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## Product Information

### Monoclonal Anti-ATM

#### Clone MAT3-4G10/8

produced in mouse, purified immunoglobulin

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.<sup>1</sup> The isotype is determined using a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents, Catalog Number ISO2.

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

Ataxia-telangiectasia (A-T) is a rare human autosomal recessive disease with a pleiotropic phenotype characterized by neurodegeneration, oculocutaneous telangiectasias, immune dysfunction, radiation sensitivity, genomic instability, cancer predisposition, and premature aging.<sup>4</sup> 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 auto phosphorylation, is responsible for these activities, which are important for genomic integrity and for avoiding neoplasia.<sup>6</sup> 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<sup>15</sup> and concomitantly activates other kinases that phosphorylate the same molecule on additional sites.<sup>7,8</sup> Furthermore, Hdm2 is phosphorylated by ATM on Ser<sup>395</sup> 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<sup>403</sup> and other sites on Hdmx in response to DSBs. This phosphorylation is important for Hdm2-mediated ubiquitination of Hdmx after DSB.<sup>8</sup>

### 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 Material 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 using various techniques and preparations, we recommend determining optimal working dilutions by titration.

### References

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