

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*

The image shows four panels (A, B, C, D) illustrating different search routes for the gene *CDKN1A* in the Osteosarcoma Database.

Panel A: The home page of the Osteosarcoma Database. A red arrow (1) points to the 'Search' link in the left navigation menu.

Panel B: The 'Search for genes' page. A red arrow (2) points to the search input field where 'CDKN1A' has been entered.

Panel C: The 'Browse osteosarcoma associated genes' page. A table lists various genes. A red arrow (3) points to the 'Browse GENES' link in the left navigation menu. A red arrow (4) points to the pagination controls at the bottom of the table. A red arrow (5) points to the search input field within the table. A red arrow (6) points to a specific number in the '#pmid' column.

Show 25 - entries	Search:		
Gene ID	Symbol	Name	#pmid
1028	CDK8	cyclic-dependent kinase 8	1
1026	CDKN1A	cyclic-dependent kinase inhibitor 1A (p21, CIP1)	53
1027	CDKN1B	cyclic-dependent kinase inhibitor 1B (p27, KIP1)	2
1028	CDKN1C	cyclic-dependent kinase inhibitor 1C (p21, KIP2)	1
1029	CDKN2A	cyclic-dependent kinase inhibitor 2A	24
1030	CDKN2B	cyclic-dependent kinase inhibitor 2B (p15, INK4a, CDK4)	5
1032	CDKN2D	cyclic-dependent kinase inhibitor 2D (p16, INK4b, CDK4)	1
1040	CDX2	caudal type homeobox 2	2
1051	CEBPB	CCAAT/enhancer binding protein (C/EBP β , Irf4)	2
1037	CLFAR	CASP8 and FADD-like apoptosis regulator	8
373073	CLAM	cellular ankyrin with progesterone microarray	1
1191	CLU	clusterin	4
23559	CLUAP1	clusterin associated protein 1	1
1264	CDNT1	caprin-1, heparin, protease inhibitor	2
1102	COL1A2	collagen, type XI, alpha 2	2
80781	COL1A1	collagen, type XVII, alpha 1	1
1277	COL4A1	collagen, type IV, alpha 1	1
1028	COL4A2	collagen, type IV, alpha 2	1
1282	COL2A1	collagen, type II, alpha 1	1

Panel D: The 'Frequency of osteosarcoma genes' page. A red arrow (7) points to the 'TOP GENES' link in the left navigation menu. A red arrow (8) points to the *CDKN1A* gene in a tag cloud.

- 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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Browse genes
Browse miRNAs
Browse abstracts
Top genes
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Results for CDKN1A (2)

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: ENST00000124792
miRNA regulators: 32 (6)
Ovism ID: 15899

PubMed abstracts associated with CDKN1A (5)

PMID	Title	Tumor	Value
7565200	Retroviral vector-mediated gene transfer of antisense cyclin D1 (CYC1D1) inhibits proliferation of human osteogenic sarcoma cells.	no	no
8915638	Apoptotic response to oncogenic signal: 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
16692722	Resveratrol induces senescence-like growth inhibition of U2-OS cells associated with the instability of telomeric DNA and upregulation of BICCA1.	no	no

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B

MicroRNA regulators of target gene CDKN1A

The graph below represents the microRNA regulators of CDKN1A determined by TargetScan6. 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 (8)

Accession	Name	Site type	Context score
MMAT0000020	hsa-miR-17	7mer-m8	-0.107
MMAT0000012	hsa-miR-20a	7mer-m8	-0.107
MMAT0000093	hsa-miR-93	7mer-m8	-0.107
MMAT0000103	hsa-miR-100a	7mer-m8	-0.107
MMAT0000425	hsa-miR-120a	7mer-m8	-0.141
MMAT0000426	hsa-miR-122	7mer-m8	-0.132
MMAT0000080	hsa-miR-100b	7mer-m8	-0.107
MMAT0000691	hsa-miR-130b	7mer-m8	-0.160
MMAT0000413	hsa-miR-20b	7mer-m8	-0.107
MMAT0004568	hsa-miR-301b	7mer-m8	-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 miRNAs
BROWSE ABSTRACTS
Top genes
Contact

Browse osteosarcoma associated abstracts

Show 25 entries Search:

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 scotinus, inhibits the angiogenesis and proliferation of osteosarcomas.	no	no	6
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	2
23470834	Melatonin inhibits the proliferation of human osteosarcoma cell line MQ-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.