abcam

ab134308

Anti-NMDAR1 antibody [N308/48] - Neuronal Marker

Anti-NMDAR1 antibody [N308/48] - Neuronal Marker (ab134308) is a mouse monoclonal antibody detecting NMDAR1 in **Western Blot, Flow Cytometry, ICC/IF**. Suitable for **Human, Mouse, Rat**.

- Over 10 publications

Lab Essentials

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	Preservative: 0.09% Sodium azide Constituents: PBS, 50% Glycerol (glycerin, glycerine)
Form	Liquid
Clonality	Monoclonal
Immunogen	Fusion protein corresponding to aa 1-400 of Grin1, fused to Grin1. The exact immunogen used to generate this antibody is proprietary information. Database link P35439
Clone number	N308/48
Purification technique	Affinity purification Protein G
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

Flow Cyt

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

WB

Tested

Species	Human
Dilution info	1/1000
Notes	-

Species	Mouse
Dilution info	1/1000
Notes	-

Species	Rat
Dilution info	1/1000
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/100
Notes	-

Expected

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

Target data

See full target information Grin1

Function	Component of N-methyl-D-aspartate (NMDA) receptors (NMDARs) that function as heterotetrameric, ligand-gated cation channels with high calcium permeability and voltage-dependent block by Mg(2+) (PubMed:1350383, PubMed:1388270, PubMed:1834949, PubMed:8428958). NMDARs participate in synaptic plasticity for learning and memory formation by contributing to the long-term potentiation (LTP) (By similarity). Channel activation requires binding of the neurotransmitter L-glutamate to the GluN2 subunit, glycine or D-serine binding to the GluN1 subunit, plus membrane depolarization to eliminate channel inhibition by Mg(2+) (PubMed:11823786, PubMed:1350383, PubMed:1388270, PubMed:15996549, PubMed:18177891, PubMed:1834949, PubMed:24876489, PubMed:27135925, PubMed:27618671, PubMed:28384476, PubMed:28468946, PubMed:8428958). NMDARs mediate simultaneously the potassium efflux and the influx of calcium and sodium (By similarity). Each GluN2 or GluN3 subunit confers differential attributes to channel properties, including activation, deactivation and desensitization kinetics, pH sensitivity, Ca2(+) permeability, and binding to allosteric modulators (PubMed:10436042, PubMed:11160393, PubMed:11929923, PubMed:28384476, PubMed:9463421). Forms excitatory glycinergic receptor complexes with GluN3 alone which are activated by glycine binding to the GluN1 and GluN3 subunits (PubMed:11823786, PubMed:11929923, PubMed:12391275).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C

Notes

What is this antibody validated in?
Anti-NMDAR1 antibody [N308/48] - Neuronal Marker (ab134308) is a mouse monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Flow Cyt), Immunocytochemistry/immunofluorescence (ICC/IF) in Human, Mouse, Rat samples.

What is the molecular weight of NMDAR1?

Anti-NMDAR1 [N308/48] - Neuronal Marker (ab134308) specifically detects a band for NMDAR1 (UniProt: P35439) at a molecular weight of 105kDa.

Trusted by the scientific community
Anti-NMDAR1 [N308/48] - Neuronal Marker (ab134308) was first used in a scientific publication in 2012 and has been cited over 10 times in peer-reviewed journals.

Supplementary info

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

Activity summary	NMDAR1 also known as GluN1 is a subunit of the NMDA receptor a type of ion channel protein found in the brain. This receptor weighs around 120 kDa and plays an important role in synaptic transmission and plasticity. NMDAR1 operates as part of a receptor complex that allows for calcium influx when activated. It shows high expression throughout the central nervous system primarily in neurons across the cortex and hippocampus. The receptor's function is important to certain calcium-dependent processes in the brain.
Biological function summary	NMDA receptors including the NMDAR1 subunit serve essential functions in synaptic plasticity and memory processes. As part of the receptor complex NMDAR1 contributes to the control of synaptic strength. It requires co-activation by glutamate and glycine or D-serine linking its function to excitatory neurotransmission. The receptor's capacity to modulate synaptic connections forms the basis of learning and long-term memory.
Pathways	NMDAR1 plays a critical role in the glutamatergic pathway influencing synaptic plasticity and memory function. It interacts with other proteins like PSD-95 within the postsynaptic density. NMDAR1 is also involved in the calcium signaling pathway due to its ability to facilitate calcium entry into neurons upon synaptic activity. This positions the receptor as an important modulator in pathways that control neuronal communication and plasticity.
Associated diseases and disorders	NMDA receptor dysfunction including the NMDAR1 subunit links to neurodegenerative diseases such as Alzheimer's. The alterations in NMDAR1 function can lead to excitotoxicity contributing to neuronal damage. NMDAR1 also associates with schizophrenia where altered glutamatergic transmission has been observed. Here abnormalities in proteins like the synaptic scaffolding protein PSD-95 have also been noted to relate to NMDAR1 dysfunction in the pathophysiology of these disorders.

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.

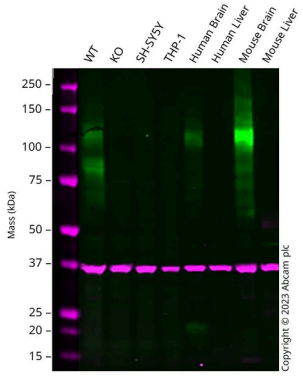
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

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6 product images



Western blot - Anti-NMDAR1 antibody [N308/48] - Neuronal Marker (ab134308)

Western blot: Anti-GRIN1 antibody [N308/48] (ab134308) staining at 1/1000 dilution, shown in green; Rabbit Anti-GAPDH antibody [EPR16891] (ab181602) loading control staining at 1/20000 dilution, shown in magenta. In Western blot, ab134308 was shown to bind specifically to GRIN1. A band was observed at 120 kDa in wild-type Neuro-2a cell lysates with no signal observed at this size in GRIN1 knockout cell line ab281960 (knockout cell lysate ab282987). To generate this image, unboiled wild-type and GRIN1 knockout Neuro-2a 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-Mouse IgG H&L 800CW and Goat anti-Rabbit IgG H&L 680RD at 1/20000 dilution.
All lanes:
Western blot - Anti-NMDAR1 antibody [N308/48] - Neuronal Marker (ab134308) at 1/1000 dilution

Lane 1:
Wild-type Neuro-2a cell lysate at 20 µg

Lane 2:
GRIN1 knockout Neuro-2a cell lysate at 20 µg

Lane 3:
SH-SY5Y UNBOILED cell lysate at 20 µg

Lane 4:
THP-1 UNBOILED cell lysate at 20 µg

Lane 5:
Human Brain UNBOILED cell lysate at 20 µg

Lane 6:

Human Liver UNBOILED cell lysate at 20 µg

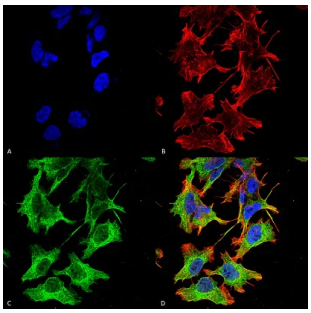
Lane 7:
Mouse Brain UNBOILED cell lysate at 20 µg

Lane 8:
Mouse Liver UNBOILED cell lysate at 20 µg

Developed using the ECL technique.

Performed under reducing conditions.

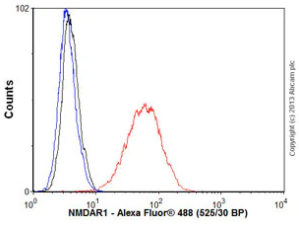
Observed band size: 120 kDa



Immunocytochemistry/ Immunofluorescence - Anti-NMDAR1 antibody [N308/48] - Neuronal Marker (ab134308)

NMDAR1 Immunocytochemistry/ Immunofluorescence staining using mouse Anti-NMDAR1 antibody

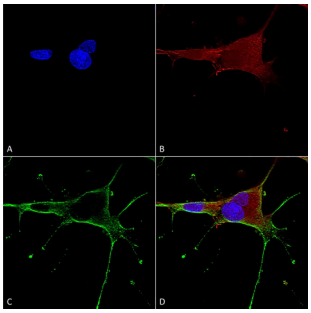
SK-N-BE cells labeling NMDAR1 using ab134308 at 1/100 dilution in ICC/IF. Cells were fixed using 4% formaldehyde for 15 minutes at room temperature. Incubated with primary antibody for 1 hour at room temperature. Secondary antibody was a goat anti-mouse ATTO 488 (green) at 1/100 dilution for 1 hour at room temperature. Counterstained with Phalloidin Texas Red F-actin stain. Nuclei were stained with DAPI (blue).



Flow Cytometry - Anti-NMDAR1 antibody [N308/48] - Neuronal Marker (ab134308)

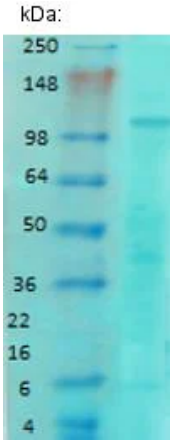
NMDAR1 Flow Cytometry staining using mouse Anti-NMDAR1 antibody

Overlay histogram showing SH-SY5Y cells stained with ab134308 (red line). The cells were fixed with 4% paraformaldehyde (10 min) and incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions. The cells were then incubated with the antibody (ab134308, 1µg/1x10^6 cells) for 30 min at 22°C. The secondary antibody used was Alexa Fluor® 488 goat anti-mouse IgG (H&L) (ab150113) at 1/2000 dilution for 30 min at 22°C. Isotype control antibody (black line) was mouse IgG1 [ICIGG1] (ab91353, 1µg/1x10^6 cells) used under the same conditions. Unlabelled sample (blue line) was also used as a control. Acquisition of >5,000 events were collected using a 20mW Argon ion laser (488nm) and 525/30 bandpass filter.This antibody gave a positive result in 80% methanol (5 min) fixed SH-SY5Y cells used under the same conditions. Please note that Abcam do not have any data for use of this antibody on non-fixed cells. We welcome any customer feedback.



Immunocytochemistry/ Immunofluorescence - Anti-NMDAR1 antibody [N308/48] - Neuronal Marker (ab134308)

Immunofluorescent analysis of 4% Paraformaldehyde-fixed Neuroblastoma cells (SH-SY5Y) labeling NMDAR1 with ab134308 at 1/50 dilution. Secondary antibody: AlexaFluor® 488 at 1/1000 dilution. (A) Hoechst (blue) nuclear stain. (B) Phalloidin-iFluor 647 (red) F-Actin stain. (C) GluN1/NR1 Antibody (D) Composite.



Western blot - Anti-NMDAR1 antibody [N308/48] - Neuronal Marker (ab134308)

All lanes:
Western blot - Anti-NMDAR1 antibody [N308/48] - Neuronal Marker (ab134308) at 1/1000 dilution

All lanes:
Rat brain membrane tissue lysate

Secondary

All lanes:
Goat anti-mouse IgG HRP

Predicted band size: 105 kDa

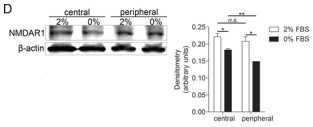


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Western blot - Anti-NMDAR1 antibody [N308/48] - Neuronal Marker (ab134308)

NMDAR1 Western blot staining using mouse Anti-NMDAR1 antibody

NMDAR1 western blot using anti-NMDAR1 antibody [N308/48] - Neuronal Marker ab134308. Publication image and figure legend from Słoniecka, M., Le Roux, S., et al., 2015, PLoS One, PubMed 26214847.

ab134308 was used in this publication in western blot. This may not be the same as the application(s) guaranteed by Abcam. For a full list of applications guaranteed by Abcam for ab134308 please see the product overview.

Glutamate and NMDAR1 expression in keratocytes.(A) Glutamate assay of cultured central and peripheral keratocytes. 250,000 cells were grown for 24h in 6 well plates in DMEM/F12 supplemented with either 2% or 0% FBS. Supernatant was collected, cell were lysed and subjected to the glutamate assay. Levels of glutamate were significantly higher in central and peripheral keratocyte culture supernatants collected from cells grown in 0% FBS than in supernatants collected from cells grown in 2% (***p<0.001 for central and ***p<0.001 for peripheral keratocytes). Levels of glutamate in cell lysates were significantly higher in peripheral keratocytes grown in 2% FBS than in peripheral keratocytes grown in 0% FBS (*p<0.05) (B) Keratocytes in sections (left panel), as well as cultured central (middle panel) and peripheral (right panel) keratocytes, were labeled with glutamate antibody (TRITC; red) and double stained with DAPI to visualize the nuclei (blue). Glutamate was expressed in both keratocytes in tissue sections and in cultured keratocytes. (C) Cornea sections (left panel), as well as cultured central (middle panel) and peripheral (right panel) keratocytes were labeled with glutamate receptor NMDAR1 (TRITC; red) and double stained with DAPI. NMDAR1 was expressed in keratocytes in tissue sections and in cultured keratocytes. (D) 250,000 central or peripheral keratocytes grown in either 2% FBS or 0% FBS were lysed and expression of NMDAR1 (105 kDa) was analyzed by western blot. NMDAR1 expression was significantly higher in both central and peripheral keratocytes grown in 2% FBS than in central and peripheral keratocytes grown in 0% FBS (*p<0.05 for central keratocytes, *p<0.05 for peripheral keratocytes). Expression of NMDAR1 was also significantly higher in central keratocytes grown in 0% FBS than in peripheral keratocytes grown in same conditions (**p<0.01). β-actin (42 kDa) served as a loading control. Values are means ± SD.

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