SANTA CRUZ BIOTECHNOLOGY, INC.

PIWIL4 siRNA (h): sc-62458

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The Power to Question

BACKGROUND

PIWIL4 (PIWI-like protein 4), also known as HIWI2 is a 852 amino acid protein that belongs to the argonaute family. PIWIL4 contains one PAZ domain and one PIWI domain and is essential for the maintenance of germline stem cells. PIWIL4 is a cytoplasmic protein that is expressed in adult testis. It regulates spermatogenesis and primordial germ cell production and has an essential role in meiotic differentiation of spermatocytes and in self-renewal of spermatogonial stem cells. PIWIL4-null mice are of normal size and weight and have the expected life span. Homozygous PIWIL4-null females are fertile and have no obvious defects. However, PIWIL4-deficient males are infertile and show a meiotic progression defect in early prophase of meiosis I and progressive loss of germ cells with age. Mutant males show elevated expression of LINE-1 and intracisternal A particle (IAP) element transcripts in germ cell lineages. The gene encoding PIWIL4 maps to human chromosome 11q21.

REFERENCES

1. Sasaki, T., et al. 2003. Identification of eight members of the Argonaute family in the human genome small star, filled. Genomics 82: 323-330.
2. Kuramochi-Miyagawa, S., et al. 2004. Mili, a mammalian member of PIWI family gene, is essential for spermatogenesis. Development 131: 839-849.
3. Lee, J.H., et al. 2005. Stem cell protein PIWIL2 modulates expression of murine spermatogonial stem cell expressed genes. Mol. Reprod. Dev. 73: 173-179.
4. Lee, J.H., et al. 2006. Stem-cell protein Piwil2 is widely expressed in tumors and inhibits apoptosis through activation of Stat3/Bcl-x_L pathway. Hum. Mol. Genet. 15: 201-211.
5. Nayernia, K., et al. 2006. Derivation of male germ cells from bone marrow stem cells. Lab. Invest. 86: 654-663.
6. Aravin, A., et al. 2006. A novel class of small RNAs bind to MILI protein in mouse testes. Nature 442: 203-207.

CHROMOSOMAL LOCATION

Genetic locus: PIWIL4 (human) mapping to 11q21.

PRODUCT

PIWIL4 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 PIWIL4 shRNA Plasmid (h): sc-62458-SH and PIWIL4 shRNA (h) Lentiviral Particles: sc-62458-V as alternate gene silencing products.

For independent verification of PIWIL4 (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-62458A, sc-62458B and sc-62458C.

PROTOCOLS

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

PIWIL4 siRNA (h) is recommended for the inhibition of PIWIL4 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

PIWIL4 (10G9B11): sc-517215 is recommended as a control antibody for monitoring of PIWIL4 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 PIWIL4 gene expression knockdown using RT-PCR Primer: PIWIL4 (h)-PR: sc-62458-PR (20 µl, 584 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Balaratnam, S., et al. 2018. A piRNA utilizes HILI and HIWI2 mediated pathway to down-regulate ferritin heavy chain 1 mRNA in human somatic cells. Nucleic Acids Res. 46: 10635-10648.
2. Cross-Barnet, C., et al. 2019. Facilitators and barriers to optimal preventive service use among providers and older patients. Geriatr. Nurs. 40: 72-77.

RESEARCH USE

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