abcam

ab210849

Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free

Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849) is a rabbit recombinant monoclonal antibody provided in a PBS only buffer for easy conjugation used in **Western Blot, Flow Cytometry, IP, IHC-P, ICC/IF, ChIP-seq, ChIC/CUT&RUN-seq**.

- Biophysical QC for unrivalled batch-batch consistency

Recombinant | RabMAb | Advanced Validation

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Carrier free	Yes
Clone number	EPR25A
Purification technique	Affinity purification Protein A
Concentration	1.065 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

Application	ChIC/CUT&RUN-seq
Reactivity	Reacts
Dilution info	-
Notes	-

Application	ChIP-seq
Reactivity	Expected
Dilution info	-
Notes	-

Application	IP
Reactivity	Reacts
Dilution info	-
Notes	-

Application	ICC/IF
Reactivity	Reacts
Dilution info	-
Notes	**Please note**: This product should be diluted to the same concentration (not dilution) of the primary antibody to be used.

Application	IHC-P
Reactivity	Reacts
Dilution info	-
Notes	**Please note**: This product should be diluted to the same concentration (not dilution) of the primary antibody to be used. Perform heat-mediated antigen retrieval before commencing with IHC staining protocol.

Application	Flow Cyt
Reactivity	Reacts
Dilution info	-
Notes	**Please note**: This product should be diluted to the same concentration (not dilution) of the primary antibody to be used.

Application	WB
Reactivity	Reacts
Dilution info	-
Notes	-

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

Product Specifications
Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849) is a recombinant rabbit monoclonal antibody which was developed by Abcam using patented rabbit monoclonal antibody technology. ab210849 is provided in a carrier-free, conjugation ready format, and is validated in ChIC/CUT&RUN-seq, ChIP-seq, Flow Cyt, ICC/IF, IHC-P and WB. Carrier-free antibodies are compatible with our best-in-class range of Lightning-Link® conjugation kits.

Quality and Validation
Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849) specifically detects Rabbit IgG is sold in 100 ug and 1mg selling sizes.

Related Products
Antibody clone EPR25A is also available pre-conjugated to a variety of labels for your convenience - Alexa Fluor® 488, Alexa Fluor® 647, HRP, Alexa Fluor® 405, Alexa Fluor® 594, Alexa Fluor® 555, PE, Alexa Fluor® 568, PerCP, FITC, APC, Biotin, Alexa Fluor® 750 (ab199091, ab199093, ab199507, ab208150, ab208568, ab208569, ab209478, ab209613, ab222107, ab223339, ab232814, ab320073, ab322086).

Immunogen
Chemical / Small Molecule conjugated to keyhole limpet haemocyanin. KLH is a copper containing oxygen carrier occurring freely dissolved in the hemolymph of many molluscs and arthropods. KLH forms a large complex composed of ~50 kDa subunits.

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.

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.

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.

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

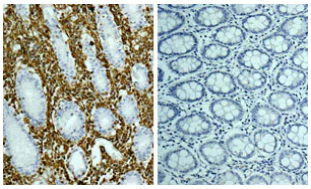
We do not recommend this combination. It is not covered by our product promise.

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.

22 product images

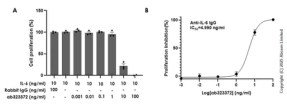


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849)

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

Immunohistochemical analysis of paraffin-embedded human colon tissue using anti-Vimentin RabMAb (ab92547, left panel) (brown) and Rabbit mAb IgG control (ab172730, right panel).

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab172730).

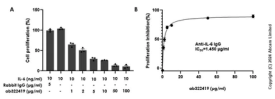


Functional Studies (Neut/Block) - Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849)

Cell proliferation of TF-1 (human erythroleukemia erythroblast) cells treated with IL-6 (ab259381) and anti-IL-6 antibody (ab323372) or isotype IgG (ab210849).

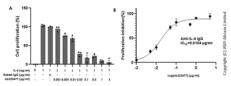
Cell proliferation (%) (A) confirms that the anti-IL-6 antibody (ab323372) neutralizes IL-6-mediated cell proliferation. The IC50 as determined by the dose-dependent inhibition of TF-1 cells proliferation is 4.990 ng/ml (B).

TF-1 cells were seeded at 5 × 10^4 cells per well in a 96-well plate and cultured in medium containing 5% FBS for 48 h. Proliferation was analysed by luminescent assay and recorded using a Microplate Reader at 560nm emission.



Functional Studies (Neut/Block) - Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849)

Cell proliferation of TF-1 (human erythroleukemia erythroblast) cells treated with IL-6 (ab259381) and anti-IL-6 antibody (ab322419) or isotype IgG (ab210849) Cell proliferation (%) (A) confirms that the anti-IL-6 antibody (ab322419) neutralizes IL-6-mediated cell proliferation. The IC50 as determined by the dose-dependent inhibition of TF-1 cells proliferation is 1.450 µg/ml (B). TF-1 cells were seeded at 5 × 10^4 cells per well in a 96-well plate and cultured in medium containing 5% FBS for 48 h. Luminescence was recorded using a Microplate Reader at 560nm emission.

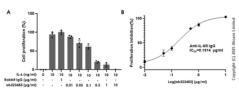


Functional Studies (Neut/Block) - Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849)

Cell proliferation of TF-1 (human erythroleukemia erythroblast) cells treated with IL-4 (ab269147) and anti-IL-4 antibody (ab323477) or isotype IgG (ab210849).

Cell proliferation (%) (A) confirms that the anti-IL-4 antibody (ab323477) neutralizes IL-4-mediated cell proliferation. The IC50 as determined by the dose-dependent inhibition of TF-1 cells proliferation is 0.0164 ug/ml (B).

TF-1 cells were seeded at 5 × 10^4 cells per well in a 96-well plate and cultured in medium containing 5% FBS for 48 h. Proliferation was analysed by luminescent assay and recorded using a Microplate Reader at 560nm emission.

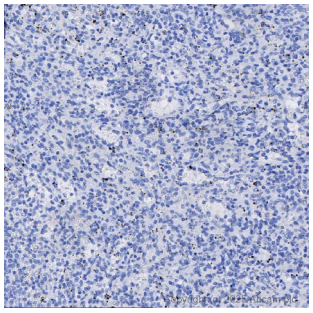


Functional Studies (Neut/Block) - Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849)

Cell proliferation of TF-1 (human erythroleukemia erythroblast) cells treated with IL-6 (ab259381) and anti-IL-6R antibody (ab323483) or isotype IgG (ab210849).

Cell proliferation (%) (A) confirms that the anti-IL-6R antibody (ab323483) neutralizes IL-6-mediated cell proliferation. The IC50 as determined by the dose-dependent inhibition of TF-1 cells proliferation is 0.1914 ug/ml (B).

TF-1 cells were plated at a density of 5 × 10^4 cells per well in a 96-well plate. A dilution series of the anti-IL-6R antibody (ab323483) was added to the cells and pre-incubated for 2 hours before IL-6 (ab259381) stimulation, and cells were cultured in medium with 5% FBS for a duration of 48 hours. Proliferation was analysed by luminescent assay and recorded using a Microplate Reader at 560nm emission.

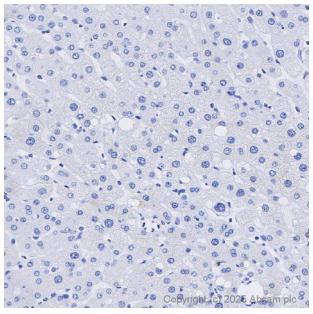


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849)

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

This data was developed using ab172730 the same antibody clone in a different buffer formulation.
Immunohistochemical analysis of formalin fixed paraffin embedded human spleen labelling Rb IgG with ab172730 at a concentration of 5µg/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, pH8.5 for 32mins. ab172730 Rabbit IgG, monoclonal [EPR25A] - Isotype Control 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).

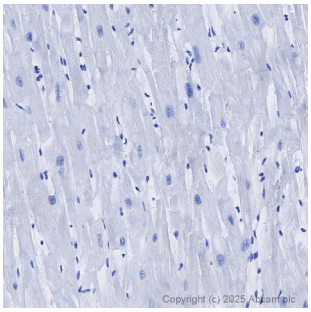


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849)

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

This data was developed using ab172730 the same antibody clone in a different buffer formulation.
Immunohistochemical analysis of formalin fixed paraffin embedded human liver labelling Rb IgG with ab172730 at a concentration of 5µg/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, pH8.5 for 32mins. ab172730 Rabbit IgG, monoclonal [EPR25A] - Isotype Control 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).

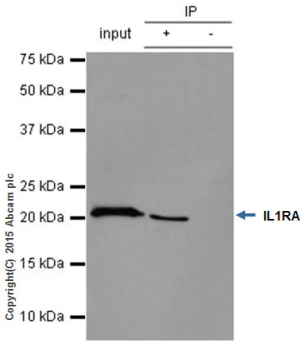


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849)

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

This data was developed using ab172730 the same antibody clone in a different buffer formulation.
Immunohistochemical analysis of formalin fixed paraffin embedded human heart labelling Rb IgG with ab172730 at a concentration of 5µg/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, pH8.5 for 32mins. ab172730 Rabbit IgG, monoclonal [EPR25A] - Isotype Control 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).

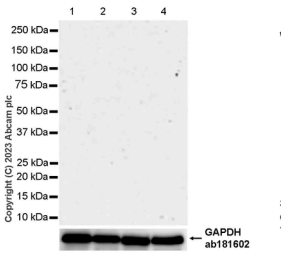


Immunoprecipitation - Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849)

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab172730).
ab124962 (purified) at 1/20 immunoprecipitating IL-1RA in NIH/3T3 whole cell lysate.
Lane 1 (input): NIH/3T3 whole cell lysate (10µg)
Lane 2 (+): ab124962 + NIH/3T3 whole cell lysate.
Lane 3 (-): Rabbit monoclonal IgG (ab172730) instead of ab124962 in NIH/3T3 whole cell lysate.
For western blotting, VeriBlot for IP Detection Reagent (HRP) (ab131366), was used for detection at 1/10,000 dilution.
Blocking buffer and concentration: 5% NFDM/TBST.
Diluting buffer and concentration: 5% NFDM /TBST.

All lanes:
Immunoprecipitation - Anti-IL-1RA antibody [EPR6483] (ab124962)

All lanes:
NIH/3T3 whole cell lysate



Western blot - Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849)

Western blot staining using rabbit Anti- antibody

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab172730).

Negative Control.

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

In Western blot, anti-GAPDH antibody (ab181602) loading control staining at 1/200000 dilution.

Lane 1:
HeLa (human cervical adenocarcinoma epithelial cell) whole cell lysate at 20 µg

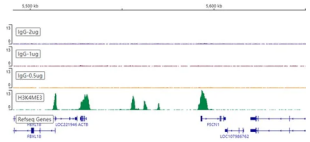
Lane 2:
293T (human embryonic kidney epithelial cell) whole cell lysate at 20 µg

Lane 3:
NIH/3T3 (mouse embryonic fibroblast) whole cell lysate at 20 µg

Lane 4:
PC-12 (rat adrenal gland pheochromocytoma cell) whole cell lysate at 20 µg

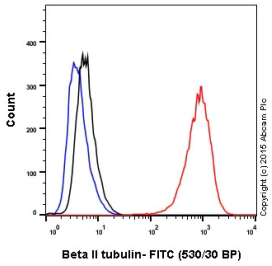
Secondary

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



ChIC/CUT&RUN sequencing - Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849)

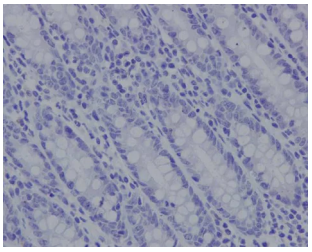
ChIC/CUT&RUN was performed using a pAG-MNAse at a final concentration of 700 ng/mL, 2.5 x 10^5 HeLa (Human cervix adenocarcinoma epithelial cell line) cells and 0.5 µg, 1 µg or 2µg of ab172730 [EPR25A]. The resulting DNA was sequenced on the Illumina NovaSeq 6000 to a depth of 10 million reads. H3K4me3 (ab213224) used for comparison. 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 (ab172730).



Flow Cytometry - Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849)

Flow Cytometry staining using rabbit Anti- antibody

Overlay histogram showing SH-SY5Y (human neuroblastoma) cells stained with ab179513 (red line). The cells were fixed with 2% paraformaldehyde. The cells were then incubated with ab179513 at 1/150 dilution. The secondary antibody used was goat anti-rabbit IgG (FITC) at 1/150 dilution. Isotype control antibody (black line) was rabbit IgG (monoclonal) (ab172730). Unlabelled control (blue line) was cells without incubation with primary antibody and secondary antibody. Acquisition of >5,000 events were collected using a 20mW Argon ion laser (488nm) and 530/30 bandpass filter.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab172730).

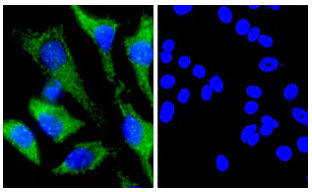


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849)

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

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of human colon tissue with unpurified Rabbit IgG ab172730 at 1/10. Heat mediated antigen retrieval was

performed using Tris/EDTA buffer pH 9. A prediluted HRP-polymer conjugated anti-rabbit IgG was used as the secondary antibody. Counterstained with Hematoxylin.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab172730).

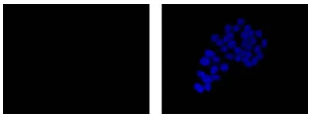


Immunocytochemistry/ Immunofluorescence - Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849)

Immunocytochemistry/ Immunofluorescence staining using rabbit Anti- antibody

Immunofluorescent staining of HeLa cells using anti-AIF RabMAb (ab32516, left panel) (green) and Rabbit mAb IgG control (ab172730, right panel). DAPI nuclear staining (blue).
Conjugated versions are available for this clone: Alexa Fluor® 488 (ab199091), Alexa Fluor® 647 (ab199093), R-PE (ab209478), APC (ab232814).

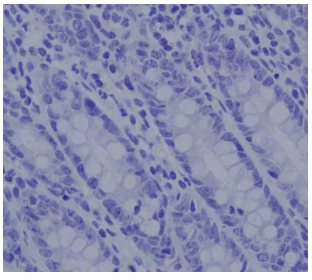
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab172730).



Immunocytochemistry/ Immunofluorescence - Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849)

Immunocytochemistry/ Immunofluorescence staining using rabbit Anti- antibody

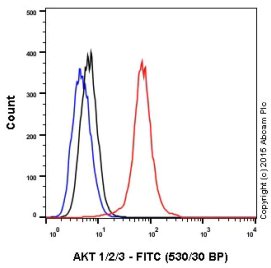
Immunocytochemistry/immunofluorescence analysis of HeLa cells with purified Rabbit IgG ab172730 at 1/100. Cells were fixed with 4% paraformaldehyde. An Alexa Fluor® 488-conjugated goat anti-rabbit IgG (1/200) was used as the secondary antibody. Counterstained with DAPI (blue).
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab172730).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849)

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

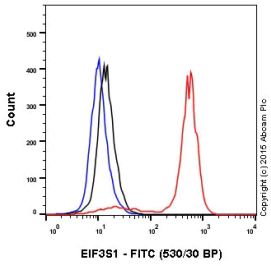
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of human colon tissue with purified Rabbit IgG ab172730 at 1/100. Heat mediated antigen retrieval was performed using Tris/EDTA buffer pH 9. A prediluted HRP-polymer conjugated anti-rabbit IgG was used as the secondary antibody. Counterstained with Hematoxylin.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab172730).



Flow Cytometry - Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849)

Flow Cytometry staining using rabbit Anti- antibody

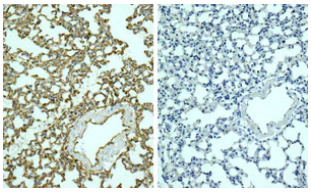
Overlay histogram showing A549 (human lung carcinoma) cells stained with ab185633 (red line). The cells were fixed with 2% paraformaldehyde. The cells were then incubated with ab185633 at 1/150 dilution. The secondary antibody used was goat anti-rabbit IgG (FITC) at 1/150 dilution. Isotype control antibody (black line) was rabbit IgG (monoclonal) (ab172730). Unlabelled control (blue line) was cells without incubation with primary antibody and secondary antibody. Acquisition of >5,000 events were collected using a 20mW Argon ion laser (488nm) and 530/30 bandpass filter.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab172730).



Flow Cytometry - Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849)

Flow Cytometry staining using rabbit Anti- antibody

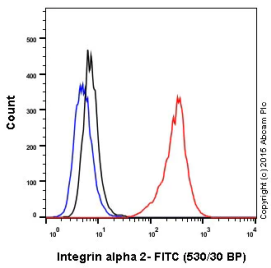
Overlay histogram showing K562 (human chronic myelogenous leukemia) cells stained with ab196018 (red line). The cells were fixed with 2% paraformaldehyde. The cells were then incubated with ab196018 at 1/150 dilution. The secondary antibody used was goat anti-rabbit IgG (FITC) at 1/150 dilution. Isotype control antibody (black line) was rabbit IgG (monoclonal) (ab172730). Unlabelled control (blue line) was cells without incubation with primary antibody and secondary antibody. Acquisition of >5,000 events were collected using a 20mW Argon ion laser (488nm) and 530/30 bandpass filter.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab172730).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849)

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

Immunohistochemical analysis of paraffin-embedded mouse lung tissue using anti-Vimentin RabMAb (ab92547, left panel) (brown) and Rabbit mAb IgG control (ab172730, right panel).
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab172730).



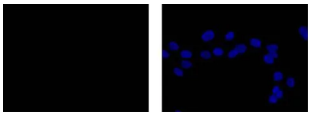
Flow Cytometry - Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849)

Flow Cytometry staining using rabbit Anti- antibody

Overlay histogram showing A549 (human lung carcinoma) cells stained with ab133557 (red line). The cells were fixed with 2% paraformaldehyde. The cells were then incubated with ab133557 at 1/60 dilution. The secondary antibody used was goat anti-rabbit IgG (FITC) at 1/150 dilution. Isotype control antibody (black line) was rabbit IgG (monoclonal) (ab172730). Unlabelled control

(blue line) was cells without incubation with primary antibody and secondary antibody. Acquisition of >5,000 events were collected using a 20mW Argon ion laser (488nm) and 530/30 bandpass filter.
Conjugated versions are available for this clone: Alexa Fluor® 488 (ab199091), Alexa Fluor® 647 (ab199093), R-PE (ab209478), APC (ab232814).

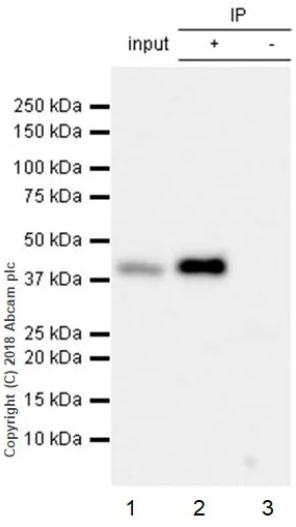
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab172730).



Immunocytochemistry/ Immunofluorescence - Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849)

Immunocytochemistry/ Immunofluorescence staining using rabbit Anti- antibody

Immunocytochemistry/immunofluorescence analysis of HeLa cells with unpurified Rabbit IgG ab172730 at 1/10. Cells were fixed with 4% paraformaldehyde. An Alexa Fluor® 488-conjugated goat anti-rabbit IgG (1/200) was used as the secondary antibody. Counterstained with DAPI (blue). This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab172730).



Immunoprecipitation - Rabbit IgG, monoclonal [EPR25A] - Isotype Control - BSA and Azide Free (ab210849)

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab172730).
LINE-1 ORF1p was immunoprecipitated from 0.35 mg F9 (mouse embryonal carcinoma epithelial cell) whole cell lysate with ab216324 at 1/30 dilution. Western blot was performed from the immunoprecipitate using ab216324 at 1/1000 dilution. VeriBlot for IP Detection Reagent (HRP) (ab131366), was used for detection at 1/5000 dilution.

Lane 1: F9 whole cell lysate 10 µg (Input).
Lane 2: ab216324 IP in F9 whole cell lysate.
Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab216324 in F9 whole cell lysate.

Blocking/Dilution buffer: 5% NFDM/TBST.
Exposure time: 30 seconds.

Exposure time: 30s

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