abcam

ab81321

Anti-Neuropilin 1 antibody [EPR3113]

Anti-Neuropilin 1 antibody [EPR3113] (ab81321) is a rabbit monoclonal antibody detecting Neuropilin 1 in **Western Blot, Flow Cytometry (Intra), IP, IHC-P, ICC/IF**. Suitable for **Human, Mouse, Rat**.

- KO validated for confirmed specificity
- Biophysical QC for unrivalled batch-batch consistency
- Over 150 publications
- Trusted since 2009

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	EPR3113
Purification technique	Affinity purification Protein A
Concentration	0.418 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

ICC/IF

Tested

Species	Human
Dilution info	1/250
Notes	-

Expected

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

Predicted

Species	Monkey, Common marmoset
Dilution info	-
Notes	-

IP

Tested

Species	Mouse
Dilution info	1/30
Notes	-

Expected

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

Predicted

Species	Monkey, Common marmoset
Dilution info	-
Notes	-

WB

Tested

Species	Mouse
Dilution info	1/1000 - 1/2000
Notes	-

Species	Rat
Dilution info	1/1000 - 1/2000
Notes	-

Species	Human
Dilution info	1/1000 - 1/2000
Notes	-

Predicted

Species	Monkey, Common marmoset
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/50 - 1/70
Notes	The epitope that the antibody recognizesis intracellular. Fixation and permeabilization are necessary.ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Expected

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

Predicted

Species	Monkey, Common marmoset
Dilution info	-
Notes	-

IHC-P

Tested

Species	Human
Dilution info	1/100 - 1/400
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Expected

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

Predicted

Species	Monkey, Common marmoset
Dilution info	-
Notes	-

Target data

See full target information NRP1

Function	Cell-surface receptor involved in the development of the cardiovascular system, in angiogenesis, in the formation of certain neuronal circuits and in organogenesis outside the nervous system. Mediates the chemorepulsant activity of semaphorins (PubMed:10688880, PubMed:9288753, PubMed:9529250). Recognizes a C-end rule (CendR) motif R/KXXR/K on its ligands which causes cellular internalization and vascular leakage (PubMed:19805273). It binds to semaphorin 3A, the PLGF-2 isoform of PGF, the VEGF165 isoform of VEGFA and VEGFB (PubMed:10688880, PubMed:19805273, PubMed:9288753, PubMed:9529250). Coexpression with KDR

results in increased VEGF165 binding to KDR as well as increased chemotaxis. Regulates VEGF-induced angiogenesis. Binding to VEGFA initiates a signaling pathway needed for motor neuron axon guidance and cell body migration, including for the caudal migration of facial motor neurons from rhombomere 4 to rhombomere 6 during embryonic development (By similarity). Regulates mitochondrial iron transport via interaction with ABCB8/MITOSUR (PubMed:30623799). (Microbial infection) Acts as a host factor for human coronavirus SARS-CoV-2 infection. Recognizes and binds to CendR motif RRAR on SARS-CoV-2 spike protein S1 which enhances SARS-CoV-2 infection. Isoform 2. Binds VEGF-165 and may inhibit its binding to cells (PubMed:10748121, PubMed:26503042). May induce apoptosis by sequestering VEGF-165 (PubMed:10748121). May bind as well various members of the semaphorin family. Its expression has an averse effect on blood vessel number and integrity.

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	Stable for 12 months at -20°C

Notes

What is this antibody validated in?
Anti-Neuropilin 1 antibody [EPR3113] (ab81321) is a rabbit recombinant monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Intra), Immunoprecipitation (IP), Immunohistochemistry (IHC-P), Immunocytochemistry/immunofluorescence (ICC/IF) in Human, Mouse, Rat samples.

What is the molecular weight of Neuropilin 1?
Anti-Neuropilin 1 [EPR3113] (ab81321) specifically detects a band for Neuropilin 1 (UniProt: O14786) at a molecular weight of 103kDa.

Trusted by the scientific community
Anti-Neuropilin 1 [EPR3113] (ab81321) was first used in a scientific publication in 2009 and has been cited over 150 times in peer-reviewed journals.

Reviewed by scientists
Anti-Neuropilin 1 [EPR3113] (ab81321) has over 30 independent reviews from customers.

Specificity confirmed
The specificity of Anti-Neuropilin 1 antibody [EPR3113] (ab81321) has been confirmed by Western blot testing in NRP1 Knockout A549 cell line, ab269507.

Other related products
We have a range of other formats of antibody clone [EPR3113] also available for your convenience: ab81321, Carrier free - ab184783, Alexa Fluor® 488 - ab197644, PE - ab209445, APC - ab310882, Alexa Fluor® 594 - ab311688, Alexa Fluor® 568 - ab312964, Alexa Fluor® 555 - ab313173, Alexa Fluor® 750 - ab321741

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.

Trial sizes available!
Test your antibody or perform pre-screening before committing to a larger quantity. Sold in 20µl. Discover our selection of trial-size antibodies.

Supplementary info

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

Activity summary	Neuropilin-1 also known as NRP1 is a transmembrane protein with a significant role in the nervous and vascular systems. It has a molecular mass of approximately 130 kDa. Neuropilin-1 expression occurs broadly in tissues including neurons endothelial cells and tumor cells. Its structure includes a large extracellular domain that binds various ligands mediating several cellular functions. Neuropilin-1 is sometimes targeted in experiments using methods like neuropilin-1 ELISA and PE immunofluorescence to study its distribution and function in different tissues.
Biological function summary	Neuropilin-1 serves as a co-receptor for both the Vascular Endothelial Growth Factor (VEGF) and Semaphorin family proteins. It plays an important role in processes such as angiogenesis axonal guidance and the immune system. Neuropilin-1 does not function alone; it forms complexes with neuropilin-2 and other receptors like Plexin and VEGFR enhancing signal transduction pathways for angiogenesis and neuronal development. This involvement allows cells to respond appropriately to their environment especially during organismal development and repair processes.
Pathways	Neuropilin-1 facilitates interactions within the VEGF and Semaphorin pathways. In the VEGF pathway Neuropilin-1 enhances binding and signaling efficiency with VEGF closely working alongside VEGFR to promote endothelial cell survival

	migration and new blood vessel formation. In the Semaphorin pathway Neuropilin-1 interacts with Plexins mediating neuronal pathfinding and axonal growth. These interactions highlight Neuropilin-1's adaptive capabilities in various physiological processes critical for system development.
Associated diseases and disorders	Neuropilin-1 is linked to pathological conditions like cancer and cardiovascular diseases. Neuropilin-1 overexpression is frequently observed in tumors driving cancer progression through enhanced angiogenesis and tissue invasion closely interacting with proteins like VEGF-A. In cardiovascular disease Neuropilin-1 contributes to abnormal blood vessel formation and stability. By studying Neuropilin-1 and other biomarkers like CD304 FITC researchers aim to develop therapeutic strategies targeting its role in these 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

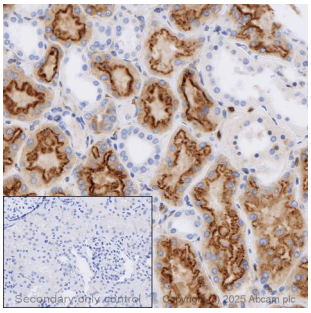
We do not recommend this combination. It is not covered by our product promise.

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.

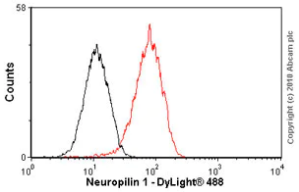
13 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Neuropilin 1 antibody [EPR3113] (ab81321)

Neuropilin 1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Human kidney using rabbit Anti-Neuropilin 1 antibody

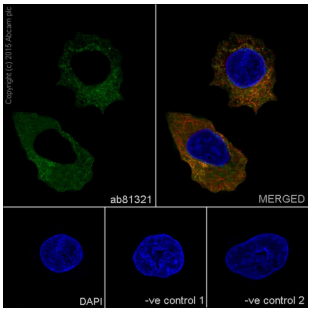
Immunohistochemical analysis of formalin fixed paraffin embedded human kidney labelling Neuropilin 1 with ab81321 at a concentration of 0.5µg/ml. The immunostaining was performed on a Ventana DISCOVERY ULTRA (Roche Tissue Diagnostics) instrument with a OptiView DAB IHC Detection Kit. Heat mediated antigen retrieval was performed with DISCOVERY cell conditioning solution (CC1) 100°C, pH8.5 for 32mins. ab81321 Anti-Neuropilin 1 antibody [EPR3113] 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).



Flow Cytometry (Intracellular) - Anti-Neuropilin 1 antibody [EPR3113] (ab81321)

Neuropilin 1 Flow Cytometry (Intracellular) staining using rabbit Anti-Neuropilin 1 antibody

Overlay histogram showing HepG2 cells stained with unpurified ab81321 (red line). The cells were fixed with 4% paraformaldehyde (10 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 (unpurified ab81321, 1/50 dilution) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-rabbit IgG (H+L) (ab96899) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was rabbit monoclonal IgG (0.5µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed. This antibody gave a significantly decreased signal in HepG2 cells fixed with methanol (5 min)/permeabilized in 0.1% PBS-Tween used under the same conditions.

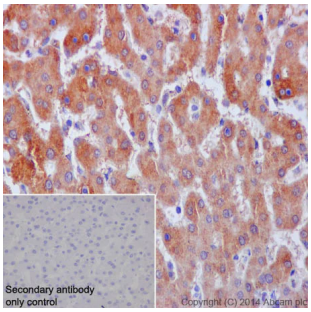


Immunocytochemistry/ Immunofluorescence - Anti-Neuropilin 1 antibody [EPR3113] (ab81321)

Neuropilin 1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Neuropilin 1 antibody

Immunocytochemistry/Immunofluorescence analysis of HUVEC cells labelling Neuropilin 1 with purified ab81321 at 1/250. Cells were fixed with 4% paraformaldehyde and permeabilized with 0.1% Triton X-100. ab150077, an Alexa Fluor® 488-conjugated goat anti-rabbit IgG (1/500) was used as the secondary antibody. DAPI (blue) was used as the nuclear counterstain. ab7291, a mouse anti-tubulin (1/1000) and ab150120, an Alexa Fluor® 594-conjugated goat anti-mouse IgG (1/500) were also used.
Control 1: primary antibody (1/250) and secondary antibody, ab150120, an Alexa Fluor® 594-conjugated goat anti-mouse IgG (1/500).

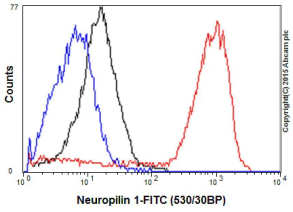
Control 2: ab7291 (1/1000) and secondary antibody, ab150077, an Alexa Fluor® 488-conjugated goat anti-rabbit IgG (1/500).



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Neuropilin 1 antibody [EPR3113] (ab81321)

Neuropilin 1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-Neuropilin 1 antibody

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of human liver tissue labelling Neuropilin 1 with purified ab81321 at 1/400. Heat mediated antigen retrieval was performed using Tris/EDTA buffer pH 9. ab97051, a HRP-conjugated goat anti-rabbit IgG (H+L) was used as the secondary antibody (1/500). Negative control using PBS instead of primary antibody. Counterstained with hematoxylin.



Flow Cytometry (Intracellular) - Anti-Neuropilin 1 antibody [EPR3113] (ab81321)

Neuropilin 1 Flow Cytometry (Intracellular) staining using rabbit Anti-Neuropilin 1 antibody

Intracellular Flow Cytometry analysis of MCF7 cells labelling Neuropilin 1 with purified ab81321 at 1/70 (red). Cells were fixed with 2% paraformaldehyde. A FITC-conjugated goat anti-rabbit IgG (1/150) was used as the secondary antibody. Black - Isotype control, rabbit monoclonal IgG. Blue - Unlabelled control, cells without incubation with primary and secondary antibodies.

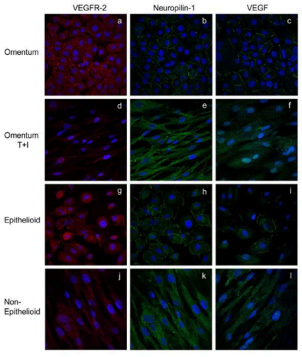
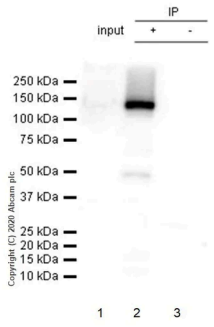


Image from Pérez-Lozano ML et al., PLoS One. 2013;8(4):e60776. Fig 5.; doi: 10.1371/journal.pone.0060776.

Immunocytochemistry/ Immunofluorescence - Anti-Neuropilin 1 antibody [EPR3113] (ab81321)

The expression of Neuropilin 1, VEGFR-2, and VEGF was analyzed by immunofluorescence microscopy in omentum and effluent-derived mesothelial cells (MCs). MCs were double stained for Neuropilin 1 (green) and VEGFR-2 (red), and single stained for VEGF (green). Nuclei were stained with DAPI. Neuropilin 1 and VEGF show a membrane distribution in omentum and epithelioid MCs (**b, c, h, i**). During *in vitro* (**e, f**) and *ex vivo* (**k, l**) MMT both proteins change their localization and are internalized. The expression of VEGFR-2 is down-regulated but it does not show differences in localization during *in vitro* (**a, d**) and *ex vivo* (**g, j**) MMT.



Immunoprecipitation - Anti-Neuropilin 1 antibody [EPR3113] (ab81321)

Neuropilin 1 was immunoprecipitated from 0.35mg mouse heart lysate with ab81321 at 1/30 dilution (2µg in 0.35mg lysates). Western blot was performed on the immunoprecipitate using ab81321 at 1/1000 dilution (0.77 µg/mL). VeriBlot for IP Detection Reagent (HRP) (ab131366) was used as the secondary antibody at 1/1000 dilution.
Lane 1: Mouse heart tissue lysate 10 µg
Lane 2: Mouse heart tissue lysate
Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab81321 in mouse heart lysate.

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

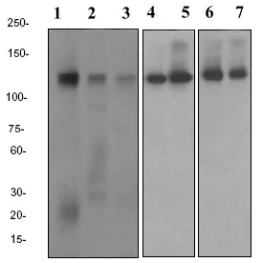
All lanes:

Immunoprecipitation - Anti-Neuropilin 1 antibody [EPR3113] (ab81321)

Predicted band size: 103 kDa

Observed band size: 120 kDa

Exposure time: 4s



Western blot - Anti-Neuropilin 1 antibody [EPR3113] (ab81321)

All lanes:
Western blot - Anti-Neuropilin 1 antibody [EPR3113] (ab81321) at 1/1000 dilution

Lane 1:
Human placenta lysate at 10 µg

Lane 2:
HUVEC cell lysate at 10 µg

Lane 3:
HepG2 cell lysate at 10 µg

Lane 4:
Mouse heart tissue lysate at 10 µg

Lane 5:
Mouse kidney tissue lysate at 10 µg

Lane 6:
Rat heart tissue lysate at 10 µg

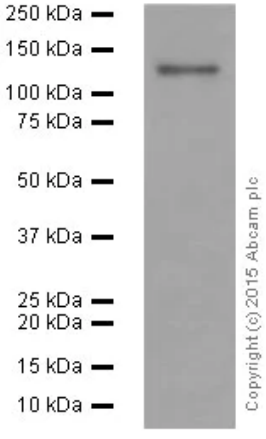
Lane 7:
Rat kidney tissue lysate at 10 µg

Secondary

All lanes:
HRP-conjugated goat anti-rabbit IgG at 1/2000 dilution

Predicted band size: 103 kDa

Observed band size: 120 kDa



Western blot - Anti-Neuropilin 1 antibody [EPR3113] (ab81321)

Neuropilin 1 Western blot staining of Human heart tissue lysate using rabbit Anti-Neuropilin 1 antibody

Blocking and dilution buffer: 5% NFDM/TBST.
All lanes:
Western blot - Anti-Neuropilin 1 antibody [EPR3113] (ab81321) at 1/10000 dilution

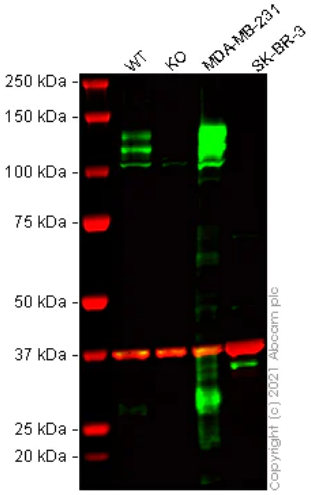
All lanes:
Human heart tissue lysate at 20 µg

Secondary

All lanes:
Peroxidase-conjugated goat anti-rabbit IgG, (H+L) at 1/1000 dilution

Predicted band size: 103 kDa

Observed band size: 120 kDa



Western blot - Anti-Neuropilin 1 antibody [EPR3113] (ab81321)

Neuropilin 1 Western blot staining using rabbit Anti-Neuropilin 1 antibody

False colour image of Western blot: Anti-Neuropilin 1 antibody [EPR3113] staining at 1/1000 dilution, shown in green; Mouse anti-GAPDH antibody [6C5] (ab8245) loading control staining at 1/20000 dilution, shown in red. In Western blot, ab81321 was shown to bind specifically to Neuropilin 1. A band was observed at 125/135 kDa in wild-type A549 cell lysates with no signal observed at this size in NRP1 knockout cell line ab269507 (knockout cell lysate ab269669). To generate this image, wild-type and NRP1 knockout A549 cell lysates were analysed. First, samples were run on an SDS-PAGE gel then transferred onto a nitrocellulose membrane. Membranes were blocked in 3 % 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 IgG H&L (IRDye® 800CW) preabsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye® 680RD) preabsorbed (ab216776) at 1/20000 dilution.
All lanes:
Western blot - Anti-Neuropilin 1 antibody [EPR3113] (ab81321) at 1/1000 dilution

Lane 1:
Wild-type A549 cell lysate at 20 µg

Lane 2:
NRP1 knockout A549 cell lysate at 20 µg

Lane 2:
Western blot - Human NRP1 knockout A549 cell line (ab269507)

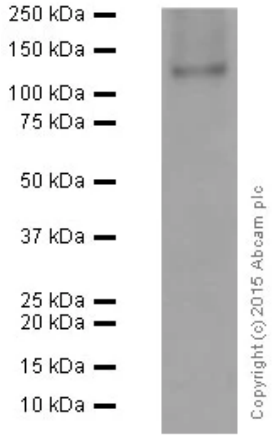
Lane 3:
MDA-MB-231 cell lysate at 20 µg

Lane 4:
SK-BR-3 cell lysate at 20 µg

Performed under reducing conditions.

Predicted band size: 103 kDa

Observed band size: 125-135 kDa



Western blot - Anti-Neuropilin 1 antibody [EPR3113] (ab81321)

Blocking and dilution buffer: 5% NFDM/TBST.
All lanes:
Western blot - Anti-Neuropilin 1 antibody [EPR3113] (ab81321) at 1/2000 dilution

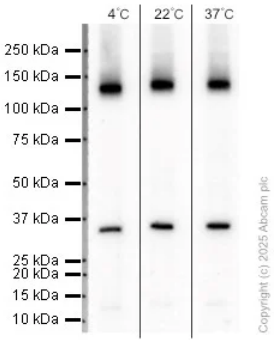
All lanes:
Human placenta tissue lysate at 20 µg

Secondary

All lanes:
Peroxidase-conjugated goat anti-rabbit IgG, (H+L) at 1/1000 dilution

Predicted band size: 103 kDa

Observed band size: 120 kDa



Western blot - Anti-Neuropilin 1 antibody [EPR3113] (ab81321)

Neuropilin 1 Western blot staining of Rat heart lysate using rabbit Anti-Neuropilin 1 antibody

This blot was produced using 4-20% SDS-PAGE containing 15 µg of rat heart lysate per lane at 150V for 1hr before being transferred onto a 0.45 µm PVDF membrane at 75V for 1hr. The membrane was then blocked for 1hr using 5% NFDM/TBST, then incubated with ab81321 (1/10,000) at room temperature for 1hr. After being washed three times in TBST, the membrane was incubated with Peroxidase conjugated goat anti-rabbit IgG (H+L) (ab97051) at 1/20,000 dilution for 1hr at room temperature. The membrane was washed three times again. Then the signal was developed using the ECL technique.

ab81321 was stored at a range of temperatures (+4°C, +22°C, +37°C) for 1 week before being tested in WB. The image shows the band intensity remains relatively constant across all storage temperatures, demonstrating that antibody activity is not affected under these conditions. This data was generated as part of a structured antibody stability study supporting Abcam’ s transition from cold⊠chain to ambient shipping.

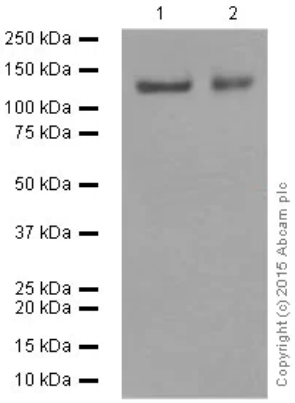
All lanes:
Western blot - Anti-Neuropilin 1 antibody [EPR3113] (ab81321) at 1/10000 dilution

All lanes:
Rat heart lysate at 15 µg with NDFM/TBST

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Exposure time: 100s



Western blot - Anti-Neuropilin 1 antibody [EPR3113] (ab81321)

Neuropilin 1 Western blot staining using rabbit Anti-Neuropilin 1 antibody

Blocking and dilution buffer: 5% NFDM/TBST.
All lanes:
Western blot - Anti-Neuropilin 1 antibody [EPR3113] (ab81321) at 1/10000 dilution

Lane 1:
Mouse heart tissue lysate at 20 µg

Lane 2:
Rat heart tissue lysate at 20 µg

Secondary

All lanes:
Peroxidase-conjugated goat anti-rabbit IgG, (H+L) at 1/1000 dilution

Predicted band size: 103 kDa

Observed band size: 120 kDa

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