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SANTA CRUZ BIOTECHNOLOGY, INC.

AID siRNA (h): sc-42729

BACKGROUND

Activation-induced cytidine deaminase (AID, HIGM-2) is a 198-amino acid, RNA-editing enzyme that contains a conserved cytidine deaminase motif and plays an important role in B-cell terminal differentiation. AID is expressed in germinal center B cells and contributes to the production of neutralizing antibodies IgG, IgA, and IgE. Hyper-IgM syndrome (HIGM2) patients that have deficient levels of AID show the absence of immunoglobulin class switch recombination (CSR), lack of immunoglobulin somatic hypermutations, and lymph node hyperplasia mediated by the presence of giant germinal centers. Furthermore, AID$^{-/-}$ mice are defective in CSR and also show a hyper-IgM phenotype, characterized by enlarged germinal centers containing active B cells. AID thus appears to be required in several stages of B-cell terminal differentiation that are necessary for efficient antibody responses such as B cell proliferation, immunoglobulin somatic hypermutations and CSR.

REFERENCES

1. Muramatsu, M., et al. 1999. Specific expression of activation-induced cytidine deaminase (AID), a novel member of the RNA-editing deaminase family in germinal center B cells. J. Biol. Chem. 274: 18470-18476.
2. Muramatsu, M., et al. 2000. Class switch recombination and hypermutation require activation-induced cytidine deaminase (AID), a potential RNA editing enzyme. Cell 102: 553-563.
3. Revy, P., et al. 2000. Activation-induced cytidine deaminase (AID) deficiency causes the autosomal recessive form of the hyper-IgM syndrome (HIGM2). Cell 102: 565-575.
4. Minegishi, Y., et al. 2000. Mutations in activation-induced cytidine deaminase in patients with hyper-IgM syndrome. Clin. Immunol. 97: 203-210.
5. Muto, T., et al. 2000. Isolation, tissue distribution, and chromosomal localization of the human activation-induced cytidine deaminase (AID) gene. Genomics 68: 85-88.

CHROMOSOMAL LOCATION

Genetic locus: AICDA (human) mapping to 12p13.31.

PRODUCT

AID siRNA (h) is a target-specific 19-25 nt siRNA 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 AID shRNA Plasmid (h): sc-42729-SH and AID shRNA (h) Lentiviral Particles: sc-42729-V as alternate gene silencing products.

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

AID siRNA (h) is recommended for the inhibition of AID expression in human 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

AID (ZA001): sc-517548 is recommended as a control antibody for monitoring of AID 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, UltraCruz® Blocking Reagent: sc-516214 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 AID gene expression knockdown using RT-PCR Primer: AID (h)-PR: sc-42729-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Borte, S., et al. 2009. Interleukin-21 restores immunoglobulin production *ex vivo* in patients with common variable immunodeficiency and selective IgA deficiency. Blood 114: 4089-4098.

RESEARCH USE

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

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.