Resource Summary Report

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siDirect

RRID:SCR_004853
Type: Tool

Proper Citation

siDirect (RRID:SCR_004853)

Resource Information

URL: http://sidirect2.rnai.jp/

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Description: siDirect 2.0 provides functional and off-target minimized siRNA design for mammalian RNAi. The previous version of our software designed functional siRNAs by considering the relationship between siRNA sequence and RNAi activity, and provided them along with the enumeration of potential off-target gene candidates by using a fast and sensitive homology search algorithm. In the new version, the siRNA design algorithm is extensively updated to eliminate off-target effects by reflecting our recent finding that the capability of siRNA to induce off-target effect is highly correlated to the thermodynamic stability, or the melting temperature (Tm), of the seed-target duplex, which is formed between the nucleotides positioned at 2-8 from the 5'' end of the siRNA guide strand and its target mRNA. Selection of siRNAs with lower seed-target duplex stabilities (benchmark Tm 21.5 degrees C) followed by the elimination of unrelated transcripts with nearly perfect match should minimize the off-target effects. siDirect 2.0 provides functional, target-specific siRNA design with the updated algorithm which significantly reduces off-target silencing. When the candidate functional siRNAs could form seed-target duplexes with Tm values below 21.5 degrees C, and their 19-nt regions spanning positions 2-20 of both strands have at least two mismatches to any other non-targeted transcripts, siDirect 2.0 can design at least one qualified siRNA for > 94% of human mRNA sequences in RefSeq. Enter an accession number and retrieve sequence or Paste in a nucleotide sequence.

Resource Type: service resource, production service resource, analysis service resource, data analysis service

Defining Citation: PMID:19948054, PMID:15215364

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Resource Name: siDirect

Resource ID: SCR_004853

Alternate IDs: nlx_83672

Record Creation Time: 20220129T080226+0000

Record Last Update: 20260731T042707+0000

Ratings and Alerts

No rating or validation information has been found for siDirect.

No alerts have been found for siDirect.

Data and Source Information

Source: SciCrunch Registry

Usage and Citation Metrics

We found 243 mentions in open access literature.

Listed below are recent publications. The full list is available at kravitz2 .

Takizawa M, et al. (2025) Involvement of nuclear receptor corepressor 2 (NCOR2) in estrogen-induced repression of arcuate Kiss1 expression in female rats. The Journal of reproduction and development, 71(2), 71.

Bayasgalan T, et al. (2025) SPOCD1 Enhances Cancer Cell Activities and Serves as a Prognosticator in Esophageal Squamous Cell Carcinoma. Cancer genomics & proteomics, 22(2), 306.

Ashoub MH, et al. (2025) siRNA-mediated inhibition of hTERT enhances the effects of curcumin in promoting cell death in precursor-B acute lymphoblastic leukemia cells: an in silico and in vitro study. Scientific reports, 15(1), 3083.

Seo S, et al. (2025) DHRS13 suppresses differentiation and mitophagy in glioma via retinoic acid and mitochondrial reactive oxygen species. Nature communications, 16(1), 6996.

Wang X, et al. (2025) Identification and characterization of a dsRNA-degrading nuclease CmdsRNase2 influencing RNAi efficiency in the rice leaffolder Cnaphalocrocis medinalis. Scientific reports, 15(1), 18795.

Zhang J, et al. (2025) Experimental validation of RNA interference technologies for improved control of barber's pole worm. Veterinary research, 56(1), 194.

Agatsuma Y, et al. (2025) FAM32A Suppression Decreases 5-Fluorouracil-induced Apoptosis and Is Associated With Poor Prognosis in Gastric Cancer. Cancer genomics & proteomics, 22(1), 55.

Shimaoka K, et al. (2025) The microcephaly-associated transcriptional regulator AUTS2 cooperates with Polycomb complex PRC2 to produce upper-layer neurons in mice. The EMBO journal, 44(5), 1354.

Li Y, et al. (2025) Dissecting the Molecular Mechanism of 10-HDA Biosynthesis: Role of Acyl-CoA Delta(11) Desaturase and Transcriptional Regulators in Honeybee Mandibular Glands. Insects, 16(6).

Loo TM, et al. (2025) Senescence-associated lysosomal dysfunction impairs cystine deprivation-induced lipid peroxidation and ferroptosis. Nature communications, 16(1), 6617.

Xiang J, et al. (2025) Lactate orchestrates the TGF? pathway and ferroptosis nexus in organ fibrosis via USP2 lactylation. Communications biology, 8(1), 1855.

Wu H, et al. (2025) Host-induced gene silencing of Sporisorium scitamineum enhances resistance to smut in sugarcane. Plant biotechnology journal, 23(4), 1067.

Nguyen QTT, et al. (2025) Human endogenous retrovirus-K envelope protein is aberrantly expressed in serous ovarian cancer and promotes chemosensitivity via NF-?B/P-glycoprotein pathway inhibition. Journal of ovarian research, 18(1), 146.

Lu Q, et al. (2025) Unraveling the Role of METTL3 in Helicobacter pylori-induced gastritis via m6A-CXCL1/NF-?B modulation. Cell death & disease, 16(1), 625.

Sriram S, et al. (2025) Molecular dynamics simulations based siRNA design against GPR10 reveals stable RNAi therapeutics for hormone-dependent uterine fibroids. Scientific reports, 15(1), 31708.

Yang C, et al. (2025) Mechanisms of adipocyte regulation: Insights from HADHB gene modulation. PloS one, 20(3), e0319384.

Yi N, et al. (2025) Lenvatinib-activated NDUFA4L2/IL33/PADI4 pathway induces neutrophil extracellular traps that inhibit cuproptosis in hepatocellular carcinoma. Cellular oncology (Dordrecht, Netherlands), 48(2), 487.

Mekonnen N, et al. (2025) Design, Screening and Development of Asymmetric siRNAs Targeting the MYC Oncogene in Triple-Negative Breast Cancer. Biomolecules & therapeutics, 33(1), 155.

Xu J, et al. (2025) Development and evaluation of siRNA-mediated gene silencing strategies for ADO2 therapy utilizing iPSCs model and DMPC-SPIONs delivery system. Stem cell research & therapy, 16(1), 66.

Zheng H, et al. (2024) CCDC157 is essential for sperm differentiation and shows oligoasthenoteratozoospermia-related mutations in men. Journal of cellular and molecular medicine, 28(7), e18215.