

Osteosarcoma Database

Performing a gene search

This guide through the Osteosarcoma Database provides a step-by-step tutorial on how to run a gene search using the example of *CDKN1A*.

Multiple routes to *CDKN1A*

A The Osteosarcoma Database home screen introduces the osteosarcoma topic and the aims of our database. Therefrom, users can enter the search (1) for genes of interest.

B The gene search can be performed using the geneids from NCBI's Entrez gene Database, by official gene symbols from the Human Gene Nomenclature Committee, or by keywords. After submitting (2) the query, all genes within the database matching the specific query are proposed (not shown). Further, clicking on a specific number in the "#pmid" column directs the user to the main results page of the respective gene.

C Alternatively, users can browse the collection of genes by clicking on the (3) "Browse Genes" menu. A table is generated holding the collection of genes implicated in osteosarcoma biology. (4) Users are able to browse by pagination buttons below the table or (5) by searching for keywords within the "Symbol" or "Name" columns. (6) Again, clicking on a specific number in the "#pmid" column directs the user to the main results page of the respective gene.

D To get an overview about frequently mentioned genes in abstracts dealing with osteosarcoma biology, (7) users need to press the "Top Genes" menu on the left. A tagcloud appears showing all genes mentioned in more than five abstracts. Dragging and dropping over the cloud allows the user to explore the genes in more detail. Genes are weighted according to the number of abstracts. (8) *CDKN1A* is currently mentioned in 43 abstracts. Clicking a marked gene inside the tagcloud directs the user to its main results page.

CDKN1A in osteosarcoma

A

Osteosarcoma Database

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Results for CDKN1A

General Information

Gene ID	3228
Gene Symbol	CDKN1A
Gene Name	cyclin-dependent kinase inhibitor 1A (p21, Cip1)
Gene Type	protein-coding
Cytoband	12p21.2
Ensembl ID	ENSG00000124762
miRNA regulators	12 (6)
Orphan ID	15889

PubMed abstracts associated with CDKN1A

Show 25 entries

PMID	Title	Tumor	Value
7585520	Retroviral vector-mediated gene transfer of antisense cyclin D1 (CYC1D1) inhibits proliferation of human osteogenic sarcoma cells	no	no
1616538	Apoptotic response to oncogenic stimuli: cooperative and antagonistic interactions between c-myc and the growth suppressor p53	no	no
8154817	Glucocorticoid receptor-mediated cell cycle arrest is achieved through distinct cell-specific transcriptional regulatory mechanisms	no	no
10339697	Expression of G1 phase regulators in MG-63 osteosarcoma cell line	no	no
16658722	Resveratrol induces senescence-like growth inhibition of U-2 OS cells associated with the instability of telomeric DNA and upregulation of BIRC6	no	no

Showing 1 to 25 of 43 entries

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B

MicroRNA regulators of target gene CDKN1A

The graph below represents the microRNA regulators of CDKN1A determined by TargetScan 6. The gene is represented in red color and its respective microRNA regulators in green. You can drag and drop the network's nodes to take a closer look. Below the graph you can find a table of context scores illustrating the strength of each microRNA target gene regulation.

Detailed prediction results of TargetScan 6 for CDKN1A

Show 25 entries

Accession	Name	Site type	Context score
MMAT000000020	hsa-miR-17	7mer-mi	-0.107
MMAT000000025	hsa-miR-20a	7mer-mi	-0.107
MMAT000000030	hsa-miR-93	7mer-mi	-0.107
MMAT000000035	hsa-miR-106a	7mer-mi	-0.107
MMAT000000040	hsa-miR-120a	7mer-mi	-0.141
MMAT000000045	hsa-miR-132	7mer-mi	-0.132
MMAT000000050	hsa-miR-106b	7mer-mi	-0.107
MMAT000000055	hsa-miR-130b	7mer-mi	-0.160
MMAT000000060	hsa-miR-20b	7mer-mi	-0.107
MMAT000000065	hsa-miR-301b	7mer-mi	-0.141

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- A** (1) The search menu enables user to search for a gene or microRNA query. (2) Submitting the query delivers the results page for the specific query that shows general information derived from external databases and abstracts associated with the query. (3) The table of abstracts can be browsed using pagination buttons and (4) filtered according to type of samples, potential prognostic and/or therapeutic value, or by text search within the titles. (5) To receive more manual annotations like experimental settings, biological context, and information about the abstracts an export button is provided. (6) Interested user can further explore microRNA target gene interactions (MTIs). Clicking the MTI-button opens a network view on MTIs predicted by TargetScan 6.
- B** (7) The MTI network visually illustrates the possible regulatory relationships of the user's query. A detailed description of the prediction results is given in the table below. (8) Again, users are able to export the table and receive additional information from the TargetScan 6 predictions like UTR start and stops and microRNA target gene pairing.

Looking on osteosarcoma literature

A

Osteosarcoma Database

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Browse osteosarcoma associated abstracts

Show 25 entries

PMID	Title	Tumor	Value	#Genes
24009496	How MicroRNA and Transcription Factor Co-regulatory Networks Affect Osteosarcoma Cell Proliferation	no	no	13
23879172	FIM-A, a phosphorus-containing scellimus, inhibits the angiogenesis and proliferation of osteosarcomas.	no	no	8
23872151	MicroRNA-340 suppresses osteosarcoma tumor growth and metastasis by directly targeting ROCK1.	no	no	2
23831057	Sprouty2 but not Sprouty4 is a potent inhibitor of cell proliferation and migration of osteosarcoma cells.	no	no	1
23827457	MicroRNA expression profiling of human bone marrow mesenchymal stem cells during osteogenic differentiation reveals Osterix regulation by miR-31.	no	no	2
23507142	miR-16 inhibits cell proliferation by targeting IGF1R and the Raf1-MEK1/2-ERK1/2 pathway in osteosarcoma.	yes	no	7
23470834	Melatonin inhibits the proliferation of human osteosarcoma cell line MG-63.	no	no	4
23462806	Y-box binding protein-1 regulates cell proliferation and is associated with clinical outcomes of osteosarcoma.	no	no	3
23461061	C-Myc overexpression promotes osteosarcoma cell invasion via activation of MEK/ERK pathway	no	no	3

Showing 1 to 25 of 1,330 entries

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- A** Users can browse all abstracts included in the Osteosarcoma Database by clicking the “Browse Abstracts” menu (1) on the left. A table appears containing the PubMed identifiers (PMIDs) and the abstract titles. For each abstract, manual reviewed and annotated information about the number of mentioned genes/microRNAs, the type of samples (human tumors: yes or no), and the proposed prognostic or therapeutic impact (yes or no) is given. The table of abstracts can be browsed using pagination buttons (2) and filtered according to type of samples, potential prognostic and/or therapeutic value, or by text search within the titles (3). By pressing a specific number in the “#Genes” column (4), a new screen appears showing the genes and microRNAs mentioned in the respective abstract.