SANTA CRUZ BIOTECHNOLOGY, INC.

Atm siRNA (m): sc-29762

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The Power to Question

BACKGROUND

The phosphatidylinositol kinase (PIK) family members fall into two distinct subgroups. The first subgroup contains proteins such as the PI 3- and PI 4-kinases and the second group comprises the PIK-related kinases. The PIK-related kinases include Atm, DNA-PK_{CS} and FRAP. These proteins have in common a region of homology at their carboxy-termini that is not present in the PI 3- and PI 4-kinases. The Atm gene is mutated in the autosomal recessive disorder ataxia telangiectasia (AT) that is characterized by cerebellar degeneration (ataxia) and the appearance of dilated blood vessels (telangiectases) in the conjunctivae of the eyes. AT cells are hypersensitive to ionizing radiation, impaired in mediating the inhibition of DNA synthesis and display delays in p53 induction.

CHROMOSOMAL LOCATION

Genetic locus: Atm (mouse) mapping to 9 A5.3.

PRODUCT

Atm siRNA (m) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Atm shRNA Plasmid (m): sc-29762-SH and Atm shRNA (m) Lentiviral Particles: sc-29762-V as alternate gene silencing products.

For independent verification of Atm (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-29762A, sc-29762B and sc-29762C.

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

Atm siRNA (m) is recommended for the inhibition of Atm expression in mouse cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 µM in 66 µl. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

GENE EXPRESSION MONITORING

p-Atm (10H11.E12): sc-47739 is recommended as a control antibody for monitoring of Atm gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto B Blocking Reagent: sc-2335 (use 50 mM NaF, sc-24988, as diluent), Lambda Phosphatase: sc-200312A and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Atm gene expression knockdown using RT-PCR Primer: Atm (m)-PR: sc-29762-PR (20 µl, 480 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Assaily, W., et al. 2011. ROS-mediated p53 induction of Lpin1 regulates fatty acid oxidation in response to nutritional stress. Mol. Cell 44: 491-501.
2. Dobbin, M.M., et al. 2013. SIRT1 collaborates with Atm and HDAC1 to maintain genomic stability in neurons. Nat. Neurosci. 16: 1008-1015.
3. Titus, S., et al. 2013. Impairment of BRCA1-related DNA double-strand break repair leads to ovarian aging in mice and humans. Sci. Transl. Med. 5: 172ra21.
4. Kim, M.H., et al. 2014. Glutamine deprivation induces interleukin-8 expression in ataxia telangiectasia fibroblasts. Inflamm. Res. 63: 347-356.
5. Sharma, M.D., et al. 2018. Activation of p53 in immature myeloid precursor cells controls differentiation into Ly6c^{+}CD103^{+} monocytic antigen-presenting cells in tumors. Immunity 48: 91-106.
6. Cap, K.C., et al. 2020. Distinct dual roles of p-Tyr42 RhoA GTPase in Tau phosphorylation and ATP citrate lyase activation upon different Aβ concentrations. Redox Biol. 32: 101446.
7. Sakai, T., et al. 2021. Effects of the cytoplasm and mitochondrial specific hydroxyl radical scavengers TA293 and mitoTA293 in bleomycin-induced pulmonary fibrosis model mice. Antioxidants 10: 1398.
8. Suzuki, R., et al. 2024. The role of declining ataxia-telangiectasia-mutated (ATM) function in oocyte aging. Cell Death Discov. 10: 302.

RESEARCH USE

For research use only, not for use in diagnostic procedures.