

Exploring The Zebrafish Information Network

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Working with Zebrafish Genome Resources

Sanger Institute Workshop

July 15, 2009



Outline

- 1. Anatomy, Antibodies, and Gene Expression**
- 2. Phenotypes in ZFIN - the Entity-Quality method**
- 3. Navigating ZFIN gene and Transcript pages**
- 4. BLAST resources at ZFIN**



ZFIN Home Page <http://zfin.org>



The Zebrafish Model Organism Database

Research

General Information

ZIRC

Site Search:

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Search **Antibodies**

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Obtain approval for gene names

ZFIN Author Guidelines

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Wild-Type Lines

Line Designations

Submit mutant/transgenic line names

Search **Anatomy**

Atlases and Resources

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Jobs, Meetings

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View *The Zebrafish Book*

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Zebrafish In The Classroom

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Request: Fish Lines, ESTs/cDNAs, Monoclonal Antibodies, *The Zebrafish Book*, Paramecia

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Health Services

ZIRC Home

Genomics

Browse the genome: Ensembl, Vega, UCSC, NCBI

View Genetic Maps

BLAST at ZFIN, Ensembl, Vega, NCBI, MGH

Find cDNAs and ESTs at ZGC, ZGI

Microarray expression at ZF-Espresso

More Zebrafish Genome Resources

Other Fish Genomes

Zebrafish Programs

Trans-NIH Zebrafish Initiative,

ZF-MODELS, more...

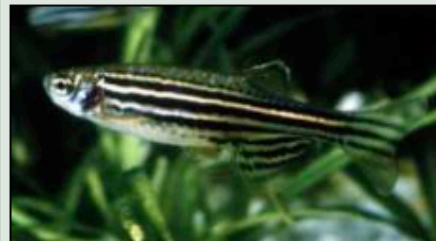
News

April 8 - New Vega Release

March 6 - Zebrafish Antibodies Poll

All News, All ZFIN Newsletters

Zebrafish Newsgroup



ZFIN Anatomy page: otic vesicle



Site Search:

Home Genes / Markers / Clones Expression Antibodies BLAST Mutants / Tg Anatomy Maps Publications

ZFIN ID: ZDB-ANAT-010921-468 OBO ID: ZFA:0000051

Your Input Welcome

Name: **otic vesicle**

search anatomy

Search:

Synonyms: otocyst, ov, otic capsule

Definition: Epithelial sac present beside the fifth rhombomere; forms the semicircular canals dorsally and the otolith organs ventrally, and houses the acoustico-vestibular sensory epithelia (maculae) of hair cells. (Also see Anatomical Atlas entry for [ear](#) by T. Whitfield.) (1)

Appears at

[Segmentation:14-19 somites \(16.0h-19.0h\)](#)

Evident until

[unk](#)

Relationships ([about](#))

develops from: [otic placode](#)

develops into: [inner ear](#)

has parts: [immature macula](#) [otolith](#)

is a type of: [embryonic structure](#)

← navigate the anatomy ontology

EXPRESSION

← view gene expression annotated to this term

PHENOTYPE

← view phenotypes annotated to this term

[Search for publications with 'otic vesicle' in abstract](#)

ZFIN Anatomy page: otic vesicle

EXPRESSION ← expand expression section

Genes with Most Figures

Gene	Figures
pax2a	28 figures from 24 publications
stm	18 figures from 6 publications
fgf8a	15 figures from 10 publications
fn1	11 figures from 4 publications
zfp361l	11 figures from 2 publications

Show all [719 genes](#) , [1436 figures](#) (including substructures [731 genes](#))

In Situ Probes: [Recommended](#) by [Thisse lab](#)

Gene	Probe	Figures
agr2	IMAGE:7163877	3 figures from Thisse et al., 2004
bambi	cb998	1 figure from Thisse et al., 2001
bmp2b	cb670	3 figures from Thisse et al., 2001
capsl	MGC:112473	3 figures from Thisse et al., 2004
cdkn1b	cb611	3 figures from Thisse et al., 2001

Show all [67 probes](#)

Antibodies

Antibody	Gene	Figures
Ab1-lrrc6	lrrc6	1 figure from Kishimoto et al., 2008
Ab1-tuba		1 figure from Kishimoto et al., 2008
Ab1-scn1bb	scn1bb	2 figures from Fein et al., 2008
Ab1-tuba		1 figure from Fein et al., 2008
Ab1-dag1	dag1	1 figure from Moore et al., 2008

Show all [7 antibodies](#)

PHENOTYPE

ZFIN antibody page



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Research

General Information

ZIRC

ZFIN ID: ZDB-ATB-090408-1

Antibody Name: Ab1-scn1bb
Host Organism: Rabbit
Immunogen Organism: Zebrafish
Isotype:
Type: polyclonal
Assays: Immunohistochemistry , Western blot
Antigen Genes: [scn1bb](#) (1)

search antibodies

Your Input Welcome

NOTES:

Reference

[Fein et al., 2008](#)

Comment

Peptide sequence of the epitope was: EHYEFSKVTSKD

ANATOMICAL LABELING

Anatomy : Substructure	Stage	Assay	Gene	Data
anterior lateral line neuromast	Protruding-mouth	IHC	scn1bb	1 figure from Fein et al., 2008
anterior lateral line neuromast : neuromast support cell	Day 5	IHC	scn1bb	1 figure from Fein et al., 2008
cranial nerve II	Day 5	IHC	scn1bb	1 figure from Fein et al., 2008
	Adult	IHC	scn1bb	1 figure from Fein et al., 2008
neuromast	Day 5	IHC	scn1bb	1 figure from Fein et al., 2008

▼ [Show all](#) 23 labeled structures

SOURCE:

[Open Biosystems](#)

Search [Genes / Markers / Clones](#)

Search [Gene Expression](#)

Search [Antibodies](#)

[BLAST](#) at ZFIN

[Nomenclature Conventions](#)

[Obtain approval for gene names](#)

[ZFIN Author Guidelines](#)

Search [Mutants / Transgenics](#)

Zebrafish International Resource Center

Request: [Fish Lines](#), [ESTs/cDNAs](#), [Monoclonal Antibodies](#), [The Zebrafish Book](#), [Paramecia](#)

Submit: [Fish Lines](#)

[Health Services](#)

[ZIRC Home](#)

Genomics

Browse the genome: [Ensembl](#), [Vega](#), [UCSC](#), [NCBI](#)

View [Genetic Maps](#)



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Search for Antibodies [Search Tips](#)

Antibody Name:

Antigen Gene:

Labeled Anatomy

Enter search terms

- Include substructures Every term entered
 Any term entered

Host Organism:

Assay:

Between stages:

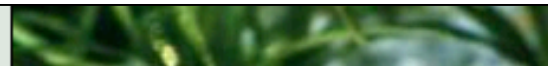
&

[Developmental Staging Series](#)

- Monoclonal
 Polyclonal
 Both Types
- Show only ZIRC Antibodies
 Show All

results per page

[Citing ZFIN](#)



Visit the [login page](#) to update person and lab records.

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Genomics



Research

General Information

ZIRC

[Home](#) [Genes / Markers / Clones](#) [Expression](#) [Antibodies](#) [BLAST](#) [Mutants / Tg](#) [Anatomy](#) [Maps](#) [Publications](#)

Search for Gene Expression Data - [Search Tips](#)

Gene/EST name

Genotype or Background

MO knockdown: Gene name

Author

Anatomy Terms

Enter search terms

Include substructures Expression in:
 Every term entered
 Any term entered

Between stages:

&

[Developmental Staging Series](#)

Assay

- Show only WT expression
- Show only figures with images
- Show only direct submission data
- Show only published literature
- Show all

Added in last days

results per page

[View The Zebrafish Book](#)

[Zebrafish for K-12](#)

[Zebrafish In The Classroom](#)

[About ZFIN](#)

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Expression search results



Site Search:

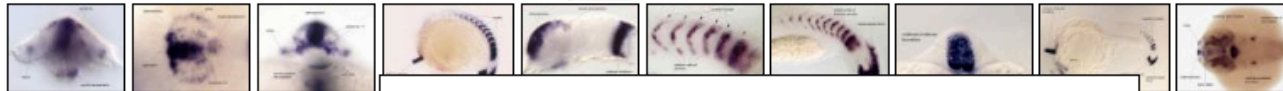
Hover over image
↓

[Modify Search](#)

Your Input Welcome

Figure Gallery (175 images)

1 / 18



Search matched on current symbol: *fgf8a*

Publication (current status)

[Dutton et al., 2009](#) [Fig. 4](#)

Data

[Fig. 6](#)

[Paridaen et al., 2009](#) [Fig. 3](#)



[Shima et al., 2009](#) [Fig. 2](#)



[Fig. 4](#)



[Duggan et al., 2008](#) [Fig. S5](#)

[Hashiguchi et al., 2008](#) [Fig. 7](#)



[Hawkins et al., 2008](#) [Fig. 3](#)

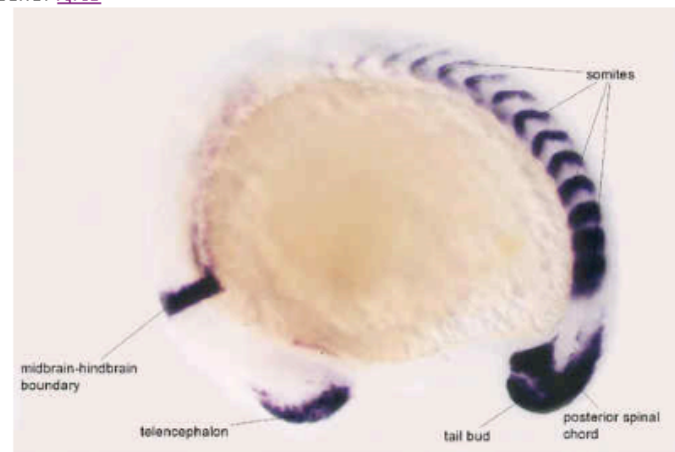


[Inoue et al., 2008](#) [Fig. 1](#)



[Thisse et al., 2001](#) [Fig. 4](#) (Contains 19 images)

Gene: *fgf8a*



fgf8a
n(s)

Anatomy

[1-15](#)

[otic vesicle](#)

[otic vesicle](#)

[optic stalk](#)

[midbrain hindbrain boundary](#)

[20-25](#)

[midbrain hindbrain boundary](#), [midbrain hindbrain boundary neural keel](#), [midbrain hindbrain boundary neural plate](#)

[midbrain hindbrain boundary](#), [telencephalon](#)

[16](#)

[whole organism](#)

[somite](#), [tail bud](#)

[6](#)

[diencephalon](#), [dorsal telencephalon](#), [midbrain hindbrain boundary](#), [midbrain hindbrain boundary neural plate ... \(all 8\)](#)

Expression search results



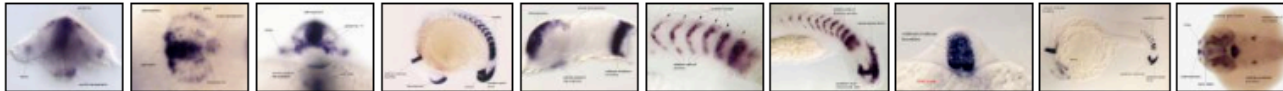
Site Search:

[Modify Search](#)

Your Input Welcome

Figure Gallery (175 images)

1 / 18



Search matched on current symbol: *fgf8a*

Expression Pattern Search Results for *fgf8a*

(161 figure(s) with expression from 128 publication(s))

[\[Show only figures with images \]](#)

Publication (current status)	Data	Genotype or Background	Stage Range	Anatomy
Dutton et al., 2009	Fig. 4 Fig. 6	<i>sox10³²³</i> , wild type (unspecified)	Prim-5 to Prim-15	otic vesicle
Paridaen et al., 2009	Fig. 3	<i>apc^{zf134/zf134}</i> , wild type (unspecified)	Long-pec	optic stalk
Shima et al., 2009	Fig. 2	<i>mqc^{at11/vt11}</i> , wild type (unspecified)	Prim-5	midbrain hindbrain boundary
	Fig. 4	<i>mqc^{at11/vt11}</i> , wild type (unspecified)	90%-epiboly to 20-25 somites	midbrain hindbrain boundary , midbrain hindbrain boundary neural keel , midbrain hindbrain boundary neural plate
Duggan et al., 2008	Fig. S5	Tupfel long fin	14-19 somites	midbrain hindbrain boundary , telencephalon
Hashiguchi et al., 2008	Fig. 7	Tuebingen	1k-cell to Shield	whole organism
Hawkins et al., 2008	Fig. 3	wild type (unspecified)	14-19 somites	somite , tail bud
Inoue et al., 2008	Fig. 1	wild type (unspecified)	Bud to Prim-15	diencephalon , dorsal telencephalon , midbrain hindbrain boundary , midbrain hindbrain boundary neural plate... (all 8) ▶

Figure page summarizes data



Site Search:

Home Genes / Markers / Clones Expression Antibodies BLAST Mutants / Tg Anatomy Maps Publications

ZFIN ID: ZDB-FIG-090424-22

[Paridaen et al., 2009](#) - Apc1-Mediated Antagonism of Wnt/beta-Catenin Signaling Is Required for Retino-Tectal Pathfinding in the Zebrafish. *Zebrafish* 6(1):41-47 - [Full text @ Zebrafish](#)

Your Input Welcome

ADDITIONAL FIGURES

EXPRESSION / LABELING:

Genes : [fgf8a](#) , [pax2a](#)

Antibodies : [zn-8](#)

Genotype or Background : [apc^{zf134/zf134}](#) , [wild type \(unspecified\)](#)

Anatomical Terms: [cranial nerve II](#), [optic stalk](#), [retinal ganglion cell layer](#)

Stage Range : [Long-pec](#)

PHENOTYPE:

Genotype(s): [apc^{zf134/zf134}](#)

Observed In: [cranial nerve II](#), [optic stalk](#), [retinal ganglion cell axon guidance](#)

Stage Range : [Long-pec](#)

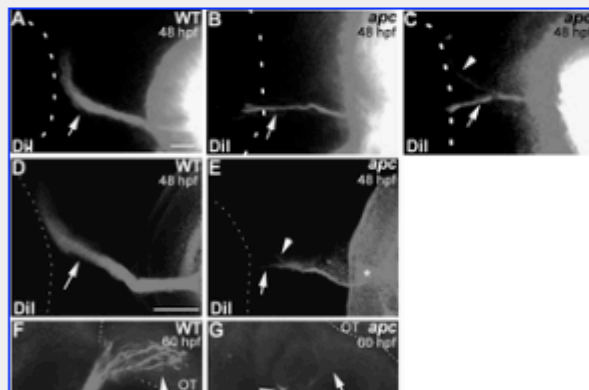
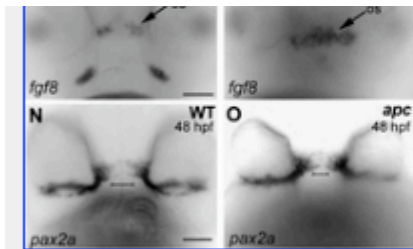


Fig. 3 Axon pathfinding defects in *apc* mutants. (A–E) Whole-eye fills with Dil at 48 hpf show that in most *apc* mutants, the ON does not cross the OC properly. In 25% of embryos, the ON does not cross at the OC and displays branching axons (arrow in B). In 50% of mutants, a portion of the ON projects toward the optic tract (arrowhead in C), while the remaining axons project into the contralateral ON (arrow in C). In some of the *apc* mutants with misprojecting ON into the contralateral ON, the ON from the opposite eye appears to initiate correct projection to the OT (arrowhead in E). In addition, axons regularly branch off after exiting the eye (asterisk in E). Ventral view. The outline of the

Figure page summarizes data



(arrowhead). Box in (I) shows magnified area in (J, K). (J, K) Single coronal planes of RGCs and their axons within the *apc* retina. (J) Most disorganized groups of RGCs are able to extend axons (arrowheads) toward the ONH (arrow). (K) In rare cases, RGC misproject within the retina (arrowheads) and do not contribute to the ON (arrow). Anterior is up. (L, M) Expanded *fgf8* expression in the os region of *apc* mutants (arrow). (N, O) In *apc* mutants, *pax2a* expression is expanded toward the diencephalic midline as indicated by the bars. (L, M) Ventral view. ce, Cerebellum; ON, optic nerve; os, optic stalk; OT, optic tectum. Scale bar = 50 μm.

Gene expression details

Gene	Antibody	Fish	Stage	Anatomy	Assay
fgf8a ▲		apc^{zf134/zf134}	Long-pec	optic stalk	ISH
		wild type (unspecified)	Long-pec	optic stalk	ISH
pax2a ▲		apc^{zf134/zf134}	Long-pec	optic stalk	ISH
		wild type (unspecified)	Long-pec	optic stalk	ISH

Antibody Labeling Details

Antibody	Assay	Fish	Stage	Anatomy
zn-8 ▲	IHC	apc^{zf134/zf134}	Long-pec	cranial nerve II
	IHC		Long-pec	retinal ganglion cell layer
	IHC	wild type (unspecified)	Long-pec	cranial nerve II
	IHC		Long-pec	retinal ganglion cell layer

Phenotype details

Fish	Stage	Observed in	Phenotype
apc^{zf134/zf134} ▲	Long-pec	optic stalk	abnormal, abnormal
	Long-pec	retinal ganglion cell axon guidance	abnormal, abnormal
	Long-pec	cranial nerve II	malformed, abnormal

Outline

1. **Anatomy, Antibodies, and Gene Expression**
2. **Phenotypes in ZFIN - the Entity-Quality method**
3. **Navigating ZFIN gene and Transcript pages**
4. **BLAST resources at ZFIN**



Phenotype Syntax

EQ: Entity + Quality

Anatomy

Anatomical Ontology (ZFA)

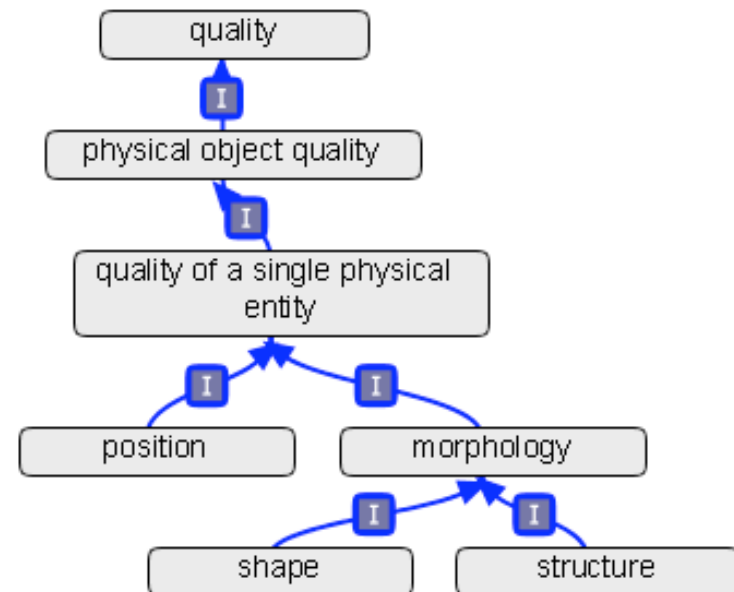
Cell Types (CL)

Cellular Component (GO)

Molecular Functions (GO)

Biological Processes (GO)

Phenotype and Trait Ontology (PATO)



Free-text to phenotypic profile recording

EQ descriptions

ahctf1^{ti262c} (*flo*)

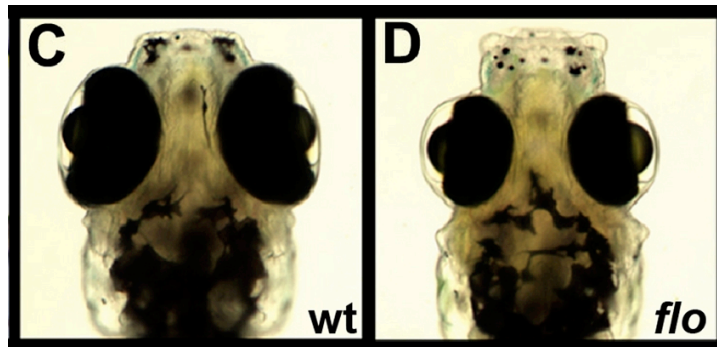
example text from de Jong-Curtain et al. 2009

“... the swim bladder rarely inflates. Microphthalmia is evident, and the head is slightly smaller and misshapen. The intestinal bulb epithelium is thinner”

Entity

Quality

GO:swim bladder inflation	PATO:abolished
ZFA:eye	PATO:decreased_size
ZFA:head	PATO:decreased_size
ZFA:head	PATO:shape
ZFA:intestinal bulb epithelium	PATO:decreased_thickness



Davuluri et al., 2008

ZFIN Figure page: phenotype summary for *ahctf1^{ti262c}* (*flo*)

[de Jong-Curtain et al., 2009](#) - Abnormal nuclear pore formation triggers apoptosis in the intestinal epithelium of elys-deficient zebrafish. *Gastroenterology* 136(3):902-911 - [Full text @ Gastroenterology](#)

Your Input Welcome

ADDITIONAL FIGURES

PHENOTYPE:

Genotype(s): [ahctf1^{ti262c}ti262c](#)

Observed In: [cell](#), [cell](#), [establishment or maintenance of apical/basal cell polarity](#), [eye](#) ... (all 13)

Stage Range : [Protruding-mouth](#) to [Day 6](#)

Figure available
only from
publisher

Fig. 1 ZFIN is incorporating published figure images and captions as part of an ongoing project. Figures from some publications have not yet been curated, or are not available for display because of copyright restrictions.

Phenotype details

Fish	Stage	Observed in	Phenotype
ahctf1^{ti262c}ti262c	Protruding-mouth to Day 4	retina	abnormal
	Day 4	intestinal bulb epithelium	decreased thickness, abnormal
	Day 4	goblet cell	present in fewer numbers in organism, abnormal
	Day 6 to Days 7-13	swim bladder inflation	abolished, abnormal
	Day 6 to Days 7-13	intestinal epithelium	abnormal
	Day 6 to Days 7-13	head	shape, abnormal
	Day 6 to Days 7-13	intestinal epithelium	shape, abnormal
	Day 6 to Days 7-13	eye	decreased size, abnormal
	Protruding-mouth to Day 4	intestinal bulb epithelium	decreased thickness, abnormal
	Protruding-mouth to Day 4	goblet cell	present in fewer numbers in organism, abnormal
	Day 6 to Days 7-13	head	shape, abnormal
	Day 6 to Days 7-13	intestinal epithelium	shape, abnormal
	Day 6 to Days 7-13	eye	decreased size, abnormal

ZFIN anatomy page: otic vesicle

☐ PHENOTYPE  [expand phenotype section](#)

Mutant and Transgenic Lines

Genotype (Background)	Affected Genes	Phenotype	Figures
ant^{m426/m426}	ant	decreased size	1 figure from Schibler et al., 2007
Df(LG03:sox8,sox9b)b971/b971		decreased size	1 figure from Yan et al., 2005
Df(LG03:sox8,sox9b)b971/b971;sox9a^{hi1134Tg}/hi1134Tg	sox9a	absent	1 figure from Yan et al., 2005
eya1^{tc257e/tc257e}	eya1	decreased size, decreased width, oblong	text only from Kozlowski et al., 2005
eya1^{tm90b/tm90b}	eya1	apoptotic, decreased size, decreased width, oblong	text only from Kozlowski et al., 2005

Show all [28 genotypes](#) (including substructures [147 genotypes](#))

Morpholino Experiments in Wild-type Fish

Target Genes	Morpholinos	Genotype	Phenotype	Figures
msxc , msxb , msxe	MO1-msxc , MO1-msxe , MO4-msxb	AB	decreased size	1 figure from Phillips et al., 2006
sox10	MO2-sox10	wild type (unspecified)	decreased size	1 figure from Dutton et al., 2001
dlx3b , foxi1	MO2-foxi1 , MO1-dlx3b	wild type (unspecified)	absent	1 figure from Hans et al., 2007
dlx3b	MO1-dlx3b	wild type (unspecified)	decreased size	1 figure from Hans et al., 2007
foxi1	MO2-foxi1	wild type (unspecified)	decreased size	1 figure from Hans et al., 2007

Show all [31 experiments](#)

Morpholino Experiments in Mutant and Transgenic Fish

Target Genes	Morpholinos	Genotype	Phenotype	Figures
wnt8b	MO1-wnt8b	fgf3^{t24149/t24149}	decreased size	1 figure from Hans et al., 2007

Search **Genes / Markers / Clones**

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View Genetic Maps

BLAST at ZFIN, Ensembl, Vega, NCBI, MGH

Find cDNAs and ESTs at ZGC, ZGI

Microarray expression at ZF-Espresso

[More Zebrafish Genome Resources](#)



Research

General Information

ZIRC

Home Genes / Markers / Clones Expression Antibodies BLAST Mutants / Tg Anatomy Maps Publications

Site Search:

Search for mutant / morphant / transgenic lines

Your Input Welcome

Gene/Allele name

LG:

Mutagen:

Mutation Type:

Affected Anatomy

× [brain](#)

Include substructures Phenotype in:
 Every term entered
 Any term entered



Filters:

- Show only morphants
- Show only morphants in WT/reporter
- Exclude morphants
- Show only characterized mutations
- Show only transgenics
- Show all

results per page

Visit the login page to update person and lab records.

Mutant/Morphant/Transgenic search results



[Modify Search](#)

Mutant / Morphant / Transgenic Lines Search Results (10 records found)

Your Input Welcome

Genotype(Background)	Phenotype	Allele	Parental Zygosity	Type	Affected Gene(s)	LG	Matching Text
Df(LG23:acvr1b,sp5l,wnt1,wnt10b)w5/w5	1 figure			deficiency	sp5l , wnt10b , wnt1 , acvr1b	23 Details	Genetic feature name: Df(LG23:acvr1b,sp5l, wnt1 ,wnt10b)v
wnt11^{bx226}/bx226	1 figure	bx226		point mutation	wnt11	5 Details	Gene symbol: wnt11
wnt11^{tz216}/tz216	1 figure	tz216		point mutation	wnt11	5 Details	Gene symbol: wnt11
AB	1 figure MO						MO gene symbol: wnt1
fezf2^{m808}/m808	1 figure MO	m808		point mutation	fezf2	11 Details	MO gene symbol: wnt8b
Tuebingen	2 figures MO NEW						MO gene symbol: wnt8a NEW
wild type (unspecified)	1 figure MO						MO gene symbol: wnt11
wild type (unspecified)	1 figure MO						MO gene symbol: wnt4a
wild type (unspecified)	1 figure MO						MO gene symbol: wnt5b
wild type (unspecified)	3 figures MO						MO gene symbol: wnt8b

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Search for Genes / Markers / Clones

Your Input Welcome

Name / Symbol:

Accession Number:

Types:

(Choose one or more)

- All
- Gene
- Pseudogene
- Transcript **NEW**
- Morpholino
- EST
- cDNA
- FOSMID
- BAC
- PAC
- BACEND
- PACEND
- RAPD
- SSLP
- STS
- Transgenic Construct
- Gene Trap Construct
- Promoter Trap Construct
- Enhancer Trap Construct

LG:

Display results in groups of

SEARCH

BEST MATCH


RESET

[Visit the login page to update person and lab records.](#)

Genes/markers/clones search results

Home Genes / Markers / Clones Expression Antibodies BLAST Mutants / Tg Anatomy Maps Publications

Search Results for: name contains 'fgf'

- [41 Genes](#) ([8 with mutants](#))
- [37 Transcripts](#) 














Site Search:

Home Genes / Markers / Clones Expression Antibodies BLAST Mutants / Tg Anatomy Maps Publications

Gene Search Results (41 records.)

Your Input Welcome

Show genes with mutant(s)

Symbol - name	Expression	Phenotype	Map	Matching Text
fgf1 -fibroblast growth factor 1	4 figures 	3 figures 	LG: 14 Details	Current symbol: fgf1
fgf2 -fibroblast growth factor 2				Current symbol: fgf2
fgf3 -fibroblast growth factor 3	63 figures 	18 figures 	LG: 7 Details View Map: Merged Individual Panels	Current symbol: fgf3
fgf4 -fibroblast growth factor 4	12 figures 		LG: 7 Details View Map: Merged Individual Panels	Current symbol: fgf4
fgf5 -fibroblast growth factor 5			LG: 5 Details	Current symbol: fgf5
fgf6a -fibroblast growth factor 6a	6 figures 		LG: 25 Details	Current symbol: fgf6a
fgf6b -fibroblast growth factor 6b			LG: 4 Details	Current symbol: fgf6b
fgf7 -fibroblast growth factor 7			LG: 18 Details	Current symbol: fgf7
fgf8a -fibroblast growth factor 8 a	161 figures 	27 figures 	LG: 13 , 23 Details View Map: Merged Individual Panels	Current symbol: fgf8a
fgf8b -fibroblast growth factor 8 b	14 figures 		LG: 1 Details	Current symbol: fgf8b
fgf10a -fibroblast growth factor 10a	35 figures 	11 figures 	LG: 21 Details View Map: Merged Individual Panels	Current symbol: fgf10a

ZFIN Gene Page: *fgf8a*

 [Research](#) [General Information](#) [ZIRC](#)

[Home](#) [Genes / Markers / Clones](#) [Expression](#) [Antibodies](#) [BLAST](#) [Mutants / Tg](#) [Anatomy](#) [Maps](#) [Publications](#)

ZFIN ID: ZDB-GENE-990415-72

Gene Name: *fibroblast growth factor 8 a* Your Input Welcome
Gene Symbol: *fgf8a*
Previous Names: id:ibd5031, acerebellar, wu:fb73a06, etID309886.13(1), fgf8, ace, fgf-8, cb110(1)
[Nomenclature History](#)

GENE EXPRESSION: [\(current status\)](#)

All expression data: [161 figure\(s\)](#) from 128 publications

Directly submitted expression data: [7 figure\(s\) \(100 images\)](#) from Thisse *et al.*, 2001 [cb110]
[4 figure\(s\) \(5 images\)](#) from Kudoh *et al.*, 2001 [ibd5031]

Wild Type Stages, Structures: [Cleavage:8-cell](#) (1.25h-1.50h) to [Adult](#) (90d-730d, breeding adult)
[apical ectodermal ridge pectoral fin, axial mesoderm ... \(all 104\)](#) ▶

Curated microarray expression: [GEO](#) (1)

MUTANTS AND TARGETED KNOCKDOWNS:

Mutant line(s): [22 genotypes \(2 alleles\)](#)

Phenotype: [\(current status\)](#)

Data: [27 figure\(s\)](#) from 14 publications

Observed in: [alar plate midbrain, anatomical system, apoptosis, atrium, brain ... \(all 61\)](#) ▶

Knockdown reagents: [MO1-fgf8a \(1\)](#), [MO2-fgf8a \(1\)](#), [MO3-fgf8a \(1\)](#), [MO4-fgf8a \(1\)](#)

GENE PRODUCTS:

Gene Ontology

Ontology	GO Term
Molecular Function	growth factor activity
Biological Process	determination of dorsal identity (more)
Cellular Component	extracellular space (more)

[All GO Terms \(45\)](#)

ZFIN Gene Page: *fgf8a*

ZFIN ID: ZDB-GENE-990415-72

Gene Name: *fibroblast growth factor 8 a* Your Input Welcome
Gene Symbol: *fgf8a*
Previous Names: id:ibd5031, acerebellar, wu:fb73a06, etID309886.13(1), fgf8, ace, fgf-8, cb110(1)
[Nomenclature History](#)

GENE EXPRESSION: [\(current status\)](#)
All expression data: [161 figure\(s\)](#) from 128 publications
Directly submitted expression data: [7 figure\(s\) \(100 images\)](#) from Thisse *et al.*, 2001 [cb110]
[4 figure\(s\) \(5 images\)](#) from Kudrycki *et al.*, 2001 [ibd5031]

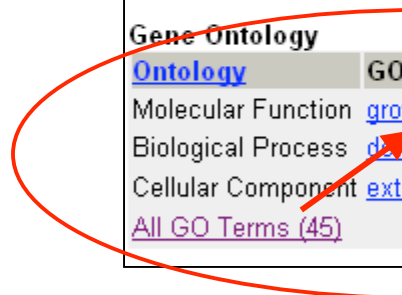
Wild Type Stages, Str
Curated microarray ex

MUTANTS AND TARGETS
Mutant line(s): [22 genes](#)
Phenotype: [\(current status\)](#)
Data: [27](#)
Observed in: [al](#)
Knockdown reagents:

GENE PRODUCTS:
Gene Ontology
[Ontology](#) **GO**
Molecular Function [grow](#)
Biological Process [d22](#)
Cellular Component [extr](#)
[All GO Terms \(45\)](#)

GO Details Your Input Welcome

Ontology	Qualifier	GO Term	Evidence	Inferred From	Reference(s)
Molecular Function		growth factor activity	IEA	InterPro:IPR002348	1
Biological Process		determination of dorsal identity	IDA		1
		dorsal/ventral pattern formation	IDA		1
		endoderm development	IDA		1
		negative regulation of endodermal cell fate specification	IDA		1
		otic vesicle formation	IDA		1
		regulation of bone remodeling	IEP		1
		anterior/posterior pattern formation	IGI	fgf3 hnf1b	1
		anterior/posterior pattern formation	IGI	eng2b eng2a	1
		anterior/posterior pattern formation	IGI	fgf3 hnf1b	1
		anterior/posterior pattern formation	IGI	eng2b eng2a	1
		anterior/posterior pattern formation	IGI	pax2a	1
		cell fate specification	IGI	eng2b eng2a	1
		cell fate specification	IGI	pax2a	1



ZFIN Gene Page continued: *fgf8a*

Protein Families, Domains and Sites:

- [InterPro:IPR002348](#) (1)
- [PROSITE:PS00247](#) (1)
- [Pfam:PF00167](#) (1)

Transcripts:

Type	Name	Length (bp)	Analysis
mRNA	fgf8a-002 (1)	600	- Select Tool -



CONSTRUCTS WITH SEQUENCE FROM *fgf8a*:

[Tg\(fgf8a.1:EGFP\)](#), [Tg\(hsp70l:fgf8a\)](#), [Tg\(fgf8a.2:EGFP\)](#)

SEGMENT (CLONE AND PROBE) RELATIONSHIPS:

fgf8a Contained in	[BAC] CH73-18917 , CH211-19418 (1) (order this)
fgf8a Encodes	[EST] cb110 (1) (order this) , fb73a06 (1) (order this) , ibd5031 (1) (order this) [cDNA] MGC:101652 (1) (order this) , MGC:192193 (1) (order this)

SEQUENCE INFORMATION:

Type	Accession #	Length	Analysis
RNA:	RefSeq:NM_131281 (1)	2146 bp	- Select Tool -
Genomic:	GenBank:CU855882	107120 bp	- Select Tool -
Polypeptide:	UniProtKB:O42278 (1)	210 aa	ZFIN BLAST NCBI BLAST Ensembl UCSC BLAT
Sequence Clusters:	UniGene:478 (1)		

[All Sequence Information \(25\)](#)

OTHER *fgf8a* GENE / MARKER PAGES:

- [Entrez Gene:30538](#) (1)
- [VEGA:OTTDARG00000018834](#) (1)
- [Ensembl\(Zv8\):ENSDARG00000003399](#) (1)

MAPPING INFORMATION:

LG: 13, 23 [Details](#)

View Map: [Merged](#) [Individual Panels](#)

ZFIN Gene Page continued: *fgf8a*

Protein Families, Domains and Sites:

- [InterPro:IPR002348](#) (1)
- [PROSITE:PS00247](#) (1)
- [Pfam:PF00167](#) (1)

Transcripts:

Type	Name	Length (bp)	Analysis
mRNA	fgf8a-002 (1)	600	CLUSTAL

CONSTRUCTS WITH S

[Tg\(fgf8a.1:EGFP\)](#), [Tg\(hs](#)

SEGMENT (CLONE AN

[fgf8a](#) Contained in

[fgf8a](#) Encodes

SEQUENCE INFORMAT

Type

RNA:

Genomic:

Polypeptide:

Sequence Clusters:

[All Sequence Information](#)

OTHER *fgf8a* GENE /

- [Entrez Gene:30538](#) (1)

MAPPING INFORMATI

LG: 13, 23 [Details](#)



Search Vega Zebrafish:

e.g. [hif1ab](#), [OTTDARG0000004830](#)

Vega v35 - Mar 2009
HOME · [SITEMAP](#) [HELP](#)

Your Vega

- [★ Login or Register](#)
- [★ About User Accounts](#)

OTTDARG00000018834

- [★ Gene information](#)
- [★ Genomic sequence](#)
- [★ Genomic sequence alignment](#)
- [★ Gene splice site image](#)
- [★ Transcript information](#)
- [★ Exon information](#)
- [★ Protein information](#)
- [★ Export gene data](#)

Chromosome 13
27,396,198 - 27,402,764

- [★ View of Chromosome 13](#)
- [★ Graphical view](#)
- [★ Graphical overview](#)
- [★ Export from region...](#)

Use Vega to...

- [★ BLAST / SSAHA](#)
- [★ Text search](#)
- [★ Export data](#)
- [★ Download data](#)

Curated Locus Report

Curated Locus	fgf8a (ZFIN ID) Synonyms: ace, acerebellar, cb110, etlD309886.13, fgf-8, fgf8, id:ibd5031, wu:fb73a06 (to view all Vega genes linked to the name click here)												
Author	This locus was annotated by Havana < vega@sanger.ac.uk >												
Locus ID	OTTDARG00000018834												
Genomic Location	This gene can be found on Chromosome 13 at location 27,396,198-27,402,764 . The start of this gene is located in Contig CR925797.8.1.65727 .												
Gene Type	Known protein coding (Definition)												
Version & Date	Version 3 Last modified on 19/06/2008 (Created on 11/05/2006)												
Alternative Symbols	ZDB-GENE-990415-72												
Description	fibroblast growth factor 8												
Database Matches	This Vega gene corresponds to the following database identifiers: ZFIN: fgf8a ZFIN expression patterns: fgf8a												
Curation Method	Finished genomic sequence is analysed on a clone by clone basis using a combination of similarity searches against DNA and protein databases as well as a series of ab initio gene predictions (GENSCAN, Fgenes). In addition, comparative analysis using vertebrate datasets is used to aid novel gene discovery. The data gathered in these steps is then used to manually annotate the clone adding gene structures, descriptions and poly-A features. The annotation is based on supporting evidence only.												
Transcripts	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">fgf8a-001</td> <td>OTTDART00000022966</td> <td>OTTDARP00000019154</td> <td>[Transcript info]</td> <td>[Exon info]</td> <td>[Peptide info]</td> </tr> <tr> <td>fgf8a-002</td> <td>OTTDART00000028887</td> <td>OTTDARP00000022042</td> <td>[Transcript info]</td> <td>[Exon info]</td> <td>[Peptide info]</td> </tr> </table>	fgf8a-001	OTTDART00000022966	OTTDARP00000019154	[Transcript info]	[Exon info]	[Peptide info]	fgf8a-002	OTTDART00000028887	OTTDARP00000022042	[Transcript info]	[Exon info]	[Peptide info]
fgf8a-001	OTTDART00000022966	OTTDARP00000019154	[Transcript info]	[Exon info]	[Peptide info]								
fgf8a-002	OTTDART00000028887	OTTDARP00000022042	[Transcript info]	[Exon info]	[Peptide info]								

ZFIN Gene Page continued: *fgf8a*

Protein F:
• [InterPro](#)

Transcript
Type
mRNA

CONSTRU
[Tg\(fgf8a.1:](#)

SEGMENT
fgf8a Cont
fgf8a Encc

SEQUENC
Type
RNA:
Genomic:
Polypeptic
Sequence
[All Sequer](#)

OTHER *fg*
• [Entrez](#)

MAPPING
LG: 13,

Ensembl
Home > Zebrafish
Login / Register | BLAST/BLAT | BioMart | Docs & FAQs

Location: 13:33,446,378-33,452,845
Gene: **fgf8a**
Transcript: fgf8a

Gene: fgf8a (ENSDARG00000003399)
 fibroblast growth factor 8 a [Source:RefSeq peptide;Acc:NP_571356]

Location [Chromosome 13: 33,446,378-33,452,845](#) reverse strand.

Transcripts There is 1 transcript in this gene: [hide transcripts](#)

Name	Transcript ID	Protein ID	Description
fgf8a	ENSDART00000025583	ENSDARP00000018653	protein_coding

Transcript and Gene level displays

In Ensembl a gene is made up of one or more transcripts. We provide displays at two levels:

- Transcript views which provide information specific to an individual transcript such as the cDNA and CDS sequences and annotation.
- Gene views which provide displays for data associated at the gene level such as orthologues and paralogues, regulator variants.

This view is a gene level view. To access the transcript level displays select a Transcript ID in the table above and then navigate using the menu at the left hand side of the page. To return to viewing gene level information click on the Gene tab in the page.

Gene summary [help](#)
[Splice variants »](#)

Name [fgf8a](#) (ZFIN)

Synonyms ace, acerebellar, cb110, etID309886.13, fgf-8, fgf8, id:ibd5031, wu:fb73a06 [To view all Ensembl genes linked to the name [click here](#).]

Gene type Known protein coding

Prediction Method Transcripts were annotated by the Ensembl [genebuild](#).







Transcripts

26.47 Kb

	33.44 Mb	33.45 Mb	33.45 Mb	33.45 Mb
Contigs	CR925797.8 >			
Ensembl gene	<div style="display: flex; align-items: center; justify-content: center;"> < > </div>			

ZFIN Gene Page continued: *fgf8a*

ORTHOLOGY:

Species	Symbol	Chromosome (Position)	Accession #	Evidence	
				AA	CL
Zebrafish	<i>fgf8a</i>	13 , 23			
Human	FGF8	10 (q24)	<ul style="list-style-type: none">• OMIM:600483• Entrez_Gene:2253		
Mouse	<i>Fgf8</i>	19 (45.00 cM)	<ul style="list-style-type: none">• MGI:99604• Entrez_Gene:14179		

[Orthology Details](#)

[CITATIONS](#) (244)

ZFIN Gene Page continued: *fgf8a*

ORTHOLOGY:

Evidence

Species
Zebrafish
Human
Mouse
Ortho
CITAT

Orthology Details

Gene Name: *fibroblast growth factor 8 a*

Gene Symbol: [fgf8a](#)

Your Input Welcome

Species	Symbol	Chromosome (Position)	Accession #
Zebrafish	fgf8a	13 , 23	
Human	FGF8	10 (q24)	<ul style="list-style-type: none"> • OMIM:600483 • Entrez Gene:2253
Mouse	Fgf8	19 (45.00 cM)	<ul style="list-style-type: none"> • MGI:99604 • Entrez Gene:14179

Orthology by Evidence Code:

Evidence Code	Zebrafish	Human	Mouse	Publication
AA	●	●		Itoh et al., 2007
	●	●		Woods et al., 2005
	●	●	●	Jovelin et al., 2007
	●	●	●	Reifers et al., 1998
	●	●	●	Wotton et al., 2008
	●	●	●	Yokoi et al., 2007
	●	●	●	Reifers et al., 2000
CL	●	●		Correa et al., 2005
	●	●		Danchin et al., 2004
	●	●		Itoh et al., 2007
	●	●		Kikuta et al., 2007
	●	●		Woods et al., 2005
	●	●	●	Wotton et al., 2008

Orthology by Publication:

Publication	Evidence Code	Zebrafish	Human	Mouse
Correa et al., 2005	CL	●	●	
Danchin et al., 2004	CL	●	●	
Itoh et al., 2007	AA	●	●	
	CL	●	●	
Jovelin et al., 2007	AA	●	●	●
Kikuta et al., 2007	CL	●	●	
Reifers et al., 1998	AA	●	●	●
Reifers et al., 2000	AA	●		●
Woods et al., 2005	AA	●	●	
	CL	●	●	
Wotton et al., 2008	AA	●	●	●

Genes/markers/clones search results

Home Genes / Markers / Clones Expression Antibodies BLAST Mutants / Tg Anatomy Maps Publications

Search Results for: name contains 'fgf'

- [41 Genes](#) ([8 with mutants](#))
- [37 Transcripts](#) 
- [38 Morpholinos](#)



Home Genes / Markers / Clones Expression Antibodies BLAST Mutants / Tg Anatomy Maps Publications

Transcript Search Results (37 records) Your Input Welcome

Name	Transcript Type	Matching Text
fgf1-001	mRNA	Current symbol: fgf1-001
fgf5-001	mRNA	Current symbol: fgf5-001
fgf6a-001	mRNA	Current symbol: fgf6a-001
fgf6b-001	mRNA	Current symbol: fgf6b-001
fgf7-001	mRNA	Current symbol: fgf7-001
fgf8a-002	mRNA	Current symbol: fgf8a-002
fgf8b-001	mRNA	Current symbol: fgf8b-001
fgf10a-001	mRNA	Current symbol: fgf10a-001
fgf11-001	mRNA	Current symbol: fgf11-001
fgf11-002	mRNA	Current symbol: fgf11-002
fgf12-001	mRNA	Current symbol: fgf12-001
fgf12-002	mRNA	Current symbol: fgf12-002
fgf12-003	ncRNA	Current symbol: fgf12-003
fgf13-001	mRNA	Current symbol: fgf13-001
fgf13-002	mRNA	Current symbol: fgf13-002
fgf14-001	mRNA	Current symbol: fgf14-001
fgf16-001	mRNA	Current symbol: fgf16-001
fgf17-001	mRNA	Current symbol: fgf17-001
fgf17-002	mRNA	Current symbol: fgf17-002
fgf18b-001	mRNA	Current symbol: fgf18b-001



ZFIN Transcript Page



Transcript Name: [ttna-001](#)

Transcript Type: mRNA

Sequence:

[OTTDART00000026737](#) (1) [\[Show\]](#)

[\[Download\]](#)

- Select Analysis Tool -

Associated with Genes: [ttna](#) (1)

SEGMENT (CLONE AND PROBE) RELATIONSHIPS:

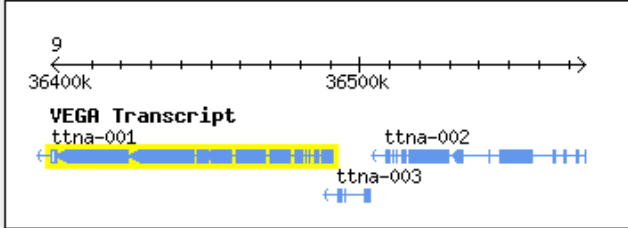
ttna-001 Contained in [BAC] [DKEY-190I10](#) (1) [\(order this\)](#), [DKEYP-67D2](#) (1)

Link to GBrowse



[ttna](#) TRANSCRIPTS:

Type	Name	Length (bp)	Analysis
mRNA	ttna-001		
	ttna-002 (1)	23044	- Select Tool -
	ttna-003 (1)	1201	- Select Tool -
transcript	OTTDART0000002029 (1)	58230	- Select Tool -



OTHER ttna-001 TRANSCRIPT PAGES:

- [Vega Trans:OTTDART00000026737](#) (1)

PROTEIN PRODUCTS:

- [VEGAPROT:OTTDARP00000021919](#) (1)

ZEBRAFISH SUPPORTING SEQUENCES:

Type	Accession #	Length	Analysis
RNA	GenBank:AY081167 (1)	1908 bp	- Select Tool -
	GenBank:CT652524 (1)	846 bp	- Select Tool -
	GenBank:BI878949 (1)	691 bp	- Select Tool -

ZFIN GBrowse



Home Genes / Markers / Clones Expression Antibodies BLAST Mutants / Tg Anatomy Maps

Showing 179.1 kbp from 9, positions 36,396,474 to 36,575,589

Instructions

Searching: Search using a sequence name, gene name, locus, or other landmark. The wildcard character * is allowed.

Navigation: Click one of the rulers to center on a location, or click and drag to select a region. Use the Scroll/Zoom buttons to change magnification and position.

Examples: [pax6a](#), [gsc](#), [fgf8a](#).

[\[Bookmark this\]](#) [\[Upload your own data\]](#) [\[Hide banner\]](#) [\[Share these tracks\]](#) [\[Link to Image\]](#) [\[Download PDF\]](#) [\[High-res Image\]](#) [\[Help\]](#) [\[Reset\]](#)

Search

Landmark or Region:

ZDB-GENE-030113-2

Data Source

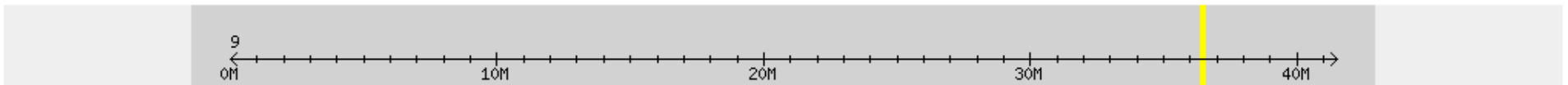
ZFIN (Zv8)

Reports & Analysis:

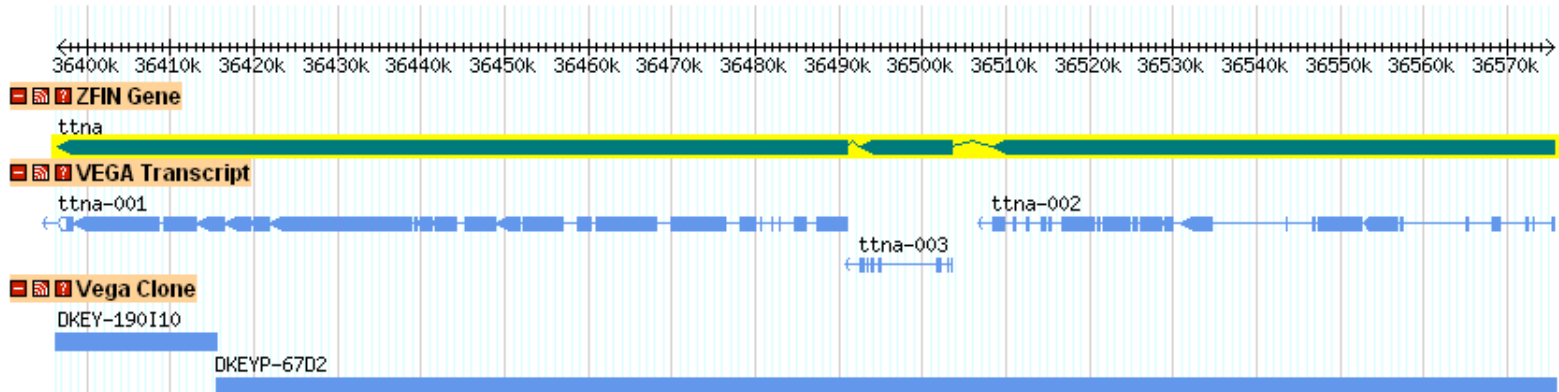
Download Decorated FASTA File

Scroll/Zoom:

Overview



Details



[Clear highlighting](#)

ZFIN GBrowse



Home Genes / Markers / Clones Expression Antibodies BLAST Mutants / Tg Anatomy Maps

Showing 179.1 kbp from 9, positions 36,396,474 to 36,575,589

Instructions

Searching: Search using a sequence name, gene name, locus, or other landmark. The wildcard character * is allowed.

Navigation: Click one of the rulers to center on a location, or click and drag to select a region. Use the Scroll/Zoom buttons to change magnification and position.

Examples: [pax6a](#), [gsc](#), [fgf8a](#).

[\[Bookmark this\]](#) [\[Upload your own data\]](#) [\[Hide banner\]](#) [\[Share these tracks\]](#) [\[Link to Image\]](#) [\[Download PDF\]](#) [\[High-res Image\]](#) [\[Help\]](#) [\[Reset\]](#)

Search

Landmark or Region:

ZDB-GENE-030113-2

Reports & Analysis:

Download Decorated FASTA File

Data Source

ZFIN

Tracks

General All on All off

Vega Clone

VEGA Transcript

ZFIN Gene

Display Settings

Show grid

Image Width

450 640 800 1024

Cache tracks

Track Name Table

Alphabetic Varying

Draggable tracks

Key position

Between Beneath Left Right

Show tooltips

Highlight feature(s) (feature1 feature2...)

Highlight regions (region1:start..end region2:start..end)

Add your own tracks

Upload your own data: [\[Help\]](#)

Upload a file

Add remote annotations: [\[Help\]](#)

Enter Remote Annotation URL

Clear

Outline

1. **Anatomy, Antibodies, and Gene Expression**
2. **Phenotypes in ZFIN - the Entity-Quality method**
3. **Navigating ZFIN gene and Transcript pages**
4. **BLAST resources at ZFIN**



Search **Genes / Markers / Clones**

Search **Gene Expression**

Search **Antibodies**

BLAST at ZFIN

Nomenclature Conventions

Obtain approval for gene names

ZFIN Author Guidelines

Search **Mutants / Transgenics**

Wild-Type Lines

Line Designations

Submit mutant/transgenic line names

Search **Anatomy**

Atlases and Resources

Search **Publications**

Find **People**

Find **Laboratories**

Find **Companies**

Jobs, Meetings

Download Data

View *The Zebrafish Book*

Zebrafish for K-12

Zebrafish In The Classroom

About ZFIN

Citing ZFIN

Visit the login page to update person and lab records.

Zebrafish International Resource Center

Request: Fish Lines, ESTs/cDNAs, Monoclonal Antibodies, *The Zebrafish Book*, Paramecia

Submit: Fish Lines

Health Services

ZIRC Home

Genomics

Browse the genome: Ensembl, Vega, UCSC, NCBI

View Genetic Maps

BLAST at ZFIN, Ensembl, Vega, NCBI, MGH

Find cDNAs and ESTs at ZGC, ZGI

Microarray expression at ZF-Espresso

More Zebrafish Genome Resources

Other Fish Genomes

Zebrafish Programs

Trans-NIH Zebrafish Initiative,

ZF-MODELS, more...

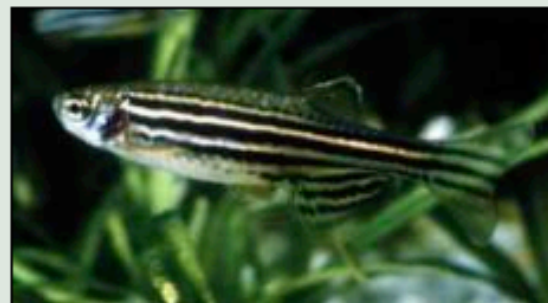
News

April 8 - New Vega Release

March 6 - Zebrafish Antibodies Poll

All News, All ZFIN Newsletters

Zebrafish Newsgroup



Current ZFIN BLAST



Site Search:

Home Genes / Markers / Clones Expression Antibodies BLAST Mutants / Tg Anatomy Maps Publications

BLAST

Your Input Welcome

Choose program and database:

Program:

- Database:
 - ===== Nucleotide Db =====
 - GenBank Zebrafish (no ESTs,GSS,HTGs)
 - RefSeq Zebrafish mRNA
 - ZFIN GenBank Sequences
 - ZFIN RNA/cDNA Sequences**
 - ZFIN Genes with Expression
 - ZFIN Morpholino Sequences
 - ZFIN MicroRNA Sequences
 - ZFIN Vega Transcripts

Query sequence (maximum of 50,000 letters):

FASTA or free-text format:

- Zebrafish mRNA
- EST Zebrafish
- Ensembl Zebrafish Transcripts
- TIGR Zebrafish Clusters
- Zebrafish DNA
- HTG Zebrafish
- GSS Zebrafish
- Zebrafish Trace Archive

Set subsequence: From To

Search for short, nearly exact matches

Sequence ID: (one or multiple delimited by ",")

Sequence Type:

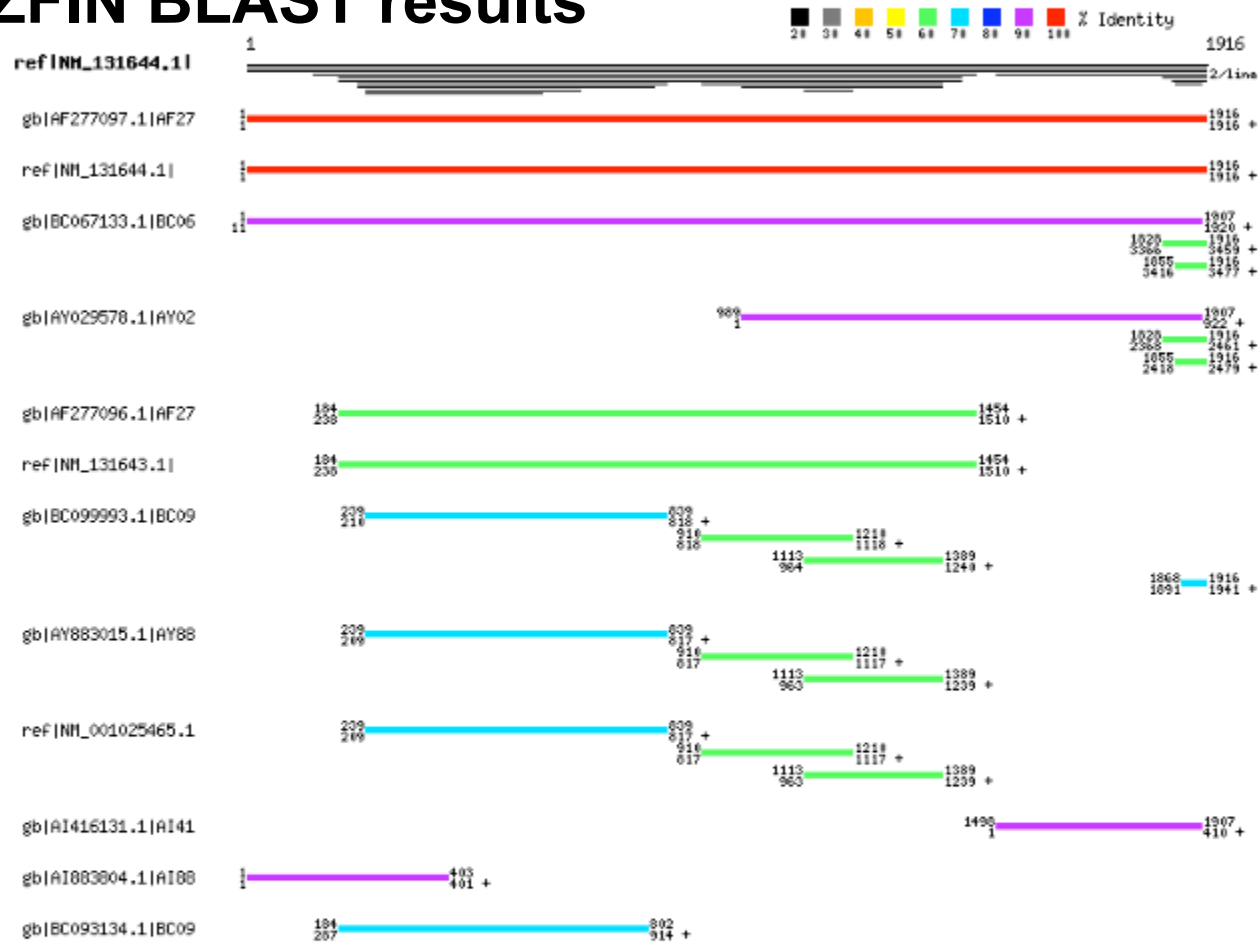
Upload a free-text file:

- ===== Protein Db =====
- RefSeq Zebrafish Protein
- UniProt Zebrafish

Options:

Expect: Word Size: Matrix:

Current ZFIN BLAST results



Sequences producing High-scoring Segment Pairs:

	High Score	Smallest Sum P(N)	N	ZFIN	Annotations
gb AF277097.1 AF277097 Danio rerio HMG box transcription ...	9580	0.	1	sox9b	E G
ref NM_131644.1 Danio rerio SRY-box containing gene 9b (...)	9580	0.	1	sox9b	E G
gb BC067133.1 BC067133 Danio rerio SRY-box containing gen...	9271	0.	2	sox9b	E G MGC: 76805
gb AY029578.1 AY029578 Danio rerio transcription factor 3...	4439	8.4e-200	2	sox9b	E G
gb AF277096.1 AF277096 Danio rerio HMG box transcription ...	2276	4.2e-98	1	sox9a	E P G

gene page
 gene expression
 gene ontology
 phenotype

New ZFIN BLAST Interface



Choose program and database:

Program:

Database:

Query sequence (FASTA or Sequence ID):

FASTA

or Sequence ID: (separate multiple with ",")

or Upload a free-text file:

Options

Search for short, nearly exact matches

Expect: Word Size: Matrix:

Set subsequence: From To

Filter options for DNA Queries: Low complexity Poly-A's filter

Filter options for Protein Queries:

SEG - filter low compositional complexity regions

XNU - filter short-periodicity repeats

Retrieve Previous Result

Selected Database Details:

New ZFIN BLAST Interface



Choose program and database:

Program: Nucleotide - Nucleotide

Database: ZFIN RNA/cDNA

Query sequence (letters):

FASTA

or Sequence

or Upload

===== Protein DB =====

Retrieve Previous Result

Selected Database Details:

Options

Search for short, nearly exact matches

Expect: 1.0E-25 Word Size: 11 Matrix: -----

Set subsequence: From To

Filter options for DNA Queries: Low complexity Poly-A's filter

Filter options for Protein Queries:

SEG - filter low compositional complexity regions

XNU - filter short-periodicity repeats

New ZFIN BLAST results



BLAST Results

Currently Viewing: [3001663800497543360](#)

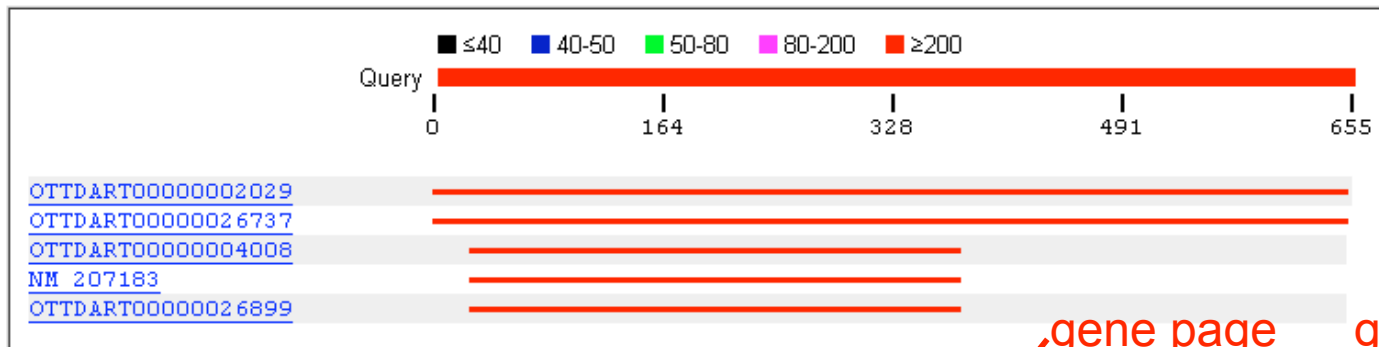
Links will be active for one week.

Query: ncbi|BM775748.1 fy40h04.y1 Sugano SJD adult male Danio rerio cDNA clone IMAGE:5602422 5' similar to TR:Q10466 Q10466 TITIN, HEART ISOFORM N2-B, mRNA sequence (655 letters)

Databases: ZFIN Genes With Expression , ZFIN RNA/cDNA

Number of Sequences: 154,437

Mouse over to see the define, click to show alignments



transcript or clone

Key **E** Gene Expression **E** with Figures **G** GO Annotations **P** Phenotype Data **P** with Figures

Hit	Score	E value	N	ZFIN Genes	Gene Data	Hit (Transcript or Clone)
OTTDART00000002029	3275	0	1	ttna	E G P	OTTDART00000002029
OTTDART000000026737	3275	0	1	ttna	E G P	ttna-001
OTTDART000000004008	849	3E-32	1	ttnb	E G	OTTDART000000004008
NM_207183	849	3E-32	1			
OTTDART000000026899	840	7.7E-32	1	ttnb	E G	OTTDART000000026899

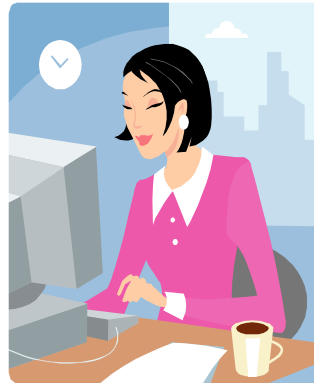
gene page

gene expression

gene ontology phenotype

[OTTDART00000002029](#) ttna|BUSM1-258D18.1 LG AB AL772356.2 Danio rerio protein coding NOVEL, 58230 bp [ttna](#) **E** **G** **P**

So how does all this data get into ZFIN?



***A biocurator* reads the literature and extracts the data**

“Amplify the impact of your research: Ensure that your data can be integrated into the electronic data stream”

Come see our talk (Genomics session on Friday)

More questions?

Come to our help desk during poster sessions



Or email us at zfinadm@zfin.org



Added by [Jonathan Knight](#), last edited by [Monte West](#) on May 14, 2009 ([view change](#))

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Updated: Mar 4, 2009

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