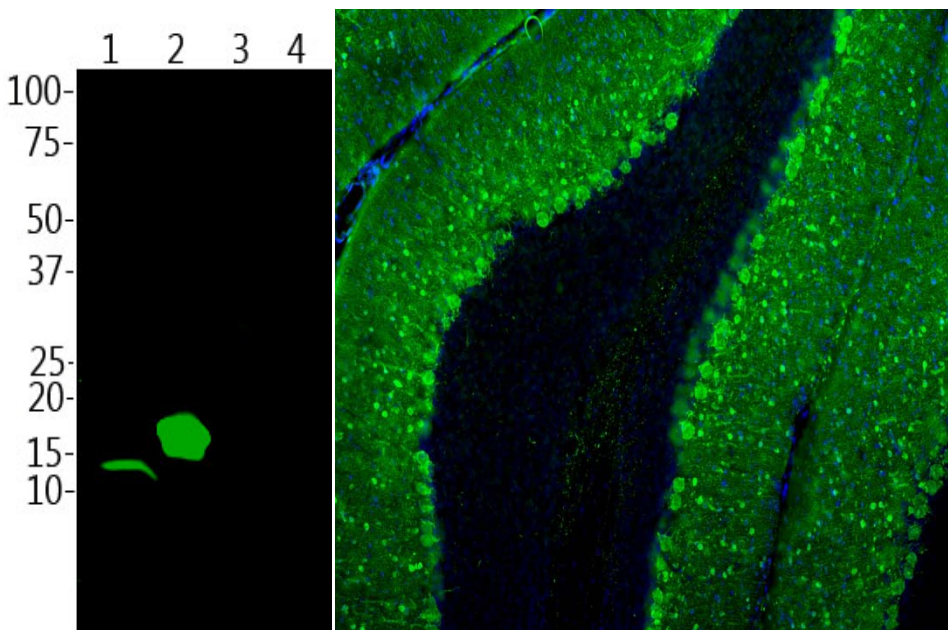


Catalogue# CPCA-PvalB: Chicken Polyclonal Antibody to Parvalbumin

The Immunogen: Parvalbumin is a cytoplasmic Ca²⁺ binding proteins with low molecular weight (9-11kDa). It belongs to subclass of these containing the "EF hand" Ca²⁺ binding motif and is the first protein characterized in this subclass (1). 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, 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 and antibodies to these three proteins are useful for identifying specific neuronal cell types (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⁺. The functional calcium-binding loops occur 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 and affecting intracellular calcium signal. Absence 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](#).



Left: Western blot analysis of CPCA-Pvalb. Blot of mouse skeleton muscle lysate (lane1) and His-tagged recombinant proteins: parvalbumin (lane 2), calretinin (lane 3) and calbindin (lane 4) was probed with CPCA-Pvalb at 1:2,500. In muscle skeleton lysates, this antibody recognizes a band at 10 kDa which represents parvalbumin and it reacts only with parvalbumin and not the other calcium-binding proteins. **Right:** Adult rat cerebellum floating section was stained with CPCA-Pvalb, polyclonal antibody (1:2,500) to parvalbumin in green. Parvalbumin is prominently expressed in the dendrites and perikarya of Purkinje cells and the molecular layer interneurons. Blue is a DNA stain.

Antibody Characteristics: This antibody was generated in chicken by standard procedures and immunoglobulin was extracted from egg yolk. The resulting polyclonal antibody belongs to the IgY subclass. This is the chicken homologue of mammalian IgG and can be used in the same general way, with the caveat that this type of antibody does not bind either Protein A or Protein G. Suitable secondary antibody reagents can be obtained from many vendors including Molecular Probes and Sigma-Aldrich. Store at 4°C or -20°C. Avoid repeat freezing and thawing.

Suggestions for use: The IgY solution is at a concentration of ~10 mg/mL. It can be used at dilutions of 1:1,000-1:5,000 in immunofluorescence experiments. In western blotting using chemiluminescence, it can be used at dilutions of 1:1,000-1:5,000.

Limitations: This product is for research use only and is not approved for use in humans or in clinical diagnosis.

References:

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2: Andressen C, Bliimcke I, Celio MR. Calcium-binding proteins: selective markers of nerve cells. [Cell Tissue Res 271:181-208 \(1993\)](#).

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 \(2005\)](#)

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