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Parvalbumin Polyclonal Antibody

Catalog Number **PA1-933**

Product data sheet

Details

Size	100 µg
Host/Isotope	Rabbit / IgG
Class	Polyclonal
Type	Antibody
Immunogen	Purified parvalbumin from rat skeletal muscle.
Conjugate	Unconjugated
Form	Lyophilized
Concentration	1 mg/mL
Purification	Antigen affinity chromatography
Storage buffer	0.1M sodium phosphate, pH 7.0, with 20mg/mL BSA
Contains	0.1% sodium azide
Storage Conditions	-20° C, Avoid Freeze/Thaw Cycles

Species Reactivity

Species reactivity	Human, Rat
Published species	Rat, Sea urchin, Zebrafish, Mouse, Human, Not Applicable

Tested Applications	Dilution *
ELISA (ELISA)	Assay-dependent
Immunohistochemistry (Paraffin) (IHC (P))	1 µg/mL
Immunoprecipitation (IP)	5 µg/mL
Western Blot (WB)	0.1 µg/mL
Immunocytochemistry (ICC/IF)	1:100-1:200

Published Applications

Immunohistochemistry (IHC)	See 10 publications below
Immunohistochemistry (Paraffin) (IHC (P))	See 1 publications below
Immunocytochemistry (ICC/IF)	See 2 publications below
Miscellaneous PubMed (Misc)	See 1 publications below
Immunohistochemistry - Free Floating (IHC (Free))	See 1 publications below
Western Blot (WB)	See 1 publications below

* Suggested working dilutions are given as a guide only. It is recommended that the user titrate the product for use in their own experiment using appropriate negative and positive controls.

Product specific information

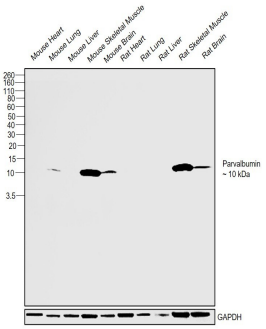
PA1-933 detects parvalbumin protein in human and rat samples. PA1-933 has successfully been used in Western blot, ELISA, immunoprecipitation and immunohistochemical procedures. By Western blot, this antibody detects a 12 kDa protein representing parvalbumin from rat cerebellum. Parvalbumin protein is relatively small and, therefore, it is recommended that the electrophoresis be performed using tricine-SDS-PAGE gels and transferred to a nylon membrane. The PA1-933 immunizing protein corresponds to purified parvalbumin from rat skeletal muscle. Reconstitute in 100 µL PBS to create a stock of 1 mg/mL.

Background/Target Information

Parvalbumin (PV) is a calcium binding protein expressed in specific muscle fibers and fast-firing neurons. PV consists of a single, unbranched chain of linked amino acids and belongs to a larger group of EF hand proteins. Studies have demonstrated that parvalbumin acts in the decay of calcium in the contraction/ relaxation cycle of fast twitch muscles. This data has shown a positive correlation between the rate of relaxation and the concentration of parvalbumin. Parvalbumin is also expressed in a specific population of GABAergic interneurones which are thought to play a role in maintaining the balance between excitation and inhibition in the cortex as well as the hippocampus. In amyotrophic lateral sclerosis (ALS) patents, parvalbumin immunoreactivity is specifically absent from neuron populations lost early in ALS.

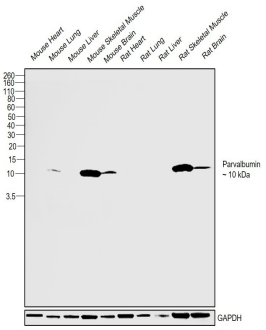
For Research Use Only. Not for use in diagnostic procedures. Not for resale without express authorization.

Product Images For Parvalbumin Polyclonal Antibody



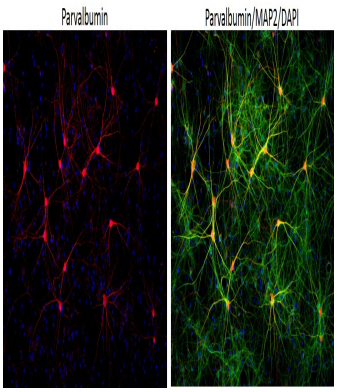
Parvalbumin Antibody (PA1-933) in WB

Western blot was performed using Anti-Parvalbumin Polyclonal Antibody (Product # PA1-933) and a 10 kDa band corresponding to Parvalbumin was observed in Mouse Skeletal Muscle, Mouse Brain, Rat Skeletal Muscle and Rat Brain which is reported to be the highly expressed models. Tissue extracts (30 µg lysate) of Mouse Heart (Lane 1), Mouse Lung (Lane 2), Mouse Liver (Lane 3), Mouse Skeletal Muscle (Lane 4), Mouse Brain (Lane 5), Rat Heart (Lane 6), Rat Lung (Lane 7), Rat Liver (Lane 8), Rat Skeletal Muscle (Lane 9) and Rat Brain (Lane 10) were electrophoresed using Novex™ 16% Tricine Protein Gel (Product # EC6695BOX). Resolved proteins were then transferred onto a Nitrocellulose membrane (Product # IB23001) by iBlot® 2 Dry Blotting System (Product # IB21001). The blot was probed with the primary antibody (0.1 µg/mL) and detected by chemiluminescence with Goat anti-Rabbit IgG (Heavy Chain) Superclonal™ Recombinant Secondary Antibody, HRP (Product # A27036, 1:4000 dilution) using the iBright FL 1000 (Product # A32752). Chemiluminescent detection was performed using Novex® ECL Chemiluminescent Substrate Reagent Kit (Product # WP20005).



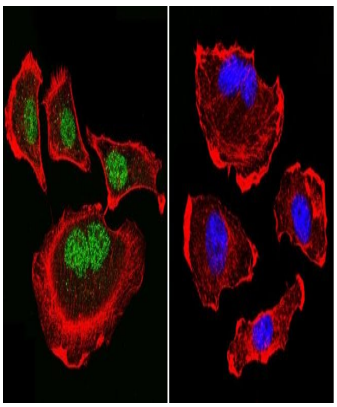
Parvalbumin Antibody (PA1-933)

Antibody specificity was demonstrated by detection of differential basal expression of the target across tissues owing to their inherent genetic constitution. Relative expression of Parvalbumin was observed in Mouse Skeletal Muscle, Mouse Brain, Rat Skeletal Muscle and Rat Brain in comparison to Mouse Heart, Mouse Lung, Mouse Liver, Rat Heart, Rat Lung and Rat Liver using Anti-Parvalbumin Polyclonal Antibody (Product # PA1-933) in Western Blot. {RE}



Parvalbumin Antibody (PA1-933) in ICC/IF

Immunofluorescent analysis of MAP2 (green) and parvalbumin (red) on rat primary Hippocampal neurons (E18) (Product # A15587) cultured for 28 days in the B-27 Plus Neuronal Culture System (Product # A3653401). At day 28 the cells were fixed with 4% paraformaldehyde for 15 min, permeabilized with 0.1% triton x-100 for 30min, and blocked with 1% BSA for 30 min at room temperature. Cells were stained with anti-parvalbumin antibody (Product # PA1-933) at a dilution of 1:200, and anti-MAP2 (Product # 13-1500) at a dilution of1:4000, in 1% BSA staining buffer, overnight at 4C, and then incubated with Alexa Fluor 488 conjugated donkey anti-rabbit (Product # A-21206) and Alexa Fluor 594 donkey anti-mouse (Product # A-21203) antibodies at a dilution of 1:1000 for 30 min. at room temp. Wash 3 times with DPBS. Stain with DAPI for nucleus.



Parvalbumin Antibody (PA1-933) in ICC/IF

Immunofluorescent analysis of Parvalbumin using Anti-Parvalbumin Polyclonal Antibody (Product # PA1-933) shows staining in U251 Cells. Parvalbumin staining (green), F-Actin staining with Phalloidin (red) and nuclei with DAPI (blue) is shown. Cells were grown on chamber slides and fixed with formaldehyde prior to staining. Cells were probed without (control) or with or an antibody recognizing Parvalbumin (Product # PA1-933) at a dilution of 1:200 over night at 4°C, washed with PBS and incubated with a DyLight-488 conjugated secondary antibody (Product # 35552, Goat Anti-Rabbit). Images were taken at 60X magnification.

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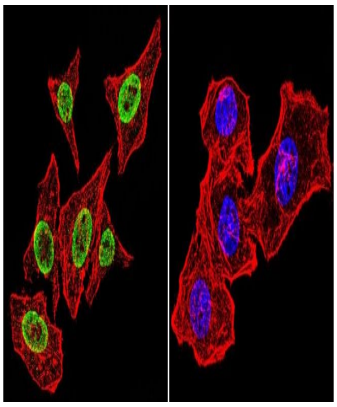
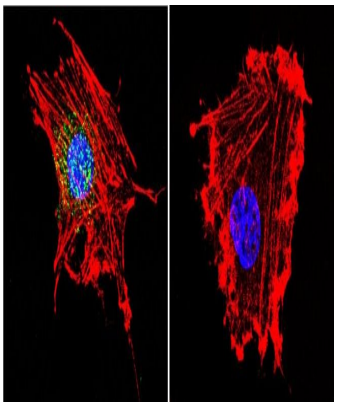


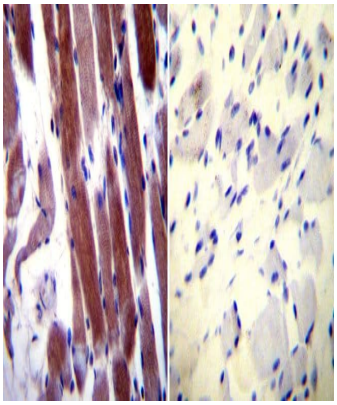
Parvalbumin Antibody (PA1-933) in ICC/IF

Immunofluorescent analysis of Parvalbumin using Anti-Parvalbumin Polyclonal Antibody (Product # PA1-933) shows staining in Hela Cells. Parvalbumin staining (green), F-Actin staining with Phalloidin (red) and nuclei with DAPI (blue) is shown. Cells were grown on chamber slides and fixed with formaldehyde prior to staining. Cells were probed without (control) or with or an antibody recognizing Parvalbumin (Product # PA1-933) at a dilution of 1:100 over night at 4°C, washed with PBS and incubated with a DyLight-488 conjugated secondary antibody (Product # 35552, Goat Anti-Rabbit). Images were taken at 60X magnification.



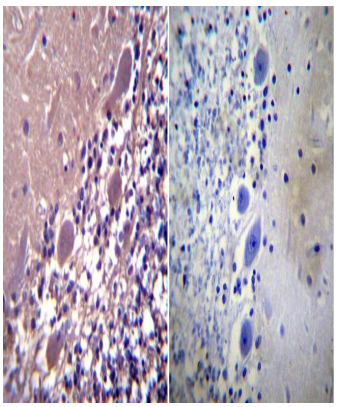
Parvalbumin Antibody (PA1-933) in ICC/IF

Immunofluorescent analysis of Parvalbumin using Anti-Parvalbumin Polyclonal Antibody (Product # PA1-933) shows staining in C6 Cells. Parvalbumin staining (green), F-Actin staining with Phalloidin (red) and nuclei with DAPI (blue) is shown. Cells were grown on chamber slides and fixed with formaldehyde prior to staining. Cells were probed without (control) or with or an antibody recognizing Parvalbumin (Product # PA1-933) at a dilution of 1:100 over night at 4°C, washed with PBS and incubated with a DyLight-488 conjugated secondary antibody (Product # 35552, Goat Anti-Rabbit). Images were taken at 60X magnification.



Parvalbumin Antibody (PA1-933) in IHC (P)

Immunohistochemistry was performed on normal biopsies of deparaffinized Human skeletal muscle tissue. To expose target proteins, heat induced antigen retrieval was performed using 10mM sodium citrate (pH6.0) buffer, microwaved for 8-15 minutes. Following antigen retrieval tissues were blocked in 3% BSA-PBS for 30 minutes at room temperature. Tissues were then probed at a dilution of 1:20 with a rabbit polyclonal antibody recognizing Parvalbumin (Product # PA1-933) or without primary antibody (negative control) overnight at 4°C in a humidified chamber. Tissues were washed extensively with PBST and endogenous peroxidase activity was quenched with a peroxidase suppressor. Detection was performed using a biotin-conjugated secondary antibody and SA-HRP, followed by colorimetric detection using DAB. Tissues were counterstained with hematoxylin and prepped for mounting.



Parvalbumin Antibody (PA1-933) in IHC (P)

Immunohistochemistry was performed on normal biopsies of deparaffinized Human cerebellum tissue. To expose target proteins, heat induced antigen retrieval was performed using 10mM sodium citrate (pH6.0) buffer, microwaved for 8-15 minutes. Following antigen retrieval tissues were blocked in 3% BSA-PBS for 30 minutes at room temperature. Tissues were then probed at a dilution of 1:100 with a rabbit polyclonal antibody recognizing Parvalbumin (Product # PA1-933) or without primary antibody (negative control) overnight at 4°C in a humidified chamber. Tissues were washed extensively with PBST and endogenous peroxidase activity was quenched with a peroxidase suppressor. Detection was performed using a biotin-conjugated secondary antibody and SA-HRP, followed by colorimetric detection using DAB. Tissues were counterstained with hematoxylin and prepped for mounting.

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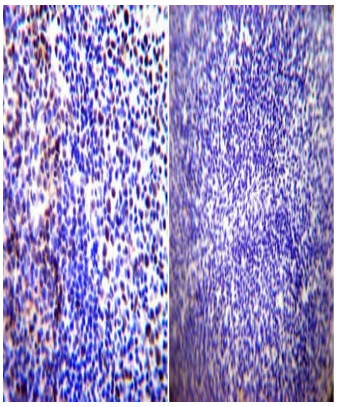
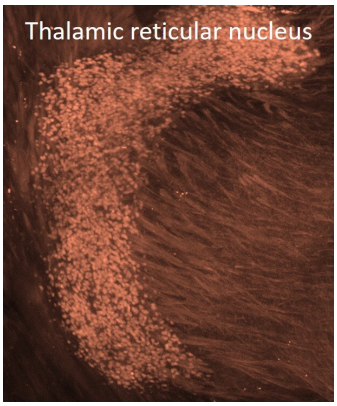


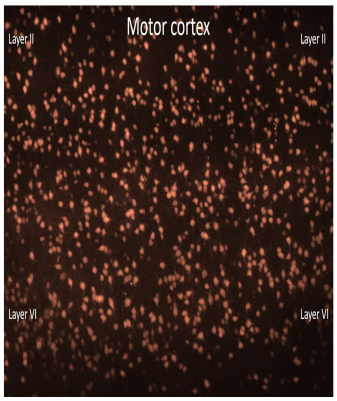
Parvalbumin Antibody (PA1-933) in IHC (P)

Immunohistochemistry was performed on normal biopsies of deparaffinized Human tonsil tissue. To expose target proteins, heat induced antigen retrieval was performed using 10mM sodium citrate (pH6.0) buffer, microwaved for 8-15 minutes. Following antigen retrieval tissues were blocked in 3% BSA-PBS for 30 minutes at room temperature. Tissues were then probed at a dilution of 1:100 with a rabbit polyclonal antibody recognizing Parvalbumin (Product # PA1-933) or without primary antibody (negative control) overnight at 4°C in a humidified chamber. Tissues were washed extensively with PBST and endogenous peroxidase activity was quenched with a peroxidase suppressor. Detection was performed using a biotin-conjugated secondary antibody and SA-HRP, followed by colorimetric detection using DAB. Tissues were counterstained with hematoxylin and prepped for mounting.



Parvalbumin Antibody (PA1-933) in IHC

Spatial expression of Parvalbumin in intact mouse brain hemispheres. Tissue was perfused with LifeCanvas's SHIELD (Park et al., Nature Biotech, 2018) solution kit. Before antibody labeling, lipids were removed for best antibody diffusion. 20 µg anti-Parvalbumin (PV) polyclonal antibody (Product # PA1-933) was then used to actively label the intact tissue sample for < 2 days. A Rhodamine Red-X conjugated Fab fragment secondary antibody was also used in SmartLabel. After antibody labeling, tissue was then refractive index matched using EasyIndex and imaged at single-cell resolution (1.8 µm/pixel in XY with 4-µm Z-step; 561 nm laser line) on LifeCanvas's SmartSPIM light-sheet microscope. Data courtesy of LifeCanvas Technologies.



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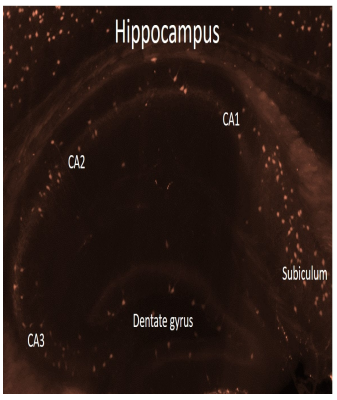

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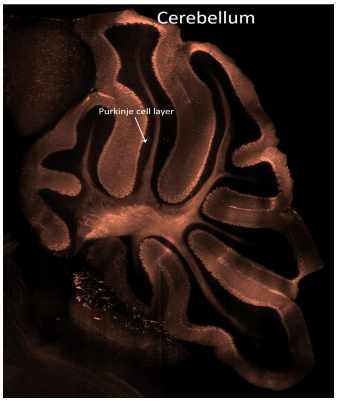

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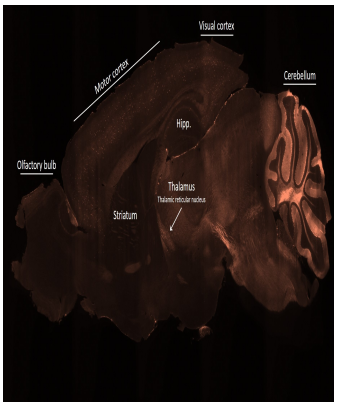

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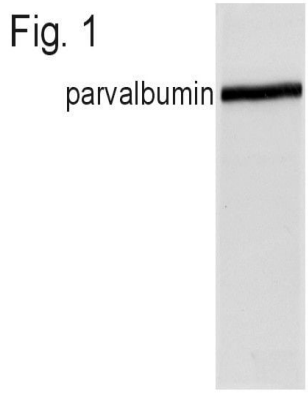

Parvalbumin Antibody (PA1-933) in WB

Western blot of parvalbumin from rat cerebellum extract using Product # PA1-933.

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PubMed References For Parvalbumin Polyclonal Antibody

10 Immunohistochemistry References

Species / Dilution	Summary
Rat / 1:1000	PA1-933 was used in Immunohistochemistry to demonstrate a key role for unrestricted juvenile social play in PFC development and emphasize the complex relation between PFC circuit connectivity and cognitive function. The Journal of neuroscience : the official journal of the Society for Neuroscience (2022; 42: 8716) **"Social Play Behavior Is Critical for the Development of Prefrontal Inhibitory Synapses and Cognitive Flexibility in Rats."** Author(s):Bijlsma A,Omrani A,Spoelder M,Verharen JPH,Bauer L,Cornelis C,de Zwart B,van Dorland R,Vanderschuren LJMJ,Wierenga CJ PubMed Article URL:http://dx.doi.org/10.1523/JNEUROSCI.0524-22.2022
Rat / Not Cited	PA1-933 was used in immunohistochemistry to study the ataxic Guillain-Barr syndrome and acute sensory ataxic neuropathy Journal of neurology, neurosurgery, and psychiatry (2011; 82: 294) **"Ataxic Guillain-Barré syndrome and acute sensory ataxic neuropathy form a continuous spectrum."** Author(s):Ito M,Matsuno K,Sakumoto Y,Hirata K,Yuki N PubMed Article URL:http://dx.doi.org/10.1136/jnnp.2010.222836
Rat / 1:1000	PA1-933 was used in immunohistochemistry to investigate the changes of endonuclease G in thalamic reticular nucleus neurons after ischemia Experimental brain research (2008; 190: 81) **"Endonuclease G expression in thalamic reticular nucleus after global cerebral ischemia."** Author(s):Nielsen M,Zimmer J,Diemer NH PubMed Article URL:http://dx.doi.org/10.1007/s00221-008-1452-3
Rat / Not Cited	PA1-933 was used in immunohistochemistry to use neuroanatomical analysis to learn about holothurian nervous system diversity PloS one (2016; 11:) **"Holothurian Nervous System Diversity Revealed by Neuroanatomical Analysis."** Author(s):Díaz-Balzac CA,Lázaro-Peña MI,Vázquez-Figueroa LD,Díaz-Balzac RJ,García-Arrarás JE PubMed Article URL:http://dx.doi.org/10.1371/journal.pone.0151129
Mouse / 1:500	PA1-933 was used in Immunohistochemistry to find no loss of inhibitory interneurons; rather, decreased GABA synthesis in feedback inhibitory neurons appears to underlie weakened inhibition. Cell reports (2021; 35:) **"Chronic loss of inhibition in piriform cortex following brief, daily optogenetic stimulation."** Author(s):Ryu B,Nagappan S,Santos-Valencia F,Lee P,Rodriguez E,Lackie M,Takatoh J,Franks KM PubMed Article URL:http://dx.doi.org/10.1016/j.celrep.2021.109001
Mouse / 1:200	PA1-933 was used in immunohistochemistry to study the excitation of cortically projecting basal forebrain GABAergic neurons by adjacent cholinegic neurons The Journal of neuroscience : the official journal of the Society for Neuroscience (2014; 34: 2832) **"Cholinergic neurons excite cortically projecting basal forebrain GABAergic neurons."** Author(s):Yang C,McKenna JT,Zant JC,Winston S,Basheer R,Brown RE PubMed Article URL:http://dx.doi.org/10.1523/JNEUROSCI.3235-13.2014
Zebrafish / 1:1,000	PA1-933 was used in Immunohistochemistry to study the roles of retrograde intraflagellar transport motor and adaptor complex genes in aminoglycoside toxicity. Biology open (2019; 8:) **"The role of retrograde intraflagellar transport genes in aminoglycoside-induced hair cell death."** Author(s):Stawicki TM,Linbo T,Hernandez L,Parkinson L,Bellefeuille D,Rubel EW,Raible DW PubMed Article URL:http://dx.doi.org/10.1242/bio.038745
Mouse / 1:400	PA1-933 was used in Immunohistochemistry-immunofluorescence to demonstrate that temporally precise intrahippocampal communication is critical for spatial processing. Nature neuroscience (2020; 23: 229) **"Breakdown of spatial coding and interneuron synchronization in epileptic mice."** Author(s):Shuman T,Aharoni D,Cai DJ,Lee CR,Chavlis S,Page-Harley L,Vetere LM,Feng Y,Yang CY,Mollinedo-Gajate I,Chen L,Pennington ZT,Taxidis J,Flores SE,Cheng K,Javaherian M,Kaba CC,Rao N,La-Vu M,Pandi I,Shtrahman M,Bakhurin KI,Masmanidis SC,Khakh BS,Poirazi P,Silva AJ,Golshani P PubMed Article URL:http://dx.doi.org/10.1038/s41593-019-0559-0

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Rat / 1:100	PA1-933 was used in immunohistochemistry to investigate the effect of growth factors on neuron proliferation and growth after ischemia Journal of neurosurgery (2010; 113: 835) **"Induction of striatal neurogenesis and generation of region-specific functional mature neurons after ischemia by growth factors. Laboratory investigation."** Author(s):Yoshikawa G,Momiyama T,Oya S,Takai K,Tanaka J,Higashiyama S,Saito N,Kirino T,Kawahara N PubMed Article URL:http://dx.doi.org/10.3171/2010.2.JNS09989
Mouse / Not Cited	PA1-933 was used in immunohistochemistry to study the neuronal plasticity in murine barrel cortex during development The European journal of neuroscience (2009; 30: 2053) **"Parvalbumin-containing neurons, perineuronal nets and experience-dependent plasticity in murine barrel cortex."** Author(s):Nowicka D,Soulsby S,Skangiel-Kramska J,Glazewski S PubMed Article URL:http://dx.doi.org/10.1111/j.1460-9568.2009.06996.x

1 Immunohistochemistry (Paraffin) References

Species / Dilution	Summary
Mouse / Not Cited	PA1-933 was used in immunohistochemistry - paraffin section to test if perineuronal nets are altered during early aging Neuroscience (2014; 277: 734) **"Aging somatosensory cortex displays increased density of WFA-binding perineuronal nets associated with GAD-negative neurons."** Author(s):Karetko-Sysa M,Skangiel-Kramska J,Nowicka D PubMed Article URL:http://dx.doi.org/10.1016/j.neuroscience.2014.07.049

2 Immunocytochemistry References

Species / Dilution	Summary
Human / Not Cited	PA1-933 was used in Immunocytochemistry-immunoflourescence to demonstrate that quantitative proteomic analysis of CTE postmortem human brain can identify disease relevant findings and novel cellular pathways involved in CTE pathogenesis. Journal of neuropathology and experimental neurology (2018; 77: 40) **"Characterization of Detergent Insoluble Proteome in Chronic Traumatic Encephalopathy."** Author(s):Cherry JD,Zeineddin A,Dammer EB,Webster JA,Duong D,Seyfried NT,Levey AI,Alvarez VE,Huber BR,Stein TD, Kiernan PT,McKee AC,Lah JJ,Hales CM PubMed Article URL:http://dx.doi.org/10.1093/jnen/nlx100
Human / Not Cited	PA1-933 was used in Immunocytochemistry to propose our optimized autaptic culture system as a tool to study functional features of human neurons, particularly in the context of disease phenotypes and experimental therapy. Cell reports (2019; 27: 2212) **"An Autaptic Culture System for Standardized Analyses of iPSC-Derived Human Neurons."** Author(s):Rhee HJ,Shaib AH,Rehbach K,Lee C,Seif P,Thomas C,Gideons E,Guenther A,Krutenko T,Hebisch M,Peitz M, Brose N,Brüstle O,Rhee JS PubMed Article URL:http://dx.doi.org/10.1016/j.celrep.2019.04.059

1 Miscellaneous PubMed References

Species / Dilution	Summary
Rat / 1:200	PA1-933 was used in immunohistochemistry to test if parvalbumin expression by retinal ganglion cells increases their resistance to cell death Experimental eye research (2016; 145: 363) **"Changes in parvalbumin immunoreactive retinal ganglion cells and amacrine cells after optic nerve injury."** Author(s):Hong CJH,Siddiqui AM,Sabljic TF,Ball AK PubMed Article URL:http://dx.doi.org/10.1016/j.exer.2015.11.005

1 Immunohistochemistry - Free Floating References

Species / Dilution	Summary
Not Applicable / 1:10,000	PA1-933 was used in immunohistochemistry - free floating to study the mouse sensory cortex for effects of postnatal exposure to low-dose bisphenol-A on activity-dependent plasticity Frontiers in neuroanatomy (2014; 8:) **"The effects of postnatal exposure to low-dose bisphenol-A on activity-dependent plasticity in the mouse sensory cortex."** Author(s):Kelly EA,Opanashuk LA,Majewska AK PubMed Article URL:http://dx.doi.org/10.3389/fnana.2014.00117

1 Western Blot References

Species / Dilution	Summary

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	PA1-933 was used in western blot to study the effects of ageing on muscle quality and sarcoplasmic reticulum Ca(2+) release.
Rat / 1:200	Acta physiologica (Oxford, England) (2011; 201: 391) **"Ageing, but not yet senescent, rats exhibit reduced muscle quality and sarcoplasmic reticulum function."** Author(s):Russ DW,Grandy JS,Toma K,Ward CW PubMed Article URL:http://dx.doi.org/10.1111/j.1748-1716.2010.02191.x

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