18550811). Plays a role in the recruitment of CENPE to the pericentromeric/centromeric regions of the chromosome during mitosis (PubMed:26321640). Acts as a transcriptional repressor binding to promoters of vertebrate MYC gene and BAG1 gene (PubMed:18413740, PubMed:8649389, PubMed:9591631). Also binds to the PLK and PIM1 promoters (PubMed:12191639). Acts as a transcriptional activator of APP (PubMed:9407128). Regulates APOA1/C3/A4/A5 gene cluster and controls MHC class II gene expression (PubMed:18347100, PubMed:19322193). Plays an essential role in oocyte and preimplantation embryo development by activating or repressing transcription (By similarity). Seems to act as tumor suppressor (PubMed:12191639).

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

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.

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	CTCF also known as the CCCTC-binding factor is a highly conserved zinc finger protein involved in transcriptional regulation and chromatin organization. It has a molecular weight of approximately 82 kDa. The CTCF protein plays a critical mechanical role in controlling the three-dimensional architecture of the genome by binding to specific DNA sequences and forming chromatin loops. It is widely expressed in various cell types across tissues where it acts as a transcriptional repressor and activator depending on the context. CTCF immunofluorescence techniques enable the visualization of its dynamic distribution and expression within the nucleus.
Biological function summary	The multipurpose CTCF protein acts in coordinating the spatial organization of the genome. It functions as an insulator by regulating the boundaries between different chromosomal domains and controlling gene expression. CTCF operates within various complexes interacting with cohesin a vital protein complex that facilitates loop formation and influences genome architecture. This interaction helps in maintaining the integrity of the genome structure and proper chromatin insulation which are essential for normal gene function.
Pathways	CTCF plays significant roles in epigenetic regulatory networks and transcriptional pathways. In the epigenetic landscape it influences gene expression through modulation of DNA methylation states at CpG islands interacting with proteins like DNA methyltransferases. In transcriptional pathways CTCF interacts with nuclear factor Y (NF-Y) which contributes to cell cycle regulation by modulating the expression of cell cycle genes. These pathways reflect CTCF's versatility in gene regulation and its influence on maintaining cellular homeostasis.
Associated diseases and disorders	CTCF disruptions have been implicated in cancer and intellectual disabilities. Mutations or altered expression of CTCF can lead to tumorigenesis as CTCF acts as a tumor suppressor by controlling oncogene and tumor suppressor gene expression. In intellectual disabilities CTCF mutations affect brain development by disrupting the expression of neuronal genes. The protein's interaction with cohesin has links to disorders such as Cornelia de Lange syndrome where cohesin complex dysfunction parallels the phenotypes seen with CTCF aberrations.

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.

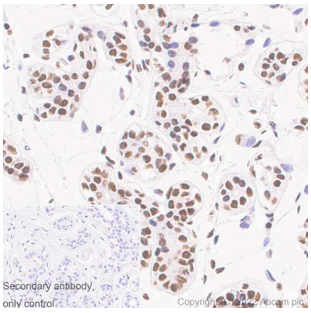
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

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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11 product images

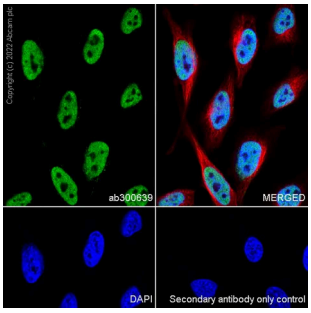


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CTCF antibody [RM1044] (BSA and Azide free) (ab300640)

This data was developed using ab300639, the same antibody clone in a different buffer formulation.

Immunohistochemical analysis of paraffin-embedded human breast tissue labelling CTCF with ab300639 at 1/10000 (0.053 µg/ml) followed by a ready to use LeicaDS9800 (BOND™ Polymer Refine Detection). Nuclear staining on human breast is observed. The section was incubated with ab300639 for 30 mins at room temperature. The immunostaining was performed on a Leica Biosystems BOND® RX instrument. Counterstained with Hematoxylin.

Secondary antibody only control: PBS was used instead of primary antibody followed by ready to use secondary antibody LeicaDS9800 (BOND™ Polymer Refine Detection).

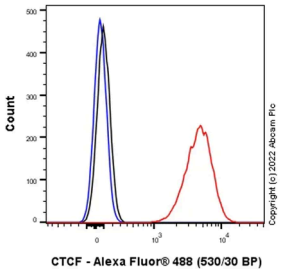


Immunocytochemistry/ Immunofluorescence - Anti-CTCF antibody [RM1044] (BSA and Azide free) (ab300640)

This data was developed using ab300639, the same antibody clone in a different buffer formulation.

Immunofluorescent analysis of 4% paraformaldehyde fixed and 0.1% TritonX-100 permeabilized HeLa (human cervix adenocarcinoma epithelial cell) labeling CTCF with ab300639 at 1/2000 dilution (0.266 µg/ml), followed by ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488, green) preadsorbed at 1:1000 (2 µg/mL). Confocal image showing nuclear staining in HeLa cell line.

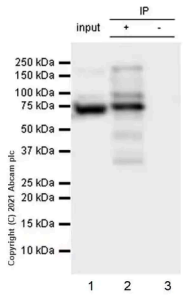
ab195889 anti-alpha Tubulin mouse monoclonal antibody - Microtubule Marker (Alexa Fluor® 594) (red) was used as a counterstain at 1:200 dilution (2.5 µg/ml). Nuclear counter satin is DAPI.



Flow Cytometry (Intracellular) - Anti-CTCF antibody [RM1044] (BSA and Azide free) (ab300640)

This data was developed using ab300639, the same antibody clone in a different buffer formulation.

Intracellular flow cytometric analysis of 4% paraformaldehyde fixed and 90% methanol permeabilized HeLa (human cervix adenocarcinoma epithelial cell) cells labelling CTCF with ab300639 at 1/500 dilution (0.1µg) (red) compared with a Rabbit monoclonal IgG (ab172730) (black) isotype control and an unlabelled control (cells without incubation with primary antibody and secondary antibody) (blue). Goat Anti-Rabbit IgG (Alexa Fluor® 488, ab150081) at 1/2000 dilution was used as the secondary antibody.



Immunoprecipitation - Anti-CTCF antibody [RM1044] (BSA and Azide free) (ab300640)

This data was developed using ab300639, the same antibody clone in a different buffer formulation.

CTCF was immunoprecipitated from 0.35 mg HeLa (human cervical adenocarcinoma epithelial cell) whole cell lysate with ab300639 at 1/30 dilution (2µg in 0.35 mg lysates). Western blot was performed on the immunoprecipitate using ab300639 at 1/1000 dilution. VeriBlot for IP secondary antibody(HRP) (ab131366) was used at 1/5000 dilution.

Blocking and dilution buffer and concentration: 5% NFDM/TBST.

All lanes:
Immunoprecipitation - Anti-CTCF antibody [RM1044] (ab300639) at 1/30 dilution

All lanes:
HeLa (human cervical adenocarcinoma epithelial cell) whole cell lysate

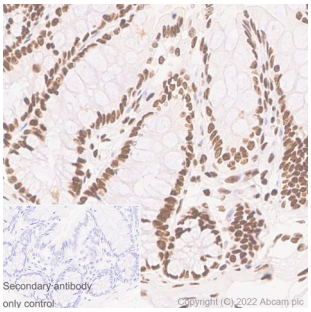
Secondary

All lanes:
Immunoprecipitation - VeriBlot for IP Detection Reagent (HRP) (ab131366) at 1/5000 dilution

Predicted band size: 83 kDa

Observed band size: 40 kDa, 130 kDa, 97 kDa, 80 kDa, 73 kDa, 55 kDa, 45 kDa

Exposure time: 10s



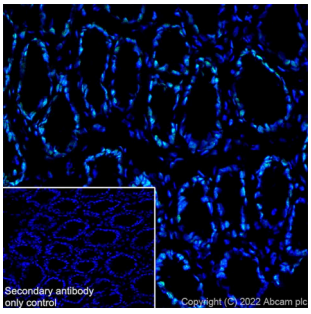
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CTCF antibody [RM1044] (BSA and Azide free) (ab300640)

This data was developed using ab300639, the same antibody clone in a different buffer formulation.

Immunohistochemical analysis of paraffin-embedded rat colon tissue labelling CTCF with ab300639 at 1/10000 (0.053 µg/ml) followed by a ready to use LeicaDS9800 (BOND™ Polymer Refine Detection). Nuclear staining on rat colon. The section was incubated with ab300639 for 30 mins at room temperature. The immunostaining was performed on a Leica Biosystems BOND® RX instrument. Counterstained with Hematoxylin.

Secondary antibody only control: PBS was used instead of primary antibody followed by ready to use secondary antibody LeicaDS9800 (BOND™ Polymer Refine Detection).

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

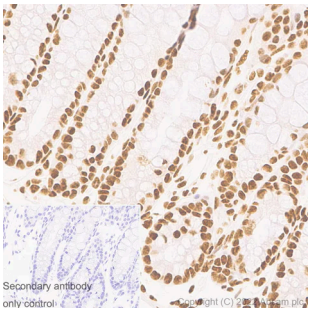


Immunohistochemistry (Frozen sections) - Anti-CTCF antibody [RM1044] (BSA and Azide free) (ab300640)

CTCF Immunohistochemistry (Frozen sections) staining of rat colon tissue using rabbit Anti-CTCF antibody

This data was developed using ab300639, the same antibody clone in a different buffer formulation.

Immunohistochemical analysis of 4% PFA-fixed, 0.2% Triton X-100 permeabilized frozen rat colon (fresh) tissue labeling CCTF with ab300639 at 1/2000 dilution (0.266 µg/ml) followed by ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preabsorbed at 1/1000 dilution (2 µg/mL) (Green). Positive staining on rat colon is observed. The nuclear counterstain was DAPI (Blue).



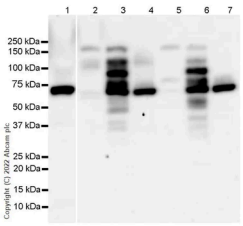
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CTCF antibody [RM1044] (BSA and Azide free) (ab300640)

This data was developed using ab300639, the same antibody clone in a different buffer formulation.

Immunohistochemical analysis of paraffin-embedded mouse colon tissue labelling CTCF with ab300639 at 1/10000 (0.053 µg/ml) followed by a ready to use LeicaDS9800 (BOND™ Polymer Refine Detection). Nuclear staining on mouse colon. The section was incubated with ab300639 for 30 mins at room temperature. The immunostaining was performed on a Leica Biosystems BOND® RX instrument. Counterstained with Hematoxylin.

Secondary antibody only control: PBS was used instead of primary antibody followed by ready to use secondary antibody LeicaDS9800 (BOND™ Polymer Refine Detection).

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



Western blot - Anti-CTCF antibody [RM1044] (BSA and Azide free) (ab300640)

CTCF Western blot staining using rabbit Anti-CTCF antibody

This data was developed using ab300639, the same antibody clone in a different buffer formulation.

Blocking and diluting buffer and concentration: 5% NFDM/TBST.

The multiples bands observed in the WB have been reported in literature (PMID: 12878173, PMID: 8246978).

All lanes:
Western blot - Anti-CTCF antibody [RM1044] (ab300639) at 1/1000 dilution

Lane 1:
Human spleen lysate at 20 µg

Lane 2:
Mouse heart lysate at 20 µg

Lane 3:
Mouse spleen lysate at 20 µg

Lane 4:
Mouse colon lysate at 20 µg

Lane 5:
Rat heart lysate at 20 µg

Lane 6:
Rat spleen lysate at 20 µg

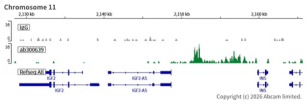
Lane 7:
Rat colon lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Predicted band size: 83 kDa

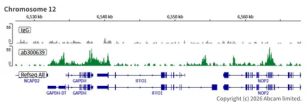
Observed band size: 140 kDa, 130 kDa, 97 kDa, 80 kDa, 73 kDa, 55 kDa, 45 kDa



ChIC/CUT&RUN sequencing - Anti-CTCF antibody [RM1044] (BSA and Azide free) (ab300640)

This data was developed using ab300639, the same antibody clone in a different buffer formulation.
ChIC/CUT&RUN was performed using a pAG-MNase at a final concentration of 700 ng/mL, 2.5 x 10^5 HeLa (human cervical adenocarcinoma epithelial cell) cells and 5 µg of ab300639 [RM1044]. The resulting DNA was sequenced on the Illumina NovaSeq 6000 to a depth of 10 million reads. The negative IgG control ab172730 is also shown.

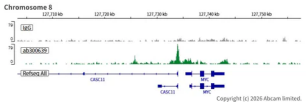
The University of Geneva owns patents relevant to ChIC (Chromatin Immuno-Cleavage) methods.



ChIC/CUT&RUN sequencing - Anti-CTCF antibody [RM1044] (BSA and Azide free) (ab300640)

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