# Using the caBIO Home Page Search for Biological Entities Tool to Find Compounds and Diseases Associated with a Gene

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### Need Additional Help?

If you need additional support, please contact the NCICB Support Group.

### To Print the Guide

We recommend you print one wiki page of the guide at a time. To do this, click the printer icon at the top right of the page; then from the browser File menu, choose Print. Printing multiple pages at one time is more complex. For instructions, refer to How do I print multiple pages?.

#### Having Trouble Reading the Text?

Resizing the text for any web page is easy. For information on how to do this in your web browser, refer to this W3C tutorial

## Search for Biological Entities Gene Query Overview

The caBIO Home Page Search for Biological Entities is a flexible tool, and the workflow presented here is just one of the ways that it can be used. These steps illustrate how to query a specific type of Cancer Gene Index-associated object to identify those with attributes that are associated with your gene search term.

## Identifying a Gene Search Term

In order to search for genes that are associated with a given disease, you must first have a HUGO gene symbol  $3^{\circ}$ . Although it is much easier to use the HUGO gene symbol, you may also use the gene's NCI Thesaurus concept code. To find this code, navigate to the NCI Thesaurus web page and select the Contains radio button (1). Enter you gene symbol (2) and click the Search button (3). If you cannot find the term for which you were looking, click on the Contact Us link at the bottom of the web page (4).



Select the desired result from the list of retrieved thesaurus terms in order to view the term's concept page. You may use Thesaurus Code (1) with the Search for Biological Entities tool.

## Using the Search for Biological Entities Tool

Compounds and diseases associated with a particular gene in the Cancer Gene Index data may be accessed by selecting the Gene class in the package g ov.nih.nci.cabio.domain. The line breaks in the tree represent classes that have been removed for space. Enter the HUGO gene symbol in the symbol field or the NCI Thesaurus gene concept code in the id field, select gov.nih.nci.cabio.domain.GeneFunctionAssociation as the Search Object, and click Submit. Retrieved results are shown as records in Gene/Agent and Gene/Disease tables.



🕝 Tip

Although the Cancer Gene Index refers to pharmacological substances by the term "compound" or even "drug," caBIO and the NCI Thesaurus use the term "agent" for this concept.

HOME CRITERIA		
Domain Class Browser		
Please click on any of the tree nodes.		
To view the search criteria for a class, expand a package listed below and select a class. To su the Submit button. For any date attributes, please use the syntax: mm-dd-yyyy.	earch for records,	, provide valid search criteria and click
2 E- gov.nih.nci.cabio.domain	gov.nin.nci	.cabio.domain.Gene
Agent	bigia:	
AgentAlias	clusterid:	
	fullName:	
	hugoSymbol:	
	nagooymbol.	
— Exon	id:	
— ExonArrayReporter	symbol:	4
<ul> <li>ExpressedSequenceTag</li> </ul>	Search	
— ExpressionArrayReporter	Object:	gov minine.casio.domain.cei • 3
3 Gene	Submit	Reset
- GeneAgentAssociation	Gubinic	1(636)
- GeneAilas	0	
- GeneEurotionAssociation		
- GeneOntology		
- GeneOntologyRelationship		

The following subsections describe how to view associated #disease terms and #compound terms

### Gene-Compound Association Results

In the Gene/Agent tables, columns include each object's identifier, the Role Code and/or Role Detail associated with the gene-compound concept pair, notation that the data derive from the Cancer Gene Index, and three method links - getGene, getEvidenceCollection, and getAgent.

Criteria: gov.nih.nci.cabio.domain.Gene@symbol=TOP2A]											
1-200 of 499   <u>Hext</u> >											
nou nik nei oskia danosia Cana Azant Azaraistian											
gov.min.nct.cablo.domain.comex.gence.sociation											
Ligita	14	TWE	source	gene	entenceconcentri	agent					
-	19895862	not_assigned	Cancer Gene Index	getGene	getEvidenceCollection	getAgent					
-	19895863	Chemical_or_Drug_May_Affect_Gene_Product	Cancer Gene Index	getGene	aetEvidenceCollection	getAgent					
-	19895864	not_assigned	Cancer Gene Index	getGene	getEvidenceCollection	getAgent					
	19895865	Chemical_or_Drug_Changes_Expression	Cancer Gene Index	getGene	getEvidenceCollection	getAgent					
-3	19895866	Chemical_or_Drug_Mediates_Pathway_Activity	Cancer Gene Index	getGene	aetEvidenceCollection	getAgent					
- 1	19895867	Chemical_or_Drug_Mediates_Pathway_Activity	Cancer Gene Index	getGene	getEvidenceCollection	getAgent					
-	19895868	Chemical_or_Drug_May_Affect_Gene_Product	Cancer Gene Index	getGene	getEvidenceCollection	getAgent					
-	19895869	Chemical_or_Drug_Induces_Gene_Expression	Cancer Gene Index	getGene	aetEvidenceCollection	getAgent					
	10005030		0 0 1 1	10	10111 0.0.0	10.1					

To view the sentence and annotation information, select the getEvidenceCollection method (green box in top panel) to call up the associated Evidence type object (green box in middle panel). For additional information on these data and metadata, refer to the Data, Metadata, and Annotations section.

#### Search Tip

 $\oslash$ 

If you do not want to spend time navigating through the caBIO object model for candidate gene-compound associations that were found to be false positives, you should first view the Evidence objects (bottom panel) and scroll to the right to check that the sentenceStatus is "finished" and negationIndicator is no before clicking through to gene name information in the Gene object.

Click the getAgent method link to the name and EVS identifier of the associated compound term in the fullName and EVSid columns, respectively.

		id	1		role		source	gene	evidenceCollection	diseaseOntology	
		19445	5960 G	ene_Product_Express	ed_in_Disease	6	Cancer Gene Index	getGene	getEvidenceCollection	getDiseaseOntology	
		19445	5961 0	961 Gene_Anormaly_has_Disease-Related_Function Cancer Gene Index getGene getEvidenceCollection					getEvidenceCollection	getDiseaseOntology	
		19445	5962 G	ene_Anormaly_has_D	isease-Related	_Function	Cancer Gene Index	getGene	getEvidenceCollection	getDiseaseOntology	
		19447	7043 N	lot assigned		Cancer Gene Index	getGene	getEvidenceCollection	getDiseaseOntology		
		19448	3791 G	Gene_May_Be_Associated_With_Disease			Cancer Gene Index	getGene	getEvidenceCollection	getDiseaseOntology	
		19448	3257 G	Gene_Product_Expressed_in_Disease			Cancer Gene Index	getGene	getEvidenceCollection	getDiseaseOntology	
		19448	3003 N	Not assigned			Cancer Gene Index	getGene	getEvidenceCollection	getDiseaseOntology	
		19449	9611 G	ene_Product_Affects_	ess	Cancer Gene Index	getGene	getEvidenceCollection	getDiseaseOntology		
	in.DiseaseOntolog	IV									
gov.nih.nci.cabio.doma			id	nan	ne	childDisease	OntologyRelationshi	ipCollect	ion histopathology	collection (	
gov.nih.nci.cabio.doma bigio	I	EVSId									
gov.nih.nci.cabio.doma bigio hdt://2500.1.PMEUQUCCLS	BFOPFORZAX	C3518	5046 r	nodular scierosis hodg	kin's lyn	nphoma <u>getChildDiseas</u>	eOntologyRelationship	Collection	getHistopathology	Collection (	
gov.nih.nci.cabio.doma bigio hdt://2500.1 /PMEUQUCCL5	BFOPFORZAX	C3518	5046 r	nodular scierosis hodg	kin's lyn	phoma <u>getChildDiseas</u>	eOntologyRelationship	Collection	getHistopathology	Collection	
gov.nih.nci.cabio.doma bigi hdt://2500.1 PMEUGUCCL5	BFOPFORZAX	C3518	5046 r	nodular scierosis hodg	kin & apos;s lyn	nphoma <u>getChildDiseas</u>	eOntologyRelationship	Collection	getHistopathology	Collection 4	

### Gene-Disease Association Results

Retrieved gene-disease results are listed as records in a single table, which includes each object's identifier, the Role Code and/or Role Detail associated with the gene-disease concept pair, notation that the data derive from the Cancer Gene Index, and three method links - getGene, getEvidenceCollect ion, and getDiseaseOntology.

gov.nih.nci.cabio.domain.GeneDiseaseAssociation											
bigid	id	role	source	gene	evidenceCollection	diseaseOntology					
<u>_</u>	19448553	Not assigned	Cancer Gene Index	aetGene	getEvidenceCollection	aetDiseaseOntology					
- 1	19449722	Gene_Product_Increased_in_Disease	Cancer Gene Index	getGene	getEvidenceCollection	getDiseaseOntology					
(1)	19452943	Not assigned	Cancer Gene Index	getGene	getEvidenceCollection	getDiseaseOntology					
- (	19450688	Gene_Anormaly_has_Disease-Related_Function	Cancer Gene Index	aetGene	getEvidenceCollection	aetDiseaseOntology					
-0	19450689	Gene_Anormaly_May_have_Disease-Related_Function	Cancer Gene Index	getGene	getEvidenceCollection	getDiseaseOntology					
• /	19450700	Not assigned	Cancer Gene Index	getGene	getEvidenceCollection	getDiseaseOntology					
-	19450701	Gene_Expression_Changed_in_Disease	Cancer Gene Index	aetGene	getEvidenceCollection	aetDiseaseOntology					
21	19454812	Not assigned	Cancer Gene Index	getGene	getEvidenceCollection	getDiseaseOntology					

To view the gene-disease sentence and annotation information, select the getEvidenceCollection method (green box in top panel) to call up the associated Evidence type object (green box in middle panel).

#### 🕢 🛛 Search Tip

If you do not want to spend time navigating through the caBIO object model for candidate gene-disease associations that were found to be false positives, you should first view the Evidence objects (bottom panel) and scroll to the right to check that the <u>sentenceStatus</u> is "finished" and <u>negationIndicator</u> is no before clicking through to gene name information in the <u>DiseaseOntology</u> object.

Click the getDiseaseOntology method link to the name and EVS identifier of the associated disease term in the fullName and EVSid columns, respectively. You may also view parent and child concepts for your disease of interest and explore gene-disease associations with those disease concepts, as well (2). Black double lines indicated breaks in the view of an object in this figure. You can find parent disease concepts by scrolling to the right and selecting the getParentDiseaseOntologyRelationshipCollection link; child disease concepts can be accessed by clicking on the getC hildDiseaseOntologyRelationshipCollection link.

Criteria: gov.nih.nci.cabio.domain.Gene	AgentAsso	ciation[@id=19972173]				
					!	1-1 of 1
gov.nih.nci.cabio.domain.GeneAgentAssociatio	n					
bigid	id	role	source	gene	evidenceCollection	agent
<u>-</u> 에	19972173	Chemical_or_Drug_Changes_Expression	Cancer Gene Index	getGene	getEvidenceCollection	aetAgent
					1	3
Criteria: GeneAgentAssociation[@i	i=1997217	3]				II.
			11			

gov.nih.nci.cabio.domain.Evid	lence						
bigid	celllineStatus	comments	id	negationStatus	pubmedid		sentenceStatus
-	yes	-	498691	no	11205246	Thef combination therapy.	finished g
				2			2

Criteria: GeneAgentAssocia							
gov.nih.nci.cabio.domain.Agent							
absorption	bigid nt	drugbankAccession	EVSId	halfLife		molecularWeight	name
-	hdl://2500.1.PMEUQUCCL5/LQ5F	DB04690	C338		in apoptosis.	348.352	camptothecin