SANTA CRUZ BIOTECHNOLOGY, INC.

APOBEC3C siRNA (h): sc-60071

BACKGROUND

APOBEC (apolipoprotein B mRNA editing enzyme, catalytic) proteins inhibit retroviruses by deaminating cytosine residues of viral RNA and DNA. The seven APOBEC3 genes or pseudogenes are found in a cluster thought to result from gene duplication on chromosome 22. Like APOBEC3G, APOBEC3F deaminates deoxycytosine to deoxyuracil in the minus strand of HIV-1 DNA, resulting in G to A hypermutation in the plus strand of DNA. Thus, APOBEC3G and APOBEC3F provide a mechanism for innate immunity to retroviruses, and are also likely contribute to sequence variation observed in many viruses. Viral infectivity factor (Vif) imparts APOBEC3G and APOBEC3F resistance to HIV through impaired translation of their mRNA and accelerated posttranslational degradation of the APOBEC3 proteins by the 26S proteasome. Interestingly, HIV-1 Vif cannot form a complex with APOBEC3G or APOBEC3F of mouse origin as it does with the human protein, and thus mouse APOBEC3G and APOBEC3F function as a potent inhibitors of wildtype HIV-1 replication, where human APOBEC3G and APOBEC3F are only able to inhibit Vif-deficient HIV-1 replication. This implies that induction of APOBEC3G and APOBEC3F activity or a method of blocking their interaction with Vif may provide a method for therapeutic intervention.

REFERENCES

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2. Dutko, J.A., et al. 2005. Inhibition of a yeast LTR retrotransposon by human APOBEC3 cytidine deaminases. Curr. Biol. 15: 661-666.
3. Mahieux, R., et al. 2005. Extensive editing of a small fraction of human T cell leukemia virus type 1 genomes by four APOBEC3 cytidine deaminases. J. Gen. Virol. 86: 2489-2494.
4. Langlois, M.A., et al. 2005. Mutational comparison of the single-domained APOBEC3C and double-domained APOBEC3F/G anti-retroviral cytidine deaminases provides insight into their DNA target site specificities. Nucleic Acids Res. 33: 1913-1923.
5. Suspène, R., et al. 2005. Extensive editing of both hepatitis B virus DNA strands by APOBEC3 cytidine deaminases *in vitro* and *in vivo*. Proc. Natl. Acad. Sci. USA 102: 8321-8326.
6. Muckenfuss, H., et al. 2006. APOBEC3 proteins inhibit human LINE-1 retrotransposition. J. Biol. Chem. 281: 22161-22172.
7. Bonvin, M., et al. 2006. Interferon-inducible expression of APOBEC3 editing enzymes in human hepatocytes and inhibition of hepatitis B virus replication. Hepatology 43: 1364-1374.

CHROMOSOMAL LOCATION

Genetic locus: APOBEC3C (human) mapping to 22q13.1.

PROTOCOLS

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

PRODUCT

APOBEC3C siRNA (h) 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 APOBEC3C shRNA Plasmid (h): sc-60071-SH and APOBEC3C shRNA (h) Lentiviral Particles: sc-60071-V as alternate gene silencing products.

For independent verification of APOBEC3C (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-60071A, sc-60071B and sc-60071C.

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

APOBEC3C shRNA Plasmid (h) is recommended for the inhibition of APOBEC3C 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor APOBEC3C gene expression knockdown using RT-PCR Primer: APOBEC3C (h)-PR: sc-60071-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

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