

MOUSE ANTI-ACTIN MONOCLONAL ANTIBODY

CATALOG NUMBER:	MAB1501	LOT NUMBER:	
QUANTITY:	100 µL		
CLONE NAME:	C4	HOST/ISOTYPE:	Ms IgG1kappa
BACKGROUND:	Actin is an abundant cytoskeletal protein found in all cells (True, 1990). The protein's 42 kD peptide chain assumes two physical forms: globular actin, which may serve as a cytoplasmic storage pool, and fibrous actin, which, in conjunction with myosin, generates muscle contraction (True, 1990). In non-muscle cells, actin appears to be involved in a variety of functions, such as cell motility, exocytosis, and phagocytosis (True, 1990). Distribution of the six known isoforms of actin - four muscle actins (alpha-skeletal, alpha-vascular smooth, alpha-cardiac, and gamma-enteric smooth) and two cytoplasmic actins (alpha and gamma) is tissue specific (Otey, 1986; Lessard, 1988).		
SPECIFICITY:	MAB1501 is a pan-actin antibody that binds to an epitope in a highly conserved region of actin; therefore, this antibody reacts with all six isoforms of vertebrate actin (Lessard, 1988). The epitope recognized by the antibody appears to be located in the N-terminal two thirds of the actin molecule, possibly near amino acids 50-70. Reacts with both globular (G) and filamentous (F) forms of actin and does not interfere with actin polymerization to form filaments, at a ratio as high as one antibody per two actin monomers. However, this antibody does increase the extent of polymerization when used at a lower ratio of antibody to actin. In addition to labeling myotubes, anti-actin stains myoblasts and fibroblasts (Lessard, 1983). Although clone C4 is prepared as an antibody to chicken gizzard muscles actin, it reacts with actins from all vertebrates, as well as with Dictyostelium discoideum and Physarum polycephalum actins (Lessard, 1988).		
IMMUNOGEN:	Purified chicken gizzard actin (Lessard, 1988).		
APPLICATIONS:	Indirect immunofluorescence at 1:100: Tissue culture cells -- fix with formaldehyde, treat with methanol or acetone. Glycerinated myofibrils -- fix fibers with formaldehyde, treat with cold methanol. Stains I-bands intensely and stress fibers in human fibroblasts. Cryostat sections (6 µ) -- quick frozen in isopentane, slides treated with gelatin and formaldehyde. Immunoblots at 1:100-1:1,000: (<i>J. Cellular Biochem.</i> (1987) 34 :113-124) On muscle homogenates subject to SDS-PAGE, reacts relatively uniformly with a 43 kD protein present in skeletal, cardiac, gizzard and aorta tissues. Appears to react with all isoforms of actin found in these preparations and shows a strong reaction with the alpha-actin found in skeletal, cardiac, and arterial muscle. Iodination: Described by Lessard, <i>et al.</i> (1979). <i>Analyt. Biochem.</i> , 94 :140-149. Solid phase binding assay at 1:800-1:1,000: In an ELISA, is strongly reactive with the cytoplasmic actin and shows a significant binding to gizzard, skeletal, arterial and cardiac actins. Also shows a significant binding to both Dictyostelium discoideum and Physarum polycephalum. Optimal working dilutions must be determined by end user.		

- AFFINITY CONSTANT:** 3-15 x 10⁸ l/m. (gizzard > cardiac = skeletal muscle actin).
- SPECIES REACTIVITIES:** To date, all animal species and cell types with an actin form react by indirect immunofluorescence or immunoblot, including plant actin.
- FORMAT:** Ascites fluid.
- PRESENTATION:** Liquid, with 0.01% sodium azide.
- STORAGE/HANDLING:** Maintain at -20°C in undiluted aliquots for up to 12 months after date of receipt. Do not store in a diluted format. Avoid repeated freeze/thaw cycles.
- REFERENCES:**
- Nguyen, M.D., et al., *J. Neuroscience* (2004) **24**:1340-1349.
- Tsou, T. *et al.* (2004). The protective role of intracellular GSH status in the arsenite-induced vascular endothelial dysfunction. *Chem. Res. Toxicol.* **17**:208-217.
- Bloom, O. *et al.* (2003). Colocalization of synapsin and actin during synaptic vesicle recycling. *J. Cell Biology.* **161**(4):737-747.
- Luciano, L *et al.* (2003). Brush cells of rodent gallbladder and stomach epithelia express neurofilaments. *J Histochem. Cytochem.* **51**(2):187-198.
- Shou, J. *et al.* (2002). Human Dkk-1, a gene encoding a Wnt antagonist, responds to DNA damage and its overexpression sensitizes brain tumor cells to apoptosis following alkylation damage of DNA. *Oncogene* **21**:878-889.
- Mitsui, K. *et al.* (2002). Purification of polyglutamine aggregates and identification of elongation factor-1alpha and heat shock protein 84 as aggregate-interacting proteins. *Journal of Neuroscience* **22**:9267-9277.
- Yamaguchi, H. *et al.* (2002). Neural Wiskott-Aldrich syndrome protein Is involved in hepatocyte growth factor-induced migration, invasion, and tubulogenesis of epithelial cells. *Cancer Research.* **62**:2503-2509.
- Alas, S. *et al.* (2002). Rituximab Modifies the Cisplatin-mitochondrial Signaling Pathway, Resulting in Apoptosis in Cisplatin-resistant Non-Hodgkin's Lymphoma. *Clinical Cancer Research* **8**:836-845.
- Du, Xiao-Jun et.al. (2002). Impaired Cardiac Contractility Response to Hemodynamic Stress in S100A1-Deficient Mice. *Mol. Cell Biol.* **22**(8):2821-2829.
- Jazirehi, A. *et al.* (2001). Adriamycin Sensitizes the Adriamycin-resistant 8226/Dox40 Human Multiple Myeloma Cells to Apo2L/Tumor Necrosis Factor-related Apoptosis-inducing Ligand-mediated (TRAIL) Apoptosis. *Clinical Cancer Research* **7**:3874-3883.
- Akimov S and Belkin, AM (2001). Cell-surface transglutaminase promotes fibronectin assembly via interaction with the gelatin-binding domain of fibronectin: a role in TGFb-dependent matrix deposition. *J. Cell Sci.* **114**:2989-3000.

Wine, R. and Chapin, R. (1999). Adhesion and Signaling Proteins Spatiotemporally Associated With Spermination in the Rat. *J. Androl.* **20**:198-213.

Stolz, D and Michalopoulos, G. (1994). Comparative effects of hepatocyte growth factor and epidermal growth factor on motility, morphology, mitogenesis, and signal transduction of primary rat hepatocytes. *J. Cellular Biochemistry* **55**:445-464.

True, L. D. (1990). Atlas of Diagnostic Immunopathology. Gower Medical Publishing, N.Y. 6.5.

Lessard, J. (1988). Two monoclonal antibodies to actin: one muscle selective and one generally reactive. *Cell Motility and the Cytoskeleton* **10**:349-362.

Harlow, E. and Lane, D. (Eds.) (1988). Antibodies: A Laboratory Manual . Cold Spring Harbor Laboratory, N.Y : 359.

Otey, C. *et al.* (1986). Immunolocalization of the gamma isoform of nonmuscle actin in cultured cells. *J. Cell Biol.* **102**:1726-1737.

Falini, B. and Taylor, C.R. (1983). New developments in immunoperoxidase techniques and their application. *Arch. Pathol. Lab Med.* **107**:105-117.

Hsu, S. *et al.* (1981). A comparative study of the peroxidase-antiperoxidase method and an avidin-biotin complex method for studying polypeptide hormones with radioimmunoassay antibodies. *Am. J. Clin. Pathol.* **75**:734-738.

Taylor, C. (1978). Immunoperoxidase techniques: practical and theoretical aspects. *Arch. Pathol. Lab. Med.* **102**:113-121.

For research use only; not for use as a diagnostic.

Important Note: *During shipment, small volumes of product will occasionally become entrapped in the seal of the product vial. For products with volumes of 200 μ L or less, we recommend gently tapping the vial on a hard surface or briefly centrifuging the vial in a tabletop centrifuge to dislodge any liquid in the container's cap.*

© 2002-2003: CHEMICON® International, Inc. - By CHEMICON® International, Inc. All rights reserved. No part of these works may be reproduced in any form without permissions in writing.