SANTA CRUZ BIOTECHNOLOGY, INC.

Id1 siRNA (h): sc-29356

BACKGROUND

Members of the Id family of basic helix-loop-helix (bHLH) proteins include Id1, Id2, Id3 and Id4. They are ubiquitously expressed and dimerize with members of the class A and B HLH proteins. Due to the absence of the basic region, the resulting heterodimers cannot bind DNA. The Id-type proteins thus appear to negatively regulate DNA binding of bHLH proteins. Since Id1 inhibits DNA binding of E12 and Myo D, it apparently functions to inhibit muscle-specific gene expression. Under conditions that facilitate muscle cell differentiation, the Id protein levels fall, allowing E12 and/or E47 to form heterodimers with Myo D and myogenin, which in turn activate myogenic differentiation. It has been shown that expression of each of the Id proteins is strongly dependent on growth factor activation and that reduction of Id mRNA levels by antisense oligonucleotides leads to a delayed reentry of arrested cells into the cell cycle following growth factor stimulation.

REFERENCES

1. Benezra, R., et al. 1990. The protein Id: a negative regulator of helix-loop-helix DNA binding proteins. Cell 61: 49-59.
2. Christy, B.A., et al. 1991. An Id-related helix-loop-helix protein encoded by a growth factor-inducible gene. Proc. Natl. Acad. Sci. USA 88: 1815-1819.
3. Sun, X., et al. 1991. Id proteins Id1 and Id2 selectively inhibit DNA binding by one class of helix-loop-helix proteins. Mol. Cell. Biol. 11: 5603-5611.

CHROMOSOMAL LOCATION

Genetic locus: ID1 (human) mapping to 20q11.21.

PRODUCT

Id1 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 Id1 shRNA Plasmid (h): sc-29356-SH and Id1 shRNA (h) Lentiviral Particles: sc-29356-V as alternate gene silencing products.

For independent verification of Id1 (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-29356A, sc-29356B and sc-29356C.

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

Id1 siRNA (h) is recommended for the inhibition of Id1 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

Id1 (B-8): sc-133104 is recommended as a control antibody for monitoring of Id1 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).

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Id1 gene expression knockdown using RT-PCR Primer: Id1 (h)-PR: sc-29356-PR (20 µl, 495 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Zielinski, A.J., et al. 2010. The helix-loop-helix Id1 inhibits PSA expression in prostate cancer cells. Int. J. Cancer 126: 2490-2496.
2. Knelson, E.H., et al. 2013. Type III TGF-β receptor promotes FGF2-mediated neuronal differentiation in neuroblastoma. J. Clin. Invest. 123: 4786-4798.
3. Strong, N., et al. 2013. Inhibitor of differentiation 1 (Id1) and Id3 proteins play different roles in TGFβ effects on cell proliferation and migration in prostate cancer cells. Prostate 73: 624-633.
4. Nair, S., et al. 2014. Nicotine-mediated invasion and migration of non-small cell lung carcinoma cells by modulating STMN3 and GSPT1 genes in an Id1-dependent manner. Mol. Cancer 13: 173.
5. Gaviglio, A.L., et al. 2017. Heparin-binding epidermal growth factor-like growth factor promotes neuroblastoma differentiation. FASEB J. 31: 1903-1915.
6. Niu, L.L., et al. 2018. Id1-induced p16/IL6 axis activation contributes to the resistant of hepatocellular carcinoma cells to sorafenib. Cell Death Dis. 9: 852.
7. Kuang, X., et al. 2021. Inhibition of USP1 induces apoptosis via ID1/AKT pathway in B-cell acute lymphoblastic leukemia cells. Int. J. Med. Sci. 18: 245-255.
8. Nguyen, A., et al. 2023. Orai3 calcium channel contributes to oral/oropharyngeal cancer stemness through the elevation of ID1 expression. Cells 12: 2225.

RESEARCH USE

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