abcam

ab222699

Anti-c-Fos antibody [EPR21930-238]

Anti-c-Fos antibody [EPR21930-238] (ab222699) is a rabbit monoclonal antibody detecting c-Fos in **Western Blot, Flow Cytometry (Intra), IP, IHC-P, ICC/IF**. Suitable for **Human, Mouse**.

- Biophysical QC for unrivalled batch-batch consistency
- Over 40 publications

Lab Essentials | Recombinant | RabMAb | KO Validated | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPR21930-238
Purification technique	Affinity purification Protein A
Specificity	In IHC-P, no staining is observed on rat tissues with this antibody in our lab. We recommend ab289723 for work on rat.
Concentration	0.525 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IP

Tested

Species	Human
Dilution info	1/30
Notes	-

Expected

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

Predicted

Species	Common marmoset
Dilution info	-
Notes	-

WB

Tested

Species	Mouse
Dilution info	1/1000 - 1/5000
Notes	-

Species	Human
Dilution info	1/1000
Notes	-

Predicted

Species	Common marmoset
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/1000
Notes	-

Expected

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

Predicted

Species	Common marmoset
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/500
Notes	-

Expected

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

Predicted

Species	Common marmoset

Dilution info	-
Notes	-

IHC-P

Tested

Species	Mouse
Dilution info	1/2000
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Species	Human
Dilution info	1/2000
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Predicted

Species	Common marmoset
Dilution info	-
Notes	-

Target data

See full target information FOS

Function

Nuclear phosphoprotein which forms a tight but non-covalently linked complex with the JUN/AP-1 transcription factor. In the heterodimer, FOS and JUN/AP-1 basic regions each seems to interact with symmetrical DNA half sites. On TGF-beta activation, forms a multimeric SMAD3/SMAD4/JUN/FOS complex at the AP1/SMAD-binding site to regulate TGF-beta-mediated signaling. Has a critical function in regulating the development of cells destined to form and maintain the skeleton. It is thought to have an important role in signal transduction, cell proliferation and differentiation. In growing cells, activates phospholipid synthesis, possibly by activating CDS1 and PI4K2A. This activity requires Tyr-dephosphorylation and association with the endoplasmic reticulum.

Storage

Shipped at conditions Conditional Ambient

Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Notes

Product Specifications

Anti-c-Fos antibody [EPR21930-238] (ab222699) was developed by Abcam using patented rabbit monoclonal antibody technology and is validated for use in Flow Cyt (Intra), ICC/IF, IHC-P, IP, WB in human, mouse samples.
Anti-c-Fos antibody [EPR21930-238] (ab222699) specifically detects c-Fos (UniProt ID: P01100; Molecular weight: 41kDa) and is sold in 100 µL and 1 mL selling sizes.

Quality and Validation

Abcam's high quality manufacturing and validation processes ensure Anti-c-Fos antibody [EPR21930-238] (ab222699) has high sensitivity and specificity alongside high lot-to-lot consistency and reproducibility.
Anti-c-Fos antibody [EPR21930-238] (ab222699) has been cited over 42 times in peer reviewed journals and is trusted by the scientific community.
Anti-c-Fos antibody [EPR21930-238] (ab222699) has 6 independent reviews from customers.

Related Products
Conjugation-ready, carrier free format available for antibody clone EPR21930-238 - ab234964.
Antibody clone EPR21930-238 is also available pre-conjugated to a variety of labels for your convenience - Alexa Fluor® 647, Alexa Fluor® 555, Alexa Fluor® 594, Alexa Fluor® 568, Alexa Fluor® 488 (ab300747, ab302541, ab302685, ab303464, ab306605).
Target Information
c-Fos is an immediate-early gene widely used in neuro research for its role as a marker of neuronal activation. It is rapidly expressed in response to various stimuli, making it an excellent indicator of neuronal activity and functional mapping. Researchers use c-Fos to study brain activity patterns, synaptic plasticity, and the effects of drugs or other interventions on the central nervous system, making it essential for understanding dynamic changes in brain function.

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.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	The c-Fos protein also known as c-Fos is a component of the Fos family of transcription factors which includes FosB Fra-1 and Fra-2. These proteins play a role in regulating gene expression. c-Fos has a molecular weight of about 55 kDa. You usually find c-Fos expressed in various tissues including the brain providing a marker for neuronal activity and is often induced in response to stimuli like stress growth factors and mitogens. In research settings c-Fos staining and c-Fos immunohistochemistry are techniques commonly used to study activation patterns in cells and tissues.
Biological function summary	C-Fos acts as part of the Activator Protein-1 (AP-1) complex a group of DNA-binding proteins that regulate gene transcription. This complex forms when c-Fos and Jun proteins dimerize. The AP-1 complex controls several cellular processes such as proliferation differentiation and apoptosis. Due to its participation in these vital processes c-Fos influences cellular responses to external stimuli and can affect how cells behave under stress.
Pathways	C-Fos significantly contributes to the MAPK/ERK pathway which plays a role in cell growth and differentiation. It partners with Jun proteins to form functional transcription factors within the MAPK signaling cascade. Additionally c-Fos is involved in the JNK signaling pathway linking it to stress responses and apoptosis. These pathways highlight the partnerships between c-Fos and other proteins like ERK and JNK indicating their intertwined roles in cellular signaling networks.
Associated diseases and disorders	Researchers associate c-Fos with cancer and neurodegenerative diseases. In cancer c-Fos expression correlates with changes in AP-1 activity which can lead to altered cell growth and proliferation potentially contributing to tumor formation. Its involvement in neurodegenerative diseases reveals its role in neuron apoptosis and cellular stress responses. In these scenarios proteins like Bcl-2 also play a part with CDK1 sharing connections in processes that affect cell cycle and apoptosis illustrating c-Fos's broad significance in both normal and pathological conditions.

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.

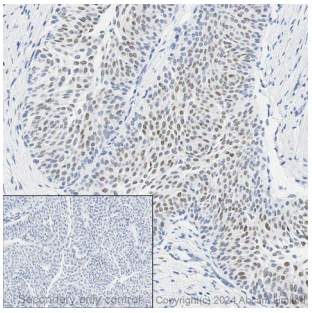
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

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

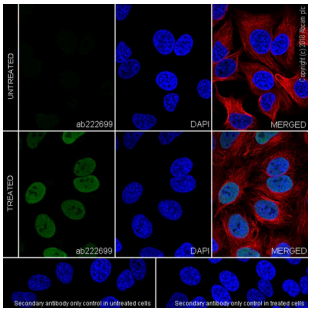


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-c-Fos antibody [EPR21930-238] (ab222699)

Immunohistochemical analysis of formalin fixed paraffin embedded human bladder cancer labelling c-Fos with ab222699 at a concentration of 0.5 µg/ml. The immunostaining was performed on a Ventana DISCOVERY ULTRA (Roche Tissue Diagnostics) instrument with a OptiView DAB IHC Detection Kit. Heat mediated antigen retrieval was performed with DISCOVERY cell conditioning solution (CC1) 100°C, pH 8.5 for 32mins.

ab222699 anti-c-Fos [EPR21930-238] was incubated for 16mins at 37°C. Sections were counterstained with Hematoxylin II. Image inset shows absence of staining in secondary antibody only control.

Customers are encouraged to optimise antigen retrieval conditions, antibody concentration, incubation times and temperature for best results in their own IHC assay workflow (automated and manual).

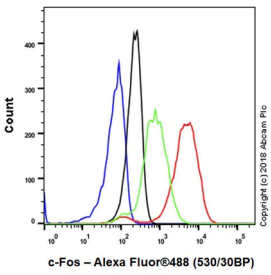


Immunocytochemistry/ Immunofluorescence - Anti-c-Fos antibody [EPR21930-238] (ab222699)

C-Fos Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-c-Fos antibody

Immunofluorescnt analysis of 4% paraformaldehyde-fixed, 0.1% Triton X-100 permeablised HeLa (human cervix adenocarcinoma epithelial cell) cells labeling c-Fos with ab222699 at 1/1000 dilution, followed by Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution (green). Confocal image showing nuclear staining in HeLa cells in serum free medium for 36 hours, followed by addition of 20% fetal bovine serum for 2 hours (PMID: 14981092).
The nuclear counter stain is DAPI (blue). Tubulin is detected with Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) (ab195889) (red) at 1/200 dilution.

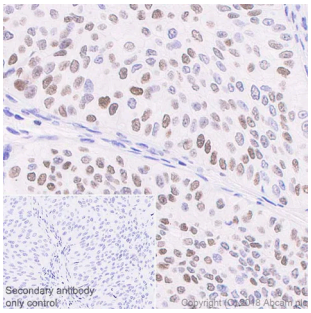
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution.



Flow Cytometry (Intracellular) - Anti-c-Fos antibody [EPR21930-238] (ab222699)

C-Fos Flow Cytometry (Intracellular) staining using rabbit Anti-c-Fos antibody

Intracellular flow cytometric analysis of 4% paraformaldehyde-fixed, 90% methanol-permebalized HeLa (human epithelial cell line from cervix adenocarcinoma) cell line grown in serum free medium for 36 hours, followed by addition of 20% FBS for 2 hours (Red) / Untreated control (Green) labeling c-Fos with ab22699 at 1/500 dilution compared with a Rabbit monoclonal IgG (ab172730) (Black) and an unlabeled control (cells without incubation with primary antibody and secondary antibody) (Blue). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) was used as the secondary antibody at 1/2000 dilution.
Serum starvation followed by FBS treatment induces the expression of c-Fos (PMID: 14981092).

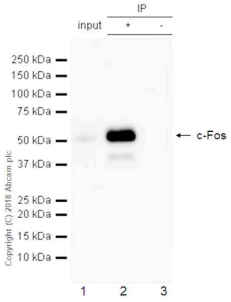


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-c-Fos antibody [EPR21930-238] (ab222699)

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

Immunohistochemical analysis of paraffin-embedded human bladder carcinoma tissue labeling c-Fos with ab222699 at 1/2000 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) ready to use. Nuclear staining in tumor cells of human bladder carcinoma (PMID: 28358415). 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.

Perform heat-mediated antigen retrieval using ab93684 (Tris/EDTA buffer, pH 9.0).



Immunoprecipitation - Anti-c-Fos antibody [EPR21930-238] (ab222699)

c-Fos was immunoprecipitated from 0.35 mg of HeLa (human epithelial cell line from cervix adenocarcinoma) grown in serum free medium for 36 hours, followed by addition of 20% FBS for 2 hours whole cell lysate with ab222699 at 1/30 dilution. Western blot was performed from the immunoprecipitate using ab222699 at 1/1000 dilution. VeriBlot for IP Detection Reagent (HRP) (ab131366) was used for detection at 1/5000 dilution.
Lane 1: HeLa grown in serum free medium for 36 hours, followed by addition of 20% FBS for 2 hours whole cell lysate 10 µg (Input).

Lane 2: ab222699 IP in HeLa grown in serum free medium for 36 hours, followed by addition of 20% FBS for 2 hours whole cell lysate.

Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab222699 in HeLa grown in serum free medium for 36 hours, followed by addition of 20% FBS for 2 hours whole cell lysate.

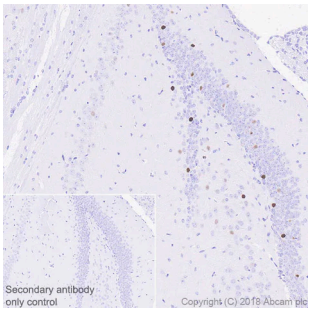
Blocking and dilution buffer and concentration: 5% NFDM/TBST

Exposure time: 30 seconds.

Serum starvation followed by FBS treatment induces the expression of c-Fos (PMID: 14981092).
All lanes:
Immunoprecipitation - Anti-c-Fos antibody [EPR21930-238] (ab222699)

Predicted band size: 41 kDa

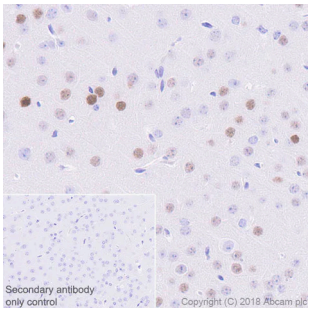
Observed band size: 55-60 kDa



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-c-Fos antibody [EPR21930-238] (ab222699)

Immunohistochemical analysis of paraffin-embedded mouse dentate gyrus tissue labeling c-Fos with ab222699 at 1/2000 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) Ready to use. Sporadic nuclear staining in mouse dentate gyrus (PMID: 24604295). 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.

Perform heat-mediated antigen retrieval using ab93684 (Tris/EDTA buffer, pH 9.0).

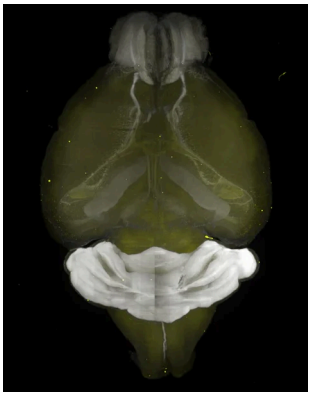


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-c-Fos antibody [EPR21930-238] (ab222699)

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

Immunohistochemical analysis of paraffin-embedded mouse cerebral cortex tissue labeling c-Fos with ab222699 at 1/2000 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) Ready to use. Nuclear staining in neurons of mouse cerebral cortex (PMID: 24604295). 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.

Perform heat-mediated antigen retrieval using ab93684 (Tris/EDTA buffer, pH 9.0).



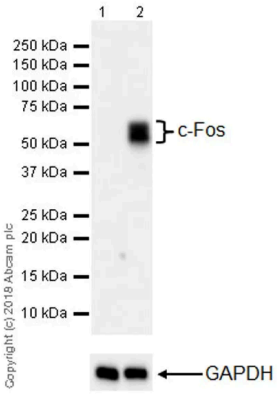
IHC-tissue clearing - Anti-c-Fos antibody [EPR21930-238] (ab222699)

C-Fos IHC-tissue clearing staining using rabbit Anti-c-Fos antibody

Anti-c-FOS antibody ab222699 was used with Tissue clearing kit – CUBIC (ab316246) and 3D Tissue Staining Kit – CUBIC (ab316248) to penetrate, stain and clear a whole mouse brain. White: nuclear staining, Yellow: c-FOS.
Learn more about tissue clearing kits, reagents, and protocols designed to make it easier to stain whole brains and get more data from each valuable tissue sample.

For a whole mouse brain, we recommend starting with 0.6 ug of ab222699 and using a Fab fragment secondary antibody at 0.4 ug to create an antibody complex before 3D staining (see protocol for details). Additive A was used during the staining process.

The sample was imaged using a light-sheet microscope.



Western blot - Anti-c-Fos antibody [EPR21930-238] (ab222699)

Blocking/Dilution buffer: 5% NFDM/TBST.
PMA treatment induces expression of c-Fos, as documented in the literature (PMID: 24386331, PMID: 23300800, PMID: 25695333).

All lanes:
Western blot - Anti-c-Fos antibody [EPR21930-238] (ab222699) at 1/1000 dilution

Lane 1:
Untreated Jurkat (human T cell leukemia cell line from peripheral blood) grown in serum free medium overnight, whole cell lysate at 10 µg

Lane 2:
Jurkat grown in serum free medium overnight, followed by treatment with 200 nM PMA for 4 hours, whole cell lysate at 10 µg

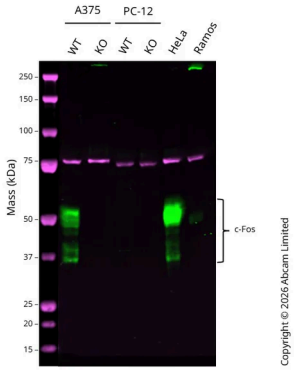
Secondary

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

Predicted band size: 41 kDa

Observed band size: 55-60 kDa

Exposure time: 48s



Western blot - Anti-c-Fos antibody [EPR21930-238] (ab222699)

C-Fos Western blot staining using rabbit Anti-c-Fos antibody

Western blot: Anti-c-Fos antibody [EPR21930-238] ab222699 staining at 1/1000 dilution, shown in green; Mouse anti-CANX ab238078 loading control staining at 1/20000 dilution, shown in magenta. A band was observed at 35-50 kDa in Wild-type A375 cell lysates with no signal observed at this size in FOS knockout A375 cell line. To generate this image, samples were run on an SDS-PAGE gel then transferred onto a nitrocellulose membrane. Membranes were blocked in 5pc 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-c-Fos antibody [EPR21930-238] (ab222699) at 1/1000 dilution

Lane 1:
Wild-type A375 cell lysates at 20 µg

Lane 2:
FOS knockout A375 cell lysates at 20 µg

Lane 3:
Wild-type PC-12 ab279978 cell lysates at 20 µg

Lane 4:
FOS knockout PC-12 ab281615 cell lysates at 20 µg

Lane 5:
HeLa cell lysates at 20 µg

Lane 6:

Ramos cell lysates at 20 µg

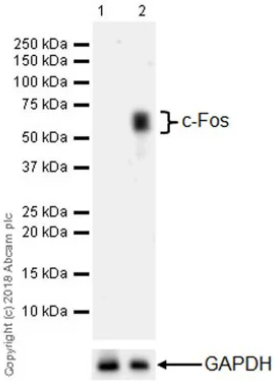
Secondary

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

Performed under reducing conditions.

Predicted band size: 41 kDa

Observed band size: 35-50 kDa



Western blot - Anti-c-Fos antibody [EPR21930-238] (ab222699)

C-Fos Western blot staining using rabbit Anti-c-Fos antibody

Blocking and diluting buffer and concentration: 5% NFDM/TBST.
In Western blot, Anti-GAPDH antibody [EPR16891] - Loading Control (ab181602).

PMA treatment induces expression of c-Fos, as documented in the literature (PMID: 24386331, PMID: 23300800, PMID: 25695333).

All lanes:
Western blot - Anti-c-Fos antibody [EPR21930-238] (ab222699) at 1/5000 dilution

Lane 1:
Untreated RAW 264.7 (mouse Abelson murine leukemia virus-induced tumor macrophage) grown in serum free medium overnight, whole cell lysate at 10 µg

Lane 2:
RAW 264.7 grown in serum free medium overnight, followed by treatment with 200 nM PMA for 4 hours, whole cell lysate at 10 µg

Secondary

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

Observed band size: 55-60 kDa, 36 kDa

Exposure time: 3min

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