SANTA CRUZ BIOTECHNOLOGY, INC.

BRCA1 siRNA (h2): sc-44247

BACKGROUND

In 1990, a breast cancer susceptibility gene, designated BRCA1, was localized to chromosome 17q. Mutations within this gene are believed to account for approximately 45% of families with high incidence of breast cancer and at least 80% of families with increased incidence of both early-onset breast cancer and ovarian cancer. A second breast cancer susceptibility gene, BRCA2, located on chromosome 13q13.1, also confers a high incidence of breast cancer but, unlike BRCA1, does not confer a substantially elevated risk of ovarian cancer. The BRCA1 gene is expressed in numerous tissues, including breast and ovary, and encodes a predicted protein of 1,863 amino acids. This protein contains a zinc-finger domain in its amino-terminal region, but is otherwise unrelated to any previously described proteins. Like many other genes involved in familial cancer, BRCA1 appears to encode a tumor suppressor, a protein that acts as a negative regulator of tumor growth.

REFERENCES

1. Hall, J.M., et al. 1990. Linkage of early-onset familial breast cancer to chromosome 17q21. Science 250: 1684-1689.
2. Narod, S.A., et al. 1991. Familial breast-ovarian cancer locus on chromosome 17q12-q23. Lancet 338: 82-83.
3. Nowak, R. 1994. Breast cancer gene offers surprises. Science 265: 1796-1799.
4. Wooster, R., et al. 1994. Localization of a breast cancer susceptibility gene, BRCA2, to chromosome 13q12-13. Science 265: 2088-2090.
5. Miki, Y., et al. 1994. A strong candidate for the breast and ovarian cancer susceptibility gene BRCA1. Science 266: 66-71.
6. Futreal, P.A., et al. 1994. BRCA1 mutations in primary breast and ovarian carcinomas. Science 266: 120-122.
7. Maul, G.G., et al. 1998. Nuclear redistribution of BRCA1 during viral infection. Cell Growth Differ. 9: 743-755.
8. Houvras, Y., et al. 2000. BRCA1 physically and functionally interacts with ATF1. J. Biol. Chem. 275: 36230-36237.
9. Cabart, P., et al. 2004. BRCA1 cooperates with NUFIP and P-TEFb to activate transcription by RNA polymerase II. Oncogene 23: 5316-5329.

CHROMOSOMAL LOCATION

Genetic locus: BRCA1 (human) mapping to 17q21.31.

PRODUCT

BRCA1 siRNA (h2) 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 BRCA1 shRNA Plasmid (h2): sc-44247-SH and BRCA1 shRNA (h2) Lentiviral Particles: sc-44247-V as alternate gene silencing products.

For independent verification of BRCA1 (h2) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-44247A, sc-44247B and sc-44247C.

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

BRCA1 siRNA (h2) is recommended for the inhibition of BRCA1 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

BRCA1 (D-9): sc-6954 is recommended as a control antibody for monitoring of BRCA1 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 BRCA1 gene expression knockdown using RT-PCR Primer: BRCA1 (h2)-PR: sc-44247-PR (20 µl, 479 bp). 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.

PROTOCOLS

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