NMDAR1 Polyclonal Antibody

Catalog Number PA3-102

Details

| Size | 200 µL |
| Host/Isotope | Rabbit / IgG |
| Class | Polyclonal |
| Type | Antibody |

Immunogen


Conjugate

Unconjugated

Form

Liquid

Concentration

Conc. Not Determined

Storage buffer

whole serum

Contains

0.05% sodium azide

Storage Conditions

-20° C, Avoid Freeze/Thaw Cycles

Species Reactivity

Human, Mouse, Rat

Published species

Rat, Mouse, Human, Not Applicable, Guinea pig

Tested Applications

ELISA (ELISA) Assay-dependent

Immunohistochemistry (IHC) 1:200

Immunoprecipitation (IP) Assay-dependent

Western Blot (WB) 1:600

Immunocytochemistry (ICC/IF) 1:250

Published Applications

Immunohistochemistry (IHC) See 4 publications below

Western Blot (WB) See 6 publications below

Flow Cytometry (Flow) See 1 publications below

Suggested working dilutions are given as a guide only. It is recommended that the user titrate the product for use in their own experiment using appropriate negative and positive controls.

Product specific information

PA3-102 detects N-methyl-D-aspartate (NMDA) receptor type 1. PA3-102 has been used successfully in Western blot, ELISA, immunoprecipitation, immunohistochemistry, and immunocytochemistry procedures. In Western blot analysis of rat brain synaptic membranes this antibody detects a ~120 kDa protein representing NMDA receptor type 1. The PA3-102 immunogen is a synthetic peptide corresponding to residues (195)N Y E N L D Q L S Y D N K R G P(210) C of Exon 5 of rat NMDA Receptor Type 1 (Isoforms B, F, G).

Background/Target Information

NMDAR1 encodes a protein that is a critical subunit of N-methyl-D-aspartate receptors, members of the glutamate receptor channel superfamily which are heteromeric protein complexes with multiple subunits arranged to form a ligand-gated ion channel. These subunits play a key role in the plasticity of synapses, which is believed to underlie memory and learning. Cell-specific factors are thought to control expression of different isoforms, possibly contributing to the functional diversity of the subunits. Alternatively spliced transcript variants have been described.

**Product Images For NMDAR1 Polyclonal Antibody**

**NMDAR1 Antibody (PA3-102) in ICC/IF**

Immunofluorescence analysis of NMDA Receptor 1 was done on 70% confluent log phase SH-SY5Y cells. The cells were fixed with 4% paraformaldehyde for 10 minutes, permeabilized with 0.1% Triton™ X-100 for 10 minutes, and blocked with 1% BSA for 1 hour at room temperature. The cells were labeled with NMDA Receptor 1 Rabbit Polyclonal Antibody (Product # PA3-102) at 1:250 dilution in 0.1% BSA and incubated for 3 hours at room temperature and then labeled with Goat anti-Rabbit IgG (H+L) Superclonal™ Secondary Antibody, Alexa Fluor® 488 conjugate (Product # A27034) at a dilution of 1:2000 for 45 minutes at room temperature (Panel a: green). Nuclei (Panel b: blue) were stained with SlowFade® Gold Antifade Mountant with DAPI (Product # S36938). F-actin (Panel c: red) was stained with Rhodamine Phalloidin (Product # R415, 1:300). Panel d is a merged image showing membranous localization. Panel e is a no primary antibody control. The images were captured at 60X magnification.

**NMDAR1 Antibody (PA3-102) in IHC**

Immunofluorescence image of NMDA receptor type 1 in rat brain tissue using Product # PA3-102.

**NMDAR1 Antibody (PA3-102) in WB**

Western blot was performed using Anti-NMDAR1 Polyclonal Antibody (Product # PA3-102) and a 110kDa band corresponding to NMDAR1 was observed across cell lines and tissues except liver and kidney tissues. Membrane enriched extracts (30 µg lysate) of (Fig. a) SH-SY5Y (Lane 1), U-87 MG (Lane 2), Neuro-2a (Lane 3), HeLa (Lane 4), (Fig. b) Mouse Brain (Lane 1), Rat Brain (Lane 2), Mouse Liver (Lane 3), Rat Liver (Lane 4), Mouse Kidney (Lane 5) were electrophoresed using NuPAGE™ 4-12% Bis-Tris Protein Gel (Product # NP0322BOX). Resolved proteins were then transferred onto a Nitrocellulose membrane (Product # IB23001) by iBlot® 2 Dry Blotting System (Product # IB21001). The blots were probed with the primary antibody (1:600 dilution) and detected by chemiluminescence with Goat anti-Rabbit IgG (H+L) Superclonal™ Recombinant Secondary Antibody, HRP (Product # A27036, 1:6000 dilution) using the iBright FL 1000 (Product # A32752). Chemiluminescent detection was performed using SuperSignal™ West Dura Extended Duration Substrate (Product # 34076). Few uncharacterized bands were observed between 30-50 kDa.
**Thermo Fisher Scientific**

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**Summarized**

**4 Immunohistochemistry References**

**Species / Dilution**

**Summary**

**Guinea pig / Not Cited**

PA3-102 was used in Immunohistochemistry to show that AMPA and NMDA receptors decreased after the repeated stimuli by 28.32 and 16.09%, respectively, implying the modification in the neuronal amplitudes.

**Human / 1:1000**

Journal of cellular physiology (Sep 2019; 234; 15989)

*"Red and near-infrared light induces intracellular Ca<sup>2+</sup> flux via the activation of glutamate N-methyl-D-aspartate receptors."*

Author(s): Golovynska I, Golovynskyi S, Stepanov YV, Garmanchuk LV, Stepanova L, Qu J, Ohulchansky TY

PubMed Article URL: http://dx.doi.org/10.1002/jcp.28257

**PA3-102 was used in Immunohistochemistry-immunofluorescence to demonstrate that NIR light can be used for nonthermal and nonpharmacological stimulation of NMDARs in cancer cells.**

**Mouse / 1:200**

Nature (Sep 2019; 573; 526)

*"Synaptic proximity enables NMDAR signalling to promote brain metastasis."*


PubMed Article URL: http://dx.doi.org/10.1038/s41586-019-1576-6

**6 Western Blot References**

**Species / Dilution**

**Summary**

**Mouse / 1:500**

Molecular cell (Mar 2020; 77; 1176)

*"Autism-Misregulated elf4F Microexons Control Synaptic Translation and Higher Order Cognitive Functions."*


PubMed Article URL: http://dx.doi.org/10.1016/j.molcel.2020.01.006

**PA3-102 was used in Western Blot to reveal an autism-disrupted mechanism by which alternative splicing specializes neuronal translation to control higher order cognitive functioning.**

**Mouse / 1:500**

British journal of pharmacology (Dec 2020; 177; 5658)

*"Glycogen synthase kinase-3 inhibition rescues sex-dependent contextual fear memory deficit in human immunodeficiency virus-1 transgenic mice."*

Author(s): Monduny S, Benneyworth MA, Titus DJ, Beurel E, Kolli U, Meints J, Jalodia R, Ramakrishnan S, Atkins CM, Roy S

PubMed Article URL: http://dx.doi.org/10.1111/bph.15288

**PA3-102 was used in Western Blot to investigate synaptic mechanisms associated with sex differences in HIV-associated neurocognitive disorders.**

**Mouse / 1:1,000**

The Journal of neuroscience : the official journal of the Society for Neuroscience (Apr 2018; 38; 3571)

*"Cerebrolin Maintains Synaptic and Cognitive Function by Regulating BK Channel."*


PubMed Article URL: http://dx.doi.org/10.1523/JNEUROSCI.2081-17.2018

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PA3-102 was used in western blot to study the effects of methyl beta-cyclodextrin on GluA1-dependent synaptic potentiation

Rat / 1:1000

Journal of neurochemistry (Feb 2015; 132: 276)
"Low levels of methyl -cyclodextrin disrupt GluA1-dependent synaptic potentiation but not synaptic depression."
Author(s): Choi TY, Jung S, Nah J, Ko HY, Jo SH, Chung G, Park K, Jung YK, Choi SY
PubMed Article URL: http://dx.doi.org/10.1111/jnc.12995

Mouse / 1:500

PA3-102 was used in western blot to study the reinstatement of morphine conditioned place preference and the role of hippocampal synaptic plasticity and NMDAR expression

The Journal of neuroscience : the official journal of the Society for Neuroscience (Jan 2014; 34: 527)
"Hippocampal long-term potentiation is disrupted during expression and extinction but is restored after reinstatement of morphine place preference."
Author(s): Portugal GS, Al-Hasani R, Fakira AK, Gonzalez-Romero JL, Melyan Z, McCall JG, Bruchas MR, Morón JA

PA3-102 was used in Western Blot to show that NMDA-R1-mediated Ca2+ influx in diabetes induces MPTP opening via CypD activation leading to increased oxidative stress and renal injury, and H2S protects diabetic kidney from injury by blocking mitochondrial Ca2+ permeability through NMDA-R1 pathway.

Mouse / Not Cited

"Hydrogen sulfide inhibits Ca<sup>2+</sup>-induced mitochondrial permeability transition pore opening in type-1 diabetes."
Author(s): Papu John AS, Kundu S, Pushpamukhar S, Amin M, Tyagi SC, Sen U
PubMed Article URL: http://dx.doi.org/10.1152/ajpendo.00251.2018

1 Flow Cytometry References

Species / Dilution
Summary

Mouse / 1:100

PA3-102 was used in flow cytometry and immunohistochemistry to study the role of NMDAR signaling in tumorogenesis using a murine model

Cell (Mar 2013; 153: 86)
"Hijacking the neuronal NMDAR signaling circuit to promote tumor growth and invasion."
Author(s): Li L, Hanahan D
PubMed Article URL: http://dx.doi.org/10.1016/j.cell.2013.02.051