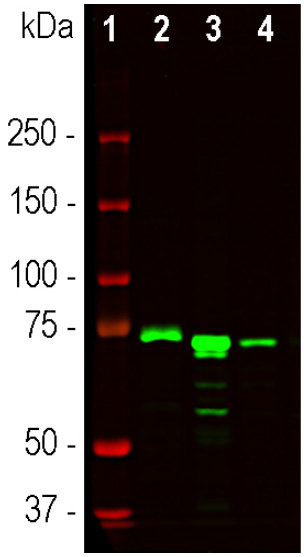
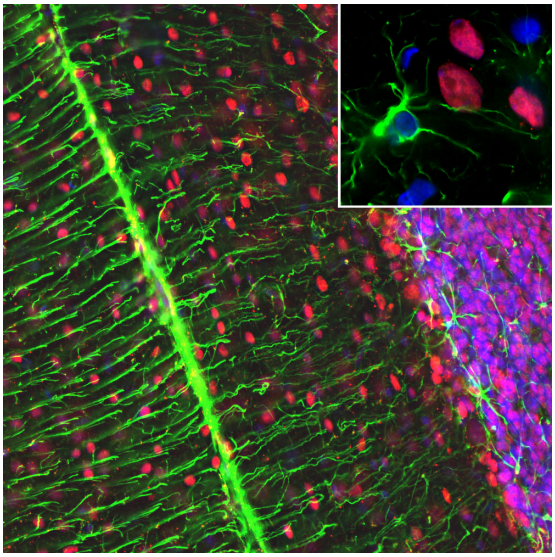
MeCP2
Mouse Monoclonal Antibody

MCA-5H12

Applications	Host	Isotype	Molecular Wt.	Species Cross-Reactivity
WB, IF/ICC, IHC	Mouse	IgG2b	~75kDa by SDS-PAGE	Hu, Rt, Ms



Western blot analysis of different tissue lysates using mouse mAb to MeCP2, MCA-5H12, dilution 1:2,000, in green. [1] protein standard, [2] nuclear extract of rat brain, [3] nuclear extract of mouse brain and [4] cow cerebellum. The strong band at about 74kDa corresponds to the MeCP2 protein.



Immunofluorescent analysis of a rat cerebellum section stained with mouse mAb to MeCP2, MCA-5H12, dilution 1:1,000 in red and costained with rabbit pAb to GFAP, RPCA-GFAP, dilution 1:5,000 in green. The blue is Hoechst staining of nuclear DNA. Following transcardial perfusion of rat with 4% paraformaldehyde, brain was post fixed for 1 hour, cut to 45µM, and free-floating sections were stained with the above antibodies. The MeCP2 antibody specifically labels nuclei of neurons, while the GFAP antibody stains the network of astroglial cells and projections of Bergmann glia.

Background:

Methyl-CpG Binding Protein 2 (MeCP2) is widely expressed in tissues and particularly heavily in neurons. It is a nuclear protein which was found to bind methylated cytosines in CpG islands in DNA, but which may also bind hydroxymethyl cytosine residues (1-3). Methyl and hydroxymethyl cytosines are generally found in regions of DNA regulating the expression of specific genes and MeCP2 is thought to function as a gene regulator, though it may have other functions. The MeCP2 protein contains one methyl-CpG binding domain and two AT hook domains, highly basic peptides which bind AT rich DNA sequences. The MeCP2 gene, *MECP2* is located on the X-chromosome and loss of function mutations of the gene cause Rett syndrome, a relatively rare neurodevelopmental, autistic disorder which presents almost exclusively in females, since similar mutation of *MECP2* in males is almost invariably lethal (3). Rett patients are apparently normal at birth but develop neurological problems over the period when extensive synaptogenesis is occurring, which coincides with the expression of high levels of MeCP2 in normal brain. The Rett brain shows smaller more densely packed neurons with less extensive dendritic branching (2). Duplication of the MECP2 gene was found to be the cause of a different neurodevelopmental disorder referred to a *MECP2* duplication syndrome (4). Levels of MeCP2 normally alter dynamically and the protein is regulated by phosphorylation on multiple sites (5-7).

The MCA-5H12 antibody was made against full length recombinant human MeCP2 expressed in and purified from *E. coli* and can be used to identify neurons transiently expressing high levels of this nuclear protein. The antibody works well for western blotting and for IF, ICC and IHC (see data under "Additional Info" tab). We also supply rabbit and chicken polyclonal antibodies to the same protein, RPCA-MeCP2 and CPCA-MeCP2, and also an alternate mouse monoclonal antibody MCA-4F11.

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

HGNC Name: *MECP2*
UniProt: *P51608*
RRID: *AB_2744534*
Immunogen: *Recombinant full length human MeCP2 expressed in and purified from E. coli.*
Format: *Purified antibody at 1mg/mL in 50% PBS, 50% glycerol plus 5mM NaN_3*
Storage: *Stable at 4°C for one year, for longer term store at -20°C*
Recommended dilutions:
WB: 1:5,000-10,000 ICC/IF or IHC: 1:1,000-5,000

References:

1. Klose RJ, et al. DNA binding selectivity of MeCP2 due to a requirement for A/T sequences adjacent to methyl-CpG. Mol. Cell 19:667–78 (2005).
2. Amir RE, et al. Rett syndrome is caused by mutations in X-linked MECP2, encoding methyl-CpG-binding protein 2. Nat. Genet. 23:185–8 (1999).
3. Pohodich AE, Zoghbi HY. Rett syndrome: disruption of epigenetic control of postnatal neurological functions. Hum. Mol. Genet. 24:R10-6 (2010).
4. Ramocki MB, Tavyev YJ, Peters SU. The MECP2 duplication syndrome. Am. J. Med. Genet. A. 152A:1079-88 (2010).
5. Zhou Z, et al. Brain-specific phosphorylation of MeCP2 regulates activity dependent Bdnf transcription, dendritic growth, and spine maturation. Neuron 52:255–69 (2006).
6. Deng JV, et al. MeCP2 in the nucleus acumbens contributes to neural and behavioral responses to psychostimulants. Nat. Neurosci. 13:1128-36 (2010).
7. Tao J, et al. Phosphorylation of Mecp2 at Serine 80 regulates its chromatin association and neurological function. PNAS 24:106 (2009).

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.