abcam

ab10303

Anti-Transportin 1/MIP antibody [D45]

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	Preservative: 0.1% Sodium azide Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	Recombinant Fragment Protein within Human TNPO1. The exact immunogen used to generate this antibody is proprietary information. Database link Q92973
Clone number	D45
Purification technique	Affinity purification Protein A
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	Protein A purified from tissue culture supernatant.

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	1 µg/mL
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Flow Cyt

Tested

Species	Human
Dilution info	1 µg for 10^6 Cells
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

WB

Tested

Species	Human
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	5 µg/mL
Notes	-

Target data

See full target information TNPO1

Function	Functions in nuclear protein import as nuclear transport receptor. Serves as receptor for nuclear localization signals (NLS) in cargo substrates (PubMed:24753571). May mediate docking of the importin/substrate complex to the nuclear pore complex (NPC) through binding to nucleoporin and the complex is subsequently translocated through the pore by an energy requiring, Ran-dependent mechanism. At the nucleoplasmic side of the NPC, Ran binds to the importin, the importin/substrate complex dissociates and importin is re-exported from the nucleus to the cytoplasm where GTP hydrolysis releases Ran. The directionality of nuclear import is thought to be conferred by an asymmetric distribution of the GTP- and GDP-bound forms of Ran between the cytoplasm and nucleus (By similarity). Involved in nuclear import of M9-containing proteins. In vitro, binds directly to the M9 region of the heterogeneous nuclear ribonucleoproteins (hnRNP), A1 and A2 and mediates their nuclear import.

Involved in hnRNP A1/A2 nuclear export. Mediates the nuclear import of ribosomal proteins RPL23A, RPS7 and RPL5 (PubMed:11682607). In vitro, mediates nuclear import of H2A, H2B, H3 and H4 histones (By similarity). In vitro, mediates nuclear import of SRP19 (PubMed:11682607). Mediates nuclear import of ADAR/ADAR1 isoform 1 and isoform 5 in a RanGTP-dependent manner (PubMed:19124606, PubMed:24753571). Main mediator of PR-DUB complex component BAP1 nuclear import; acts redundantly with the karyopherins KPNA1 and KPNA2 (PubMed:35446349). (Microbial infection) In case of HIV-1 infection, binds and mediates the nuclear import of HIV-1 Rev.

Storage

Shipped at conditions	Blue Ice
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

Heterogeneous nuclear ribonucleoprotein hnRNPA1 is an abundant nuclear protein that plays an important role in pre-mRNA processing and mRNA export from the nucleus. A1 shuttles rapidly between the nucleus and the cytoplasm, and a 38-amino acid domain, M9, serves as the bi-directional transport signal of A1. Recently, a 90-kD protein, transportin, was identified as the mediator of A1 nuclear import. Transportin mediates the nuclear import of additional hnRNP proteins, including hnRNPF. The nuclear localization of A1 is dependent on ongoing RNA polymerase II transcription.

Supplementary info

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

Activity summary	Transportin 1 also known as MIP-1 TRN1 or TNPO1 is a protein involved in nuclear transport mechanisms. It functions as a part of the importin-beta family facilitating the transport of cargo proteins into the nucleus by recognizing nuclear localization signals (NLS). Transportin 1 has a molecular weight of approximately 98 kDa and is expressed widely in various tissues. This protein is essential for the nucleocytoplasmic transport operating predominantly in the cytoplasm where it interacts with its cargoes.
Biological function summary	Transportin 1 is an important component in cellular operation by being part of the nuclear pore complex. It mediates the translocation of proteins across the nuclear

	envelope. The protein plays a role in not just import but also export of numerous cellular regulators and factors influencing gene expression and cell cycle progression. Being part of such complexes places it at the core of many fundamental cellular processes.
Pathways	The actions of Transportin 1 are integral to nuclear-cytoplasmic transport pathways and the Ran-GTPase pathway. It interacts with the small GTPase Ran which provides the necessary energy for active transport and directionality across the nuclear pore complexes. Additionally Transportin 1 shows functional similarity with importin-alpha which expands its role to include overlap in pathway regulation and cargo specificity further embedding it in complex cellular signaling networks.
Associated diseases and disorders	Transportin 1 has been linked to neurodegenerative conditions and certain cancers. Its role in improper protein transport potentially contributes to the pathogenesis of neurodegenerative diseases like amyotrophic lateral sclerosis (ALS) where mislocalized proteins accumulate improperly. Transportin 1 also associates with the protein TDP-43 known to play a role in ALS and other similar disorders. In cancer abnormal expression of Transportin 1 can alter nuclear transport dynamics affecting tumor suppressor and oncogene distribution thereby contributing to tumorigenesis and cancer progression.

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

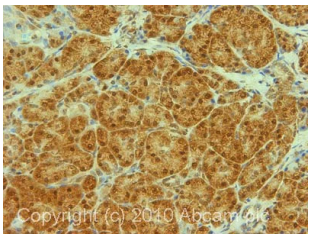
We do not recommend this combination. It is not covered by our product promise.

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.

5 product images

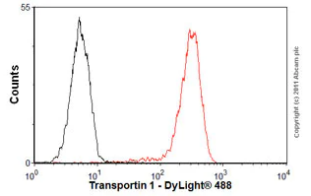


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Transportin 1/MIP antibody [D45] (ab10303)

Transportin 1/MIP Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-Transportin 1/MIP antibody

IHC image of ab10303 staining in human pancreas 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 ab10303, 1µg/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.

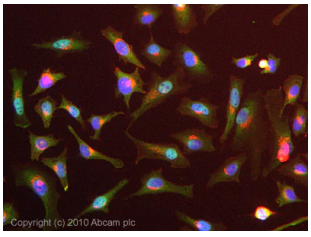
For other IHC staining systems (automated and non-automated) customers should optimize variable parameters such as antigen retrieval conditions, primary antibody concentration and antibody incubation times.



Flow Cytometry - Anti-Transportin 1/MIP antibody [D45] (ab10303)

Transportin 1/MIP Flow Cytometry staining using mouse Anti-Transportin 1/MIP antibody

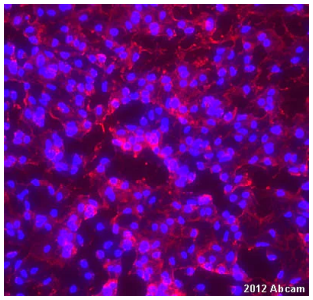
Overlay histogram showing HeLa cells stained with ab10303 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab10303, 1µg/1x10^6 cells) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-mouse IgG (H+L) (ab96879) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was mouse IgG1 [ICIGG1] (ab91353, 2µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed.



Immunocytochemistry/ Immunofluorescence - Anti-Transportin 1/MIP antibody [D45] (ab10303)

Transportin 1/MIP Immunocytochemistry/ Immunofluorescence staining using mouse Anti-Transportin 1/MIP antibody

ICC/IF image of ab10303 stained HeLa cells. The cells were 4% formaldehyde fixed (10 min) and then incubated in 1%BSA / 10% normal goat serum / 0.3M glycine in 0.1% PBS-Tween for 1h to permeabilise the cells and block non-specific protein-protein interactions. The cells were then incubated with the antibody (ab10303, 5µg/ml) overnight at +4°C. The secondary antibody (green) was Alexa Fluor® 488 goat anti-mouse IgG (H+L) used at a 1/1000 dilution for 1h. Alexa Fluor® 594 WGA was used to label plasma membranes (red) at a 1/200 dilution for 1h. DAPI was used to stain the cell nuclei (blue) at a concentration of 1.43µM.

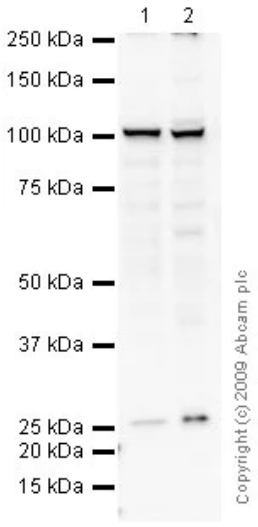


This image is courtesy of a customer review submitted by Ruma Raha-Chowdhury

Immunocytochemistry/ Immunofluorescence - Anti-Transportin 1/MIP antibody [D45] (ab10303)

Transportin 1/MIP Immunocytochemistry/ Immunofluorescence staining using mouse Anti-Transportin 1/MIP antibody

ab10303 staining cultured P0 mouse neurons by ICC/IF. The cultured neurons were fixed with 4% formaldehyde for 5 minutes and blocked with 10% donkey serum in 0.1% PBS-0.3% Triton X for 30 minutes at 24°C. The cultured neurons were then stained with ab10303 at 1/1000 in 0.3% TritonX with 0.1x PBS and 10% donkey serum for 4h at 24°C. An Alexa Fluro 568 donkey anti-mouse polyclonal antibody at 1/1000 was used as the secondary antibody. Hoechst was used to stain the cell nuclei (blue) at a concentration of 1.43µM



Western blot - Anti-Transportin 1/MIP antibody [D45] (ab10303)

All lanes:
Western blot - Anti-Transportin 1/MIP antibody [D45] (ab10303) at 5 µg/mL

Lane 1:
HeLa (Human epithelial carcinoma cell line) Whole Cell Lysate at 10 µg

Lane 2:
SW480 (Human colon adenocarcinoma cell line) Whole Cell Lysate at 10 µg

Secondary

All lanes:
Goat polyclonal to Mouse IgG - H&L - Pre-Adsorbed (HRP) at 1/3000 dilution

Predicted band size: 102 kDa

Observed band size: 107 kDa, 25 kDa

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