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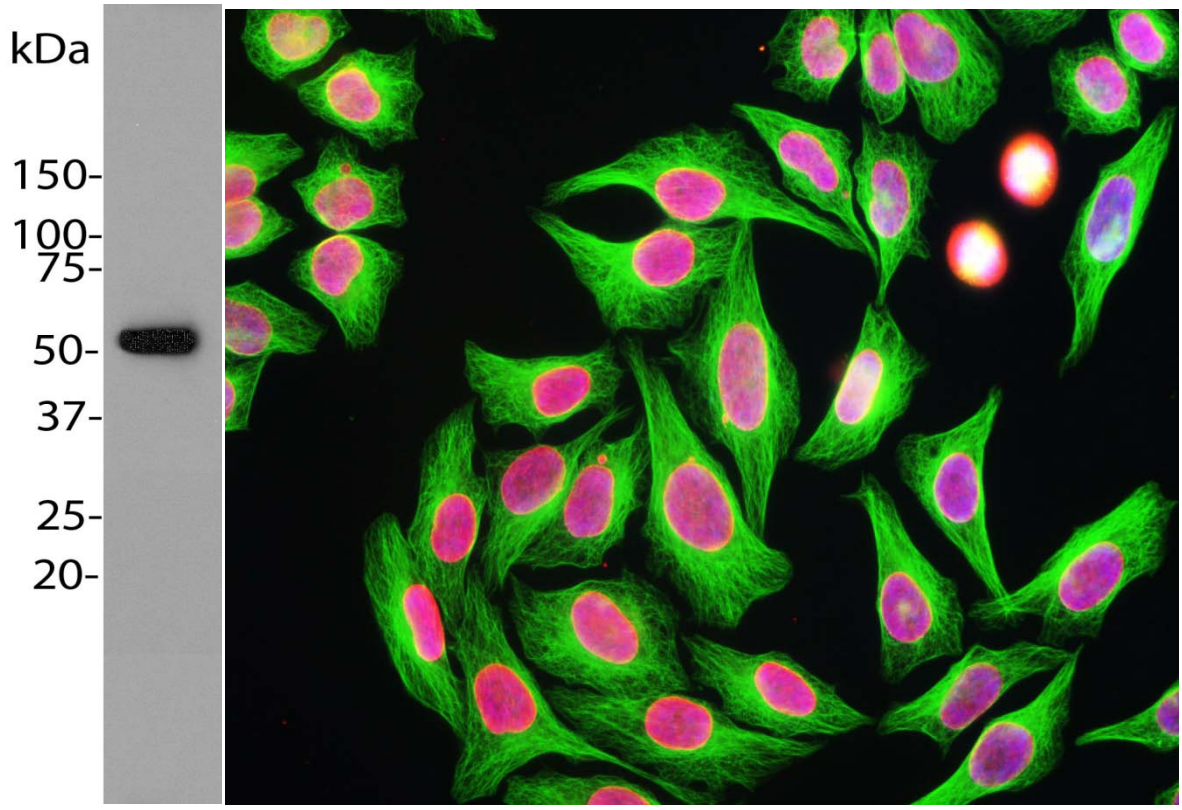
Catalog # MCA-4E4: Mouse Monoclonal Antibody to Tubulin

The Immunogen: Tubulins are a major class of cytoskeletal proteins and divided into five distinct classes, namely α, β, γ, δ and ε tubulins. The most abundant members of the tubulin family are the α and β-tubulins and are the major components of cytoplasmic microtubules. The various subunits have molecular weights of approximately 55 kDa and are 50% identical to one another at the protein sequence level. Microtubules are assembled from stable dimer of one α and one β subunit, and polymerization from dimers to assembled microtubules requires GTP. Microtubules are involved in a number of essential cellular functions including the maintenance of cell shape, transport, motility, cell signaling and mitosis (1). β tubulin is regarded as a "house keeping" protein which is generally not altered much in expression as a result of experimental manipulations. As a result antibodies to β tubulin are widely used as loading controls in western blotting as a standard by which the levels of other proteins may be measured. The important role of microtubules in cell division makes them a desirable target for the development of chemotherapeutic agents directed against rapidly dividing cancer cells (2). MCA-4E4 was raised against tubulin purified from pig brain and reacted with recombinant β-tubulin (Abcam), but not recombinant α-tubulin (Abnova) by ELISA and dot blots. he



Left : Blot of HeLa cell lysates blotted with MCA-4E4. Note the single sharp clean band corresponding to β-tubulin at 55 kDa. **Right:** HeLa cells stained with MCA-4E4 in green, and CPCA-LaminA/C, EnCor's chicken antibody to Lamin A/C in red, and DNA in blue. The MCA-4E4 antibody reveals strong microtubular staining in the cytoplasm of HeLa cells, while the Lamin A/C localizes in the nuclear membrane.

Antibody characteristics: MCA-4E4 is a mouse IgG2a class antibody. The antibody solution is purified from tissue culture supernatant and is at a concentration of 1 mg/mL in phosphate buffered saline. The antibody recognizes β-tubulin specifically both in western blots and in immunofluorescence experiments. On blots, MCA-4E4 reveals a band 55 kDa, and on cells in tissue culture the antibody stains microtubules. Since tubulin is highly conserved, it is likely that the antibody is effective on other species also.

Suggestions for use: The antibody solution can be used at dilutions of at least 1:1,000-1:5,000 in immunofluorescence experiments. In western blotting using chemiluminescence it can be used at dilutions of 1:5,000-1:10,000. Antibody preparation contains 10 mM sodium azide preservative (Link to http://www.encorbio.com/MSDS/azide.htm for Material Safety Data Sheet). Avoid repeated freezing and thawing, store at 4°C or -20°C.

References:

1. Nogales E. Structural insight into microtubule function. Annu Rev Biophys Biomol Struct 30:397–420 (2001).

2. Perez EA. Microtubule inhibitors: Differentiating tubulin-inhibiting agents based on mechanisms of action, clinical activity, and resistance. Mol Cancer Ther 8:2086-2095 (2009).

Limitations: This product is for research use only and is not approved for use in humans or in clinical diagnosis.