abcam

ab138501

Anti-Alpha-synuclein antibody [MJFR1]

Anti-Alpha-synuclein antibody [MJFR1] (ab138501) is a rabbit monoclonal antibody detecting Alpha-synuclein in **Western Blot, Flow Cytometry (Intra), IP, IHC-P, ICC/IF**. Suitable for **Human**.

- KO validated for confirmed specificity
- Biophysical QC for unrivalled batch-batch consistency
- Over 225 publications

Chicken and mouse version of this clone also available as ab320839 and ab309157. Same clone, same staining pattern, different species antibody backbone.
Learn more about chimeric antibodies

Recombinant | RabMAb | KO Validated

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	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	MJFR1
Purification technique	Affinity purification Protein A
Epitope	The epitope was mapped to amino acids 118-123 (VDPDNE).
Concentration	1.065 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	1/150
Notes	**For unpurified use at 1/15 to 1/300.** Perform heat-mediated antigen retrieval before commencing with IHC staining protocol.

ICC/IF

Tested

Species	Human
Dilution info	0.1 µg/mL
Notes	-

IP

Tested

Species	Human
Dilution info	1/600
Notes	**For unpurified use at 1/50**

WB

Tested

Species	Human
Dilution info	1/10000
Notes	**For unpurified use at 1/1000 - 1/10000.**

Flow Cyt (Intra)

Tested

Species	Human

Dilution info	1/200
Notes	For unpurified use at 1/20. ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Target data

See full target information SNCA

Function	Neuronal protein that plays several roles in synaptic activity such as regulation of synaptic vesicle trafficking and subsequent neurotransmitter release (PubMed:20798282, PubMed:26442590, PubMed:28288128, PubMed:30404828). Participates as a monomer in synaptic vesicle exocytosis by enhancing vesicle priming, fusion and dilation of exocytotic fusion pores (PubMed:28288128, PubMed:30404828). Mechanistically, acts by increasing local Ca(2+) release from microdomains which is essential for the enhancement of ATP-induced exocytosis (PubMed:30404828). Also acts as a molecular chaperone in its multimeric membrane-bound state, assisting in the folding of synaptic fusion components called SNAREs (Soluble NSF Attachment Protein REceptors) at presynaptic plasma membrane in conjunction with cysteine string protein-alpha/DNAJC5 (PubMed:20798282). This chaperone activity is important to sustain normal SNARE-complex assembly during aging (PubMed:20798282). Also plays a role in the regulation of the dopamine neurotransmission by associating with the dopamine transporter (DAT1) and thereby modulating its activity (PubMed:26442590).

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

Anti-Alpha-synuclein antibody [MJFR1] (ab138501) was developed by Abcam using patented rabbit monoclonal antibody technology and is validated for use in Flow Cyt (Intra), ICC/IF, IHC-P, IP and WB.

Anti-Alpha-synuclein antibody [MJFR1] (ab138501) was first used in a scientific publication in 2012 and has been cited over 156 times in peer reviewed journals. It's performance in Western Blot in human samples is trusted by the scientific community.

Abcam's high quality manufacturing and validation processes ensure Anti-Alpha-synuclein antibody [MJFR1] (ab138501) has high sensitivity and specificity alongside high lot-to-lot consistency and reproducibility.

The specificity of Anti-Alpha-synuclein antibody [MJFR1] (ab138501) has been confirmed by Western Blot testing in Alpha-synuclein knockout HEK-293T cells (ab263769).

Anti-Alpha-synuclein antibody [MJFR1] (ab138501) has 7 independent reviews from customers.

Anti-Alpha-synuclein antibody [MJFR1] (ab138501) specifically detects Alpha-synuclein (UniProt ID: P37840; Molecular weight: 15kDa) and is sold in 100 µL and 1 mL selling sizes.

Conjugation-ready, carrier free format available for antibody clone MJFR1 - ab156369.

Antibody clone MJFR1 is also available pre-conjugated to a variety of labels for your convenience - Biotin, HRP (ab309388, ab314243).

Anti-Alpha-synuclein antibody [MJFR1] (ab138501) was developed by Abcam in partnership with the Michael J. Fox Foundation for Parkinson's Research.

Alpha-Synuclein is expressed predominantly in the brain, where it is concentrated in presynaptic nerve terminals. The deposition of the abundant presynaptic brain protein alpha-synuclein as fibrillary aggregates in neurons or glial cells is a hallmark lesion in a subset of neurodegenerative disorders. These disorders include Parkinson's disease (PD), dementia with Lewy bodies (DLB) and multiple system atrophy, collectively referred to as synucleinopathies. Parkinson's disease (PD) is a common neurodegenerative disorder characterized by the progressive accumulation in selected neurons of protein inclusions containing alpha-synuclein and ubiquitin. This antibody was developed with support from The Michael J. Fox Foundation, in collaboration with the laboratory of Dr. Michael Schlossmacher (University of Ottawa).

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.

Species reactivity

Rat: We have preliminary internal testing data to indicate this antibody may not react with this species.
Please contact us for more information.

Supplementary info

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

Activity summary	Alpha-synuclein often referred to by alternate names such as SNCA is a protein of around 14 kDa mass. It mainly expresses in the brain particularly in presynaptic nerve terminals. This protein functions mechanically by stabilizing synaptic vesicles and maintaining synaptic function. It exists both in soluble monomer forms and as aggregates in protein filaments. Antibodies like 4D6 and EP1536Y target monomer forms of protein for more detailed studies.
Biological function summary	The alpha-synuclein protein plays critical roles in neuronal activity. It contributes to neurotransmitter release regulation by acting in the formation and plasticity of the presynaptic neuronal network. Alpha-synuclein doesn't usually form parts of large protein complexes but it may associate transiently with membranes and vesicular structures. The protein's monomer form has also been observed in alpha lines and related neuronal processes operating alongside various cellular functions.
Pathways	Synaptic vesicle trafficking and dopamine neurotransmitter release are significant areas involving the alpha-synuclein protein. In these pathways alpha-synuclein interacts with other proteins like synaptophysin and protein monomer monomerizations are intrinsic to these processes. Altered function or aggregation of alpha-synuclein disrupts these pathways influencing broader neurological functions.
Associated diseases and disorders	Alterations or accumulations of alpha-synuclein are strongly linked to Parkinson's disease and Lewy body dementia. In these conditions alpha-synuclein forms abnormal protein filaments known as Lewy bodies within neurons. These formations disrupt cellular processes and neuron health. Synucleinopathies such as these show connections with proteins like parkin and DJ-1 which also have key roles in these neurodegenerative diseases.

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

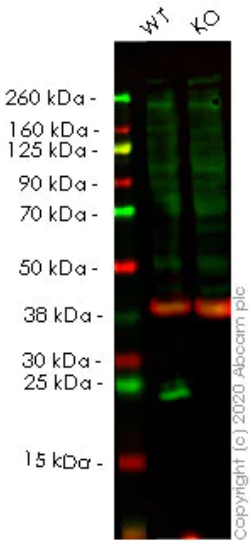
We do not recommend this combination. It is not covered by our product promise.

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.

15 product images



Western blot - Anti-Alpha-synuclein antibody [MJFR1] (ab138501)

Alpha-synuclein Western blot staining using rabbit Anti-Alpha-synuclein antibody

This data was developed using the same antibody clone in a different buffer formulation (ab138501).
Lanes 1- 2: Merged signal (red and green). Green - ab138501 observed at 18 kDa. Red - Anti-GAPDH antibody [6C5] - Loading Control (ab8245) observed at 37 kDa.

ab138501 was shown to react with SNCA in wild-type HEK-293T cells in western blot. Loss of signal was observed when knockout cell line ab255433 (knockout cell lysate ab263769) was used. Wild-type HEK-293T and SNCA knockout HEK-293T cell lysates were subjected to SDS-PAGE. Membrane was blocked for 1 hour at room temperature in 0.1% TBST with 3% non-fat dried milk. ab138501 and Anti-GAPDH antibody [6C5] - Loading Control (ab8245) overnight at 4°C at a 1 in 10000 dilution and a 1 in 20000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye®800CW) preadsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye®680RD) preadsorbed (ab216776) secondary antibodies at 1 in 20000 dilution for 1 hour at room temperature before imaging.

Lanes 1 - 2:
Western blot - Anti-Alpha-synuclein antibody [MJFR1] (ab138501) at 1/10000 dilution

Lanes 1 - 2:
Anti-Alpha-synuclein antibody [MJFR1] - BSA and Azide free (ab156369) at 1/10000 dilution

Lane 1:
Wild-type HEK-293T cell lysate at 20 µg

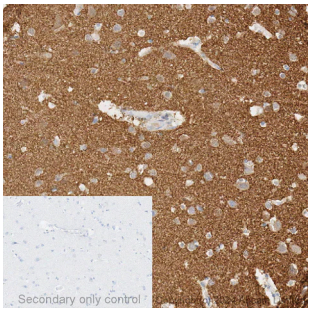
Lane 2:
SNCA knockout HEK-293T cell lysate at 20 µg

Lane 2:
Western blot - Human SNCA (Alpha-synuclein) knockout HEK-293T cell line (ab255433)

Performed under reducing conditions.

Predicted band size: 14 kDa

Observed band size: 18 kDa

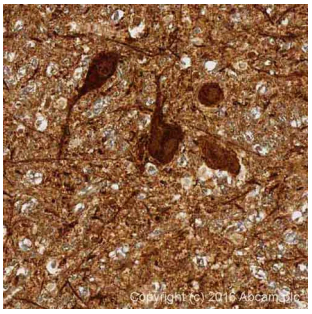


Immunohistochemistry - Anti-Alpha-synuclein antibody [MJFR1] (ab138501)

Immunohistochemical analysis of formalin fixed paraffin embedded human cerebrum labelling Alpha-synuclein with ab138501 at a concentration of 0.01 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 (CC2) 100°C, pH 8.5 for 32 mins.

ab138501 anti-Alpha-synuclein [MJFR1] was incubated for 16 mins at 37°C. Sections were counterstained with Hematoxylin II. Image inset shows absence of staining in secondary antibody only control.

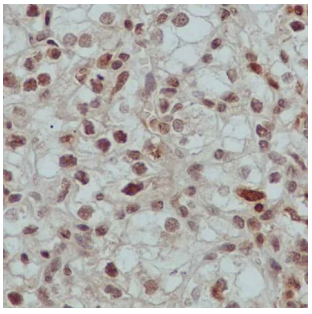
Customers are encouraged to optimise antigen retrieval conditions, antibody concentration, incubation times and temperature for best results in their own IHC assay workflow (automated and manual).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Alpha-synuclein antibody [MJFR1] (ab138501)

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

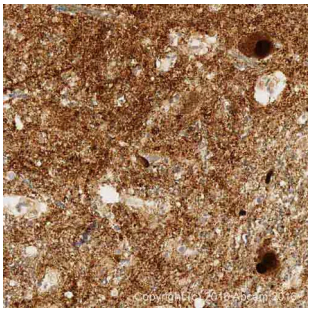
IHC image of alpha Synuclein staining in Normal human Substantia Nigra formalin fixed paraffin embedded tissue section, performed on a Leica Bond™ system using the standard protocol F. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH6, epitope retrieval solution 1) for 20 mins. The section was then incubated with ab138501, 5µg/ml, for 15 mins at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX.
For other IHC staining systems (automated and non-automated) customers should optimize variable parameters such as antigen retrieval conditions, primary antibody concentration and antibody incubation times.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Alpha-synuclein antibody [MJFR1] (ab138501)

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

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of Human clear cell carcinoma of kidney labeling alpha Synuclein with purified ab138501 at 1/150 dilution. Heat mediated antigen retrieval was performed using Tris/EDTA buffer pH 9. Prediluted HRP Polymer for Rabbit IgG was used as the secondary antibody. Counter stained with Hematoxylin.

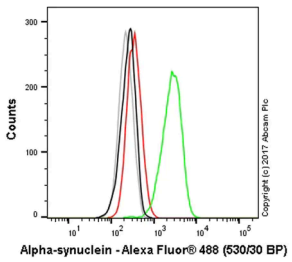


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Alpha-synuclein antibody [MJFR1] (ab138501)

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

IHC image of alpha Synuclein staining in Parkinson Human Substantia Nigra formalin fixed paraffin embedded tissue section*, performed on a Leica Bond™ system using the standard protocol F. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH6, epitope retrieval solution 1) for 20 mins. The section was then incubated with ab138501, 5µg/ml, for 15 mins at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX.
For other IHC staining systems (automated and non-automated) customers should optimize variable parameters such as antigen retrieval conditions, primary antibody concentration and antibody incubation times.

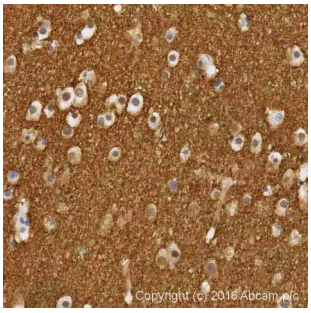
*Tissue obtained from the Human Research Tissue Bank, supported by the NIHR Cambridge Biomedical Research Centre



Flow Cytometry (Intracellular) - Anti-Alpha-synuclein antibody [MJFR1] (ab138501)

Alpha-synuclein Flow Cytometry (Intracellular) staining using rabbit Anti-Alpha-synuclein antibody

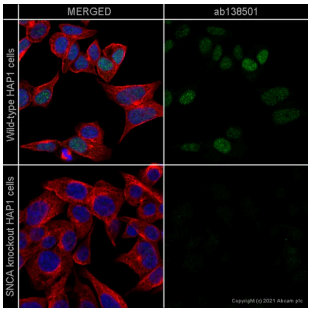
Overlay histogram showing HAP1 wildtype (green line) and HAP1-SNCA knockout cells (red line) stained with ab138501. The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Triton X-100 for 15 min. The cells were then incubated in 1x PBS / 10% normal goat serum to block non-specific protein-protein interactions followed by the antibody (ab138501, 1µg/ml) for 30 min at 22°C. The secondary antibody used was Alexa Fluor® 488 goat anti-rabbit IgG (H&L) presorbed (ab150081) at 1/2000 dilution for 30 min at 22°C. A rabbit IgG isotype control antibody (ab172730) was used at the same concentration and conditions as the primary antibody (HAP1 wildtype - black line, HAP1-SNCA knockout - grey line). Unlabelled sample was also used as a control (this line is not shown for the purpose of simplicity). Acquisition of >5,000 events were collected using a 50 mW Blue laser (488nm) and 530/30 bandpass filter.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Alpha-synuclein antibody [MJFR1] (ab138501)

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

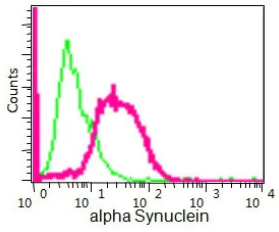
IHC image of alpha Synuclein staining in normal Human cerebral cortex formalin fixed paraffin embedded tissue section, performed on a Leica Bond™ system using the standard protocol F. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH6, epitope retrieval solution 1) for 20 mins. The section was then incubated with ab138501, 5µg/ml, for 15 mins at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX.
For other IHC staining systems (automated and non-automated) customers should optimize variable parameters such as antigen retrieval conditions, primary antibody concentration and antibody incubation times.



Immunocytochemistry/ Immunofluorescence - Anti-Alpha-synuclein antibody [MJFR1] (ab138501)

Alpha-synuclein Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Alpha-synuclein antibody

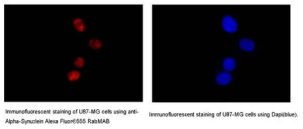
ab138501 staining Alpha-Synuclein in wild-type Hap1 cells (top panel) and SNCA knockout Hap1 cells (bottom panel). The cells were fixed with 4% paraformaldehyde (10 min) then permeabilized with 0.1% Triton X-100 for 5 minutes and then blocked with 1% BSA/10% normal goat serum/0.3M glycine in 0.1% PBS-Tween for 1h. The cells were then incubated with ab138501 at 0.1 µg/ml concentration and ab7291 (Mouse monoclonal to alpha Tubulin) at 1/1000 dilution overnight at 4°C followed by a further incubation at room temperature for 1h with a goat secondary antibody to rabbit IgG (Alexa Fluor® 488) (ab150081) at 2 µg/ml (shown in green) and a goat secondary antibody to mouse IgG (Alexa Fluor® 594) (ab150120) at 2 µg/ml (shown in red). Nuclear DNA was labelled in blue with DAPI.
Image was taken with a confocal microscope (Leica-Microsystems TCS SP8).



Flow Cytometry (Intracellular) - Anti-Alpha-synuclein antibody [MJFR1] (ab138501)

Alpha-synuclein Flow Cytometry (Intracellular) staining using rabbit Anti-Alpha-synuclein antibody

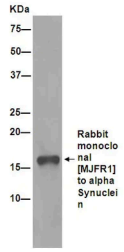
Intracellular Flow Cytometry analysis of 2% paraformaldehyde fixed HeLa (Human epithelial cells from cervix adenocarcinoma) cells labeling alpha Synuclein with purified ab138501 at 1/200 dilution. The secondary antibody was Goat anti rabbit IgG (FITC) at 1/150 dilution.
The Isotype control is Rabbit monoclonal IgG (green line).



Immunocytochemistry/ Immunofluorescence - Anti-Alpha-synuclein antibody [MJFR1] (ab138501)

Alpha-synuclein Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Alpha-synuclein antibody

Immunocytochemistry/Immunofluorescence analysis of U87-MG (Human glioblastoma-astrocytoma epithelial cell line) cells labeling alpha Synuclein with purified ab138501 at 1/150 dilution (left panel). Cells were fixed with 4% paraformaldehyde. A Goat anti rabbit IgG(Alexa Fluor® 555) (1/200) was used as the secondary antibody. DAPI (blue) was used as the nuclear counter stain (right panel).

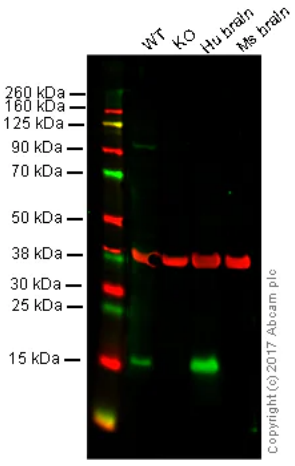


Immunoprecipitation - Anti-Alpha-synuclein antibody [MJFR1] (ab138501)

alpha Synuclein was immunoprecipitated from Human fetal brain tissue using purified ab138501 at 1/600 dilution. Western blot was performed from the immunoprecipitate using purified ab138501. Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated was used as secondary antibody at 1/1000 dilution. Blocking and dilution buffer and concentration: 5% NFDM/TBST.
All lanes:
Immunoprecipitation - Anti-Alpha-synuclein antibody [MJFR1] (ab138501)

Predicted band size: 14 kDa

Observed band size: 18 kDa



Western blot - Anti-Alpha-synuclein antibody [MJFR1] (ab138501)

Lanes 1 - 4: Merged signal (red and green). Green - ab138501 observed at 14 kDa. Red - loading control, ab8245, observed at 37 kDa.
ab138501 was shown to specifically react with SNCA in wild-type HAP1 cells. No band was observed when SNCA knockout samples were used. Wild-type and SNCA knockout samples were subjected to SDS-PAGE. ab138501 and ab8245 (Mouse anti GAPDH loading control) were incubated overnight at 4°C at 1/10000 and 1/10000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preabsorbed ab216773 and Goat anti-Mouse IgG H&L (IRDye® 680RD) preabsorbed ab216776 secondary antibodies at 1/10000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-Alpha-synuclein antibody [MJFR1] (ab138501) at 1/10000 dilution

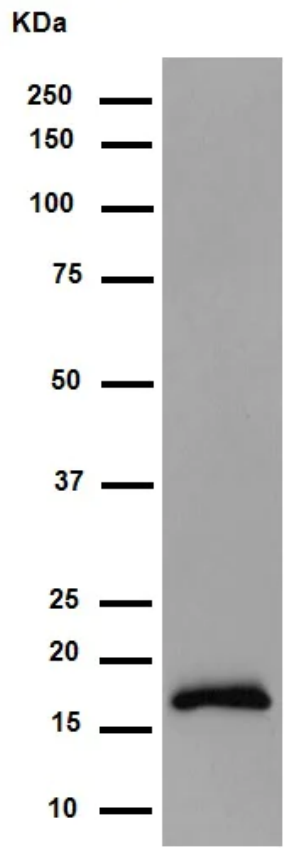
Lane 1:
Wild-type HAP1 whole cell lysate at 40 µg

Lane 2:
SNCA knockout HAP1 whole cell lysate at 40 µg

Lane 3:
Human brain whole cell lysate at 40 µg

Lane 4:
Mouse brain whole cell lysate at 40 µg

Predicted band size: 14 kDa



Western blot - Anti-Alpha-synuclein antibody [MJFR1] (ab138501)

Blocking and diluting buffer and concentration: 5% NFDM/TBST
All lanes:
Western blot - Anti-Alpha-synuclein antibody [MJFR1] (ab138501) at 1/10000 dilution

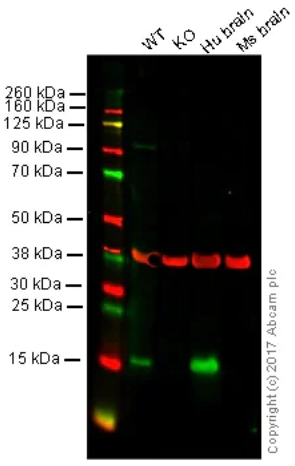
All lanes:
Human fetal brain at 20 µg

Secondary

All lanes:
Anti-Rabbit IgG (HRP), specific to the non-reduced form of IgG at 1/1000 dilution

Predicted band size: 14 kDa

Observed band size: 18 kDa



Western blot - Anti-Alpha-synuclein antibody [MJFR1] (ab138501)

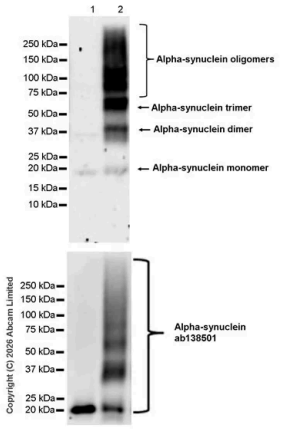
This data was developed using the same antibody clone in a different buffer formulation (ab138501). **Lanes 1 - 4:** Merged signal (red and green). Green - ab138501 observed at 14 kDa. Red - loading control, ab8245, observed at 37 kDa. ab138501 was shown to specifically react with SNCA in wild-type HAP1 cells. No band was observed when SNCA knockout samples were used. Wild-type and SNCA knockout samples were subjected to SDS-PAGE. ab138501 and ab8245 (Mouse anti GAPDH loading control) were incubated overnight at 4°C at 1/10000 and 1/10000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preabsorbed ab216773 and Goat anti-Mouse IgG H&L (IRDye® 680RD) preabsorbed ab216776 secondary antibodies at 1/10000 dilution for 1 hour at room temperature before imaging.
All lanes:
Western blot - Anti-Alpha-synuclein antibody [MJFR1] (ab138501) at 1/10000 dilution

Lane 1:
Wild-type HAP1 whole cell lysate at 20.0 µg

Lane 2:
SNCA knockout HAP1 whole cell lysate at 20.0 µg

Lane 3:
Human brain whole cell lysate at 20.0 µg

Lane 4:
Mouse brain whole cell lysate at 20.0 µg



Western blot - Anti-Alpha-synuclein antibody [MJFR1] (ab138501)

Alpha-synuclein Western blot staining of Alpha-synuclein recombinant protein incubated with 300 µM DOPAL for 18 hours using rabbit Anti-Alpha-synuclein antibody

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

In Western blot, Anti-Alpha-synuclein antibody [MJFR1] (ab138501) (1:1000) (20, 40, 60, 80-300KDa).

All lanes:
Western blot - Anti-DOPAL-modified Alpha-synuclein antibody [OBI-1-F1-10 VHVL] (ab327646) at 1/1000 dilution

Lane 1:
Untreated Alpha-synuclein recombinant protein at 10 ng

Lane 2:
Alpha-synuclein recombinant protein incubated with 300 µM DOPAL for 18 hours at 10 ng

Secondary

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

Observed band size: 20 kDa, 40 kDa, 60 kDa, 80-300 kDa

Exposure time: 180s

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