SANTA CRUZ BIOTECHNOLOGY, INC.

PIWIL1 siRNA (h): sc-40677

BACKGROUND

The PIWI family is an evolutionarily conserved gene family that plays an essential role in stem cell self-renewal, gametogenesis, and RNA interference in diverse organisms. PIWIL1 (PIWI-like 1), also known as HIWI belongs within the PIWI subfamily of argonaute proteins. PIWIL1 maps to the long arm of chromosome 12, band 12q24.33, a genomic region that displays genetic linkage to the development of testicular germ cell tumors of adolescents and adults. PIWIL1 encodes a 3.6 kb mRNA that is expressed abundantly in the adult testis and encodes a highly basic 861-amino-acid protein that shares significant homology throughout its entire length with other members of the PIWI family proteins in *Drosophila, C. elegans,* and mammals. In normal human testis, PIWIL1 is specifically expressed in germline cells, with its expression detectable in spermatocytes and round spermatids during spermatogenesis. PIWIL1 is also present in human $CD34^+$ hemato-poietic progenitor cells, but not in more differentiated cell populations. *Drosophila* PIWI gene is required for the asymmetric division of GSCs to produce and maintain a daughter GSC, but is not essential for the further differentiation of the committed daughter cell.

REFERENCES

1. Cox, D.N., et al. 1998. A novel class of evolutionarily conserved genes defined by PIWI are essential for stem cell self-renewal. Genes Dev. 12: 3715-3727.
2. Kuramochi-Miyagawa, S., et al. 2001. Two mouse PIWI-related genes: miwi and mili. Mech. Dev. 108: 121-133.
3. Sharma, A.K., et al. 2001. Human $CD34^+$ stem cells express the HIWI gene, a human homologue of the *Drosophila* gene PIWI. Blood 97: 426-434.
4. Qiao, D., et al. 2002. Molecular characterization of HIWI, a human member of the PIWI gene family whose overexpression is correlated to seminomas. Oncogene 21: 3988-3999.
5. LocusLink Report (LocusID: 9271). http://www.ncbi.nlm.nih.gov/LocusLink/

CHROMOSOMAL LOCATION

Genetic locus: PIWIL1 (human) mapping to 12q24.33.

PRODUCT

PIWIL1 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 PIWIL1 shRNA Plasmid (h): sc-40677-SH and PIWIL1 shRNA (h) Lentiviral Particles: sc-40677-V as alternate gene silencing products.

For independent verification of PIWIL1 (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-40677A, sc-40677B and sc-40677C.

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

PIWIL1 siRNA (h) is recommended for the inhibition of PIWIL1 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 PIWIL1 gene expression knockdown using RT-PCR Primer: PIWIL1 (h)-PR: sc-40677-PR (20 µl, 372 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 secondary structure within a human piRNA modulates its functionality. Biochimie 157: 72-80.
2. 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.
3. Matei, N., et al. 2018. Intranasal wnt3a attenuates neuronal apoptosis through Frz1/PIWIL1a/FOXM1 pathway in MCAO rats. J. Neurosci. 38: 6787-6801.
4. 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.