Nestin
Mouse Monoclonal Antibody

References:


Immunofluorescent analysis of cortical neuron-glial cell culture from E20 rat stained with mouse mAb to nestin, MCA-4D11, dilution 1:500 in red, and costained with chicken pAb to MAP2, CPCA-MAP2, dilution 1:5,000 in green. The blue is Hoechst staining of nuclear DNA. The nestin antibody labels developing astrocytes and neuronal stem cells in a clearly filamentous fashion, while the MAP2 antibody stains dendrites and perikarya of mature neurons.

Background:

Nestin is a member of the class IV intermediate filament protein family which is expressed in neuroepithelial stem cells, which is the origin of the name nestin. Nestin was originally identified as a result of the production of a series of monoclonal antibodies directed against epitopes expressed on formalin fixed embryo day 15 rat spinal cord tissue (1). One of these antibodies, called Rat 401, stained fibrous profiles in the developing nervous system, but not in the mature nervous system. By screening bacteriophage expression libraries with the Rat 401 antibody, Lendahl et al. (2) were able to isolate a CDNA encoding the protein to which Rat 401 antibody bound. The protein proved to be an unusual member of the intermediate filament family, containing an α-helical region homologous to that found in keratin and neurofilament subunits. The nestin protein has a very short non-helical N-terminal region followed by the α-helical region and a very long and repetitive C-terminal region. Nestin is expressed by radial glia and other types of dividing cells in the developing central and peripheral nervous systems and in developing muscle. Nestin is expressed in many types of brain tumor in particular in gliomas (3,4). Nestin is also a marker of stem cells in the pancreas (4) and heart (5) and reactive astrocytes following CNS injury (6). In the mature brain, nestin is useful as a marker of resident stem cells, particularly in the dentate gyrus of the hippocampus and the olfactory bulb. The nestin amino acid sequence is relatively poorly conserved across species boundaries, so that the mouse and human proteins have an overall identity of only 62%. As a result, antibodies to the human protein often fail to recognize the rodent homologue and vice versa.

The MCA-4D11 antibody was made against a purified recombinant construct of amino acids 317-630 of the human protein, a region of the C-terminal “tail” region of the molecule. Although this region is relatively poorly conserved across species boundaries the MCA-4D11 antibody is cross reactive with both rodent and human nestin. We also supply a chicken polyclonal antibody to the same protein, CPCA-Nestin.

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.
Dm—D.
Sa—S.
Ms—M.
Ec—E.
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