SANTA CRUZ BIOTECHNOLOGY, INC.

PALB2 siRNA (h): sc-93396

BACKGROUND

Fanconi anemia (FA) is an autosomal recessive disorder characterized by bone marrow failure, birth defects and chromosomal instability. At the cellular level, FA is characterized by spontaneous chromosomal breakage and a unique hypersensitivity to DNA cross-linking agents. PALB2 (partner and localizer of BRCA2), also designated as FANCN (fanconi anemia, complementation group N) or FLJ21816, is a 1,186 amino acid nuclear protein that co-localizes with BRCA2 (breast cancer 2) to the nuclear foci. As the name implies, PALB2 is an essential partner of BRCA2 and promotes stable intranuclear localization and accumulation of BRCA2. Considered a potential tumor surppressor, PALB2 contains four WD repeats, which are involved in protein-protein interactions. Genetic variations in PALB2 may be associated with breast cancer susceptibility and the cause of genetic disorder FANCN. PALB2 is phosphorylated upon DNA damage by ATM or ATR.

REFERENCES

1. García, M.J., et al. 2009. Analysis of FANCB and FANCN/PALB2 Fanconi anemia genes in BRCA1/2-negative Spanish breast cancer families. Breast Cancer Res. Treat. 113: 545-551.
2. Pakkanen, S., et al. 2009. PALB2 variants in hereditary and unselected Finnish prostate cancer cases. J. Negat. Results Biomed. 8: 12.
3. Sy, S.M., et al. 2009. PALB2 regulates recombinational repair through chromatin association and oligomerization. J. Biol. Chem. 284: 18302-18310.
4. Zhang, F., et al. 2009. PALB2 functionally connects the breast cancer susceptibility proteins BRCA1 and BRCA2. Mol. Cancer Res. 7: 1110-1118.
5. Shen, X., et al. 2009. Recruitment of fanconi anemia and breast cancer proteins to DNA damage sites is differentially governed by replication. Mol. Cell 35: 716-723.
6. Thompson, L.H. and Hinz, J.M. 2009. Cellular and molecular consequences of defective Fanconi anemia proteins in replication-coupled DNA repair: mechanistic insights. Mutat. Res. 668: 54-72.
7. McInerney, N.M., et al. 2010. Evaluation of variants in the CHEK2, BRIP1 and PALB2 genes in an Irish breast cancer cohort. Breast Cancer Res. Treat. 121: 203-210.

CHROMOSOMAL LOCATION

Genetic locus: PALB2 (human) mapping to 16p12.2.

PRODUCT

PALB2 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 PALB2 shRNA Plasmid (h): sc-93396-SH and PALB2 shRNA (h) Lentiviral Particles: sc-93396-V as alternate gene silencing products.

For independent verification of PALB2 (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-93396A, sc-93396B and sc-93396C.

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

PALB2 siRNA (h) is recommended for the inhibition of PALB2 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 PALB2 gene expression knockdown using RT-PCR Primer: PALB2 (h)-PR: sc-93396-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Murphy, A.K., et al. 2014. Phosphorylated RPA recruits PALB2 to stalled DNA replication forks to facilitate fork recovery. J. Cell Biol. 206: 493-507.
2. Khanal, S. and Galloway, D.A. 2019. High-risk human papillomavirus oncogenes disrupt the Fanconi anemia DNA repair pathway by impairing localization and de-ubiquitination of FancD2. PLoS Pathog. 15: e1007442.
3. Ge, O., et al. 2021. PALB2 upregulation is associated with a poor prognosis in pancreatic ductal adenocarcinoma. Oncol. Lett. 21: 224.
4. Liu, Y., et al. 2024. NUSAP1 promotes pancreatic ductal adenocarcinoma progression by drives the epithelial-mesenchymal transition and reduces AMPK phosphorylation. BMC Cancer 24: 87.

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.