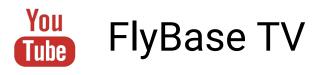


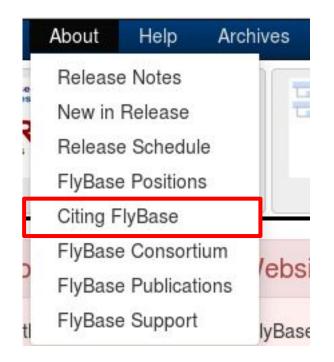


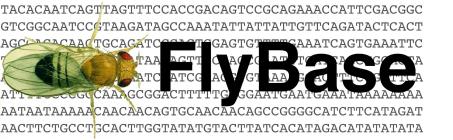
Thank you for your support.





How to Help FlyBase





FlyBase 2018: New look, new features

Josh Goodman, FlyBase ADRC 2018



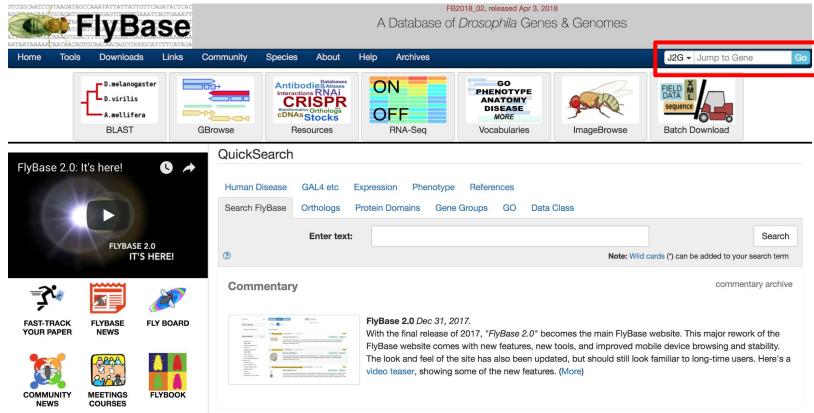
Annual Drosophila Research Conference

Overview

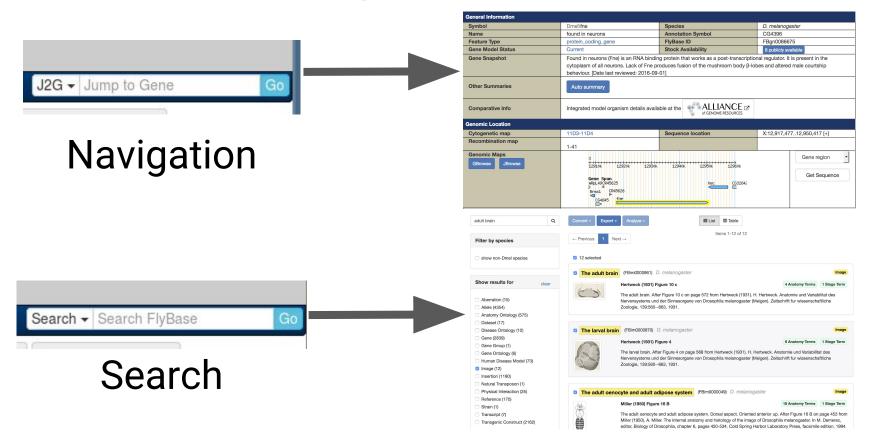
- Human Disease • Jump to Gene
- HitLists
- Reports

- GAL4
- Orthologs
- Summaries
 Sequence Downloader
- **Ribbons**
- **Domains**
- **References**

FlyBase 2.0



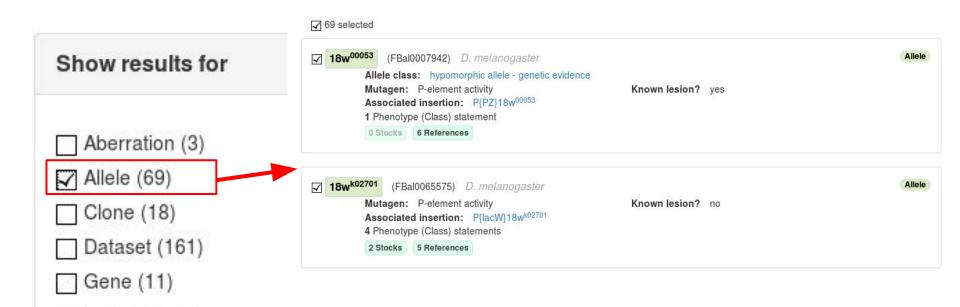
Jump to Gene



HitLists

18w	Q	Convert → Export → Analyze → III List III Table	
low	q		
Filter by species		$\leftarrow \text{Previous} 1 2 3 \dots 11 \text{Next} \rightarrow$	
show non-Dmel species		☑ 506 selected	
Show results for	clear	18w 18 wheeler (CG8896, FBgn0004364) D. melanogaster GBrowse JBrowse Feature type: protein coding gene Gene model status: Current Sequence Location: 2R:20,111,51120,116,932 [+] Cytogenetic Map: 56F8-56F8	Gene
 ☐ Aberration (3) ☐ Allele (69) ☐ Clone (18) 		27 Alleles 12 Stocks 1 Transcript 1 Polypeptide 159 References Gene Snapshot >	
Dataset (161) Gene (11) Insertion (13) Physical Interaction (3)		BDSC:4372 Image: (FBst0004372) D. melanogaster Stock Center 4372 L ² Genotype: y ¹ w ² ; 18w ^{Δ7-35} /CyO Collection: Bloomington Drosophila Stock Center	Stock
 Polypeptide (1) Reference (180) Sequence Feature (16) Stock (5) 		Kyoto:107712 (FBst0306360) D. melanogaster Stock Center 107712 Genotype: y ¹ w ² ; 18w ^{Δ7-35} /CyO Collection: Kyoto Stock Center	Stock
Transcript (1) Transgenic Construct (25) show empty		(FBal0007942) D. melanogaster Allele class: hypomorphic allele - genetic evidence Mutagen: P-element activity Associated insertion: P{PZ}18w ⁰⁰⁰⁵³ 1 Phenotype (Class) statement O Stocks 6 References	Allele

HitLists - Data Class



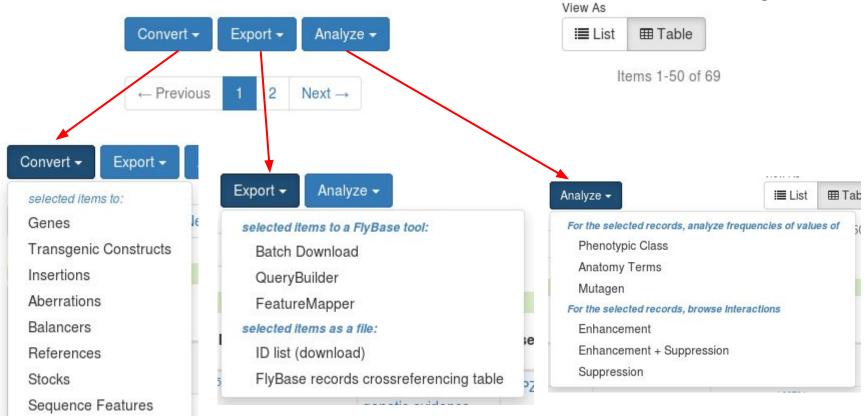
HitLists - Views





	Allele Results								
V	Symbol 🖡	Class	Inserted Elements	# Stocks	Mutagens	Known Lesion?			
	18w ⁰⁰⁰⁵³	hypomorphic allele - genetic evidence	P{PZ}18w ⁰⁰⁰⁵³	0	P-element activity	yes			
\checkmark	18w ^{k02701}		P{lacW}18w ^{k02701}	2	P-element activity	no			
\checkmark	18w ^{unspecified}			0		no			
\checkmark	18w ^{GD17}			3	in vitro construct	yes			
\checkmark	18w ^{GD2513}			2	in vitro construct	yes			
	18w ^{GD14418}			1	in vitro construct	yes			

HitLists - Convert, Export, and Analyze



HitLists - Convert, Export, and Analyze

Dataset: FBal Field: CV: phenotypic class

#	Most frequent CV Terms (out of 46461)	Related records
1	lethal	<u>33</u>
2	[empty field - no data available]	<u>15</u>
3	neuroanatomy defective	<u>14</u>
4	partially lethal - majority die	<u>11</u>
5	visible	<u>10</u>
6	viable	<u>8</u>
7	increased cell death	<u>8</u>

Reports

Symbol	Dmel\18w	Species	D. melanogaster		
Name	18 wheeler	Annotation Symbol	CG8896		
Feature Type	protein_coding_gene	FlyBase ID	FBgn0004364		
Gene Model Status	Current	Stock Availability	12 publicly available		
Gene Snapshot	processes including ovarian follicle cell m	nigration, antibacterial humoral re	18w-encoded protein contributes to multiple esponse and ventral cord development. A role in enetic interaction of 18w with Toll-6 and Tollo.		
Other Summaries	Auto summary Interactive Fly				
Also Known As	Toll-2				
Comparative Info	Integrated model organism details availa	ble at the ALLIANC	CE ♂		
enomic Location					
Cytogenetic map	56F8-56F8	Sequence location	2R:20,111,51120,116,932 [+]		
Recombination map	2-90				
Sequence	Gene region Get Sequence	•	Decorated FASTA Get genome region		
Genomic Maps GBrowse JBrowse	28 4 20110k Gene Span 180	2012ок	>		
Other Genome Views	The following external sites may use different assemblies or annotations than FlyBase.				
	NCBI Genome Data Viewer	2	UCSC Genome Browser		
	Ensembl Genome Browser	2	PopFly Genome Browser 2*		

Gene	ral Information
Sym	ibol
Dme	el\18w
Spe	cies
D. n	nelanogaster
Nam	10
18 w	vheeler
Ann	otation Symbol
CG8	896
Feat	ture Type
prote	ein_coding_gene
FlyE	Base ID
FBg	n0004364
Gen	e Model Status
Curr	rent
Stoc	ck Availability
12 p	publicly available
Gen	e Snapshot
rece mult antik deve emb	wheeler (18w) encodes a member of the Toll-like ptor family. The 18w-encoded protein contributes to iple processes including ovarian follicle cell migration, pacterial humoral response and ventral cord elopment. A role in convergent extension during early ryogenesis is suggested by the genetic interaction of with Toll-6 and Tollo. [Date last reviewed: 2018-01-25]
Othe	er Summaries
AL	Interactive Fly

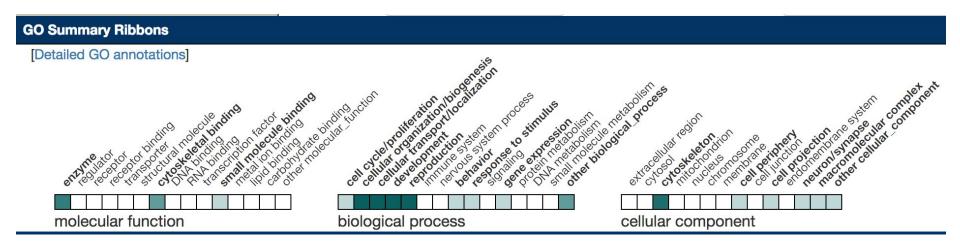
Also Known As Toll-2 **Report Sections**

General Information
Overview
Disease Summary
Related Diseases
Ortholog Information
Dmel Gene Information
Synthetic Gene(s) Used
Experimental Findings
Summary of Physical Interactions
Alleles Reported to Model Human Disease
Genetic Tools, Stocks and Reagents
References

Reports - General Information

General Information						
Symbol	Dmel\Khc	Species	D. melanogaster			
Name	Kinesin heavy chain	Annotation Symbol	CG7765			
Feature Type	protein_coding_gene	FlyBase ID	FBgn0001308			
Gene Model Status	Current	Stock Availability	19 publicly available			
Gene Snapshot		Kinesin heavy chain (Khc) is the force generating subunit of kinesin-1, a microtubule motor protein. Khc functions in the long-distance transport of cytoplasmic "cargoes" such as mRNAs, protein complexes, and organelles. [Date last reviewed: 2016-06-09]				
Other Summaries	Auto summary Gene Group	UniProt Red Book	Interactive Fly			
Also Known As	KIN, kinesin, DmKHC, DKH, kinesin-1	KIN, kinesin, DmKHC, DKH, kinesin-1				
Comparative Info	Integrated model organism details availa	able at the of GENOME RESOURCES				

Reports - GO Ribbons

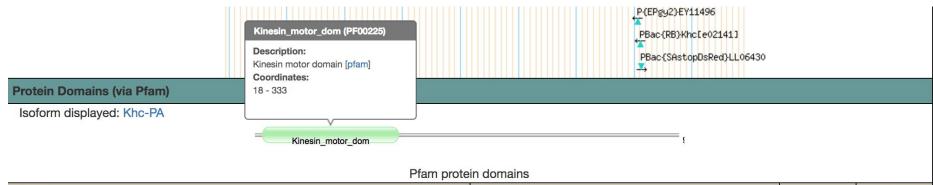


Reports - GO Ribbons

GO Summary Ribbons

[Detailed GO annotations]		ane di	
Ś	ding	in we here the state	ten anderent
ding openie indire	inding te bindiftur	roller and rolling and a second a	Legon the at the at the contraction
orthe store of the	oring to the the cel	college to the second of the s	A RECTOR OF THE ROLL OF THE RECTOR OF THE RE
molecular function	bio		component
Families, Domains and Molecular Fund	tion	CELLULAR ORGANIZATION/BIOGENESIS: • actin filament bundle organization • axon guidance	
Gene Group Membership (FlyBase)	KINESINS	• axonogenesis	
Protein Family (UniProt, Sequence		centrosome separation dendrite morphogenesis	
Similarities)	Belongs to	 dorsal appendage formation 	y. Kinesin family. Kinesin subfamily. (P17210)
Protein Domains/Motifs		 heterochromatin organization involved in chromatin silencin intracellular distribution of mitochondria 	ng
	InterPro	microtubule polymerization	
	Kinesin mo	 oocyte microtubule cytoskeleton polarization 	-loop containing nucleoside triphosphate hydrolase;
	Kinesin-like	 pole plasm assembly 	
Molecular Function (see GO		pole plasm oskar mRNA localization	
section for details)	Experimer	stress granule disassembly	

Reports - Protein Domains

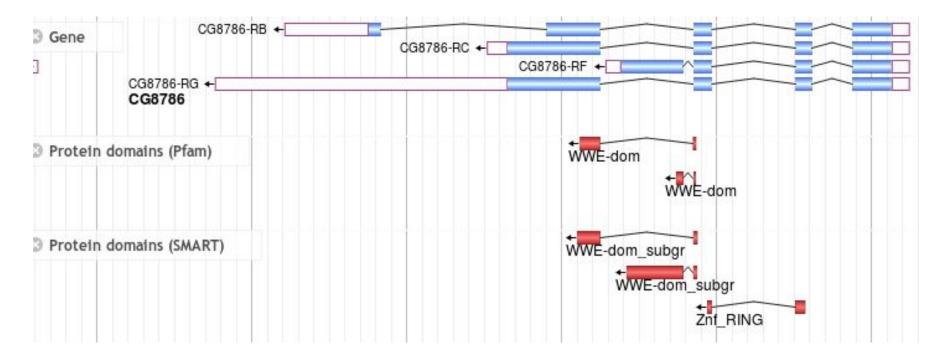


InterPro name	classification	start	end
Kinesin motor domain (Kinesin_motor_dom)	Domain	18	333

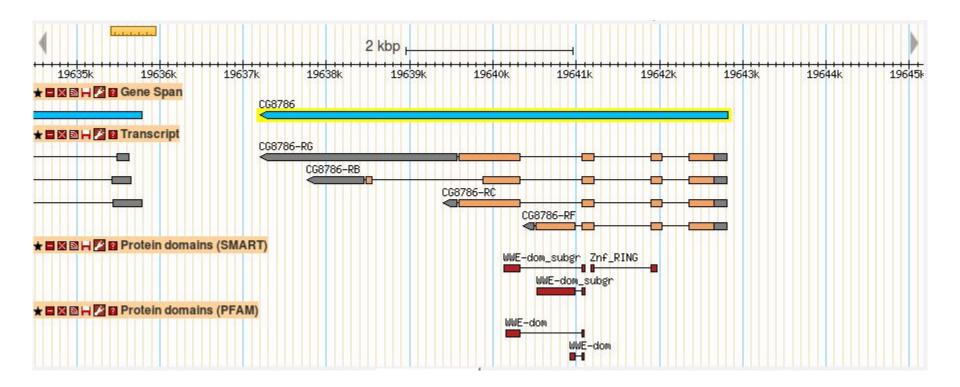
Reports - Protein Domains

Genomic Location			
Cytogenetic map	53A3-53A4	Sequence location	2R:16,266,96016,271,971 [-]
Recombination map	2-79		
Sequence	Gene region Get Sequence	•	Decorated FASTA Get genome region
Genomic Maps GBrowse JBrowse	2R 16260k Gene Span CngA fidipidine csul	16270k 16280k 16280k prim CC CG33017 prim CC CG15	
Other Genome Views	The following external NCBI Genome Data Viewer Ensembl Genome Browser		PopFly Genome Browser C

JBrowse - Protein Domains



GBrowse - Protein Domains

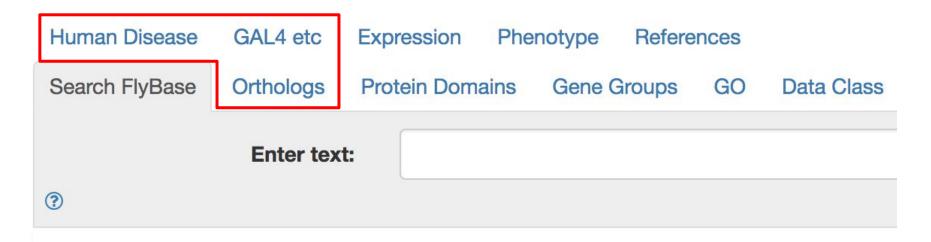


References

 References (2,623) 							
Publication Types	<u>.</u>	Filter	2015, Smith, cell, etc.	Q	Sort by	Default order	•
Representative publications (25)	I HitList	(0): 006	200				
All publications (2623)	 ④ Batch Download ➡ Citation Manager (RIS) 	(2): 296 Sollagen	Enhances BMP Signaling to	o Guide Renal Ti	ubule Morph	ogenesis in	
Research paper (1258)							
Supplementary material 14	Teleman and Cohen, 2000, Dpp gradient formation in the			f0132263]			
Review (649)	Deshpande et al., 2014, PLo	S ONE 9	(2): e88847				
Erratum 1	BMP Signaling and the Main	itenance o	of Primordial Germ Cell Iden	tity in Drosophila	1 Embryos. [F	FBrf0224203]	
Personal communication to FlyBase	Frandsen et al., 2008, Proc. Salmonella pathogenesis rev Drosophila. [FBrf0205983]				tasis and imn	nune responses in	

QuickSearch

QuickSearch



Human Disease

Search using a disease name/ID/synonym, or a human or fly gene symbol/ID:

Enter text:

Parkinson's, etc.

Alternatively, browse all Human Disease Model reports

?

Note: Wild ca

Human Disease

Arl6IP1 ADP-ribosylation fa rowse JBrowse Feature type: Sequence Location:	actor-like 6 interacting proteir protein coding gene 3R:16,643,60516,645,171		n0038453) <i>D. melanoga</i> Gene model status: Cytogenetic Map:	Current 89D6-89D6	Gene
7 Alleles	8 Stocks	Transcripts	2 Polypeptides	30 References	
spastic paraplegia (FBh	h0000032)			Human Di	isease Model
Associated DO term: Human Genes implica	hereditary spastic parapleg ated (HGNC):	D. mela	ated OMIM term: nogaster Orthologs:		
11 Subtypes 0 Relate	ad Disease Reports 8 Refere	nces			
spas^{5.75} (FBal0177736) D	0				Allele
Mutagen: Delta2-3 tr No associated inserti	ons or constructs statements, 20 Phenotype (A	Known	lesion? yes ts, and 1 Disease Model a	annotation	

✓ tropical spastic paraparesis (DOID:321)



A viral infectious disease that results_in inflammation located_in spinal cord, has_material_basis_in Human T-lymphotropic virus 1, which is transmitted_by sexual contact, and transmitted_by breast feeding. The infection has_symptom spastic weakness of both legs, has_symptom muscle stiffness, has_symptom sensory disturbance, and has_symptom spasms.

GAL4 Search

Driver/Reporter:	GAL4 binary driver	Output format:	integrated table	-
	refine search by adding qualifier terr	ns		
Developmental Stage:	e.g., third instar larval stage			
Anatomy/Cell Type:	e.g., neuron			
Cellular Component:	e.g., neuromuscular junction			

Frequently Used GAL4 Drivers

Search for GAL4 and other drivers and reporters by expression pattern:

Driver/Reporter:	GAL4 binary driver
	refine search by adding qualifier terms
Developmental Stage:	e.g., third instar larval stage
Anatomy/Cell Type:	e.g., neuron
Cellular Component:	e.g., neuromuscular junction
	Fill only as many fields as you need
Frequently Used GAL4 Drivers t	able

Frequently Used GAL4 Drivers

Export TSV

Allele	Insertions / Constructs	Assoc. gene	Common terms	Major tissue	Major stage	Description	# Stocks	# Refs
Scer\GAL4 ^{Bx-MS1096}	P{GawB}Bx ^{MS1096} P{GawB}	Bx		wing disc dorsal compartment	larval stage	Drives expression in the dorsal wing pouch.	6	416
Scer\GAL4 ^{C-765}	P{GawB}C-765 P{GawB}		leg disc	ventral thoracic disc wing disc	larval stage	Drives expression in leg and wing discs.	1	140
Scer\GAL4 ^{C164}	P{GawB}C164 P{GawB}			motor neuron	larval stage adult stage	Drives expression in motor neurons.	1	29
Scer\GAL4 ^{C57}	P{GawB}C57 P{GawB}		body wall muscle	embryonic/larval hypodermal muscle somatic muscle	larval stage	Drives expression in larval body wall muscles.	2	91

Orthologs

Input:				Enter gene symbol(s) or ID(s), separated by spaces				
Species:	D. melanogaster	\$	Gene(s):	e.g. Cdk1, CG5363, FBgn0004106, 34411				
	ID MODEL ORGANISMS (vi <i>iens (Human)</i>	a DIOPT)	D. melanogaster	· (Fruit flv)				
R. norvegicus (Norway rat)			C. elegans (Nematode, roundworm)					
🗹 M. mu	M. musculus (Laboratory mouse)			S. cerevisiae (Brewer's yeast)				
X. tropicalis (Western clawed frog)		og) 🔽	S. pombe (Fission yeast)					
🗹 D. reri	o (Zebrafish)							
Oun/check a	un/check all: V instead search Drosophila species, insects etc.							

Orthologs

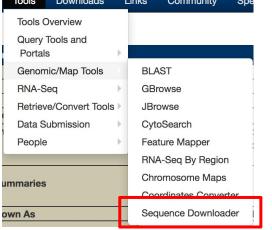
Save results as tsv file | Exclude scores <3 | Help

Search Term: Cdk1 Species: Drosophila melanogaster (Fruit fly) Gene: Cdk1 Reports: NCBI FlyBase									
Ortholog Cono	Ortholog Gene Reports		Via DIOPT (v6.0)						
Ortholog Gene		Score	Best Score	Best Rev Score	Source	Align	Transgene in Fly		
Homo sapiens (Human)									
CDK1	NCBI Ensembl OMIM HGNC	10 of 11	Yes	Yes (+)	Compara, eggNOG, Homologene, Inparanoid, OMA, OrthoDB, Panther, Phylome, RoundUp, TreeFam	(+)			
CDK2	NCBI Ensembl OMIM HGNC	4 of 11	No	No (+)	eggNOG, OrthoDB, orthoMCL, RoundUp	(+)			
CDK5	NCBI Ensembl OMIM HGNC	4 of 11	No	No (+)	eggNOG, OrthoDB, orthoMCL, RoundUp	(+)	Yes		
CDK14	NCBI Ensembl OMIM HGNC	2 of 11	No	No (+)	eggNOG, OrthoDB	(+)			
CDK15	NCBI OMIM HGNC	2 of 11	No	No (+)	eggNOG, OrthoDB	(+)			
CDK16	NCBI Ensembl OMIM HGNC	2 of 11	No	No (+)	eggNOG, OrthoDB	(+)			
CDK18	NCBI Ensembl OMIM HGNC	2 of 11	No	Yes (+)	eggNOG, OrthoDB	(+)			

Orthologs

Input:				Enter gene symbol(s) or ID(s), separated by spaces
Species:	D. melanogaster	\$	Gene(s):	e.g. Cdk1, CG5363, FBgn0004106, 34411
Droso non-D non-D non-In	LA SPECIES, OTHER INS phila species (<i>D. pseudo</i> rosophila Dipterans (mo ipteran Insects (bees, be sect Arthropods (arach rthropod Metazoa (chick all: 🗸	oobscura, squitoes eetles, etc nids, wate ken, sea u	<i>D. virilis, etc.</i>) and flies) c.) er flea, etc.) urchin, etc.)	and model organisms

Genomic Location								
Cytogenetic map	53A3-53A4	Sequence location	2R:16,266,96016,271,971 [-]					
Recombination map	2-79							
Sequence	Gene region	•	Decorated FASTA					
Get Sequence			Get genome region					
Toole Downloade Linke Community Spe								



FlyBase Sequence Downloader



\$

Mode

ID \$

FlyBase ID

FBgn0001308

Туре

Gene Region

View Sequence

FBgn0000490 ID:

dpp
gene
2L:24283722459823
31452
71-463
2L:24284422428834
0

Search in sequence.. (Regex support



1	ATTCAGTTTT	TTGCGCTCAA	CGCTCGTTGT	ACGGAACCGA	AAAACGCGTT	CGTTCGTCCA
61	CAGAGTGTCG	CCAAATCGAG	GCGAAAGATC	GCTGGTTACA	ACCGAATATA	CAGCCTCTAA
121	TCACTTTTTT	TCTGCTCTGT	AATCGTTCGC	GGTTTCTGCG	GCCATAAAAT	AAAGTAAATC
181	CGAGTTAAAC	GCTGATAGTC	GCGCCTGAAG	AACCACAGAA	AAAACAGAAA	ATATCTCCCG
241	TCGTTTCTCG	TTCTCGTTTC	CGCGATCGCT	CGTCAGCCAG	CCAAAGCCTC	TCCGATTTTT
301	GATACCGATT	CGGTATCAGA	TAATATATTC	GTAACCATCG	CCATTCTTGC	GAGTGTGCCA
361	GTGTGAGTGA	GTGATGTGTC	TGTGTGCCAA	ATCCAAATCG	AAAATAGCCA	AAGTCTGAGC
421	TTGGCCACCA	TCGTCAGCAG	CAAACATGTG	AAGTGCCAGT	GAT TTCCATA	AGCCAAAATC
481	GAAGTCGAAG	TCGAATCGAA	TCGAATCGAA	GCCACAGCGA	GATAGATAGG	TCGAAAGTAT
541	TTGAGTGGAT	ATCCGAGTCG	AACCAGTGTA	TAATGTATGC	GACGTTCGCG	AACTGCCAGA

ID: FBpp0303224 Zif-PC Symbol: Parent features: FBqn0037446, FBtr0330191 Type: protein Location: 3R:join(6457287..6457430.6457493..6458109.6458167..6458301.6458403..6458673) 388 Length: 251-252 Selected relative region: # of matches: 2 0 YA 1 MRVELTPOTC RVCLAQSERL ORLDEIREEG EESPNEMLIO LLAVSYSNLN DREHIPDGIC 61 KSCKVELNMA YQFREKALRK QMEIEEYCRE LGLLDESDVM XIKEEDGSQQ QCDEEMYILE 121 ETTTGEEEHQ EEKGHEEYLE VDTSDQQECI GDTIEYLEEN YTIEMNSDQT EIVLESEKQY EETPSQQLAL QEAAKASLKA RRGRVRRGLN SLTESDGTEK GGYICDVCGN FYEKRGRMME 181 HRRRHDGICO VACELCDAKF OVREOLRKHM YSHTGSKPYK CSFCSRQFFY ESVLKSHENV 241 301 HRGIKPYVCK VCDKAFAVAH SLTKHELIHS DIKLYRCDYC NKDFRLLHHM RQHEETKLHQ 361 NAVMLAESMK VEMVAEQGGG NEIRIQAH

€

Acknowledgements

- Dr. Thom Kaufman
- Dr. Brian Calvi
- Victor Strelets
- Jim Thurmond
- FlyBase Consortium



Dr. Kathleen Matthews