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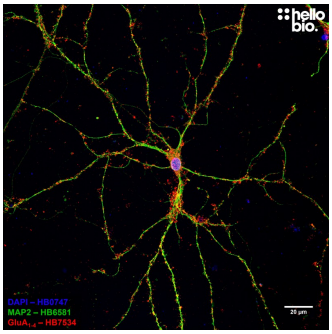
DATASHEET

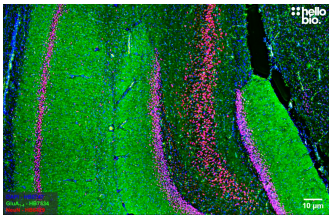
Anti-GluA$_{1-4}$ (pan-AMPAR) antibody ValidAb™

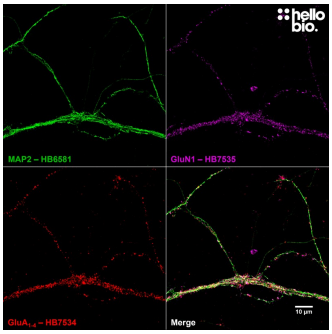
Product overview

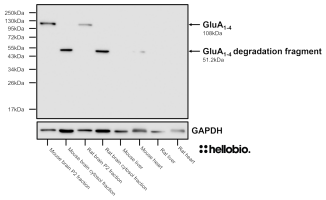
Name	Anti-GluA$_{1-4}$ (pan-AMPAR) antibody ValidAb™
Cat No	HB7534
Host	Rabbit
Clonality	Polyclonal
Target	GluA$_{1-4}$
Description	Antibody to GluA$_{1-4}$ (pan-AMPAR). Part of the ValidAb™ range of highly validated, data-rich antibodies.

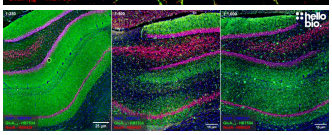
Validation data

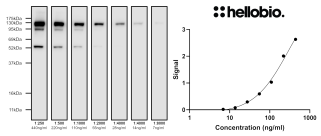


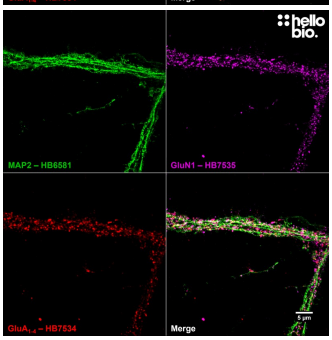


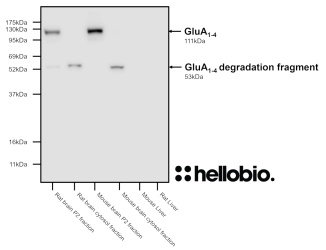


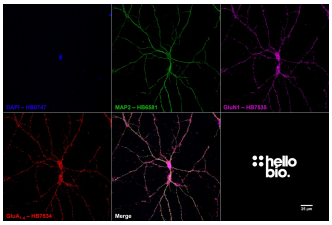


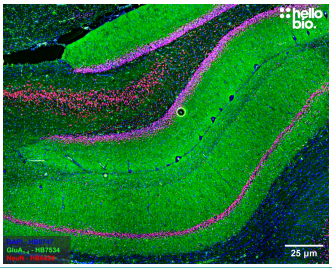












Product information

Immunogen	Fusion protein expressed in and purified from *E.coli* consisting of residues 724-781 of GluR1$_{flop}$ conjugated to Glutathione-S-transferase (GST)
Purification	Dual stage immunogen affinity purification consisting of a first stage to remove GST reactive antibodies and a second stage to purify only specific anti-GluA$_{1-4}$ antibodies.
Concentration	0.11mg/ml

Formulation	Lyophilised, When reconstituted contains PBS with 1% recombinant human albumin and 0.05% sodium azide
Predicted species reactivity	Mouse, Rat
Tested species reactivity	Mouse, Rat

Tested applications

Applications	WB, IHC(IF)
Western blot optimal concentration	1:2000 dilution as tested in a rat brain P2 membrane preparation
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.
Positive control	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, $GluR_{1-4}$, $GRIA_{1-4}$
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	$GluA_1$: 2890 $GluA_2$: 2891 $GluA_3$: 2892 $GluA_4$: 2893
Amino acids	$GluA_1$: 906 amino acids, 101.5kDa $GluA_2$: 883 amino acids, 98.8kDa $GluA_3$: 894 amino acids, 101.1kDa $GluA_4$: 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.
Processing	All AMPA receptor isoforms contain a N-terminal signal peptide which drives their translocation to the cell membrane.
Post translational modifications	All AMPA receptor isoforms are subject to glycosylation on multiple residues with GluA1 and GluA2 also being subject to phosphorylation at multiple sites too.
Homology (compared to human)	$GluA_1$: Mouse and rat show 97.8% and 98.6% homology to the human homologue respectively $GluA_2$: Mouse and rat show 99.7% and 99.6% homology to the human homologue respectively $GluA_3$: Mouse and rat show 98.5% and 99.4% homology to the human homologue respectively $GluA_4$: Mouse and rat show 99.7% and 98.2% homology to the human homologue respectively
Epitope homology (between species)	A BLAST search using the immunogen sequence shows the following homologies for each species against each receptor target:

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
- GluA2 - 96.6% homology
- GluA3 - 96.6% homology
- GluA4 - 89.7% homology
- GluK1 - 48.3% homology
- GluK2 - 46.6% homology
- GluK3 - 48.3% homology
- GluK4 - 50.0% homology
- GluK5 - 48.3% homology
- GluD1 - 44.0% homology
- GluD3 - 37.3% homology
- GluN2D - 34.0% homology

Storage & Handling

Storage instructions	-20°C then use reconstitution advice
Reconstitution advice	Upon receipt store at either -20°C or -80°C. For 100µg packs either: • Reconstitute with 100µl dH_2O and store at 4°C • Reconstitute with 50µl dH_2O and 50µl glycerol then store at -20°C • Reconstitute with 100µl dH_2O, aliquot then snap freeze and store at -80°C For 25µg packs either: • Reconstitute with 25µl dH_2O and store at 4°C • Reconstitute with 12.5µl dH_2O and 12.5µl glycerol then store at -20°C • Reconstitute with 25µl dH_2O, 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.
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