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DATASHEET

Anti-Glu A_{1-4} (pan-AMPAR) antibody ValidAbTM

Product overview

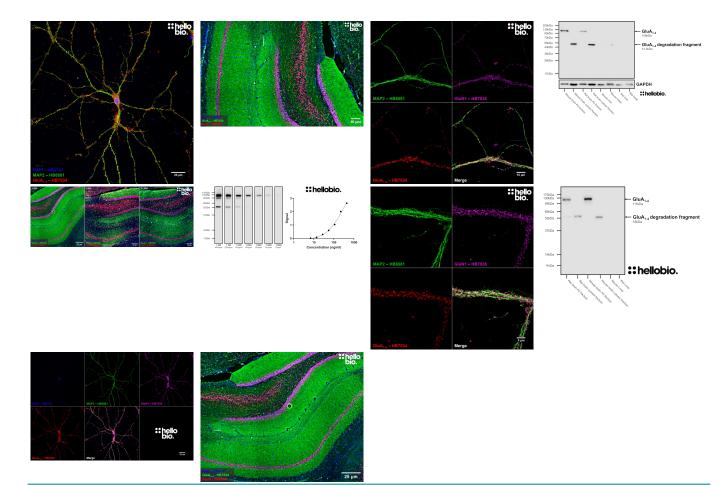
Name Anti-GluA₁₋₄ (pan-AMPAR) antibody ValidAbTM

Cat NoHB7534HostRabbitClonalityPolyclonalTargetGluA1-4

Description Antibody to GluA₁₋₄ (pan-AMPAR). Part of the ValidAb™ range of highly validated, data-rich

antibodies.

Validation data



Product information

Immunogen Fusion protein expressed in and purified from *E.coli* consisting of residues 724-781 of GluR1_{flop}

conjugated to Glutathione-S-transferase (GST)

PurificationDual stage immunogen affinity purification consisting of a first stage to remove GST reactive

antibodies and a second stage to purify only specific anti-GluA₁₋₄ antibodies.

Concentration 0.11mg/ml

Formulation Lyophilised, When reconstituted contains PBS with 1% recombinant human albumin and 0.05%

> sodium azide Mouse, Rat Mouse, Rat

Predicted species reactivity **Tested species reactivity**

Tested applications

Applications ICC, WB, IHC(IF)

Western blot optimal 1:2000 dilution as tested in a rat brain P2 membrane preparation

concentration

Positive control

IHC(IF) optimal concentration 1:250 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 1:1,000 dilution as tested in cultured rat hippocampal neurons. Please note that antigen retrieval is

required for successful staining (we recommend 100mM Tris, 5% Urea, pH9.5, 95°C)

AMPAR receptors are widely expressed in the brain therefore neural tissues serve as an excellent

positive control.

Negative control Tissues such as the liver and heart lack AMPA 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 OSF

Target information

Other names pan-AMPA, GluR₁₋₄, GRIA₁₋₄ **UniProt ID** P42261, P42262, P42263, P48058 Gene name GRIA1, GRIA2, GRIA3, GRIA4

NCBI full gene name glutamate ionotropic receptor AMPA type subunit 1, glutamate ionotropic receptor AMPA type subunit

2, glutamate ionotropic receptor AMPA type subunit 3, glutamate ionotropic receptor AMPA type

subunit 4

Entrez gene ID GluA₁: 2890 GluA₂: 2891

GluA₃: 2892 GluA₄: 2893

Amino acids GluA₁: 906 amino acids, 101.5kDa

GluA₂: 883 amino acids, 98.8kDa GluA₃: 894 amino acids, 101.1kDa GluA₄: 902 amino acids, 100.9kDa

Isoforms AMPA receptors are subject to alternative splicing resulting in two variants known as flip and flop (see

> Sommer et al., 1990 for more information). While there is evidence that these different isoforms have different functional properties both isoforms for each receptor have the same number of amino acids

and therefore almost identical molecular weights.

Expression AMPA receptors are widely expresed in the CNS with particularly high expression in the hippocampus,

cortex and cerebellum. AMPA receptors have also been found to be expressed in peripheral tissues

where they regulate insulin release (see Wu et al., 2012).

Subcellular expression AMPA receptors are primarily expressed within both the pre and post-synaptic densities found within

the axon terminals and dendrites of neurones respectively.

Target function AMPA receptors are the main excitatory neurotransmitter receptor in the CNS and upon glutamate

binding allow Na⁺ and Ca²⁺ ions to enter the cell and cause depolarization.

Processing All AMPA receptor isoforms contain a N-terminal signal peptide which drives their translocation to the

cell membrane.

Post translational modifications

Homology (compared to

human)

All AMPA receptor isoforms are subject to glycosylation on multiple residues with GluA1 and GluA2 also being subject to phosphorylation at multiple sites too.

GluA₁: Mouse and rat show 97.8% and 98.6% homology to the human homologue respectively

Mouse and rat show 99.7% and 99.6% homology to the human homologue respectively GluA₂: Mouse and rat show 98.5% and 99.4% homology to the human homologue respectively Mouse and rat show 99.7% and 98.2% homology to the human homologue respectively A BLAST search using the immunogen sequence shows the following homologies for each species

against each receptor target:

Epitope homology (between species)

Receptor	Species		
	Human	Mouse	Rat
GluA1	100.0%	93.1%	100.0%
GluA2	96.6%	94.8%	94.8%
GluA3	96.6%	93.1%	94.8%
GluA4	89.7%	89.7%	91.4%

Epitope homology (other proteins)

A BLAST search using the immunogen sequence against all human targets provides the following proteins with significant homology:

GluA1 - 100.0% homology

• GluK3 - 48.3% homology • GluA2 - 96.6% homology • GluK4 - 50.0% homology

- GluA3 96.6% homology
- GluA4 89.7% homology
- GluK1 48.3% homology
- GluK2 46.6% homology

- GluK5 48.3% homology
- GluD1 44.0% homology
- GluD3 37.3% homology
- GluN2D 34.0% homology

Storage & Handling

Storage instructions Reconstitution advice -20°C then use reconstitution advice Upon receipt store at either -20°C or -80°C.

For 100µg packs either:

- Reconstitute with 100µl dH₂O and store at 4°C
- Reconstitute with 50µl dH₂O and 50µl glycerol then store at -20°C
- Reconstitute with 100µl dH₂O, aliquot then snap freeze and store at -80°C

For 25µg packs either:

- Reconstitute with 25µl dH₂O and store at 4°C
- Reconstitute with 12.5µl dH₂O and 12.5µl glycerol then store at -20°C
- Reconstitute with 25µl dH₂O, aliquot then snap freeze and store at -80°C

For more information read our guide on the best care for your product. 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. Stable for ambient temperature shipping. Follow storage instructions on receipt.

Shipping Conditions Important

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

References

Cell type and pathway dependence of synaptic AMPA receptor number and variability in the hippocampus.

Nusser Z et al (1998) Neuron 21

PubMedID 9768841

Developmental and activity dependent regulation of ionotropic glutamate receptors at synapses.

Molnar E et al (2002) TheScientificWorldJournal 2 **PubMedID**12806037

High-resolution immunogold localization of AMPA type glutamate receptor subunits at synaptic and non-synaptic sites in rat hippocampus.

Baude A et al (1995) Neuroscience 69 **PubMedID**8848093