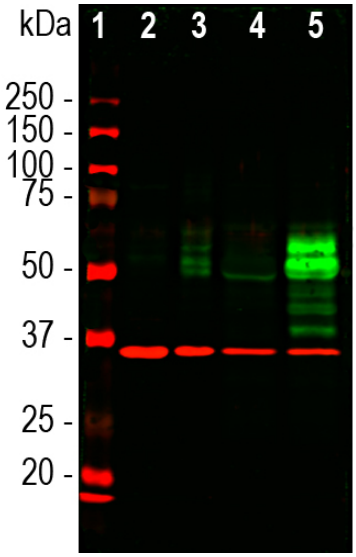
c-FOS
Mouse Monoclonal Antibody

MCA-2H2

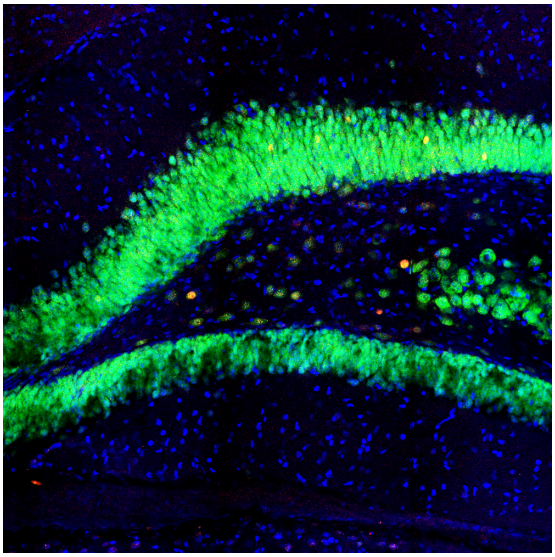
Ordering Information
Web *www.encorbio.com*
Email *admin@encorbio.com*
Phone *352-372-7022*
Fax *352-372-7066*

HGNC Name: *FOS*
UniProt: *P01100*
RRID: *AB_2571561*
Immunogen: *Full length recombinant human protein expressed in and purified from E. coli.*
Format: *Purified antibody at 1mg/mL in 50% PBS, 50% glycerol plus 5mM NaN_3*
Storage: *Store at 4°C for short term, for longer term at -20°C.*
Recommended dilutions:
WB: 1:500, IF/ICC or IHC: 1:500

Applications	Host	Isotype	Molecular Wt.	Species Cross-Reactivity
WB, IF/ICC, IHC	Mouse	IgG1 heavy, κ light	50-65kDa	Hu, Rt, Ms



Western blot analysis of cell lysates using mouse mAb to cFos, MCA-2H2, dilution 1:1,000, in green, and rabbit pAb to GAPDH, RPCA-GAPDH, dilution 1:20,000, in red, used as a loading control. [1] protein standard (red), [2] HeLa cells in serum free media. [3] HeLa cells stimulated with 20% fetal bovine serum for 2hrs after 36hrs in serum free media. [4] rat cortical neurons. [5] rat cortical neurons treated with membrane depolarization buffer for 5hrs. Multiple bands at 50-65kDa in stimulated or treated cell lysates correspond to different forms of the c-Fos proten. The single band at 37 kDa represents GAPDH protein.



Immunofluorescent analysis of rat hippocampus section stained with mouse mAb to c-FOS, MCA-2H2, dilution 1:200, in red, and costained with rabbit pAb to FOX3/NeuN, RPCA-FOX3, dilution 1:3,000, in green. The blue is Hoechst staining of nuclear DNA. The MCA-2H2 antibody labels nuclei of spontaneously activated neurons, while FOX3/NeuN antibody stains nuclei and distal perikarya of most neurons.

Background:

The *FOS* gene and protein were originally identified as the transforming element in a viral oncogene. The transforming protein was named v-FOS, for viral FOS, and the normal cellular non-transforming proto-oncogene was called c-FOS, for cellular FOS. FOS is an acrynym for "FBJ murine osteogenic sarcoma", the virus in which the gene product was first discovered. The c-FOS protein is a normal gene acting as an on/off switch controlling the expression of many other genes. The v-FOS form is mutated to stay in the on position, this persistently activating other genes and promoting unregulated cell division. The unmutated c-FOS is an "immediate-early" gene, so-called because protein expression is usually very low but increases rapidly and transiently in response to a wide array of stimuli including serum, growth factors, tumor promoters, cytokines, and UV radiation. Newly expressed c-FOS protein associates with JUN family and other basic leucine-zipper (bZIP) proteins to create a variety of activator protein-1 (AP-1) complexes (1). AP-1 complexes specifically activate the expression of many other genes and so regulate cellular responses to stimuli which may result in cell proliferation, differentiation, neoplastic transformation, apoptosis, and response to stress (2). The regulated expression of c-FOS therefore plays an important role in many cellular functions. Site specific phosphorylation activates c-FOS, while sumoylation of c-FOS inhibits the AP-1 transcriptional activity (3,4). Since c-FOS expression is induced in neurons which are rapidly firing action potentials, appropriate c-Fos antibodies can be used to identify activated neurons in tissues (5). Using current techniques it is possible to follow processes of such cells or obtain data on their mRNA expression.

The MCA-2H2 antibody was made against recombinant full length human c-FOS expressed in and purified from *E. coli*. It can be used to identify activated cells in cell culture and in sections and to follow c-FOS expression in western blots of cell and tissue homogenates. The antibody also works well on formalin fixed paraffin embedded sections, select the "Additional Info" for this data. The K_D is 6.68 x 10^{-10} M, K_{on} rate is 1.36 x 10^5 1/MS and the K_{dis} rate is 9.12 x 10^{-5} 1/S, all indicative of unusually high affinity. The same recombinant immunogen was used to generate a rabbit polyclonal antibody to c-FOS, RPCA-c-Fos, which has similar properties.

References:

1. Mildle-Langosch K. The Fos family of transcription factors and their role in tumourigenesis. Eur. J. Cancer 41:2449-2461 (2005)..
2. Chiu R, et al. The c-Fos protein interacts with c-Jun/AP-1 to stimulate transcription of AP-1 responsive genes. Cell 54:541–52 (1988).
3. Karin M. The regulation of AP-1 activity by mitogen activated protein kinases. J Biol Chem. 270:16483-6 (1995).
4. Bossis G, et al. Down-regulation of c-Fos/c-Jun AP-1 dimer activity by sumoylation. Mol Cell Biol.25(16):6964-79 (2005).
5. Dragunow M, Faull R. The use of c-fos as a metabolic marker in neuronal pathway tracing. J. Neurosci. Mets. 29:261–265 (1989).

This is a new antibody but peer reviewed publications using it are beginning to come on line. So if you perform a Google Scholar search for "MCA-2H2" several publications will appear, or you can just select here.

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.