abcam

ab240035

Anti-CTCF antibody [EPR7314(B)] - ChIP Grade - 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	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Carrier free	Yes
Clone number	EPR7314(B)
Purification technique	Affinity purification Protein A
Dissociation constant	1.74 x 10^{-11} M
Concentration	1.061 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

CUT&Tag

Tested

Species	Mouse

Dilution info	-
Notes	-

Expected

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

Predicted

Species	Rat
Dilution info	-
Notes	-

ChIC/CUT&RUN-seq

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

Predicted

Species	Rat
Dilution info	-
Notes	-

IHC-P

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

Predicted

Species	Rat
Dilution info	-
Notes	-

ChIP

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

Predicted

Species	Rat
Dilution info	-

Notes	-

WB

Expected

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

ICC/IF

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

Predicted

Species	Rat
Dilution info	-
Notes	-

ChIP-seq

Tested

Species	Human
Dilution info	4 µg for 30 µg chromatin
Notes	-

Expected

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

Predicted

Species	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.

Expected

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

Predicted

Species	Rat
Dilution info	-
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

ab240035 is the carrier-free version of ab128873.

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	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

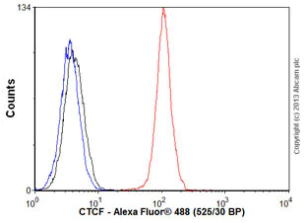
We do not recommend this combination. It is not covered by our product promise.

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.

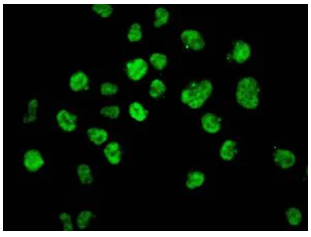
13 product images



Flow Cytometry (Intracellular) - Anti-CTCF antibody [EPR7314(B)] - ChIP Grade - BSA and Azide free (ab240035)

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

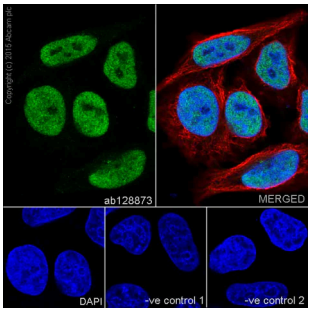
Overlay histogram showing Hela cells stained with un-purified ab128873 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab128873, 1/1000 dilution) for 30 min at 22°C. The secondary antibody used was Alexa Fluor® 488 goat anti-rabbit IgG (H&L) (ab150077) at 1/2000 dilution for 30 min at 22°C. Isotype control antibody (black line) was rabbit IgG (monoclonal) (0.1µg/1x10^6 cells) used under the same conditions. Unlabelled sample (blue line) was also used as a control. Acquisition of >5,000 events were collected using a 20mW Argon ion laser (488nm) and 525/30 bandpass filter. This antibody gave a positive signal in HeLa cells fixed with 4% paraformaldehyde (10 min)/permeabilized with 0.1% PBS-Tween for 20 min used under the same conditions.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab128873).



Immunocytochemistry/ Immunofluorescence - Anti-CTCF antibody [EPR7314(B)] - ChIP Grade - BSA and Azide free (ab240035)

CTCF Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-CTCF antibody

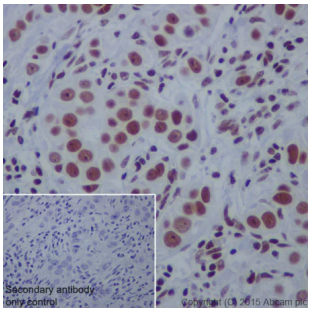
Immunocytochemistry/Immunofluorescence analysis of HeLa cells labelling CTCF with un-purified ab128873 at 1/250 dilution.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab128873).



Immunocytochemistry/ Immunofluorescence - Anti-CTCF antibody [EPR7314(B)] - ChIP Grade - BSA and Azide free (ab240035)

CTCF Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-CTCF antibody

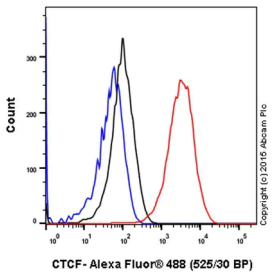
Immunocytochemistry/immunofluorescence staining of 4% paraformaldehyde fixed; 0.1% triton X 100 permeabilized HeLa (human cervix adenocarcinoma) cells with purified ab128873 at dilution of 1/500. The secondary antibody used was Alexa Fluor® 488; goat anti-rabbit IgG (ab150077) at a dilution of 1/1000. Nucleus was counter-stained with DAPI (blue). ab7291, a mouse anti-tubulin antibody (1/1000) was used to stain tubulin along with ab150120 (AlexaFluor®594 goat anti-mouse secondary, 1/1000) shown in the top right hand panel. The negative controls are shown in the bottom middle and right hand panels- for negative control 1 rabbit primary antibody and anti-mouse secondary antibody (ab150120) was used. For negative control 2 mouse primary antibody (ab7291) and anti-rabbit secondary antibody (ab150077) was used.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab128873).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CTCF antibody [EPR7314(B)] - ChIP Grade - BSA and Azide free (ab240035)

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

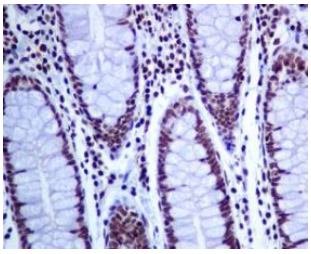
Immunohistochemical staining of paraffin-embedded human breast carcinoma sections labelling CTCF with purified ab128873 at dilution of 1:1000. The secondary antibody used was ab97051; a goat anti-rabbit IgG H&L (HRP) at dilution of 1/500. The sample was counter-stained with hematoxylin. Antigen retrieval was performed using EDTA Buffer; pH 9.0. PBS was used instead of the primary antibody as the negative control and is shown in the inset.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab128873).



Flow Cytometry (Intracellular) - Anti-CTCF antibody [EPR7314(B)] - ChIP Grade - BSA and Azide free (ab240035)

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

Intracellular Flow Cytometry analysis showing 4% paraformaldehyde fixed 293T (human embryonic kidney) cells labelling CTCF with purified ab128873 at dilution of 1/40 followed by the secondary antibody; Alexa Fluor® 488 goat-anti-rabbit IgG at dilution of 1/500 (red line). A non-specific IgG antibody (rabbit monoclonal) was used as isotype control (black line). The blue line shows cells without incubation with primary antibody and secondary antibody.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab128873).

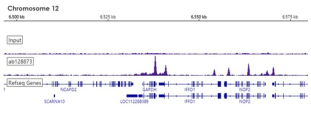


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CTCF antibody [EPR7314(B)] - ChIP Grade - BSA and Azide free (ab240035)

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

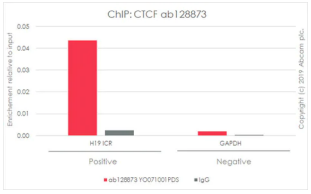
Immunohistochemical analysis of paraffin embedded Human colon tissue labelling CTCF with un-purified ab128873 at 1/250 dilution.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab128873).

Perform heat mediated antigen retrieval before commencing with IHC staining protocol.



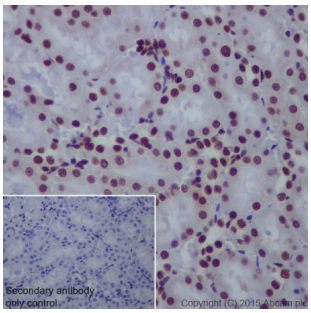
ChIP-sequencing - Anti-CTCF antibody [EPR7314(B)] - ChIP Grade - BSA and Azide free (ab240035)

Chromatin was prepared from HeLa cells. Cells were fixed with 1% formaldehyde for 10 minutes. ChIP was performed with 30 µg of chromatin and 4 µg of ab128873. ChIP DNA was sequenced on the Illumina NextSeq 500 to a depth of 30 million reads. ChIP-Seq validation performed with ChIP-Ki Transcription Factors ChIP-Seq (ab270813). Additional screenshots of mapped reads can be downloaded here.



ChIP - Anti-CTCF antibody [EPR7314(B)] - ChIP Grade - BSA and Azide free (ab240035)

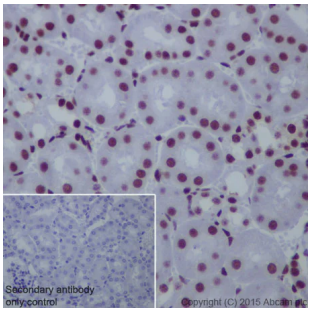
Chromatin was prepared from HeLa cells according to the Abcam X-ChIP protocol. Cells were fixed with 1% formaldehyde for 10 minutes. The ChIP was performed with 25µg of chromatin, 5µg of ab128873 (red), and 20µl of protein A/G sepharose beads slurry (10µl of sepharose A beads + 10µl of sepharose G beads). 5µg of rabbit normal IgG was added to the beads control (grey). The immunoprecipitated DNA was quantified by real time PCR (Sybr green approach).
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab128873).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CTCF antibody [EPR7314(B)] - ChIP Grade - BSA and Azide free (ab240035)

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

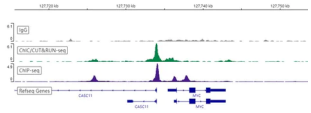
Immunohistochemical staining of paraffin-embedded rat kidney sections labelling CTCF with purified ab128873 at dilution of 1:1000. The secondary antibody used was ab97051; a goat anti-rabbit IgG H&L (HRP) at dilution of 1/500. The sample was counter-stained with hematoxylin. Antigen retrieval was performed using EDTA Buffer; pH 9.0. PBS was used instead of the primary antibody as the negative control and is shown in the inset.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab128873).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CTCF antibody [EPR7314(B)] - ChIP Grade - BSA and Azide free (ab240035)

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

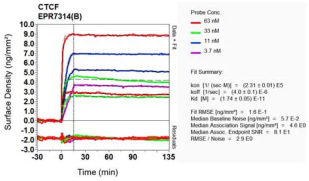
Immunohistochemical staining of paraffin-embedded mouse kidney sections labelling CTCF with purified ab128873 at dilution of 1:1000. The secondary antibody used was ab97051; a goat anti-rabbit IgG H&L (HRP) at dilution of 1/500. The sample was counter-stained with hematoxylin. Antigen retrieval was performed using EDTA Buffer; pH 9.0. PBS was used instead of the primary antibody as the negative control and is shown in the inset.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab128873).



ChIC/CUT&RUN sequencing - Anti-CTCF antibody [EPR7314(B)] - ChIP Grade - BSA and Azide free (ab240035)

ChIC/CUT&RUN was performed using a pAG-MNAse at a final concentration of 700 ng/mL, 2.5 x 10^5 HeLa (Human cervix adenocarcinoma epithelial cell line) cells and 2 µg of ab128873 [EPR7314(B)]. 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 ChIP data was conducted on chromatin prepared from HeLa cells. Cells were fixed with 1% formaldehyde for 10 minutes. ChIP

was performed with 10^7 HeLa cells and 4 µg of ab128873. ChIP DNA was sequenced on the Illumina NovaSeq 6000 to a depth of 30 million reads. Additional screenshots of mapped reads can be found in the Protocol booklet in the Product Protocol section. The University of Geneva owns patents relevant to ChIC (Chromatin Immuno-Cleavage) methods. This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab128873).



OI-RD Scanning - Anti-CTCF antibody [EPR7314(B)] - ChIP Grade - BSA and Azide free (ab240035)

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.



This experiment and image is courtesy of Dr Marek Bartosovic, Gonçalo Castelo-Branco Group, Karolinska Institutet.

CUT&Tag - Anti-CTCF antibody [EPR7314(B)] - ChIP Grade - BSA and Azide free (ab240035)

CUT&Tag-seq was performed using 200,000 Oli-neu (Oligodendrocyte progenitor) cells. Cells were permeabilized with 0.05% Digitonin and 0.01% NP-40 for 3 minutes. A 1:100 dilution of Recombinant Anti-CTCF antibody [EPR7314(B)] - ChIP Grade (ab128873) was used, along with a Guinea pig anti-rabbit Secondary. DNA was seg using Illumina NovaSeq S Prime to a depth of 24 million reads. This image is courtesy of Dr Marek Bartosovic, Gonçalo Castelo-Branco Group, Karolinska Institutet. The University of Geneva owns patents relevant to ChIC (Chromatin Immuno-Cleavage) methods.

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