Product Datasheet

STEP Antibody (23E5) - BSA Free
NB300-202

Unit Size: 0.1 ml

Aliquot and store at -20C or -80C. Avoid freeze-thaw cycles.

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Reviews: 1 Publications: 41

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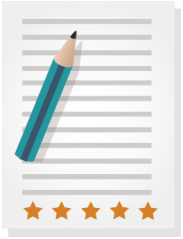
Updated 9/9/2025 v.20.1



NB300-202

STEP Antibody (23E5) - BSA Free

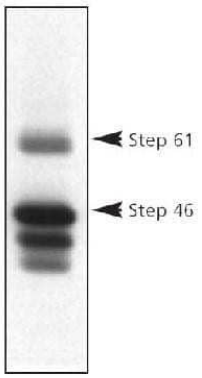
Product Information	
Unit Size	0.1 ml
Concentration	This product is unpurified. The exact concentration of antibody is not quantifiable.
Storage	Aliquot and store at -20C or -80C. Avoid freeze-thaw cycles.
Clonality	Monoclonal
Clone	23E5
Preservative	0.09% Sodium Azide
Isotype	IgG1
Purity	Unpurified
Buffer	Ascites

Product Description	
Description	Novus Biologicals Mouse STEP Antibody (23E5) - BSA Free (NB300-202) is a monoclonal antibody validated for use in IHC, WB, ICC/IF and IP. Anti-STEP Antibody: Cited in 41 publications. All Novus Biologicals antibodies are covered by our 100% guarantee.
Host	Mouse
Gene ID	84867
Gene Symbol	PTPN5
Species	Human, Mouse, Rat
Specificity/Sensitivity	NB300-202 is specific for STEP61, STEP46, STEP38, and STEP20.
Immunogen	A synthetic peptide of rat STEP46 (amino acids 57-74: MCTPGCNEEGFGYLVSPR)

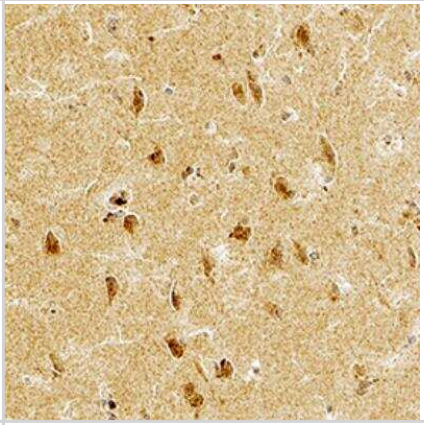
Product Application Details	
Applications	Western Blot, Immunohistochemistry-Paraffin, Immunocytochemistry/ Immunofluorescence, Immunohistochemistry, Immunohistochemistry-Frozen, Immunoprecipitation
Recommended Dilutions	Western Blot 1:1000 -1:2000, Immunohistochemistry 1:100-1:500, Immunocytochemistry/ Immunofluorescence 1:100-1:500, Immunoprecipitation 1:50, Immunohistochemistry-Paraffin, Immunohistochemistry-Frozen 1:100-1:500
Application Notes	This STEP (23E5) antibody is useful for Western blot, Immunoprecipitation, Immunocytochemistry/Immunofluorescence and Immunohistochemistry on frozen sections. By Western Blot, this STEP antibody recognizes bands at ~64-66, 46, 37, and 33 kDa, in rat brain tissues. Neuronal cells have been used for ICC/IF and frozen brain sections have been used for IHC.

Images

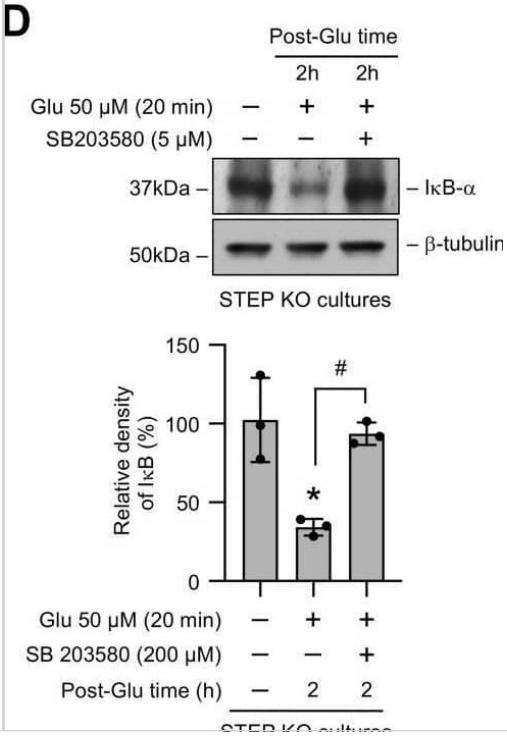
Western Blot: STEP Antibody (23E5) [NB300-202] - Analysis of STEP protein in striatal rat protein homogenates



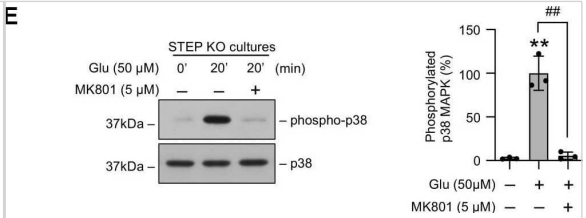
Immunohistochemistry-Paraffin: STEP Antibody (23E5) [NB300-202] - STEP was detected in immersion fixed paraffin-embedded sections of human brain basal ganglia using Mouse Anti-Human STEP (23E5) Monoclonal Antibody (Catalog # NB300-202) at 1:100 for 1 hour at room temperature followed by incubation with the Anti-Mouse IgG VisUCyte™ HRP Polymer Antibody (Catalog # VC001). Tissue was stained using DAB (brown) and counterstained with hematoxylin (blue). Specific staining was localized to the cytoplasm in neurons.



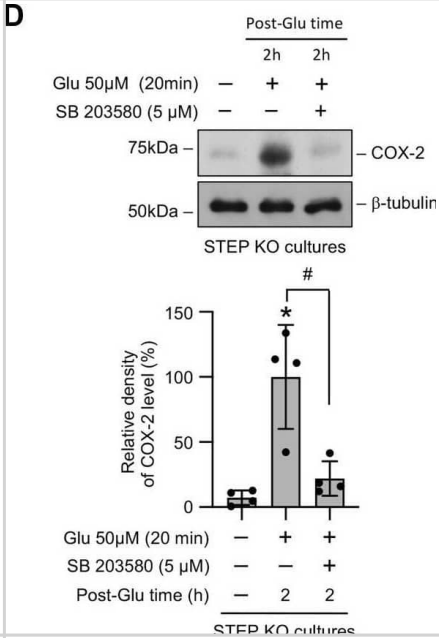
Role of NF-κB in glutamate-induced increase in the COX-2 protein level in STEP-deficient neurons.A and B, neuronal cultures from (A) WT and (B) STEP KO mice were treated with 50 μM glutamate (Glu) for 20 min and then maintained in their original medium for the specified times (post-Glu time). C–F, neuronal cultures from STEP KO mice were treated with 50 μM glutamate (Glu) for 20 min followed by recovery (post-Glu time) in the absence and presence of (C) MK801 (5 μM), (D) SB 203580 (5 μM), or (E and F) Bengamide B (500 nM). Equal amounts of protein from each sample were analyzed by immunoblotting using (A–D) anti-IκBα (top) and anti-β-tubulin (bottom) antibodies, or (E) anti-COX-2 (top) and anti-β-tubulin (bottom) antibodies. Corresponding bar diagrams represents quantitative analysis of (A–D) IκBα or (E) COX-2 protein levels as the mean +/- SD. F, equal amounts of culture media from each sample were analyzed for PGE2 level using ELISA. Statistical analysis has been performed using ANOVA with Tukey's post hoc test. Values are expressed as the mean +/- SD (n = 3–4). □p < 0.01 and □□p < 0.001 compared with the untreated control and #p < 0.01 from 2 h postglutamate time. COX-2, cyclooxygenase-2; IκB, inhibitor of nuclear factor-κB; STEP, striatal-enriched phosphatase. Image collected and cropped by CiteAb from the following open publication (https://pubmed.ncbi.nlm.nih.gov/34246631), licensed under a CC-BY license. Not internally tested by Novus Biologicals.



Glutamate induces sustained p38 MAPK phosphorylation in STEP-deficient neurons. Neuronal cultures from (A and C) WT and (B and D) and STEP KO mice were treated with 50 µM glutamate (Glu) or 50 µM NMDA for the specified times. A–D, equal amounts of protein from each sample were analyzed by immunoblot analysis using anti-phospho-p38 (top), anti-p38 (middle), and anti-STEP (bottom) antibodies. E, neuronal cultures from STEP KO mice were treated with glutamate (50 µM) for 20 min in the absence or presence of MK801 (5 µM). Protein extracts were analyzed by immunoblotting with anti-phospho-p38 (top) and anti-p38 (bottom) antibodies. Corresponding bar diagrams represent quantitative analysis of p38 MAPK phosphorylation as the mean +/- SD (n = 3). □p < 0.01 and □□p < 0.001 compared with the untreated control. Statistical analysis has been performed using ANOVA with Tukey's post hoc test. #p < 0.001 and ##p < 0.0001 from 5 min glutamate treatment. NMDA, N-methyl-D-aspartic acid; p38 MAPK, p38 mitogen-activated protein kinase; STEP, striatal-enriched phosphatase. Image collected and cropped by CiteAb from the following open publication (https://pubmed.ncbi.nlm.nih.gov/34246631), licensed under a CC-BY license. Not internally tested by Novus Biologicals.



Role of the NMDAR and p38 MAPK in glutamate-induced increase in the COX-2 protein level in STEP-deficient neurons. Neuronal cultures from (A) WT and (B) STEP KO mice were treated with 50 µM glutamate (Glu) for 20 min and then maintained in their original medium for the specified times (post-Glu time). C and D, neuronal cultures from STEP KO mice were treated with 50 µM glutamate (Glu) for 20 min followed by recovery (post-Glu time) in the absence and presence of (C) MK801 (5 µM) or (D) SB 203580 (5 µM). Equal amounts of protein from each sample were analyzed by immunoblotting using anti-COX-2 (top) and anti-β-tubulin (bottom) antibodies. Corresponding bar diagrams represents quantitative analysis of COX-2 protein level as the mean +/- SD (n = 3–4). Statistical analysis has been performed using ANOVA with Tukey's post hoc test. □p < 0.001 and □□p < 0.0001 compared with untreated control and #p < 0.01 and ##p < 0.001 from 2 h postglutamate time. COX-2, cyclooxygenase-2; p38 MAPK, p38 mitogen-activated protein kinase; STEP, striatal-enriched phosphatase. Image collected and cropped by CiteAb from the following open publication (https://pubmed.ncbi.nlm.nih.gov/34246631), licensed under a CC-BY license. Not internally tested by Novus Biologicals.



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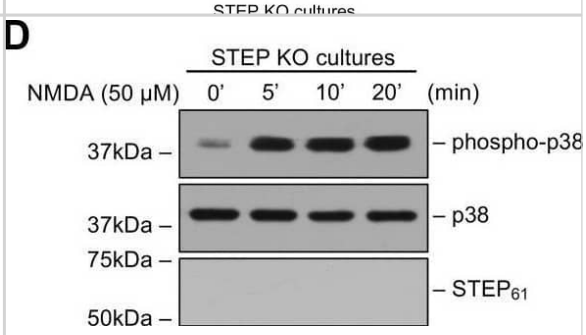

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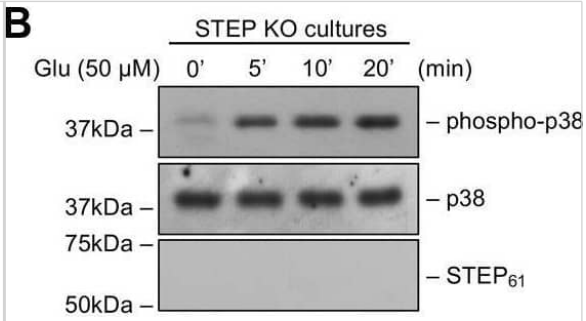

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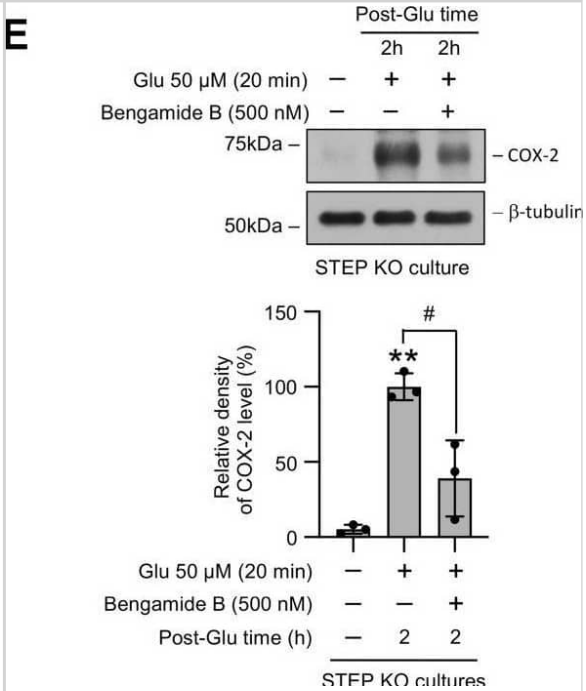
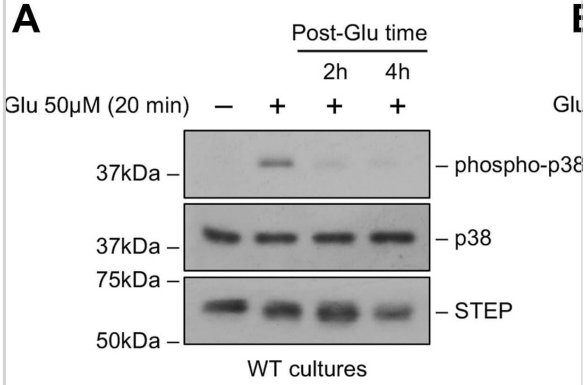
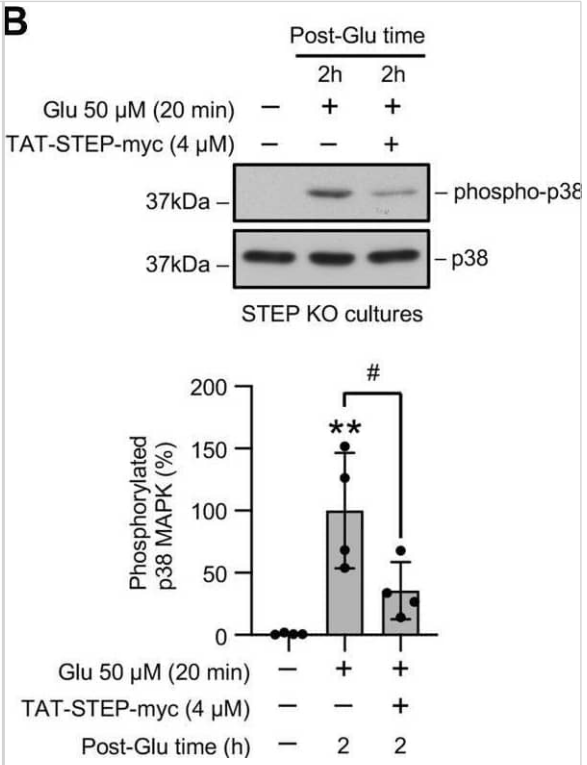


Sustained p38 MAPK phosphorylation in STEP-deficient neurons in the postglutamate recovery phase. Neuronal cultures from (A) WT and (B) and STEP KO mice were treated with 50 μM glutamate (Glu) for 20 min and then maintained in their original medium for the specified times (post-Glu time). Protein extracts were analyzed by immunoblotting with anti-phospho-p38 (top), anti-p38 (middle), and anti-STEP (bottom) antibodies. Corresponding bar diagrams represent quantitative analysis of p38 MAPK phosphorylation as the mean +/- SD (n = 3). Statistical analysis has been performed using ANOVA with Tukey's post hoc test. □p < 0.01 and □□p < 0.001 compared with the untreated control. #p < 0.01 from 20 min glutamate treatment. p38 MAPK, p38 mitogen-activated protein kinase; STEP, striatal-enriched phosphatase. Image collected and cropped by CiteAb from the following open publication (https://pubmed.ncbi.nlm.nih.gov/34246631), licensed under a CC-BY license. Not internally tested by Novus Biologicals.



A STEP mimetic attenuates glutamate-induced increase in p38 MAPK phosphorylation, COX-2 expression, and PGE2release in STEP-deficient neurons.A, schematic representation of TAT-STEP-Myc peptide generated from STEP61. The diagram of STEP61 shows the positions of the phosphatase domain, transmembrane domain (TM), kinase-interaction motif (KIM), kinase specificity sequence (KIS), and the phosphorylation sites in the KIM and KIS domains. The diagram of the TAT-STEP-Myc peptide (STEP mimetic), derived from STEP61, shows the positions of the TAT domain at the N terminus, myc-tag at the C terminus, the serine residue in the KIM domain that was mutated to alanine to allow the peptide to bind to its substrates, and the threonine and serine residues in the KIS domain, which were mutated to glutamic acid to render the peptide resistant to degradation. B–D, neuronal cultures from STEP KO mice were treated with 50 μM glutamate (Glu) for 20 min in the absence and presence of TAT-STEP-myc peptide and then maintained in their original medium for 2 h (post-Glu time). B and C, equal amounts of protein from each sample were analyzed by immunoblotting using anti-phospho-p38 (top) and anti-p38 (bottom) antibodies. Corresponding bar diagrams represent quantitative analysis of p38 MAPK phosphorylation as the mean +/- SD (n = 3–4). D, equal amounts of culture media from each sample were analyzed for the PGE2 level using ELISA. Statistical analysis has been performed using ANOVA with Tukey's post hoc test. Values are expressed as the mean +/- SD (n = 4). □p < 0.01 and □□p < 0.001 compared with the untreated control. #p < 0.05 and ##p < 0.01 from 2 h post-glutamate time. COX-2, cyclooxygenase-2; p38 MAPK, p38 mitogen-activated protein kinase; STEP, striatal-enriched phosphatase. Image collected and cropped by CiteAb from the following open publication (https://pubmed.ncbi.nlm.nih.gov/34246631), licensed under a CC-BY license. Not internally tested by Novus Biologicals.



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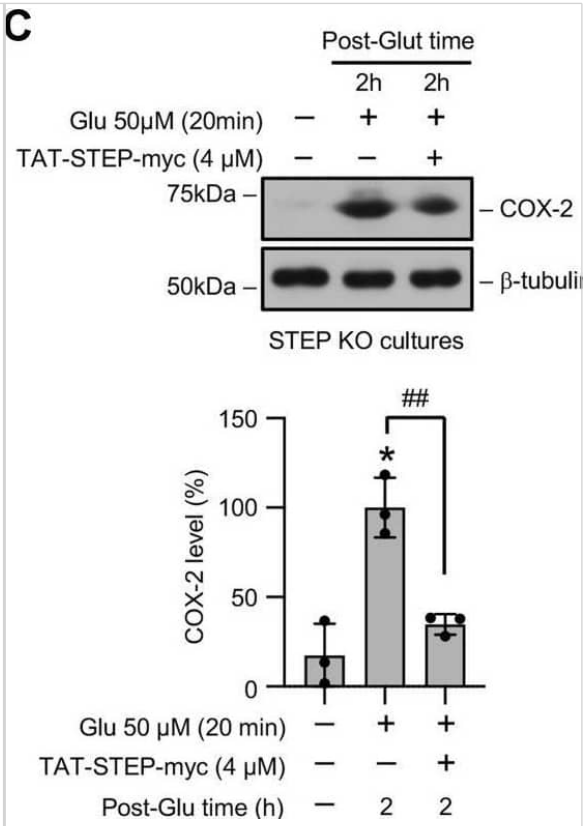

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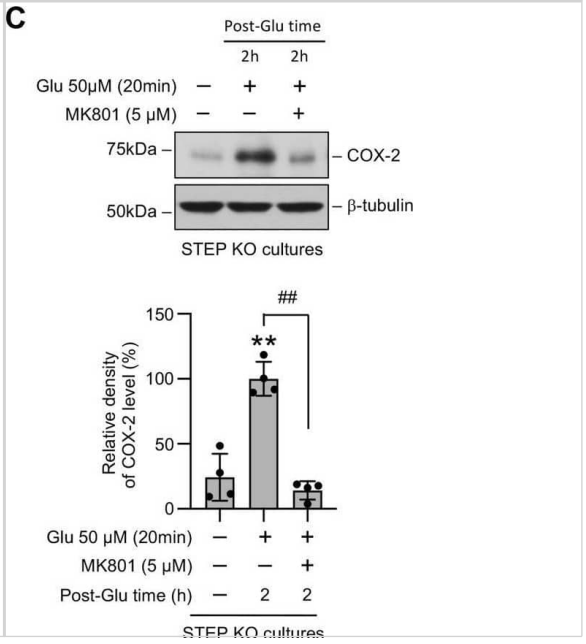

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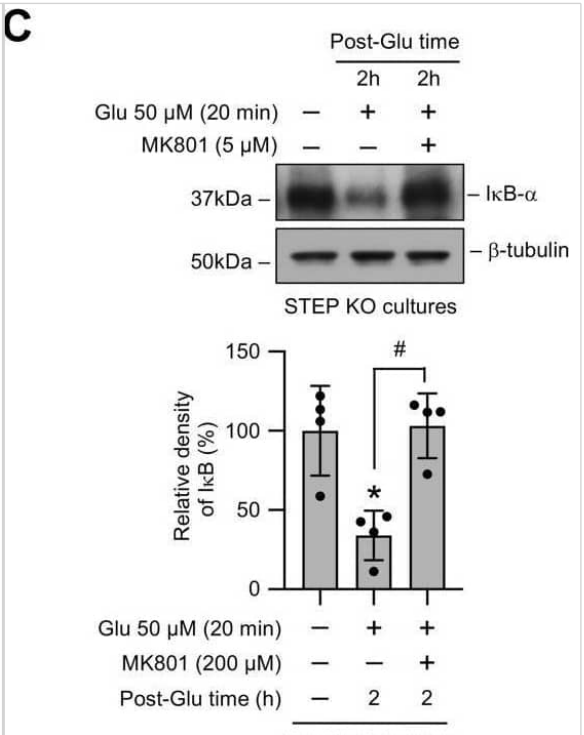

Publications

He RB, Li L, Liu LZ, Ma YJ et Al. Ceftriaxone improves impairments in synaptic plasticity and cognitive behavior in APP/PS1 mouse model of Alzheimer's disease by inhibiting extrasynaptic NMDAR-STEP(61) signaling J Neurochem 2023-06-07 [PMID: 37284938]

Paramasivam, P;Choi, SW;Poddar, R;Paul, S; Impairment of neuronal tyrosine phosphatase STEP worsens post-ischemic inflammation and brain injury under hypertensive condition Journal of neuroinflammation 2024-10-22 [PMID: 39438980]

Wang C, Jiang Q, Zhao P Sevoflurane exposure during the second trimester induces neurotoxicity in offspring rats by hyperactivation of PARP-1 Psychopharmacology 2022-07-20 [PMID: 35859039] (WB, Rat)

Rajagopal S, Poddar R, Paul S Tyrosine phosphatase STEP is a key regulator of glutamate-induced prostaglandin E2 release from neurons The Journal of biological chemistry 2021-07-08 [PMID: 34246631] (WB)

Rajagopal S, Yang C, DeMars KM, et al. Regulation of post-ischemic inflammatory response: A novel function of the neuronal tyrosine phosphatase STEP Brain, behavior, and immunity 2021-01-08 [PMID: 33422638] (WB, Mouse)

Wang Y, Liu Y, Bi X, Baudry M Calpain-1 and Calpain-2 in the Brain: New Evidence for a Critical Role of Calpain-2 in Neuronal Death Cells 2020-12-16 [PMID: 33339205] (WB)

Hu P, Maita I, Phan ML et al. Early-life stress alters affective behaviors in adult mice through persistent activation of CRH-BDNF signaling in the oval bed nucleus of the stria terminalis Transl Psychiatry 2020-11-11 [PMID: 33177511] (IF/IHC, Mouse)

Huang L, Peng Z, Lu C et al. Ginsenoside Rg1 alleviates repeated alcohol exposure-induced psychomotor and cognitive deficits Chin Med 2020-05-07 [PMID: 32411290] (WB, Mouse)

Selective reduction of APP-BACE1 activity improves memory via NMDA NR2B receptor-mediated mechanisms in aged PDAPP mice. Evans C, Thomas R, Freeman T et al. Neurobiol Aging [PMID: 30572184] (WB, Mouse)

Hu P, Liu J, Maita I et al. Chronic Stress Induces Maladaptive Behaviors by Activating Corticotropin-Releasing Hormone Signaling in the Mouse Oval Bed Nucleus of the Stria Terminalis J. Neurosci. 2020-02-11 [PMID: 32054675] (IHC-Fr, Mouse)

Carvajal FJ, Mira RG, Rovegno M et al. Age-related NMDA signaling alterations in SOD2 deficient mice. Biochim. Biophys. Acta. 2018-03-22 [PMID: 29577983] (ICC/IF)

Pose-Utrilla J, Garcia-Guerra L, Del Puerto A et al. Excitotoxic inactivation of constitutive oxidative stress detoxification pathway in neurons can be rescued by PKD1. Nat Commun 2017-12-22 [PMID: 29273751] (Mouse)

More publications at http://www.novusbio.com/NB300-202

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Products Related to NB300-202

NBP2-33376H	Blue Marker Antibody (6F4-F6) [HRP]
HAF007	Goat anti-Mouse IgG Secondary Antibody [HRP]
NB7539	Goat anti-Mouse IgG (H+L) Secondary Antibody [HRP]
NBP1-97005-0.5mg	Mouse IgG1 Isotype Control (MG1)

Limitations
This product is for research use only and is not approved for use in humans or in clinical diagnosis. Primary Antibodies are guaranteed for 1 year from date of receipt.

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