

### Ordering Information

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### HGNC Name: DCX

UniProt: [O43602](http://www.uniprot.org/entry/O43602)

RRID: [AB\\_2572262](http://www.ebi.ac.uk/RRID/AB_2572262)

**Immunogen:** Recombinant full length human Lis-A isoform of doublecortin expressed in and purified from *E. coli*.

**Format:** Purified antibody at 1mg/mL in 50% PBS, 50% glycerol plus 5mM NaCl<sub>3</sub>

**Storage:** Store at 4°C for short term, for longer term at -20°C

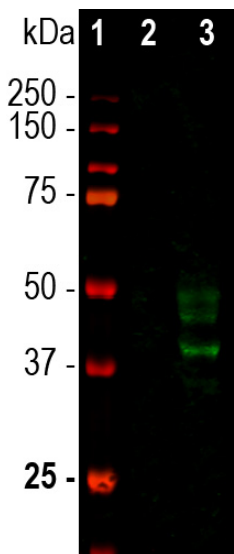
### Recommended dilutions:

WB: 1:1,000. IF/ICC and IHC: 1:1,000.

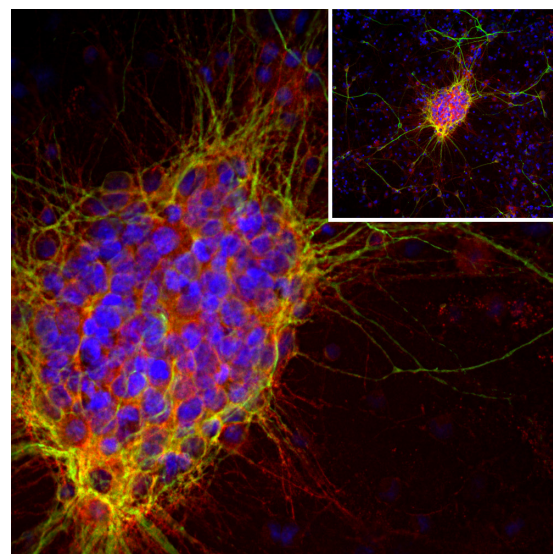
### References:

1. Ayanlaja AA, et al. Distinct Features of Doublecortin as a Marker of Neuronal Migration and Its Implications in Cancer Cell Mobility. *Front. Mol. Neurosci.* 10:199.
2. des Portes V, et al. A novel CNS gene required for neuronal migration and involved in X-linked subcortical laminar heterotopia and lissencephaly syndrome. *Cell* 92:51-61 (1998).
3. Gleeson JG, et al. Doublecortin, a brain-specific gene mutated in human X-linked lissencephaly and double cortex syndrome, encodes a putative signaling protein. *Cell* 92:63-72 (1998).
4. Jin J, et al. JNK phosphorylates Ser332 of doublecortin and regulates its function in neurite extension and neuronal migration. *Dev. Neurobiol.* 70:929-42 (2010).
5. Viprey VF, et al. Neuroblastoma mRNAs predict outcome in children with stage 4 neuroblastoma: a European HR-NBL1/SIOPEN study. *J. Clin. Oncol.* 32:1074-83 (2014).
6. Yanez Y. TH and DCX mRNAs in peripheral blood and bone marrow predict outcome in metastatic neuroblastoma patients. *J. Cancer Res. Clin. Oncol.* 142:573-80 (2016).
7. Rich JN, et al. Gene Expression Profiling and Genetic Markers in Glioblastoma Survival. *Cancer Res.* 65:4051-8 (2005).

Applications	Host	Isotype	Molecular Wt.	Species Cross-Reactivity
WB, IF/ICC, IHC	Mouse	IgG2a	35-45kDa	Hu, Rt, Ms



Western blot analysis of rat whole brain lysates using mouse mAb to doublecortin, MCA-3E1, dilution 1:1,000 in green: [1] protein standard (red), [2] adult rat brain, [3] embryonic E20 rat brain. Strong bands at 40kDa and 45kDa correspond to the doublecortin protein, detected only in the developing brain.



Immunofluorescent analysis of cortical neuron-glia cell culture from E20 rat stained with mouse mAb to doublecortin, MCA-3E1, dilution 1:1,000 in red, and costained with chicken pAb to microtubule associated protein 2 (MAP2), CPCA-MAP2, dilution 1:10,000 in green. The blue is DAPI staining of nuclear DNA. The doublecortin antibody reveals strong cytoplasmic staining in a population of small developing neurons and their processes, while the MAP2 antibody stains dendrites and perikarya of mature neurons. Doublecortin antibody is an excellent marker of early developing neuronal cells.

### Background:

Doublecortin was originally discovered since defects in the gene encoding it are causative of an X-linked lissencephaly, a rare group of brain malformations resulting in a smooth cerebral cortex caused by aberrant neuronal migration during development (1-4). The name doublecortin comes from the unusual layering of the cortex in this form of lissencephaly, which appears to have a second deep cortical layer of neurons. The doublecortin protein appears to function as a microtubule and actin binding protein expressed in developing neuroblasts as they become post-mitotic, but is lost as neurons mature. Loss of doublecortin causes defects in neuronal migration during development, so that many neurons fail to migrate into the cortex but remain close to the ventricular germinal zones. Antibodies to doublecortin are useful to identify neuronal stem cells and developing neurons in sections and in tissue culture, and to monitor neurogenesis. Studies of neuroblastoma, the most common form of extracranial solid tumor in childhood, show that levels of doublecortin mRNA are associated with poor patient outcome (5-7).

The MCA-3E1 antibody was made against full length recombinant human doublecortin expressed in and purified from *E. coli*. The antibody works well for western blotting and for IF, ICC and IHC (for IHC see data under "Additional Info" tab). It works identically to the goat polyclonal peptide antibody to doublecortin (C18):sc-8066 previously available from Santa Cruz, but now discontinued.

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### 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.