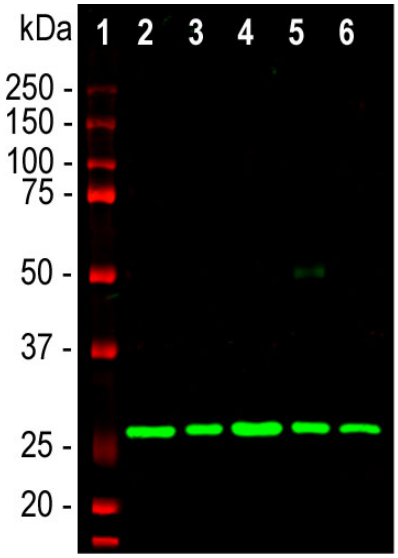
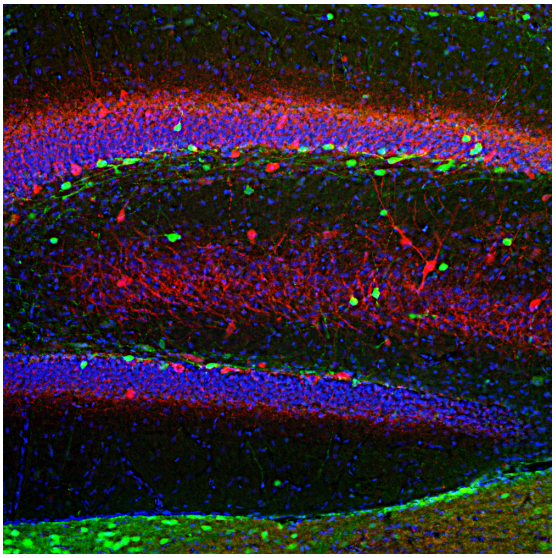
Calretinin Mouse Monoclonal Antibody

MCA-6A9

Applications	Host	Isotype	Molecular Wt.	Species Cross-Reactivity
WB, IF/ICC	Mouse	IgA	29kDa	Hu, Rt, Ms, Co, Pi, Ho



Western blot analysis of tissue lysates probed with mouse mAb to calretinin, MCA-6A9, dilution 1:2,000, in red: [1] protein standard (red), [2] rat brain, [3] rat spinal cord, [4] mouse brain, [5] mouse spinal cord, and [6] cow spinal cord. The single clean band at 29kDa corresponds to the calretinin protein.



Immunofluorescent analysis of a section of rat hippocampus section stained with mouse mAb to calretinin, MCA-6A9, dilution 1:2,000 in green and costained with chicken pAb to parvalbumin, CPCA-Pvalb, dilution 1:1,000, 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 45µM, and free-floating sections were stained with above antibodies. The calretinin and parvalbumin antibodies stain different subsets of GABAergic interneurons.

Background:

Calretinin, as the name suggests, was originally isolated in the retina but was found to be also expressed in mammalian central nerve system, testis, fallopian tube and pancreas (1). It is a cytoplasmic Calcium binding protein which includes typical "EF hand" structures the prototype for which is the protein parvalbumin (2-4). In the brain calretinin it is localized in certain classes of neurons, and antibodies to it are useful for identifying specific neuronal cell types (1). It is particularly concentrated in some cerebellar granular cells and their parallel fibres, but is also found in many GABAergic interneurons in the cortex. These GABAergic interneurons in most cases express only one of three related Calcium binding proteins, namely calretinin, calbindin or parvalbumin (5,6). As a result these important inhibitory interneurons can be identified and classified based on their content of these three proteins. Each type of neuron as defined in this fashion has distinct electrophysiological and functional properties (7). Calretinin deficiency in the mossy cells of the mouse dentate gyrus and granule cells results in abnormal excitability in the cerebellar neuronal network and impairment of long-term potentiation and motor coordination, suggesting that calretinin functions as a general Calcium buffer (8).

The MCA-6A9 antibody was made against full length recombinant human calretinin expressed in and purified from *E. coli*. The calretinin protein is related in amino acid sequence to calbindin and to a lesser extent parvalbumin, so, for studies of GABAergic interneurons, it is important to verify that antibodies developed against one protein do not cross react with either of the others, which we have done for MCA-3G9 using appropriate recombinant human proteins. This antibody is not recommended for IHC, for that we recommend an alternate mouse monoclonal antibody MCA-3G9. We also have a rabbit polyclonal RPCA-Calret and a chicken polyclonal CPCA-Calret. We also supply a variety of other mouse, rabbit and chicken antibodies to calbindin (MCA-4H7, MCA-5A9 and CPCA-Calb) and parvalbumin (MCA-3C9 and CPCA-Pvalb), allowing double and triple labeling of appropriate cell and tissue samples.

EnCor Biotechnology Inc.

Ordering Information
Web ***www.encorbio.com***
Email ***admin@encorbio.com***
Phone ***352-372-7022***
Fax ***352-372-7066***

HGNC Name: *CALB2*
UniProt: *P22676*
RRID: *AB_2572243*
Immunogen: *Full-length recombinant human protein expressed in and purified from E. coli.*
Format: *Antibody is supplied as an aliquot of 1 mg/mL of purified antibody diluted at 50% glycerol/PBS.*
Storage: *Store at 4°C for short term, for longer term at -20°C*
Recommended dilutions:
WB: 1:2,000-5,000. IF/ICC: 1:2,000-5,000. IHC not recommended

References:

1. Rogers JH. Calretinin: a gene for a novel calcium-binding protein expressed principally in neurons. J. Cell Biol. 105:1343-53 (1987).
2. Kretsinger RH, Nockolds CE. Carp Muscle Calcium-binding Protein: II. Structure determination and general description. J. Biol. Chem. 248:3313-26 (1973).
3. Andressen C, Bliimcke I, Celio MR. Calcium-binding proteins: selective markers of nerve cells. Cell Tissue Res. 271:181-208 (1993).
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 1:241–58 (2002).
5. Condé F, et al. Local circuit neurons immunoreactive for calretinin, calbindin D-28k or parvalbumin in monkey prefronatal cortex: Distribution and morphology. J. Comp. Neurol. 341:95-116 (1994).
6. Hof PR, et al. Cellular distribution of the calcium-binding proteins parvalbumin, calbindin, and calretinin in the neocortex of mammals: phylogenetic and developmental patterns. J. Chem. Neuroanat. 16:77-116 (1999).
7. Bearzatto B, et al. Mono- and dual-frequency fast cerebellar oscillation in mice lacking parvalbumin and/or calbindin D-28k. Eur. J. Neurosci. 22:861-70 (2005).
8. Schiffmann SN, et al. Impaired motor coordination and Purkinje cell excitability in mice lacking calretinin. PNAS 27:5257-62 (1999).

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 Co—Cow Pi—Pig Ho—Horse Ch—Chicken Dr—D. rerio Dm—D. melanogaster Sm—S. mutans Ce—C. elegans Sc—S. cerevisiae Sa—S. aureus Ec—E. coli.

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 Co—Cow Pi—Pig Ho—Horse Ch—Chicken Dr—D. rerio Dm—D. melanogaster Sm—S. mutans Ce—C. elegans Sc—S. cerevisiae Sa—S. aureus Ec—E. coli.