

Module 1: Where do I start? (NCBI)

iii – Zebrafish Genome Resources and the NCBI Home Page

Aims

- Introduce NCBI web sites
- Suggest starting points for data mining at NCBI
- Provide examples of different types of queries
- Show ways to navigate around NCBI web resources

Introduction

NCBI provides query and retrieval of many diverse types of data stored in its many databases. Interconnected resources allow users to begin at any of the NCBI web resources and then navigate to other related resources.

To start you may find it useful to begin at one of these sites:

NCBI home page: <http://www.ncbi.nlm.nih.gov>

Entrez home page: <http://www.ncbi.nlm.nih.gov/gquery/gquery.fcgi>

Genome Guide page:

<http://www.ncbi.nlm.nih.gov/genome/guide/zebrafish/>

Projects page:

http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=genomeprij&cmd=Retrieve&dopt=Overview&list_uids=9557

NCBI Home Page

As an introduction to NCBI's suite of resources, the NCBI home page provides access to NCBI databases and resources through direct links and organizes resource areas, such as GenBank, Literature databases, Molecular databases, Genomic biology and Tools in the blue side bar.

As you scroll down the NCBI home page, take note of:

- Links in the top menu bar and under 'Hot Spots'
- The Search bar: where you can click on "**All Databases**" to go to the Entrez Home page or select a database in the query bar at the top, and submit a query.
- Learn what is new at NCBI by clicking on the NCBI newsletter
- Find contact information and where to submit a question by following the 'Contact Information' link at the bottom of the blue side bar. (e.g. NCBI help desk: info@ncbi.nlm.nih.gov)

Choose a database
and submit a query

Workshop – Dresden 2005

Follow links to NCBI
tools and resources

The screenshot shows the NCBI homepage with various sections and links. Annotations include arrows pointing to the 'All Databases' search bar, the 'Hot Spots' sidebar, the 'Entrez Gene' section, the 'PubMed Central' section, the 'NCBI News' section, and the 'Contact Information' link in the left sidebar.

NCBI National Center for Biotechnology Information
National Library of Medicine National Institutes of Health

PubMed All Databases BLAST OMIM Books TaxBrowser Structure

Search **All Databases** for **Go**

SITE MAP
Alphabetical List
Resource Guide
About NCBI
An introduction to NCBI
GenBank
Sequence submission support and software
Literature databases
PubMed, OMIM, Books, and PubMed Central
Molecular databases
Sequences, structures, and taxonomy
Genomic biology
The human genome, and related resources
Whole genomes, and related resources
Tools
Data mining
Research at NCBI
People, projects, and seminars
Software engineering
Tools, R&D, and databases
Education
Teaching resources and on-line tutorials
FTP site
Download data and software
Contact information
How to reach us

What does NCBI do?
Established in 1988 as a national resource for molecular biology information, NCBI creates public databases, conducts research in computational biology, develops software tools for analyzing genome data, and disseminates biomedical information - all for the better understanding of molecular processes affecting human health and disease. [More...](#)

New Global NCBI Search Engine
NCBI's growing number of Entrez databases can now be searched at once! [Go](#)

Entrez Gene
You can now use Entrez to search for information centered on the concept of a gene, and connect to many sources of related information both within and outside NCBI.

PubMed Central
An archive of life sciences journals
• Free fulltext
• Over 300,000 articles from over 150 journals
• Linked to PubMed and fully searchable
Use of PubMed Central requires no registration or fee. Access it from any computer with an Internet connection.

FG++ enhanced NCBI training course

NCBI News
May 2005 News available online

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1. MyNCBI
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3. NewMicrobial Genomes
3. Isoman Preserved in GenBank
6. ReSeq Updates
6. ReSeq Release 11
6. NewOrganisms in UniGene
6. GenBank Release 147
9. NewGenome Build
9. CCDS Database
9. NCBI Courses
10. PubMed Corrects Spelling
11. BLAST Lab
12. LocustLink Retired

Hot Spots

- Assembly Archive
- Clusters of orthologous groups
- Coffee Break, Genes & Disease, NCBI Handbook
- Electronic PCR
- Entrez Home
- Entrez Tools
- Gene expression omnibus (GEO)
- Human genome resources
- Malaria genetics & genomics
- Map Viewer
- dbMHC
- Mouse genome resources
- My NCBI
- ORF finder
- Rat genome resources
- Reference sequence project
- Retrovirus resources
- SAGEmap
- SKY/CGH database
- Trace archive
- VecScreen
- NCI-CGAP

Entrez Home Page

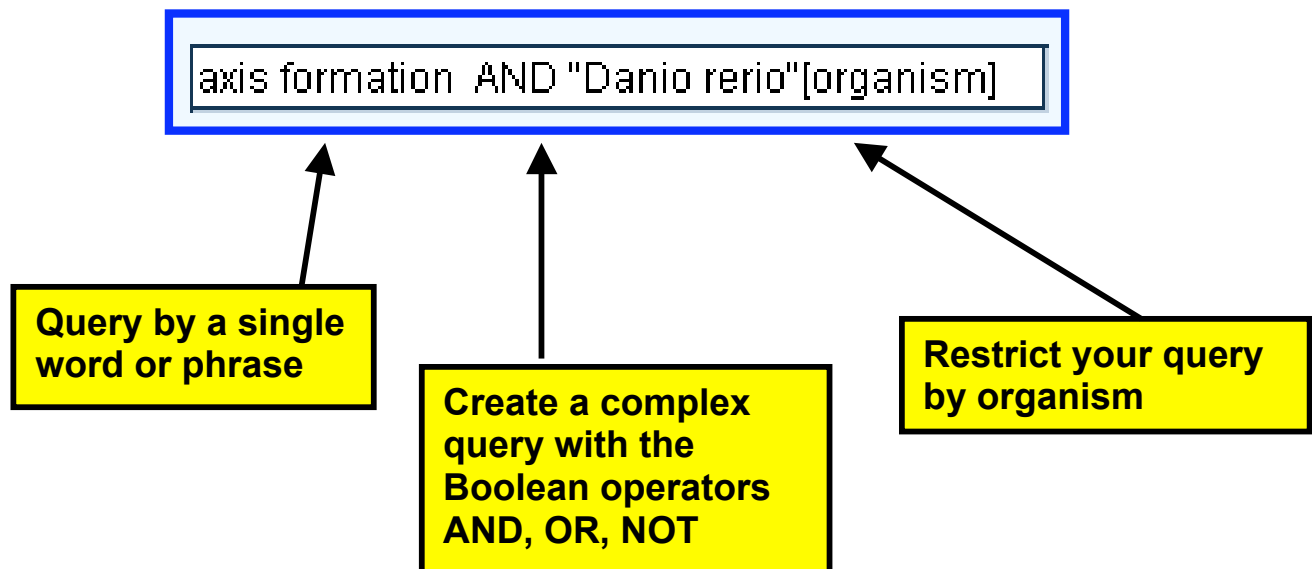
Click on Contact Information to submit a question

Click on NCBI news to find out what's new

National Center for Biotechnology Information
U.S. National Library of Medicine
8600 Rockville Pike, Bethesda, MD 20894
[Copyright](#), [Disclaimer](#), [Privacy](#), [Accessibility](#)

The Entrez Home Page provides a global query interface, where you can follow links to each Entrez database or submit a single text based query against all databases simultaneously and then view the number of records matching your query in each database. You may be surprised to see results in several databases.

Try a global query: search for records in each Entez database with a single text query. You can further restrict your query to look for zebrafish only records by adding: AND "Danio rerio"[organism] to the query bar .



Submit a global query against all Entrez Databases

The screenshot shows the NCBI Entrez search engine interface. At the top, the NCBI logo and the Entrez logo are visible. Below the logo, there is a navigation bar with links: HOME, SEARCH, SITE MAP, PubMed, All Databases, Human Genome, GenBank, Map Viewer, and BLAST. The 'All Databases' link is highlighted. Below the navigation bar, there is a search bar with the text 'axis formation AND "Danio rerio"[organism]'. To the right of the search bar are buttons for 'GO', 'CLEAR', and 'Help'. Below the search bar, there is a list of databases with their respective icons and result counts. The databases are arranged in two columns. The first column includes PubMed (7), PubMed Central (32), Nucleotide (30), Protein (38), Genome (none), Structure (none), Taxonomy (none), SNP (none), Gene (4), HomoloGene (72), PubChem Compound (none), PubChem Substance (none), and Genome Project (none). The second column includes Books (9), OMIM (1), UniGene (none), CDD (none), 3D Domains (none), UniSTS (none), PopSet (none), GEO Profiles (none), GEO DataSets (none), Cancer Chromosomes (none), PubChem BioAssay (none), GENSAT (none), Journals (none), and MeSH (none). A yellow callout box on the left side of the screenshot points to the 'Gene' database entry, with the text 'View gene-related records in Gene, Homologene or UniGene'. Another yellow callout box at the top right points to the 'GenBank' link in the navigation bar, with the text 'Submit a global query against all Entrez Databases'. At the bottom of the screenshot, there is a note: '- Result counts displayed in gray indicate one or more terms not found'.

NCBI

Entrez, The Life Sciences Search Engine

HOME SEARCH SITE MAP PubMed All Databases Human Genome GenBank Map Viewer BLAST

Search across databases axis formation AND "Danio rerio"[organism] GO CLEAR Help

7 PubMed: biomedical literature citations and abstracts ?

32 PubMed Central: free, full text journal articles ?

9 Books: online books ?

1 OMIM: online Mendelian Inheritance in Man ?

none Site Search: NCBI web and FTP sites ?

30 Nucleotide: sequence database (GenBank) ?

38 Protein: sequence database ?

none Genome: whole genome sequences ?

none Structure: three-dimensional macromolecular structures ?

none Taxonomy: organisms in GenBank ?

none SNP: single nucleotide polymorphism ?

4 Gene: gene-centered information ?

72 HomoloGene: eukaryotic homology groups ?

none PubChem Compound: small molecule chemical structures ?

none PubChem Substance: chemical substances screened for bioactivity ?

none Genome Project: genome project information ?

none UniGene: gene-oriented clusters of transcript sequences ?

none CDD: conserved protein domain database ?

none 3D Domains: domains from Entrez Structure ?

none UniSTS: markers and mapping data ?

none PopSet: population study data sets ?

none GEO Profiles: expression and molecular abundance profiles ?

none GEO DataSets: experimental sets of GEO data ?

none Cancer Chromosomes: cytogenetic databases ?

none PubChem BioAssay: bioactivity screens of chemical substances ?

none GENSAT: gene expression atlas of mouse central nervous system ?

none Journals: detailed information about the journals indexed in PubMed and other Entrez databases ?

none NLM Catalog: catalog of books, journals, and audiovisuals in the NLM collections ?

MeSH: detailed information about NLM's controlled vocabulary ?

- Result counts displayed in gray indicate one or more terms not found

Click on the icon or database name to view the records returned for each database.

Zebrafish Genome Resources Page

The Genome guide pages provide a guide to web resources for zebrafish researchers. This page includes links to NCBI and community resources and announcements, such as the first release of the zebrafish Zv4 genome annotation at NCBI.

NCBI Resources

Click on a chromosome to see map data in Map Viewer

Community Resources

[NCBI Home](#) > [Genomic Biology](#) > [Zebrafish Genome Resources](#)

Search for

Zebrafish Genome Resources

NCBI Web Resources

Global Query. Query all Entrez databases in one step.

Search. Search across all NCBI databases, including Web and FTP sites.

BLAST Zebrafish. BLAST your sequences against Zebrafish mRNA, EST, and genome sequences.

Clone Registry. Find information about specific clones or libraries selected for genome sequencing.

dbSNP. Database of SNPs and other genetic variation.

Entrez Gene. Focal point for genes and associated information.

e-PCR. Review in genomic context your sequence for sequence tag sites (STSs).

FLcDNA Projects. View Full-Length cDNA project summaries and links to resources.

GeneRIF. Help enrich gene annotation in Entrez Gene.

Genome Project. Complete and in-progress large-scale sequencing, assembly, annotation and mapping projects.

Map Viewer. Interactive viewer for genome maps, sequences, and genes.

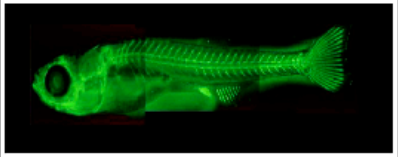
RefSeq. Reference sequences of mRNAs and proteins.

Taxonomy. The Taxonomy Browser hosts summaries of sequence resources and external links through NCBI's LinkOut

Trace Archive. Collection of raw sequence traces from various sequencing projects.

Welcome to the Zebrafish Genome resources page. This homepage will bring together information on NCBI and community zebrafish-related resources including sequence, mapping, and clone information.

[We encourage your suggestions.](#)



Bone Growth Visualization
Du et al. (2001)
Visualizing Normal and Defective Bone Development in Zebrafish Embryos Using the Fluorescent Chromophore Clacain. *Developmental Biology* 238:239-246.
Photo courtesy of:
The Zebrafish CD Exchange Project's: The Living Laboratory

This month in ...
[PubMed](#)
[GenBank](#)

Upcoming Meetings:
4th European Fish Genetics and Development Meeting
 Dresden, Germany
 July 13-16, 2005

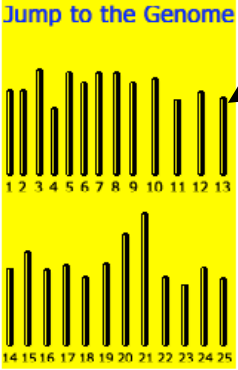
Zebrafish Genome Resources Workshop - Dresden 2005
 Dresden, Germany
 July 14th and 15th, 2005
[View workshop slides and modules from Sanger, ZFIN, and NCBI](#)

What's New

June 2005 NEW
 NCBI's Zebrafish [Map Viewer](#) has been updated with NCBI's annotation of the zebrafish Zv4 genome assembly.

August 2004
Genome Resources Workshop Slides and Tutorial
 NCBI, ZFIN and the Sanger Institute presented a joint workshop on genome

Jump to the Genome



ANNOUNCING the release of the zebrafish genome assembly (build 1.1) in [Map Viewer](#). Take a moment to **BLAST** your favorite gene sequence against the genome and explore the [maps](#) available for viewing. Learn more about the [Gnomon](#) gene prediction program and the resulting models available in [Map Viewer](#).

Community Resources
[ZFIN](#)
[Zebrafish Gene Collection \(ZGC\)](#)
[Trans-NIH Zebrafish Initiative](#)
[WashU-Zebrafish Genome Resources Project](#)
[Zebrafish International Resource Center](#)
[Tuebingen Zebrafish Stockcenter](#)

Maps and Sequencing
[The Danio rerio Sequencing Project](#)
[Zebrafish Genome Fingerprinting Project](#)
[GUDb](#)

Zebrafish Projects database

Query the Entrez Genome Project database to search for zebrafish sequencing and mapping projects. Query by organism name or follow

links provided on the Genome Projects home page
(<http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=genomeprj>).

Click on related
Entrez links to
navigate to
related records

NCBI ENTREZ Genome Project

Search for

Limits Preview/Index History Clipboard Details

Display Overview Show 20 Sort by Send to

All: 1 Prokaryotes: 0

Genome Project > **Danio rerio (zebra danio)**

Resource Links

NCBI Resources

- MapViewer
- BLAST genome
- Human Genome Guide
- Zebrafish Genome Resources

Organism data in GenBank

- EST
- Genomic
- mRNA
- Protein
- WGS

Sequencing Projects


- The Danio rerio Sequencing Project
- Zebrafish Genome Browser

Related Resources

- ZFIN
- Zebrafish Gene Collection

Danio rerio is a model organism for studies of vertebrate development, developmental biology, and some human genetic diseases. [Project data](#)

Lineage: [Eukaryota](#) ; [Metazoa](#) ; [Chordata](#) ; [Craniata](#) ; [Vertebrata](#) ; [Euteleostomi](#) ; [Actinopterygii](#) ; [Neopterygii](#) ; [Teleostei](#) ; [Ostariophysi](#) ; [Cypriniformes](#) ; [Cyprinidae](#) ; [Danio](#) ; [Danio rerio](#)



1 2 3 4 5 6 7 8 9 10 11 12 13

14 15 16 17 18 19 20 21 22 23 24 25 MT

Search Map Viewer for

Available maps:

Sequence Maps	Genetic maps	RH maps
8 maps	5 maps	LN54 T51

Sequence Maps

- Ab initio
- Component
- Contig
- estDr
- GenBank DNA
- Gene
- RefSeq Transcripts
- STS

Genome Projects

Danio rerio overview

Mitochondrial genome:
[Danio rerio](#) at [DOE Joint Genome Institute](#)

Genome sequencing:
[Danio rerio](#) at [Sanger Institute](#) [In progress]

Full length cDNA:
[Danio rerio](#) at [Zebrafish Gene Collection](#)

RefSeq:
[Danio rerio](#) at [NCBI](#)

Click on related
Entrez links to
navigate to
related records

Click on links for
sequence
data
providers