


## Product datasheet

# Anti-Agrin antibody ab85174

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### Overview

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<b>Product name</b>	Anti-Agrin antibody
<b>Description</b>	Rabbit polyclonal to Agrin
<b>Host species</b>	Rabbit
<b>Tested applications</b>	<b>Suitable for:</b> IHC-P
<b>Species reactivity</b>	<b>Reacts with:</b> Mouse, Human <b>Predicted to work with:</b> Rat 
<b>Immunogen</b>	Synthetic peptide from the N terminal residues of Human Agrin protein (NM_198576).
<b>Positive control</b>	Human skeletal muscle.
<b>General notes</b>	<p>The Life Science industry has been in the grips of a reproducibility crisis for a number of years. Abcam is leading the way in addressing this with our range of recombinant monoclonal antibodies and knockout edited cell lines for gold-standard validation. Please check that this product meets your needs before purchasing.</p> <p>If you have any questions, special requirements or concerns, please send us an inquiry and/or contact our Support team ahead of purchase. Recommended alternatives for this product can be found below, along with publications, customer reviews and Q&amp;As</p>

### Properties

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<b>Form</b>	Lyophilized:Reconstitute with 200ul distilled sterile water. Please note that if you receive this product in liquid form it has already been reconstituted as described and no further reconstitution is necessary.
<b>Storage instructions</b>	Shipped at 4°C. Upon delivery aliquot and store at -20°C. Avoid repeated freeze / thaw cycles.
<b>Storage buffer</b>	pH: 7.20 Preservative: 0.02% Sodium azide Constituents: 1% BSA, 0.184% Tris glycine
<b>Purity</b>	Immunogen affinity purified
<b>Clonality</b>	Polyclonal
<b>Isotype</b>	IgG

### Applications

## The Abpromise guarantee

Our **Abpromise guarantee** covers the use of ab85174 in the following tested applications.

The application notes include recommended starting dilutions; optimal dilutions/concentrations should be determined by the end user.

Application	Abreviews	Notes
IHC-P		1/100 - 1/500.

## Target

### Function

Isoform 1: heparan sulfate basal lamina glycoprotein that plays a central role in the formation and the maintenance of the neuromuscular junction (NMJ) and directs key events in postsynaptic differentiation. Component of the AGRN-LRP4 receptor complex that induces the phosphorylation and activation of MUSK. The activation of MUSK in myotubes induces the formation of NMJ by regulating different processes including the transcription of specific genes and the clustering of AChR in the postsynaptic membrane. Calcium ions are required for maximal AChR clustering. AGRN function in neurons is highly regulated by alternative splicing, glycan binding and proteolytic processing. Modulates calcium ion homeostasis in neurons, specifically by inducing an increase in cytoplasmic calcium ions. Functions differentially in the central nervous system (CNS) by inhibiting the alpha(3)-subtype of Na<sup>+</sup>/K<sup>+</sup>-ATPase and evoking depolarization at CNS synapses. This secreted isoform forms a bridge, after release from motor neurons, to basal lamina through binding laminin via the NtA domain.

Isoform 2: transmembrane form that is the predominate form in neurons of the brain, induces dendritic filopodia and synapse formation in mature hippocampal neurons in large part due to the attached glycosaminoglycan chains and the action of Rho-family GTPases.

Isoform 1, isoform 4 and isoform 5: neuron-specific (z<sup>+</sup>) isoforms that contain C-terminal insertions of 8-19 AA are potent activators of AChR clustering. Isoform 5, agrin (z<sup>+</sup>8), containing the 8-AA insert, forms a receptor complex in myotubules containing the neuronal AGRN, the muscle-specific kinase MUSK and LRP4, a member of the LDL receptor family. The splicing factors, NOVA1 and NOVA2, regulate AGRN splicing and production of the 'z' isoforms.

Isoform 3 and isoform 6: lack any 'z' insert, are muscle-specific and may be involved in endothelial cell differentiation.

Agrin N-terminal 110 kDa subunit: is involved in regulation of neurite outgrowth probably due to the presence of the glycosaminoglycan (GAG) side chains of heparan and chondroitin sulfate attached to the Ser/Thr- and Gly/Ser-rich regions. Also involved in modulation of growth factor signaling.

Agrin C-terminal 22 kDa fragment: this released fragment is important for agrin signaling and to exert a maximal dendritic filopodia-inducing effect. All 'z' splice variants (z<sup>+</sup>) of this fragment also show an increase in the number of filopodia.

### Tissue specificity

Expressed in basement membranes of lung and kidney. Muscle- and neuron-specific isoforms are found. Isoforms (y<sup>+</sup>) with the 4 AA insert and (z<sup>+</sup>8) isoforms with the 8 AA insert are all neuron-specific. Isoforms (z<sup>+</sup>11) are found in both neuronal and non-neuronal tissues.

### Involvement in disease

Myasthenic syndrome, congenital, 8

### Sequence similarities

Contains 4 EGF-like domains.

Contains 9 Kazal-like domains.

Contains 2 laminin EGF-like domains.

Contains 3 laminin G-like domains.

Contains 1 NtA (N-terminal agrin) domain.

Contains 1 SEA domain.

## Domain

The NtA domain, absent in TM-agrin, is required for binding laminin and connecting to basal lamina.

Both laminin G-like 2 (G2) and laminin G-like 3 (G3) domains are required for alpha-dystroglycan/DAG1 binding. G3 domain is required for C-terminal heparin, heparan sulfate and sialic acid binding.

## Post-translational modifications

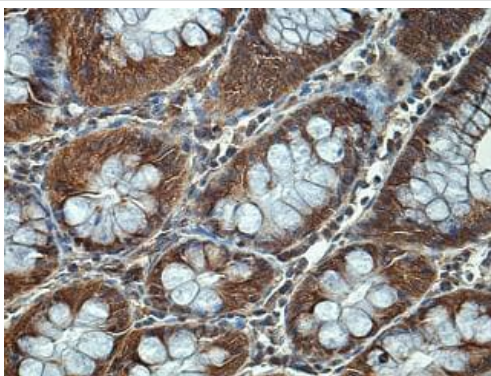
Contains heparan and chondroitin sulfate chains and alpha-dystroglycan as well as N-linked and O-linked oligosaccharides. Glycosaminoglycans (GAGs), present in the N-terminal 110 kDa fragment, are required for induction of filopodia in hippocampal neurons. The first cluster (Gly/Ser-rich) for GAG attachment contains heparan sulfate (HS) chains and the second cluster (Ser/Thr-rich), contains chondroitin sulfate (CS) chains. Heparin and heparan sulfate binding in the G3 domain is independent of calcium ions. Binds heparin with a stoichiometry of 2:1. Binds sialic acid with a stoichiometry of 1:1 and binding requires calcium ions.

At synaptic junctions, cleaved at two conserved sites, alpha and beta, by neurotrypsin. Cleavage at the alpha-site produces the agrin N-terminal 110-kDa subunit and the agrin C-terminal 110-kDa subunit. Further cleavage of agrin C-terminal 110-kDa subunit at the beta site produces the C-terminal fragments, agrin C-terminal 90 kDa fragment and agrin C-terminal 22 kDa fragment. Excessive cleavage at the beta-site releases large amounts of the agrin C-terminal 22 kDa fragment leading to destabilization at the neuromuscular junction (NMJ).

## Cellular localization

Cell junction, synapse. Cell membrane and Secreted, extracellular space, extracellular matrix. Synaptic basal lamina at the neuromuscular junction.

## Images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Agrin antibody (ab85174)

ab85174 staining Agrin in foetal colon tissue by immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) at a dilution of 1/100.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Agrin antibody (ab85174)

ab85174, at 1/100 dilution, staining Agrin in formalin-fixed, paraffin-embedded human skeletal muscle by Immunohistochemistry.

**Please note:** All products are "FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES"

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