

# Advanced Search

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## Introduction

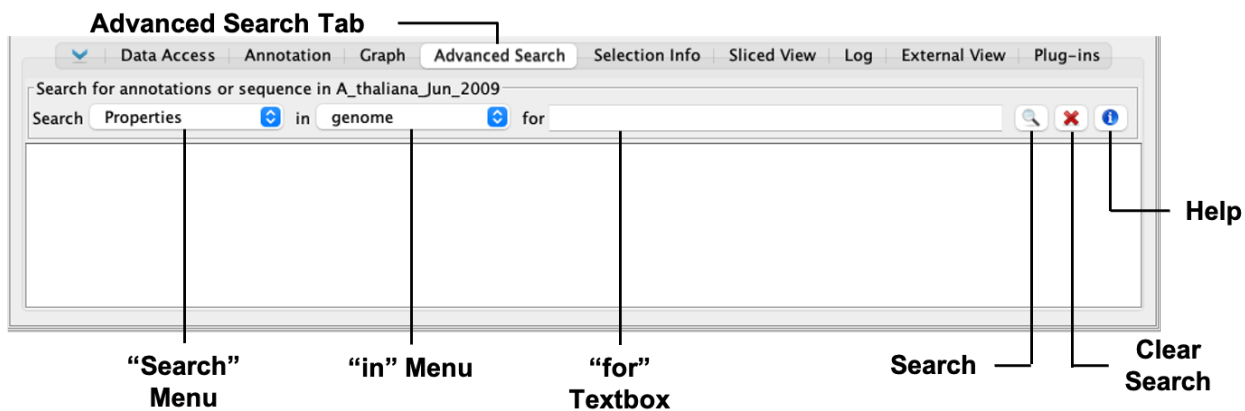
Use the **Advanced Search** tab to search for gene annotations or sequence residues. Both search types support regular expressions and wild card characters (see the "Regular expression, wild cards, and nucleotide symbols" section below).

Using Advanced Search, you can:

- Look up genes or other annotations by name or keyword
- Find instances of transcription factor binding sites
- Display locations of PCR primers

Search results will appear in the **Advanced Search** tab in a results table. Double-click a row in the table to view the result in the main IGB window.

If you search for sequence residues, IGB will also display color-coded bars in the coordinates track indicating the matched sequence.



## Advanced Search tab

The **Search** menu lists the available types of searches IGB can do (see the "Search types" section below). The **in** menu is a drop-down menu that defines which portion of the genome IGB will search within, whether that's the whole genome or a specific chromosome. The **for** textbox is where the search term should be entered. Press the <Enter> key or click the **Search** button to start a search. Clicking the **Clear Search** button will clear all search results present in the **Advanced Search** tab.

**NOTE:** IGB will only search data that has already been loaded no matter what has been specified in the **in** menu. For example, a search for a gene annotation on a chromosome that has not been loaded will return no results.

## Search types

The Advanced Search supports:

- **Properties** - find annotations by Title or Keyword
- **ID, Name, or Title** - find annotations by name
- **Keyword** - find annotations by keyword
- **Residues** - find sequences or regular expressions

## Search by Properties

**Properties** search combines the **Keyword** and **ID, Name, or Title** searches.

To find an annotation by Properties:

1. Select **Properties** from the **Search** menu.
2. Choose "genome" or a specific chromosome from the **in** menu.
3. Enter the keyword you want to search for (**for** textbox).
4. Press <Enter> key or click the **Search** button.

Data Access Annotation Graph Advanced Search Selection Info Sliced View Log External View Plug-ins							
Search for annotations or sequence in D_melanogaster_Aug_2014							
Search	Properties	in	chr3R	for	RNA		
ID	Title	Description	Track	Start	End	Chr	Strand
NR_156794	hpRNA:1	hairpin RNA 1;FBgn0285966;FBtr0472836	RefGene	19920862	19920707	chr3R	-
NR_163206	sisRNA:1	stable intronic sequence RNA 1;FBgn0285959;FB...	RefGene	5609611	5609244	chr3R	-
NR_002493	snRNA:7SK	small nuclear RNA 7SK;FBgn0065099;FBtr00919...	RefGene	7474996	7474552	chr3R	-
NR_048505	lncRNA:CR43126	long non-coding RNA:CR43126;FBgn0262741;FB...	RefGene	28586047	28588127	chr3R	+
NR_133418	lncRNA:CR46041	long non-coding RNA:CR46041;FBgn0267708;FB...	RefGene	19058019	19058519	chr3R	+
NR_074019	lncRNA:iab8	long non-coding RNA:iab8;FBgn0264857;FBtr03...	RefGene	16892098	16831115	chr3R	-
NR_125160	lncRNA:CR45590	long non-coding RNA:CR45590;FBgn0267150;FB...	RefGene	13786583	13785805	chr3R	-
NR_133445	asRNA:CR46096	antisense RNA:CR46096;FBgn0267765;FBtr0347...	RefGene	24815758	24817131	chr3R	+
NR_125142	lncRNA:CR45055	long non-coding RNA:CR45055;FBgn0266415;FB...	RefGene	11310675	11311182	chr3R	+
NR_002506	snoRNA:Psi18S-1377a	ncRNA:FBgn0086665;FBtr0091751	RefGene	30207883	30207744	chr3R	-
NR_133493	lncRNA:CR46116	long non-coding RNA:CR46116;FBgn0267785;FB...	RefGene	30984808	30985135	chr3R	+
NR_125189	lncRNA:iab4	long non-coding RNA:iab4;FBgn0020546;FBtr03...	RefGene	16850237	16856496	chr3R	+
NR_048428	lncRNA:CR43258	long non-coding RNA:CR43258;FBgn0262903;FB...	RefGene	19329735	19330836	chr3R	+
NR_125131	lncRNA:CR45576	long non-coding RNA:CR45576;FBgn0267136;FB...	RefGene	10490216	10488322	chr3R	-
NR_125158	lncRNA:CR45680	long non-coding RNA:CR45680;FBgn0267240;FB...	RefGene	13618550	13617749	chr3R	-

## Properties Search Results

## Search by ID, Name, or Title

**ID, Name, or Title** search will search IDs and names of annotations.

To find an annotation by ID, Name, or Title:

1. Select **ID, Name, or Title** from the **Search** menu.
2. Choose "genome" or a specific chromosome from the **in** menu.
3. Enter the ID or name of the annotation you want to find (**for** textbox).
4. Press <Enter> key or click the **Search** button.

Data Access Annotation Graph Advanced Search Selection Info Sliced View External View Plug-ins							
Search for annotations or sequence in H_sapiens_Dec_2013							
Search	ID, Name, or Title	in	genome	for	ADAR		
ID	Title	Description	Track	Start	End	Chr	Strand
NR_027673	ADARB1	adenosine deaminase, RNA-specific, B1	RefGene	45074577	45226563	chr21	+
NR_027672	ADARB1	adenosine deaminase, RNA-specific, B1	RefGene	45074577	45226563	chr21	+
NM_001111	ADAR	adenosine deaminase, RNA-specific	RefGene	154608248	154582057	chr1	-
NM_001025107	ADAR	adenosine deaminase, RNA-specific	RefGene	154627980	154582057	chr1	-
NM_015834	ADARB1	adenosine deaminase, RNA-specific, B1	RefGene	45074577	45226563	chr21	+
NM_001160230	ADARB1	adenosine deaminase, RNA-specific, B1	RefGene	45074577	45226563	chr21	+
NM_018702	ADARB2	adenosine deaminase, RNA-specific, B2 (non...	RefGene	1737476	1177312	chr10	-
NR_073200	ADARB1	adenosine deaminase, RNA-specific, B1	RefGene	45074577	45226563	chr21	+
NR_027674	ADARB1	adenosine deaminase, RNA-specific, B1	RefGene	45074577	45226563	chr21	+
NM_015840	ADAR	adenosine deaminase, RNA-specific	RefGene	154608248	154582057	chr1	-
NM_001193495	ADAR	adenosine deaminase, RNA-specific	RefGene	154606300	154582057	chr1	-

## ID, Name, or Title Search Results

## Search by Keyword

**Keyword** search, similar to **ID, Name, or Title** search, will search annotation IDs, but it will also search other information associated with annotations such as descriptions and other attributes.

To find an annotation by Keyword:

1. Select **Keyword** from the **Search** menu.
2. Choose "genome" or a specific chromosome from the **in** menu.
3. Enter the keyword you want to search for (**for** textbox).
4. Press <Enter> key or click the **Search** button.

ID	Title	Description	Track	Start	End	Chr	Strand
NM_001286370	Ghr	growth hormone receptor	RefGene	3611324	3347236	chr15	-
NM_010284	Ghr	growth hormone receptor	RefGene	3612834	3347236	chr15	-
NM_001048178	Ghr	growth hormone receptor	RefGene	3612834	3357006	chr15	-
NM_001113417	Thrb	thyroid hormone receptor beta	RefGene	4808736	4431607	chr14	-
NM_009380	Thrb	thyroid hormone receptor beta	RefGene	4488052	4431607	chr14	-
NM_178060	Thra	thyroid hormone receptor alpha	RefGene	98632610	98655939	chr11	+
NM_001313983	Thra	thyroid hormone receptor alpha	RefGene	98632610	98659832	chr11	+
NM_001310653	Gnrhr	gonadotropin releasing hormone receptor	RefGene	86345760	86332416	chr5	-
NM_146153	Thrap3	thyroid hormone receptor associated protein 3	RefGene	126096503	126057875	chr4	-
NM_001003685	Gnrhr	growth hormone releasing hormone receptor	RefGene	55353279	55365515	chr6	+
NM_001356456	Thrap3	thyroid hormone receptor associated protein 3	RefGene	126094800	126057875	chr4	-
NM_010323	Gnrhr	gonadotropin releasing hormone receptor	RefGene	86345760	86328612	chr5	-
NM_001310651	Gnrhr	gonadotropin releasing hormone receptor	RefGene	86345760	86328612	chr5	-

Properties : Found 32 matches for local search, ID, Name, or Title : Found 0 matches, Double-click rows to view matches

## Keyword Search Results

## Search by Residues

To find all instances of a sequence or regular expression:

1. Select **Residues** from the **Search** menu
2. Choose "genome" or a specific chromosome from the **in** menu.
3. Enter the sequence or regular expression you want to find (**for** textbox).
4. Press <Enter> key or click the **Search** button.
5. Enter new search terms. Notice that IGB will **overlay results**, preserving results from previous searches.

IGB displays matches in the results table and as colored bars underneath the coordinates axis. Matches on the minus strand appear in a slightly lower position than matches on the plus strand. Consecutive searches will be added to the **Advanced Search** tab until the **Clear Search** button is clicked.

Selection Info: Click the map below to select annotations

Search for annotations or sequence in A\_thaliana\_Jun\_2009

Search Residues in Chr1 for TGCTCTTTTC

Pattern	Color	Start	End	Strand	Chr	Matched sequence
CTCTCAATGTCCA	Yellow	9414724	9414738	+	Chr1	CTCTCAATGTCCA
CATTCTG	Green	9414750	9414757	-	Chr1	CATTCTG
CATTCTG	Blue	9414787	9414794	+	Chr1	CATTCTG
TTGTTCACTGAGGGAAGT...	Red	9414817	9414851	+	Chr1	TTGTTCACTGAGGGAAGTCAATTAATCAAGATA
CGGAAAGAGGC	Purple	9414927	9414939	+	Chr1	CGGAAAGAGGC
TGCTCTTTTC	Red	9414929	9414940	-	Chr1	TGCTCTTTTC

TGCTCTTTTC : Found 0 forward and 1 reverse strand hits. Double-click rows to view matches

Plus Strand Match  
Minus Strand Match  
Previous Search  
Current Search

## Residues Search Results

## Regular expression, wild cards, and nucleotide symbols

IGB searching supports regular expressions and wild cards. This is especially useful when searching for sequence motifs, such as transcription factor binding sites.

Searching by nucleotide symbols is available in IGB versions 9.1.12 and above.

Example queries:

Pat tern	Represents	Example	Finds
.	Any single nucleotide	ACCT.T	ACCTTT, ACCTAT, ACCTGT, and ACCTCT (4 possibilities)
..	Any two nucleotides	ACCT..T	ACCTAAT, ACCTATT, ACTAGT, Etc. (4 x 4 possibilities)
[C G]	C or G	ACCT[CG]TC	ACCTCTC and ACCTGTC
X Y	X or Y	ATC AAG	ATC and AAG
T {1, n}	1 to n T's	ACGGT{1,3}C	ACGGTC, ACGGTTC, ACGGTTTC
T*	Zero or more T's	ACGGT*C	ACGGC, ACGGTC, ACGGTTC, ACGGTTTC, ACGGTTTTTTTTTTTTTTTTTTTTTTTC, Etc.
.*?	A string of any length containing any nucleotides	TCGGGGTTAA. *?CTGGACTC	Many possibilities.  Because this allows for so many possibilities, it only recommended with a limited scope of search and /or with very specific (several specified base pairs) on both ends.
.*	The longest possible string of any length containing any nucleotides	TCGGGGTTAA. *CTGGACTC	Differs from the search above in that the longest possible result(s) will be found.  Bear in mind that the result returned from this search will depend on the scope of the search, i.e., how much of the genomic sequence has been loaded and is available for searching.
R	A or G	GCCR	GCCA, GCCG
Y	C or T	AGCY	AGCC, AGCT
S	G or C	AGCS	AGCG, AGCC
W	A or T	AGCW	AGCA, AGCT
K	G or T	AGCK	AGCG, AGCT
M	A or C	AGCM	AGCA, AGCC
B	C or G or T	AGCB	AGCC, AGCG, AGCT
D	A or G or T	AGCD	AGCA, AGCG, AGCT
H	A or C or T	AGCH	AGCA, AGCC, AGCT
V	A or C or G	AGCV	AGCA, AGCC, AGCG
N	Any base (i.e., A or G or T or C)	AGCN	AGCA, AGCG, AGCT, AGCC
\Q N\E	N	AGC\QNNN\E	AGCNNN

More information about regular expressions is available from [this Java Regex Cheat Sheet](#).