

### Background

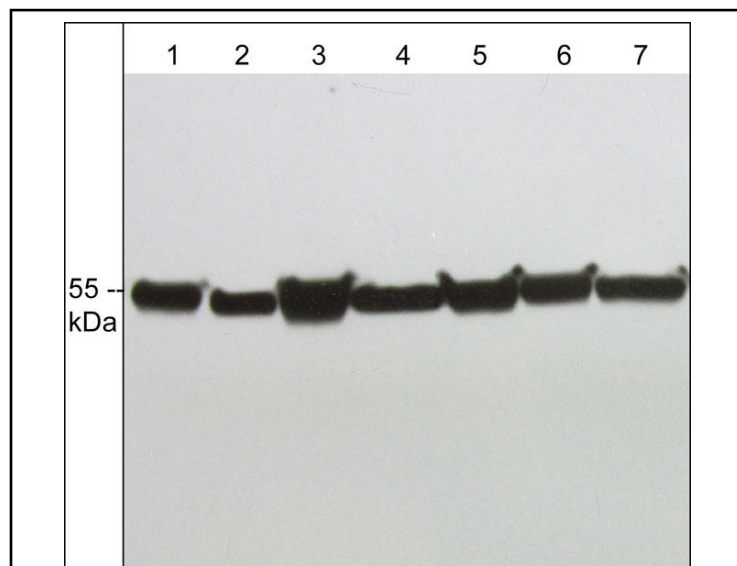
Microtubules (MTs) are cytoskeletal elements that play an essential role in cell division and cytoplasmic organization. MTs are dynamic polymers of  $\alpha/\beta$ -Tubulin heterodimers. At least two populations of MTs, called dynamic and stable according to their rates of turnover, are readily distinguishable in cells. The proteins associated with MTs (MAPs) are among the best-known factors that regulate MT dynamics and stability. In addition, a variety of different post-translational modifications may also regulate MT dynamics and stability. Phosphorylation is one of these modifications and it can occur on serine, threonine, and tyrosine residues in  $\alpha$ - and  $\beta$ -Tubulin isoforms. Multiple kinases can phosphorylate Ser-444 at the C-terminus of  $\beta$ III-Tubulin *in vitro*, and unphosphorylated Ser-444 may be an early marker for cells of neuronal lineage. Cdk1 can phosphorylate Ser-172 in  $\beta$ -Tubulin during mitosis and this may impair tubulin incorporation into microtubules. In  $\alpha$ -tubulin, PKC can phosphorylate Ser-165 leading to increased cell motility in human breast cells.

### Background References

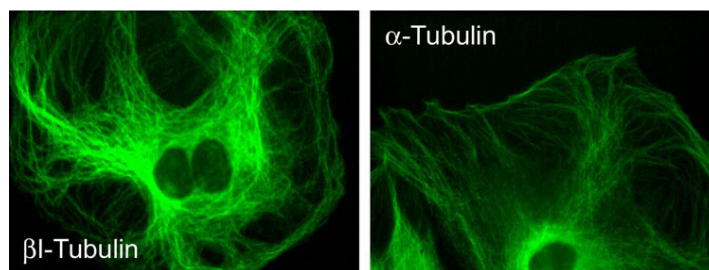
Diaz-Nido, J. et al. (1990) *J Biol. Chem.* 265(23):13949.  
 Westermann, S. & Weber, K. (2003) *Nat. Rev. Mol. Cell. Biol.*  
 Fourrest-Lieuvin, A. et al. (2006) *Mol. Biol. Cell.* 17(3):1041.  
 Abeyweera, T.P. et al. (2009) *J Biol Chem.* 284(26):17648.

### Product Citations

Gehrig, S. et al. (2012) *Nature.* 484(7394):394.  
*WB: mouse skeletal muscle*



Western blot analysis of  $\alpha$ -tubulin expression in human A431 (lane 1), HUVEC (lane 2), Jurkat (lane 3), mouse J774.1 (lane 4), human PC-3 (lane 5), rat PC12 (lane 6), and mouse C2C12 (lane 7). The blot was probed with anti- $\alpha$ -Tubulin (C-terminus) at 1:1000.



Immunocytochemical labeling of  $\alpha$ - and  $\beta$ -Tubulin in rat A7r5 cells. The cells were labeled with anti- $\beta$ -Tubulin (TM1541) (left) and anti- $\alpha$ -tubulin (TM4111) (right). The antibodies were detected using Goat anti-Mouse conjugated to DyLight® 488.

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**Immunogen**                      **Uniprot ID: Q9BQE3**

Clone DM1A was generated from purified chick brain tubulin. The antibody recognizes an epitope within the C-terminal end of  $\alpha$ -tubulin isoforms. The epitope is highly conserved in  $\alpha$ -tubulin isoforms from most vertebrate species.

**Buffer and Storage**

Mouse monoclonal antibody purified with protein A chromatography is supplied in 100 $\mu$ l phosphate-buffered saline, 50% glycerol, 1 mg/ml BSA, and 0.05% sodium azide. Store at  $-20^{\circ}\text{C}$ . Stable for 1 year.

**Applications**

WB	1:1000
ICC	1:200
IP	1:100
IHC	1:200
ELISA	1:2000

**Species Reactivity**

Hu, Rt, Ms

**Isotype:** IgG1

End user should determine optimal dilution for their particular applications and experiments.

Western blot membranes were incubated with diluted antibody in 5% non-fat milk, Tris buffer, 0.04% Tween20 for 1 hour at room temperature.

Abbreviations: E = ELISA, ICC = Immunocytochemistry, IHC = immunohistochemistry, IP = immunoprecipitation, MS = mass spectrometry, WB = western blot

Hu = Human, Ms = Mouse, Rt = Rat, Ck = Chicken, F = Frog, B = Bovine

**Specificity**

The antibody detects a 55 kDa\* protein corresponding to the molecular mass of  $\alpha$ -Tubulin on SDS-PAGE immunoblots of human, rat, and mouse cells and tissues.

\*All molecular weights (MW) are confirmed by comparison to MW standards and to western blot mobilities of known proteins with similar MW.

"Native" western blot utilizes non-reducing sample buffer (no mercaptoethanol or SDS), normal SDS-PAGE gel electrophoresis, and no methanol in transfer buffers.

**Related Products**

TM1541  $\beta$ -Tubulin Mouse Monoclonal

TP1691  $\beta$ III-Tubulin (C-terminus) Rabbit Polyclonal

TP1721  $\beta$ -Tubulin (Ser-172), phospho-specific Rabbit Polyclonal

TP1741  $\beta$  -Tubulin (Ser-444), phospho-specific Rabbit Polyclonal

TP1781  $\beta$ -Tubulin (a.a. 168-177) Rabbit Polyclonal

AK6060 Actin & Tubulin Antibody Sampler Kit

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