# Datasheet: MCA78G

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| **Description:** | RAT ANTI TUBULIN ALPHA |
| **Specificity:** | TUBULIN ALPHA |
| **Format:** | Purified |
| **Product Type:** | Monoclonal Antibody |
| **Clone:** | YOL1/34 |
| **Isotype:** | IgG2a |
| **Quantity:** | 0.5 mg |

## Product Details

**Applications**

This product has been reported to work in the following applications. This information is derived from testing within our laboratories, peer-reviewed publications or personal communications from the originators. Please refer to references indicated for further information. For general protocol recommendations, please visit www.bio-rad-antibodies.com/protocols.

| | Yes | No | Not Determined | Suggested Dilution |
|---|---|---|---|---|
| Flow Cytometry | | | ▪ | |
| Immunohistology - Frozen | ▪ | | | |
| Immunohistology - Paraffin | | | ▪ | |
| ELISA | ▪ | | | 10ug/ml as detecting antibody |
| Immunoprecipitation | | | ▪ | |
| Western Blotting | ▪ | | | |
| Immunofluorescence | ▪ | | | |
| Radioimmunoassays | ▪ | | | |

Where this product has not been tested for use in a particular technique this does not necessarily exclude its use in such procedures. Suggested working dilutions are given as a guide only. It is recommended that the user titrates the product for use in their own system using appropriate negative/positive controls.

**Target Species**

Yeast

**Species Cross Reactivity**

Reacts with: Drosophila, Human, Arabidopsis thaliana, Saccharomyces, Platyzoma , Ashbya, Mouse, Naegleria, Asplenium nidus, Seagrass (Cymodocea nodosa), Rye (Secale cereale L.)
Based on sequence similarity, is expected to react with:Birds, Mammals, Fungal
**N.B.** Antibody reactivity and working conditions may vary between species. Cross reactivity is derived from testing within our laboratories, peer-reviewed publications or personal communications from the originators. Please refer to references indicated for further information.

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| **Product Form** | Purified IgG - liquid |
| **Preparation** | Purified IgG prepared by affinity chromatography on Protein G from tissue culture supernatant. |
| **Buffer Solution** | Phosphate buffered saline |
| **Preservative Stabilisers** | 0.09% Sodium Azide |
| **Carrier Free** | Yes |
| **Approx. Protein Concentrations** | IgG concentration 1.0mg/ml |
| **Immunogen** | Yeast tubulin. |
| **RRID** | AB_325005 |
| **Fusion Partners** | Spleen cells from immunized LOU rats were fused with cells of the rat YB2/0 myeloma cell line. |
| **Specificity** | **Rat anti tubulin alpha antibody, clone YOL1/34** recognizes the alpha subunit of tubulin. The reactivity pattern is similar to that seen with clone YL1/2. |
| **References** | 1. Sullivan, M. *et al.* (2001) Orchestrating anaphase and mitotic exit: separase cleavage and localization of Slk19. Nat Cell Biol. 3: 771-7.<br>2. Trieselmann, N. *et al.* (2003) Ran modulates spindle assembly by regulating a subset of TPX2 and Kid activities including Aurora A activation. J Cell Sci. 116: 4791-8.<br>3. Petronczki, M. *et al.* (2004) Sister-chromatid cohesion mediated by the alternative RF-CCtf18/Dcc1/Ctf8, the helicase Chl1 and the polymerase-alpha-associated protein Ctf4 is essential for chromatid disjunction during meiosis II. J Cell Sci. 117: 3547-59.<br>4. Chatzimeletiou, K. *et al.* (2005) Spindle abnormalities in normally developing and arrested human preimplantation embryos in vitro identified by confocal laser scanning microscopy. Hum Reprod. 20: 672-82.<br>5. White, J. *et al.* (2005) Developmental activation of the Rb-E2F pathway and establishment of cell cycle-regulated cyclin-dependent kinase activity during embryonic stem cell differentiation. Mol Biol Cell. 16 (4): 2018-27.<br>6. Yu, H.G. *et al.* (2007) The Aurora kinase Ipl1 maintains the centromeric localization of PP2A to protect cohesin during meiosis. J Cell Biol. 176: 911-8.<br>7. D'Ambrosio, C. *et al.* (2008) Identification of cis-acting sites for condensin loading onto budding yeast chromosomes. Genes Dev. 22: 2215-27<br>8. Sullivan, M. *et al.* (2008) Cyclin-specific control of ribosomal DNA segregation. Mol Cell Biol. 28: 5328-36.<br>9. Hartl, T.A. *et al.* (2008) Condensin II resolves chromosomal associations to enable anaphase I segregation in *Drosophila* male meiosis. PLoS Genet. 4: e1000228.<br>10. Waples, W.G. *et al.* (2009) Putting the brake on FEAR: Tof2 promotes the biphasic release of Cdc14 phosphatase during mitotic exit. Mol Biol Cell. 20 (1): 245-55.<br>11. Fonseca, A.V. *et al.* (2010) Polarization and migration of hematopoietic stem and |

progenitor cells rely on the RhoA/ROCK I pathway and an active reorganization of the microtubule network. J Biol Chem. 285: 31661-71.
12. Lang, C. *et al.* (2010) Structural mutants of the spindle pole body cause distinct alteration of cytoplasmic microtubules and nuclear dynamics in multinucleated hyphae. Mol Biol Cell. 21 (5): 753-66.
13. Lang, C. *et al.* (2010) Mobility, microtubule nucleation and structure of microtubule-organizing centers in multinucleated hyphae of *Ashbya gossypii*. Mol Biol Cell. 21: 18-28.
14. Rossio, V. *et al.* (2010) The RSC chromatin-remodeling complex influences mitotic exit and adaptation to the spindle assembly checkpoint by controlling the Cdc14 phosphatase J Cell Biol. 191: 981-97.
15. Mirchenko, L. and Uhlmann, F. (2010) Sli15(INCENP) dephosphorylation prevents mitotic checkpoint reengagement due to loss of tension at anaphase onset. Curr Biol. 20: 1396-401.
16. Takeo, S. *et al.* (2010) Calcineurin and its regulation by Sra/RCAN is required for completion of meiosis in *Drosophila*. Dev Biol. 344 (2): 957-67.
17. Whelan, F. *et al.* (2010) Amino acid substitutions in the aryl hydrocarbon receptor ligand binding domain reveal YH439 as an atypical AhR activator. Mol Pharmacol. 77: 1037-46.
18. Finlayson, M.R. *et al.* (2011) Regulation of exit from mitosis in multinucleate *Ashbya gossypii* cells relies on a minimal network of genes. Mol Biol Cell. 22 (17): 3081-93.
19. Keeling, J.W. and Miller, R.K. (2011) Indirect immunofluorescence for monitoring spindle assembly and disassembly in yeast. Methods Mol Biol. 782: 231-44.
20. Raspelli, E. *et al.* (2011) Budding yeast Dma1 and Dma2 participate in regulation of Swe1 levels and localization. Mol Biol Cell. 22: 2185-97.
21. Goto, G.H. *et al.* (2011) Bub1-mediated adaptation of the spindle checkpoint. PLoS Genet. 7: e1001282.
22. Rossio, V. and Yoshida, S. (2011) Spatial regulation of Cdc55-PP2A by Zds1/Zds2 controls mitotic entry and mitotic exit in budding yeast. J Cell Biol. 193: 445-54.
23. Hao, N. *et al.* (2011) Identification of residues in the N-terminal PAS domains important for dimerization of Arnt and AhR. Nucleic Acids Res. 39 (9): 3695-709.
24. Grava, S. *et al.* (2011) Clustering of Nuclei in Multinucleated Hyphae Is Prevented by Dynein-Driven Bidirectional Nuclear Movements and Microtubule Growth Control in *Ashbya gossypii*. Eukaryot Cell. 10: 902-15.
25. Walsh, C.J. (2012) The structure of the mitotic spindle and nucleolus during mitosis in the amebo-flagellate *Naegleria*. PLoS One. 7: e34763.
26. Chatzimeletiou, K. *et al.* (2012) Cytoskeletal analysis of human blastocysts by confocal laser scanning microscopy following vitrification. Hum Reprod. 27: 106-13.
27. Elhanany-Tamir, H. *et al.* (2012) Organelle positioning in muscles requires cooperation between two KASH proteins and microtubules. J Cell Biol. 198 (5): 833-46.
28. Malea, P. *et al.* (2013) Microtubule integrity and cell viability under metal (Cu, Ni and Cr) stress in the seagrass *Cymodocea nodosa.* Chemosphere. pii: S0045-6535(13)00820-5.
29. Panteris, E. *et al.* (2013) The distribution of TPX2 in dividing leaf cells of the fern *Asplenium nidus*. Plant Biol (Stuttg). 15: 203-9.
30. Buerstenbinder, K. *et al.* (2013) *Arabidopsis* Calmodulin-binding IQD1 Localizes to Microtubules and Interacts with Kinesin Light Chain-Related Protein-1. J Biol Chem. 288: 1871-82.

31. Adamakis, I.D. *et al.* (2013) Effects of bisphenol A on the microtubule arrays in root meristematic cells of *Pisum sativum* L. Mutat Res. 750 (1-2): 111-20.
32. Hao, N. *et al.* (2013) Reciprocal regulation of the basic helix-loop-helix/Per-Arnt-Sim partner proteins, Arnt and Arnt2, during neuronal differentiation. Nucleic Acids Res. 41 (11): 5626-38.
33. Wang, S. *et al.* (2015) Nesprin provides elastic properties to muscle nuclei by cooperating with spectraplakin and EB1. J Cell Biol. 209 (4): 529-38.
34. Eleftheriou, E.P. *et al.* (2015) Aberration of mitosis by hexavalent chromium in some *Fabaceae* members is mediated by species-specific microtubule disruption. Environ Sci Pollut Res Int. 22 (10): 7590-9.
35. Schweizer, N. *et al.* (2015) An organelle-exclusion envelope assists mitosis and underlies distinct molecular crowding in the spindle region. J Cell Biol. 210 (5): 695-704.
36. Bacon, T. *et al.* (2015) Histone deacetylase 3 indirectly modulates tubulin acetylation. Biochem J. 472 (3): 367-77.
37. Eleftheriou, E.P. *et al.* (2016) Hexavalent chromium-induced differential disruption of cortical microtubules in some *Fabaceae* species is correlated with acetylation of α-tubulin. Protoplasma. 253 (2): 531-42.
38. Okamoto, M. *et al.* (2016) Fyn Accelerates M Phase Progression by Promoting the Assembly of Mitotic Spindle Microtubules. J Cell Biochem. 117 (4): 894-903.
39. Sullivan, A.E. *et al.* (2016) MAGED1 is a novel regulator of a select subset of bHLH PAS transcription factors. FEBS J. 283 (18): 3488-502.
40. Livanos P *et al.* (2016) Deliberate ROS production and auxin synergistically trigger the asymmetrical division generating the subsidiary cells in *Zea mays* stomatal complexes. Protoplasma. 253 (4): 1081-99.
41. Kowanda, M. *et al.* (2016) Loss of function of the *Drosophila* Ninein-related centrosomal protein Bsg25D causes mitotic defects and impairs embryonic development. Biol Open. 5 (8): 1040-51.
42. Diao, L.T. *et al.* (2017) Delineation of the role of chromatin assembly and the Rtt101Mms1 E3 ubiquitin ligase in DNA damage checkpoint recovery in budding yeast. PLoS One. 12 (7): e0180556.
43. Xie, J.L. *et al.* (2017) Staurosporine Induces Filamentation in the Human Fungal Pathogen *Candida albicans* via Signaling through Cyr1 and Protein Kinase A. mSphere. 2 (2): Mar 1;2(2). pii: e00056-17. eCollection 2017 Mar-Apr.
44. Panteris, E. *et al.* (2018) Cortical microtubule orientation in *Arabidopsis thaliana* root meristematic zone depends on cell division and requires severing by katanin. J Biol Res (Thessalon). 25: 12.
45. Játiva, S. *et al.* (2019) Cdc14 activation requires coordinated Cdk1-dependent phosphorylation of Net1 and PP2A-Cdc55 at anaphase onset. Cell Mol Life Sci. 76 (18): 3601-20.
46. Giannoutsou, E. *et al.* (2019) De-Esterified Homogalacturonan Enrichment of the Cell Wall Region Adjoining the Preprophase Cortical Cytoplasmic Zone in Some Protodermal Cell Types of Three Land Plants. Int J Mol Sci. 21(1):81.
47. Stojic, L. *et al.* (2020) A high-content RNAi screen reveals multiple roles for long noncoding RNAs in cell division. Nat Commun. 11 (1): 1851.
48. Coronas-Serna, J.M. *et al.* (2020) The TIR-domain containing effectors BtpA and BtpB from Brucella abortus impact NAD metabolism. PLoS Pathog. 16 (4): e1007979.
49. Ellnati, E. *et al.* (2020) The BCL-2 pathway preserves mammalian genome integrity by

eliminating recombination-defective oocytes. Nat Commun. 11 (1): 2598.
50. Jühlen, R. *et al.* (2020) Centrosome and ciliary abnormalities in fetal akinesia deformation sequence human fibroblasts. Sci Rep. 10 (1): 19301.
51. Avilés-Pagán, E.E. *et al.* (2020) Identification of New Regulators of the Oocyte-to-Embryo Transition in *Drosophila*. G3 (Bethesda). 10 (9): 2989-2998.
52. Yam, C.Q.X. *et al.* (2020) Dun1, a Chk2-related kinase, is the central regulator of securin-separase dynamics during DNA damage signaling. Nucleic Acids Res. 48 (11): 6092-107.
53. Morii, M. *et al.* (2021) Src-mediated tyrosine phosphorylation of PRC1 and kinastrin/SKAP on the mitotic spindle. Sci Rep. 11 (1): 2616.
54. Cavazza, T. *et al.* (2021) Parental genome unification is highly error-prone in mammalian embryos. Cell. 184 (11): 2860-2877.e22.
55. Giourieva, V. & Panteris, E. (2021) Inhibition of cell expansion enhances cortical microtubule stability in the root apex of *Arabidopsis thaliana*.. J Biol Res (Thessalon). 28 (1): 13.
56. Malea, P. *et al.* (2021) Structural and physiological effects of chromium uptake in the seagrass *Halophila stipulacea*.. Ecological Indicators. 122: 107224.
57. Scheffler, K. *et al.* (2021) Two mechanisms drive pronuclear migration in mouse zygotes. Nat Commun. 12 (1): 841.
58. Benoit, L.B. *et al.* (2023) RBP Image Database: A resource for the systematic characterization of the subcellular distribution properties of human RNA binding proteins. Nucleic Acids Res. 51 (D1): D1549-D1557.
59. Mourer, T. *et al.* (2023) The Pga59 cell wall protein is an amyloid forming protein involved in adhesion and biofilm establishment in the pathogenic yeast *Candida albicans*. NPJ Biofilms Microbiomes. 9 (1): 6.
60. Wu, S. *et al.* (2023) Apical-basal polarity precisely determines intestinal stem cell number by regulating Prospero threshold. Cell Rep. 42 (2): 112093.
61. Choudhary, R. *et al.* (2023) Sen1 and Rrm3 ensure permissive topological conditions for replication termination. Cell Rep. 42 (7): 112747.
62. Rojas, J. *et al.* (2023) Spo13/MEIKIN ensures a Two-Division meiosis by preventing the activation of APC/C(Ama1) at meiosis I. EMBO J. 42 (20): e114288.
63. Ota, S. *et al.* (2023) Distinct effects of heat shock temperatures on mitotic progression by influencing the spindle assembly checkpoint Exp Cell Res. 429 (2): 113672.
64. Gililand, W.D. *et al.* (2024) A Cytological F1 RNAi Screen for Defects in Drosophila melanogaster Female Meiosis bioRχiv. 15 Jan [Epub ahead of print].
65. Grigaitis, R. *et al.* (2020) Phosphorylation of the RecQ Helicase Sgs1/BLM Controls Its DNA Unwinding Activity during Meiosis and Mitosis. Dev Cell. 53 (6): 706-723.e5.
66. Pappas, D. *et al.* (2020) The effects of microcystin-LR in *Oryza sativa* root cells: F-actin as a new target of cyanobacterial toxicity. Plant Biol (Stuttg). 22 (5): 839-49.
67. Koutalianou, M. *et al.* (2022) *In situ* experiments on the effect of low pH on the ultrastructure of the seagrasses *Cymodocea nodosa* and *Posidonia oceanica*. Mediterranean Marine Science. 23 (1), 30-45.
68. Tsioli, S. *et al.* (2022) Responses of the Mediterranean seagrass *Cymodocea nodosa* to combined temperature and salinity stress at the ionomic, transcriptomic, ultrastructural and photosynthetic levels. Mar Environ Res. 175: 105512.
69. Mylona, Z. *et al.* (2020) Silver nanoparticle toxicity effect on the seagrass *Halophila stipulacea*. Ecotoxicol Environ Saf. 189: 109925.

70. Mylona, Z. *et al.* (2020) Effects of titanium dioxide nanoparticles on leaf cell structure and viability, and leaf elongation in the seagrass *Halophila stipulacea*. Sci Total Environ. 719: 137378.

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| **Storage** | This product is shipped at ambient temperature. It is recommended to aliquot and store at -20°C on receipt. When thawed, aliquot the sample as needed. Keep aliquots at 2-8°C for short term use (up to 4 weeks) and store the remaining aliquots at -20°C.<br><br>Avoid repeated freezing and thawing as this may denature the antibody. Storage in frost-free freezers is not recommended. |
| **Guarantee** | 12 months from date of despatch |
| **Health And Safety Information** | Material Safety Datasheet documentation #10040 available at: https://www.bio-rad-antibodies.com/SDS/MCA78G<br>10040 |
| **Regulatory** | For research purposes only |

## Related Products

### Recommended Secondary Antibodies

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| Rabbit Anti Rat IgG (STAR16...) | DyLight®800 |
| Rabbit Anti Rat IgG (STAR17...) | FITC |
| Goat Anti Rat IgG (STAR72...) | HRP |
| Goat Anti Rat IgG (STAR69...) | FITC |
| Goat Anti Rat IgG (STAR73...) | RPE |
| Rabbit Anti Rat IgG (STAR21...) | HRP |
| Goat Anti Rat IgG (MOUSE ADSORBED) (STAR71...) | DyLight®550, DyLight®650, DyLight®800 |
| Goat Anti Rat IgG (STAR131...) | Alk. Phos., Biotin |

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