GENETIC ELEMENT (GENE)

BCH-GENE-SCBD-115117-2

LAST UPDATED: 19 AUG 2019

General information

Name of genetic element

ATM protein kinase | EN

Abbreviation

ATM | EN

Category

Protein coding sequence

Is this genetic element a synthetic molecule?

No

Donor organism

Donor organism(s)

BCH-ORGA-SCBD-246-6 ORGANISM | ZEA MAYS (MAIZE, CORN, MAIZE) |
Crops

Characteristics of the protein coding sequence

Name of the protein expressed by the coding sequence

ATAXIA-TELANGIECTASIA MUTATED | EN

Biological function of the protein

ATAXIA-TELANGIECTASIA MUTATED (ATM) is a serine/threonine protein kinase that catalyzes the addition of a phosphate group to serine or threonine residues and is activated upon perception of genotoxic stresses (e.g. ionizing radiation). ATM primarily responds to double stranded DNA breaks. The kinase phosphorylates histone variant H2AX to form H2AXS139ph at double strand breaks. The protein becomes activated in response to stress-induced damage in somatic cells and DNA damage during meiosis. ATM has also been implicated in cellular responses to telomere dysfunction. ATM works synergistically with RUG3 during the DNA damage response. | EN

Related trait(s) or use(s) in biotechnology

Other

Sensitivity to DNA damaging agents
Impaired DNA repair mechanisms

Additional Information

ATM is a homologue of the human ATM protein that has been implicated in Ataxia–telangiectasia, a chromosome instability disorder.	EN

Other relevant website addresses and/or attached documents

? (Arabidopsis) DNA damage checkpoint kinase ATM regulates.pdf *(English)*

? (Arabidopsis homologue) TAIR: Locus: AT3G48190 *(English)*

? (Arabidopsis homologue) UniProtKB: ATM *(English)*

? (Arabidopsis homologue) Arabidopsis ATM and ATR Kinases Prevent Propagation.pdf *(English)*

? The Plant DNA Damage Response - Signaling Pathways Leading to Growth Inhibition and Putative Role in Response to Stress Conditions.pdf *(English)*

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Further Information

Questions about the Cartagena Protocol on Biosafety or the operation of the Biosafety Clearing-House may be directed to the Secretariat of the Convention on Biological Diversity.

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