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DATASHEET

Anti-GluN1 antibody ValidAbTM

Product overview

Name Anti-GluN1 antibody ValidAbTM

 Cat No
 HB7535

 Host
 Mouse

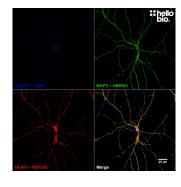
 Clonality
 Monoclonal

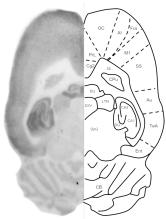
 Target
 GluN1

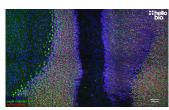
Description Antibody to the GluN1 subunit of the NMDA receptor. Part of the ValidAb™ range of highly validated,

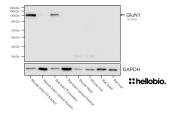
data-rich antibodies.

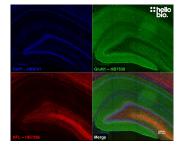
Validation data

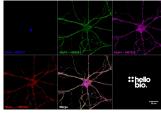


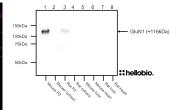


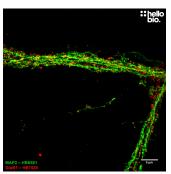


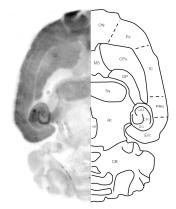


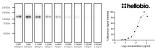


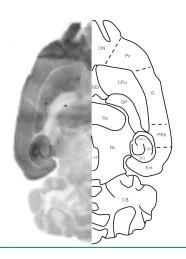












Product information

Immunogen Amino acids 1-564 of rat GluN1 expressed in a fusion protein

Epitope Amino acids 341-561

Clone number R1JHL Isotype IgG

Purification Culture supernatent

Concentration 0.3mg/ml

Formulation Lyophilised. When reconstituted contains PBS with 0.05% sodium azide and 1% recombinant albumin

Predicted species reactivity Mouse, Rat, Human Tested species reactivity Mouse, Rat

Tested applications

Applications WB, IHC(IF), Histoblot

Western blot optimal

concentration

300ng/ml (1:1000 dilution) as tested in a rat brain P2 membrane preparation

IHC(IF) optimal concentration 300ng/ml (1:1000 dilution) as tested in rat brain hippocampal sections. Please note that utilisation of a

citrate antigen retrieval protocol is required for successful staining.

ICC optimal concentration 300ng/ml (1:1000 dilution) as tested in cultured rat cortical neurons. Please note that utilisation of

antigen retrieval is required for successful staining (10 minutes at 95 °C in 100mM Tris, 5% urea,

pH9.5).

Histoblot optimal

concentration

300ng/ml (1:1000 dilution) as tested in horizontal rat brain sections

Product specific protocols

For IHC(IF) this antibody requires citrate antigen retrieval. For retrieval, incubate sections with 10mM citric acid, 0.05% Tween 20, pH6 at 95°C for 30 minutes followed by a 20 minute cooling period. GluN1 is widely expressed in the brain therefore neural tissues serve as an excellent positive control. Tissues such as the liver, heart and lung lack GluN1 expression while popular cell lines such as HeLa

Positive control Negative control

and HEK293 also lack expression therefore are good negative controls.

Open data link Please follow this link to the OSF.

Target information

Other names

- Glutamate receptor ionotropic, NMDA 1,
- Glutamate [NMDA] receptor subunit zeta-1,
- N-methyl-D-aspartate receptor subunit NR1,
- NMD-R1,
- NMDAR1

UniProt ID Gene name Q05586 GRIN1

NCBI full gene name Entrez gene ID

glutamate ionotropic receptor NMDA type subunit 1

2002

Amino acids 938 (105.4kDa)

Isoforms

GluN1 has seven isoforms produced by alternative splicing:

- Isoform 3 (canonical), known as Long isoform or NR1-3 938aa, 105.3kDa
- Isoform 1, known as Short isoform or NR1-1 885aa, 99.3kDa
- Isoform 2, known as Medium isoform or NR1-2 901aa, 101.2kDa
- Isoform 4 922aa, 103.5kDa
- Isoform 5 959aa, 107.9kDa
- Isoform 6 943aa, 106.0kDa

Isoform 7 – 906aa, 101.9kDa

Expression GluN1 is expressed alongside GluN2 as a heterotetramer in N-methyl-D-aspartate (NMDAR) receptors

with each subunit containing two GluN1 subunits and a combination of two GluN2 (GluN2A, GluN2B, GluN2C or GluN2D) subunits. NMDAR receptors are expressed widely throughout the CNS and PNS. GluN1 expression has also been found in the kidney, heart and within bone alongside being reported in

adipose tissue and the bladder.

Subcellular expression GluN1 is expressed as part of NMDA receptors primarily within the post-synaptic densities found

within the dendrites of neurones.

Target function GluN1 forms a key component of NMDA receptors where it contains the glycine binding site which acts

as a co-agonist with glutamate. NMDA receptors are abundant within the brain and due to their calcium permeability are key to the induction of long term potentiation (LTP); a vital property of neurones which

underlies learning and memory.

Processing Following translation, the signal peptide (amino acids 1-18) is removed to leave the main peptide

sequence.

Post translational modifications

GluN1 has multiple glycosylation sites alongside phosphorylation sites on residues 889, 890, 896 and

897.

Homology (compared to human)

Mouse GluN1 has a 99.04% homology to the human protein (9 amino acid changes) while Rat GluN1 has a 99.25% homology to human GluN1 (7 amino acid changes). Mouse and rat proteins have a

99.8% homology with only a single amino acid change (V460I).

Similar proteins No other proteins with a significant homology were identified in a BLAST search. Other NMDAR

subunits have <29% identity to GluN1.

Epitope homology (between

species)

There is a 100% match between the epitope of HB7535 and human GluN1 while the mouse and rat

Epitope homology (other

proteins show 99.09% and 99.55% identity respectively.

proteins)

The only homology identified was with GluN3A and GluN3B however these were both of low similarity with identity scores of 33.1% and 33.2% respectively.

Storage & Handling

Storage instructions Reconstitution advice

-20°C then use reconstitution advice

We recommend reconstituting with either 50μl (15μg pack) or 10μl (3μg pack) or of either:

- dH₂O and storing at 4°C
- 50:50 ratio of dH₂O to glycerol and storing at -20°C
- dH₂O then aliquot and store at -80°C

Take care when opening as the precipitate is extremely light and can easily be lost if disturbed. When reconstituting make sure that the antibody is thoroughly dissolved by pipetting up and down before giving the antibody a brief spin at <10,000g to make sure that all material is recovered and at the bottom of the tube.

For more information please see our detailed guide on storing and using your antibody

Important This product is for RESEARCH USE ONLY and is not intended for therapeutic or diagnostic use. Not

for human or veterinary use

References

X-ray structure, symmetry and mechanism of an AMPA-subtype glutamate receptor.

Sobolevsky AI et al (2009) Nature 462

PubMedID 19946266

Crystal structure of a heterotetrameric NMDA receptor ion channel.

Karakas E et al (2014) Science (New York, N.Y.) 344

PubMedID 24876489

Molecular basis of NMDA receptor functional diversity.

Paoletti P (2011) The European journal of neuroscience 33

PubMedID 21395862

Structure, function, and allosteric modulation of NMDA receptors.

Hansen KB et al (2018) The Journal of general physiology 150

PubMedID 30037851

GluN2B-containing NMDA receptors regulate depression-like behavior and are critical for the rapid antidepressant actions of ketamine.

Miller OH et al (2014) eLife 3

PubMedID 25340958

Mechanism of NMDA Receptor Inhibition and Activation.

Zhu S et al (2016) Cell 165

PubMedID 27062927