ZFIN NEWS

The Zebrafish Information Network

http://zfin.org

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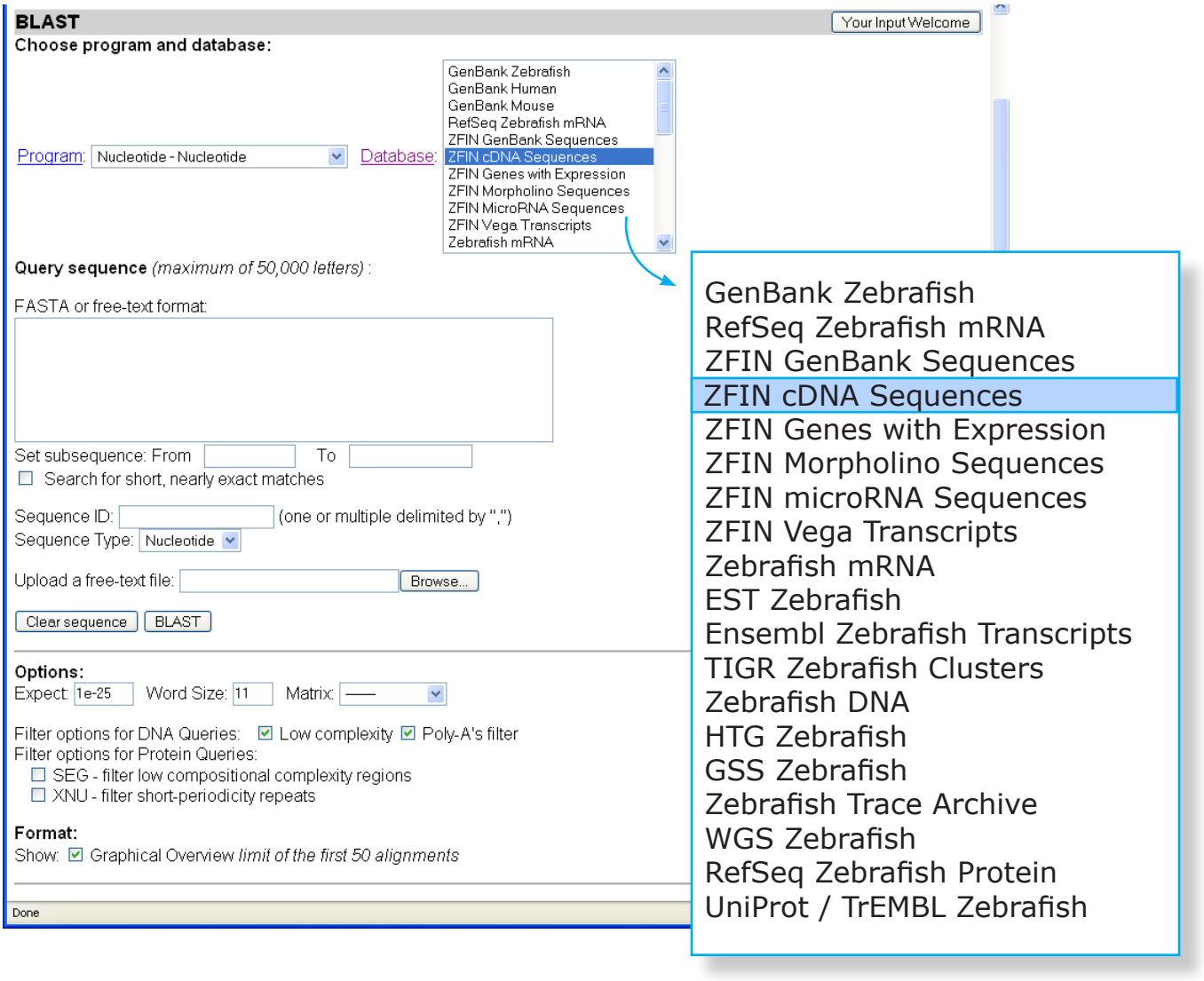
ZFIN BLAST Search

ZFIN is pleased to introduce ZFIN BLAST, a powerful new tool to find zebrafish genes using sequence or sequence accession IDs. Users can also quickly identify genes annotated with expression and gene ontology data. ZFIN BLAST can be accessed from the home page or from the navigation bar. The BLAST search page is shown below:



BLAST

(continued from pg. 1)

As shown in the inset box above, ZFIN BLAST provides a variety of sequence datasets to compare with your search sequence. These include GenBank zebrafish, curated Vega transcripts identified by the zebrafish genome project at Sanger, Ensembl transcripts and TIGR zebrafish clusters. Multiple databases can be selected. Simply hold down the Shift key while selecting databases. You can readily optimize the BLAST search parameters for short, nearly exact matches. This is particularly useful when searching for morpholinos.

The main advantage of ZFIN BLAST is tight integration with the ZFIN database via the ZFIN specific data sets: ZFIN GenBank sequences, ZFIN cDNA sequences, ZFIN Genes with Expression, ZFIN morpholino sequences, ZFIN microRNA sequences and ZFIN Vega transcripts.

Below, a typical results page:

As in any good BLAST program, ZFIN BLAST displays sequence alignments. Because ZFIN BLAST is integrated with the ZFIN database, you can navigate directly from BLAST results to ZFIN gene and clone pages. Genes with related expression and Gene Ontology data are indicated through the use of E and G icons respectively. The camera icons are used for instances where ZFIN has been able to provide a figure containing expression data. Similarly, you will be able to view gene and cluster records at Vega, Ensembl or TIGR for queries involving these resources.

BLAST

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The ZFIN BLAST server is a shared resource. To optimize performance for all, the following strategies have been implemented:

- WU BLAST program running on a dedicated multi-processor server
- query length – up to 50,000 letters
- graphical display available for the first 50 alignments
- single queries for searching the zebrafish trace archive
- batch queries of up to 100 sequences for small to medium zebrafish datasets

ZFIN is currently working towards providing other biologically relevant datasets. As always, your suggestions and ideas are welcome.

Site Search: A Global View of ZFIN Data

Site Search is a quick way to search the entire ZFIN website. It's easy – you'll find the search box in the upper right hand corner of every ZFIN page - just enter words in the search box and press return.

Example Search

Let's begin by searching for cartilage. At the top of the results page is a box where results are sorted into several different data categories. Categories help you narrow your search. The currently-selected category is marked with an arrowhead (►). The number beside each category is the number of pages found. Look inside the categories box. Next to "All", you can see that there are 353 ZFIN pages containing the word "cartilage". 28 of these are Mutant/Transgenic pages.

Click the Mutants/Transgenics category to find fish pages containing the word "cartilage". The *dirty south* locus page is in this group because the word "**cartilage**" is contained in the phenotype description.

Site Search

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Locus: dirty south
... some ventral **cartilages** reduced or absent), underdeveloped liver/gut. CITATIONS (1) Home Email ZFIN About ZFIN Helpful Hints ...
/cgi-bin_almost/webdriver?MIval=aa-locusview.apg&OID=ZDB-LOCUS-040927-5

The Gene Ontology (GO) category is a good place to look for genes related to cartilage. Here you see that *sox9b* has been annotated with the GO term 'cartilage development'. Follow the GO details link for *sox9b* to learn that this annotation was inferred from deficiency mutant phenotypes and morpholino experiments.

GO Details: sox9b
... s) Molecular Function DNA binding IEA 1 Biological Process **cartilage** development IMP MO3-sox9b MO2-sox9b 1 **cartilage** development IMP Df(LG03)sox8,sox9b b971 1 embryonic pectoral fin morphogenesis ...
/cgi-bin_almost/webdriver?MIval=aa-markergoview.apg&OID=ZDB-GENE-001103-2

Cartilage appears many times in the zebrafish anatomical ontology. Follow the links in the Anatomy category to view definitions, possible probes and expressed genes.

Anatomical Structure: ceratobranchial
... Definition: Ceratobranchials are bilaterally paired **cartilage** bones that form part of the ventral ... with the epibranchials. Ceratobranchials 1-5 ossify in the ceratobranchial **cartilages**. Appears ...
/cgi-bin_almost/webdriver?MIval=aa-anatomy_item.apg&OID=ZDB-ANAT-011113-411

You might even find a cartilaginous job with Site Search – check the Jobs/Meetings category.

Site Search vs. Domain Specific Search

Site Search complements ZFIN's topic specific searches but it is important to understand the differences. Site search looks for word matches on ZFIN web pages. It's fast and it covers the entire database, but it's not very smart. The domain-specific searches are smart – they are designed take advantage of domain-specific associations between terms. For example, if you enter "brain" in the anatomy field of the domain-specific Gene Expression search page, your results will include all figures with cerebellar gene expression. Gene Expression search "knows" that the cerebellum is part of the brain. In contrast, the expression category of a Site Search for "brain" will return figures only if the word "brain" appears in figure captions, gene names or anatomical structures, as shown in the example below:

Expression search results for 'brain' (1059). Tips

Your Input Welcome

Advanced search: Expression

All (3073)	Genes/Markers/Clones (653)	Mutants/Transgenics (681)	Expression (1059)	Sequence Information (17)
Anatomy (52)	Gene Product (59)	Gene Ontology (53)	The Zebrafish Book (21)	Nomenclature (0)
Jobs/Meetings (0)	People (463)	Other (15)		

Exact Match: brain

Figure: Chou et al., 2006, Fig. 2
... Expression and characterization of a **brain-specific** protein kinase BSK146 from zebrafish. Biochem ... Anatomical Terms: **brain** , embryo , unspecified Stage Range : 5-9 somites to Adult Fig. 2 ZFIN is incorporating ... Not detected embryo RTPCR Prim-5 to Day 6 unspecified RTPCR Adult **brain** RTPCR Home Email ZFIN About ZFIN Helpful Hints ...
/cgi-bin_almost/webdriver?MIval=aa-fxfigureview.apg&OID=ZDB-FIG-060313-4

For a more detailed search, follow the 'Advanced search: Expression' link to the ZFIN domain specific gene expression search. As a convenience, "brain" will be automatically entered into the anatomy field of the expression search form.

Site Search

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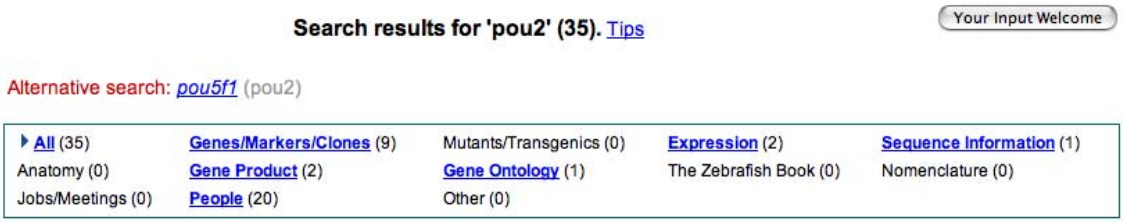
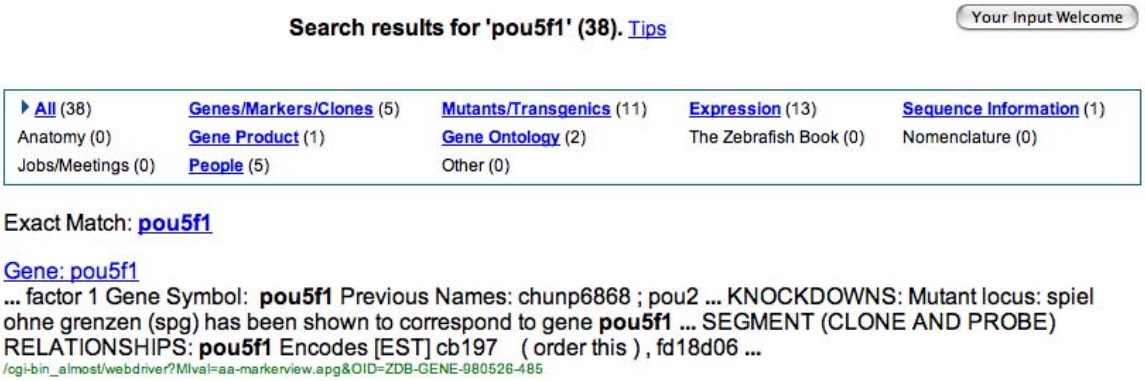
Synonyms

When a synonym or previous name is entered into Site Search, you are provided with an Alternative search suggestion link. Click this link to start a fresh Site Search using the primary name of the term. This is worth a try, because it will typically provide you with much better results. Examples below:

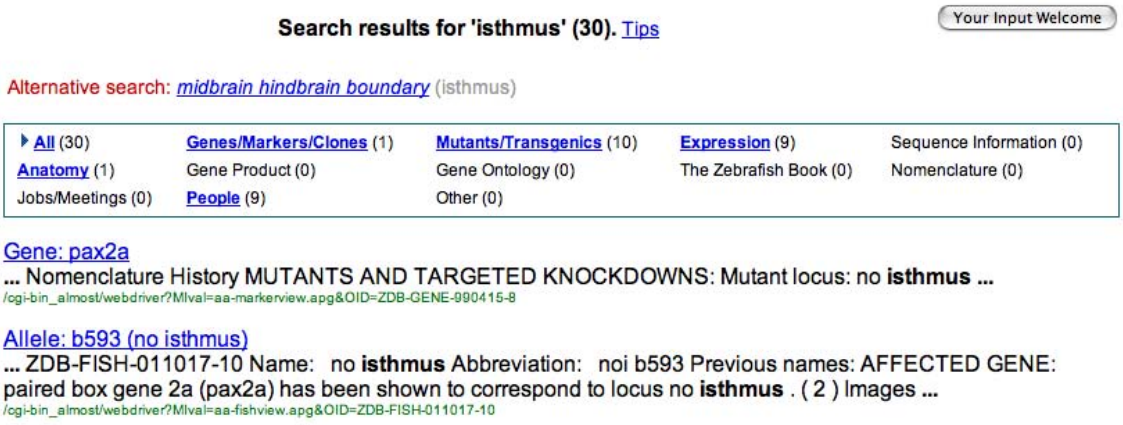
pou2 is a previous name for *pou5f1*. Site search for *pou2* produces *pou2* results and an optional alternative search for *pou5f1* :



Follow the alternate search link to find matches to *pou5f1*.



Similarly, entering a previous/alternate name for an anatomy term ("isthmus") will provide an alternative search using the primary anatomical structure name.



We hope that you like our Site Search!