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Product Information

Anti-ATM antibody, Mouse monoclonal
clone MAT3-4G10/8,
purified from hybridoma cell culture

Catalog Number **A1106**

Product Description

Monoclonal Anti-ATM (mouse IgG1 isotype) is derived from the hybridoma MAT3-4G10/8 produced by the fusion of mouse myeloma cells (NSO) and splenocytes from BALB/c mice immunized with a peptide spanning positions 1967-1988 of mouse ATM (Gene ID: 11920) containing a cysteine at its N terminus coupled to KLH.[1] The isotype is determined using a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents, Catalog Number ISO2.

Monoclonal Anti-ATM recognizes human[2] and mouse[1,3] ATM. The antibody may be used in ELISA,[1] immunoblotting (~300 kDa),[1-3] and immunoprecipitation.[3]

Ataxia-telangiectasia (A-T) is a rare human autosomal recessive disease with a pleiotropic phenotype characerized by neurodegeneration, oculocutaneous telangiectasias, immune dysfunction, radiation sensitivity, genomic instability, cancer predisposition, and premature aging.[4] This phenotype is caused by deficiency or inactivity of the protein kinase ATM. The protein activates cellular responses to double strand DNA breaks. A cascade of phosphorylations of different protein substrates, including autophosphorylation, is responsible for these activities, which are important for genomic integrity and for avoiding neoplasia.[6]

For example, the p53 protein is important in cellular stress responses since it regulates two major pathways: temporary cell cycle arrest through the damage-induced cell-cycle checkpoints and apoptosis. ATM is responsible for the activation and stabilization of p53 in response to double-strand break (DSB). This is achieved by controlling the induction of post-translational modifications along the p53 molecule, thus affecting its transactivation activity or the inhibition of its proteasome-mediated degradation. ATM phosphorylates p53 directly on Ser^{15} and concomitantly activates other kinases that phosphorylate the same molecule on additional sites.[7, 8] Furthermore, Hdm2 is phosphorylated by ATM on Ser^{395} and this phosphorylation inhibits Hdm2-mediated degradation of p53.

p53 activity to DNA damage also depends on Mdm2-dependent proteolysis of Mdmx (Hdmx), a homologue of Mdm2 (Hdm2), that represses p53's transactivation function. Damage-induced degradation of human Hdmx depends on functional ATM and on phosphorylation at Ser^{403} and other sites on Hdmx in response to DSBs. This phosphorylation is important for Hdm2-mediated ubiquitination of Hdmx after DSB.[8]

Reagent

Supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide as a preservative.

Antibody concentration: ~2 mg/mL

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

For continuous use, store at 2–8 °C for up to one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing, or storage in "frost-free" freezers, is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

Product Profile

Immunoblotting: a working antibody concentration of 0.1-0.2 μg/mL is recommended using HEK-293T total cell extract.

Note: In order to obtain the best results in various techniques and preparations, it is recommended to determine the optimal working dilution by titration.

References

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DS,EK,KAA,PHC,MAM 11/18-1