

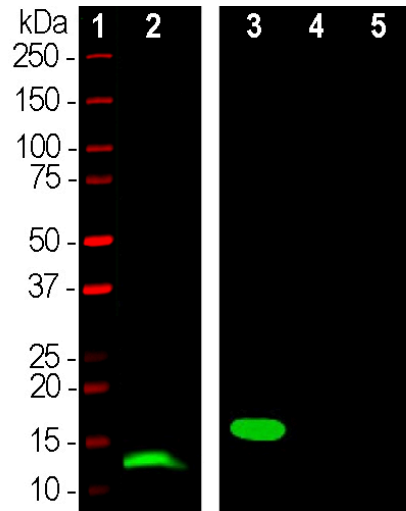
Ordering Information
 Web www.encorbio.com
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HGNC name: PVALB
RRID: [AB_2572372](https://eutils.ncbi.nlm.nih.gov/entrez/eutils/rrid.cgi?db=AB)
Immunogen: Full-length recombinant human protein
Format: Purified antibody at 1mg/mL in 50% PBS, 50% glycerol plus 5mM Na₃
Storage: Shipped on ice. Stable at 4°C for one year, for longer term store at -20°C
Recommended dilutions:
 Western blots: 1:1,000-1:5,000 ICC/IF or IHC: 1:1,000-1:5,000

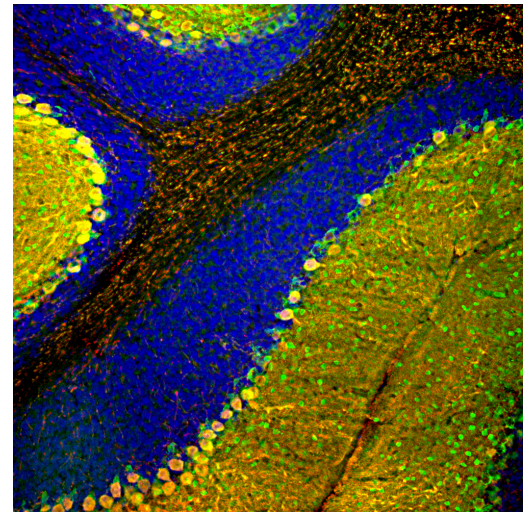
References:

- 1: Kretsinger RH, Nockolds CE. Carp Muscle Calcium-binding Protein: II. Structure determination and general description. *J. Biol. Chem.* [248:3313-3326](https://doi.org/10.1074/jbc.248.3313-3326) (1973).
- 2: Andressen C, Bliimcke I, Celio MR. Calcium-binding proteins: selective markers of nerve cells. *Cell Tissue Res* [271:181-208](https://doi.org/10.1007/BF00210811) (1993).
- 3: Bearzatto B, Schwaller B, Dumont M, De Saedeleer C, Dan B, Barski JJ, Schiffmann SN, Cheron G. Mono- and dual-frequency fast cerebellar oscillation in mice lacking parvalbumin and/or calbindin D-28k. *Eur J Neurosci.* [22\(4\):861-70](https://doi.org/10.1523/JNEUROSCI.22(4):861-70) (2005)
- 4: Schwaller B, Meyer M, Schiffmann S. 'New' functions for 'old' proteins: The role of the calcium binding proteins calbindin D-28k, calretinin and parvalbumin, in cerebellar physiology. Studies with knockout mice. *The Cerebellum* [1:241-258](https://doi.org/10.1007/s12275-002-0202-0) (2002).

Applications	Host	Isotype	Molecular Wt.	Species Cross-Reactivity
Western blot, ICC/IF, IHC	Mouse	IgG1	12 kDa	Hu, Rt, Ms, Bo, Po, Ho



Western blot analysis of skeletal muscle lysates and His-tagged human recombinant proteins using mouse mAb to parvalbumin, MCA-3C9, dilution 1:1,000 in green: [1] protein standard (red), [2] mouse muscle, [3] parvalbumin, [4] calretinin, and [5] calbindin. A band at 12kDa is detected in in muscle lysate and one at 18kDa in the His-tagged recombinant parvalbumin protein lane as expected since the His-tag and other vector derived sequence adds about 6kDa to the molecule. Note that the MCA-3C9 antibody is not cross-reactive with either calbindin or calretinin despite their related amino acid sequences.



Immunofluorescent analysis of rat cerebellum section stained with mouse mAb to parvalbumin, MCA-3C9, dilution 1:1,000, in green, and costained with chicken pAb to calbindin, CPCA-Calb, dilution 1:2,000 in red. The blue is DAPI staining of nuclear DNA. Following transcardial perfusion of rat with 4% paraformaldehyde, brain was post fixed for 24 hours, cut to 45 μm, and free-floating sections were stained with above antibodies. Most Purkinje cells strongly express both parvalbumin and calbindin and so appear yellow, whereas basket, stellate and Golgi cells express parvalbumin alone and so appear green.

Background: Parvalbumin is a cytoplasmic low molecular weight Ca²⁺ binding proteins. It is the prototypic member of the very large family of proteins containing the "EF hand" Ca²⁺ binding motif (1). The nomenclature comes from the parvalbumin structure in which the fifth and sixth alpha helices, the E and F helices, form a V shape cleft including acid amino acids which coordinate a single Ca²⁺. It turns out that close variants of this structure are found in many other Ca²⁺ binding proteins. Parvalbumin is expressed in fast-contracting muscles, where its levels are highest, as well as in the brain and some endocrine tissues. In brain, it is particularly concentrated in Purkinje cells and interneurons in the molecular layer of the cerebellum, but is also found in many GABAergic interneurons in the cortex. These GABAergic interneurons in most cases express only one of three Ca²⁺ binding proteins, namely parvalbumin, calretinin, or calbindin. As a result, these important inhibitory interneurons can be identified and subclassified based on their content of these three proteins (2). Each type of neuron as defined in this fashion has particular electrophysiological and functional properties. For example, calbindin positive interneurons are not fast-spiking as are parvalbumin expressing interneurons.

Parvalbumin contains 3 EF-hand domains, domain AB, CD and EF. The N-terminal EF-hand of parvalbumin does not bind Ca²⁺, so that functional Ca²⁺ binding is between helices C and D and between helices E and F. The function of parvalbumin appears to be primarily buffering the Ca²⁺ level in cells. Absence

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Abbreviation Key:

mAb—Monoclonal Antibody pAb—Polyclonal Antibody WB—Western Blot IF—Immunofluorescence ICC—Immunocytochemistry IHC—Immunohistochemistry E—ELISA Hu—Human Mo—Monkey Do—Dog Rt—Rat Ms—Mouse Bo—Cow Po—Pig Ho—Horse Ch—Chicken Dr—D. rerio Dm—D. melanogaster Ce—C. elegans Sc—S. cerevisiae Sa—S. aureus Ec—E. coli.

of parvalbumin and calbindin disrupts the regulation of Purkinje cell firing rate and rhythmicity *in vivo* and parvalbumin dysfunction in cells critically contributes to abnormalities in oscillatory rhythms and network (3, 4). The [HGNC](#) name for this protein is [PVALB](#).