Hello Bio, Inc.
304 Wall St., Princeton, NJ 08540 USA

T. 609-683-7500
F. 609-228-4994

customercare-usa@hellobio.com

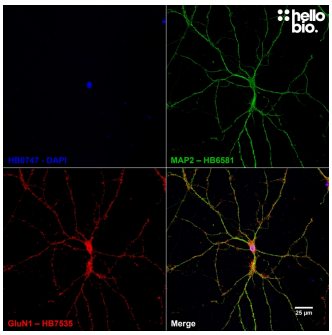
DATASHEET

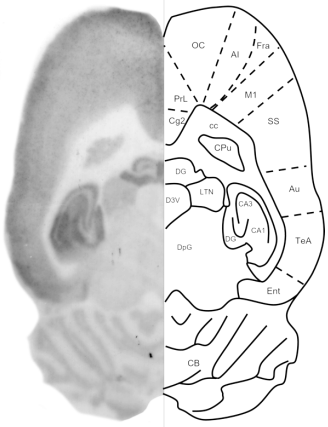
Anti-GluN1 antibody ValidAb™

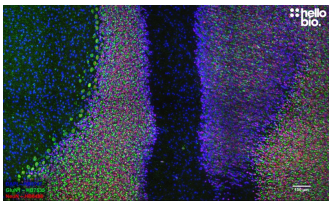
Product overview

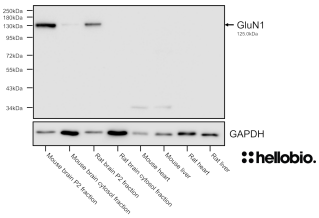
Name	Anti-GluN1 antibody ValidAb™
Cat No	HB7535
Host	Mouse
Clonality	Monoclonal
Target	GluN1
Description	Antibody to the GluN1 subunit of the NMDA receptor. Part of the ValidAb™ range of highly validated, data-rich antibodies.

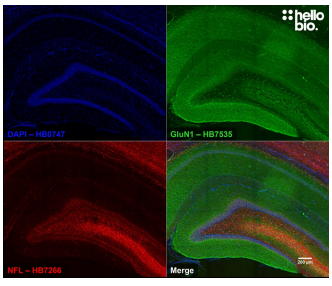
Validation data

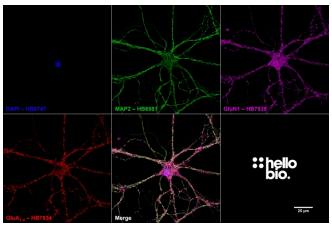


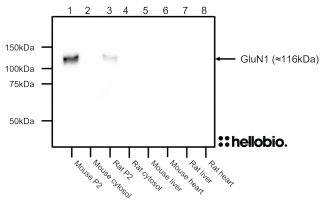


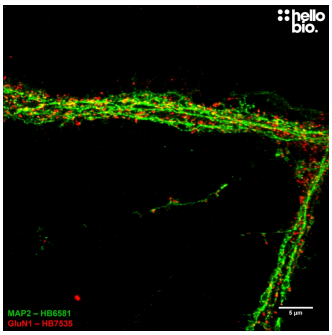


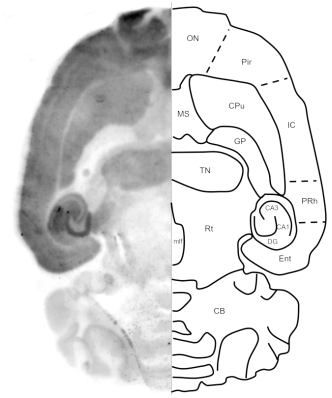


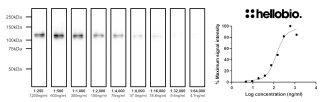


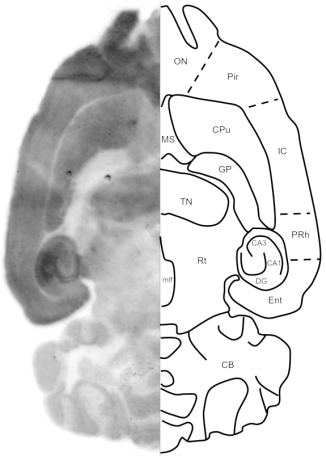












Product information

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.
Positive control	GluN1 is widely expressed in the brain therefore neural tissues serve as an excellent positive control.
Negative control	Tissues such as the liver, heart and lung lack GluN1 expression while popular cell lines such as HeLa 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	Q05586
Gene name	GRIN1
NCBI full gene name	glutamate ionotropic receptor NMDA type subunit 1
Entrez gene ID	2902
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 proteins show 99.09% and 99.55% identity respectively.
Epitope homology (other 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	-20°C then use reconstitution advice
Reconstitution advice	We recommend reconstituting with either 50µl (15µg pack) or 10µl (3µg pack) or of either: • dH_2O and storing at 4°C • 50:50 ratio of dH_2O to glycerol and storing at -20°C • dH_2O 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