

## GEPHE SUMMARY

Kcnj13 ( <a +kcnj13+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase="+Kcnj13+"#gephebase-summary-title</a> )	Gephebase Gene	GP00002364	GepheID
Published	Entry Status	Santos	Main curator

## PHENOTYPIC CHANGE

Morphology ( <a +morphology+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait+Category=">https://www.gephebase.org/search-criteria?/and+Trait+Category="+Morphology+"#gephebase-summary-title</a> )	Trait Category		
Coloration ( <a +coloration+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=">https://www.gephebase.org/search-criteria?/and+Trait="+Coloration+"#gephebase-summary-title</a> )	Trait		
Stripes	Trait State in Taxon A		
Bars	Trait State in Taxon B		
Taxon A	Ancestral State		
Interspecific ( <a +interspecific+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status="+Interspecific+"#gephebase-summary-title</a> )	Taxonomic Status		
	Taxon A	Taxon B	
Danio rerio ( <a +danio+rerio+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Danio+rerio+"#gephebase-summary-title</a> )	Latin Name	Danio aesculapii ( <a +danio+aesculapii+"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms="+Danio+aesculapii+"#gephebase-summary-title</a> )	Latin Name
zebrafish	Common Name	-	Common Name
Brachydanio rerio; Brachydanio rerio frankei; Cyprinus rerio; Danio frankei; Danio rerio frankei; zebrafish; leopard danio; zebra danio; zebra fish; Cyprinus rerio Hamilton, 1822; Danio rerio (Hamilton, 1822); Brachidanio rerio	Synonyms	Danio aesculapii Kullander & Fang, 2009	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Actinopterygii; Actinopteri; Neopterygii; Teleostei; Osteoglossocephalai; Clupecocephala; Otomorpha; Ostariophysi; Otophysi; Cypriniphysae; Cypriniformes; Cyprinoidei; Cyprinidae; Danio	Lineage	cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Actinopterygii; Actinopteri; Neopterygii; Teleostei; Osteoglossocephalai; Clupecocephala; Otomorpha; Ostariophysi; Otophysi; Cypriniphysae; Cypriniformes; Cyprinoidei; Danioninae; Danio	Lineage
Danio () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7954">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7954</a> )	Parent	Danio () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7954">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7954</a> )	Parent
7955 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7955">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7955</a> )	NCBI Taxonomy ID	1142201 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=1142201">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=1142201</a> )	NCBI Taxonomy ID
No	is Taxon A an Intraspecies?	No	is Taxon B an Intraspecies?

## GENOTYPIC CHANGE

Kcnj13	Generic Gene Name	P86046 ( <a href="http://www.uniprot.org/uniprot/P86046">http://www.uniprot.org/uniprot/P86046</a> )	UniProtKB Mus musculus
Kir7.1	Synonyms	0	GenebankID or UniProtKB
10090.ENSMUSP00000108838 ( <a href="http://string-db.org/newstring.cgi/show_network_section.pl?identifier=10090.ENSMUSP00000108838">http://string-db.org/newstring.cgi/show_network_section.pl?identifier=10090.ENSMUSP00000108838</a> )	String		
Belongs to the inward rectifier-type potassium channel (TC 1.A.2.1) family. KCNJ13 subfamily.	Sequence Similarities		
GO:0005242 : inward rectifier potassium channel activity ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005242">https://www.ebi.ac.uk/QuickGO/term/GO:0005242</a> )	GO - Molecular Function		
GO:1990573 : potassium ion import across plasma membrane	GO - Biological Process		

(<https://www.ebi.ac.uk/QuickGO/term/GO:1990573>)  
GO:0034765 : regulation of ion transmembrane transport  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0034765>)

GO - Cellular Component

GO:0016021 : integral component of membrane  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0016021>)  
GO:0005886 : plasma membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0005886>)

Presumptive Null

No ([https://www.gephebase.org/search-criteria?/and+Presumptive Null="^No^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Presumptive+Null=))

Molecular Type

Unknown ([https://www.gephebase.org/search-criteria?/and+Molecular Type="+Unknown^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Molecular+Type=))

Aberration Type

Unknown ([https://www.gephebase.org/search-criteria?/and+Aberration Type="+Unknown^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration+Type=))

Molecular Details of the Mutation

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Experimental Evidence

Candidate Gene ([https://www.gephebase.org/search-criteria?/and+Experimental Evidence="+Candidate Gene^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=))

Main Reference

Evolution of the potassium channel gene Kcnj13 underlies colour pattern diversification in Danio fish. (2020) (<https://pubmed.ncbi.nlm.nih.gov/33277491>)

Authors

Podobnik M; Frohnhäfer HG; Dooley CM; Eskova A; Nässlein-Volhard C; Irion U

Abstract

The genetic basis of morphological variation provides a major topic in evolutionary developmental biology. Fish of the genus *Danio* display colour patterns ranging from horizontal stripes, to vertical bars or spots. Stripe formation in zebrafish, *Danio rerio*, is a self-organizing process based on cell-contact mediated interactions between three types of chromatophores with a leading role of iridophores. Here we investigate genes known to regulate chromatophore interactions in zebrafish that might have evolved to produce a pattern of vertical bars in its sibling species, *Danio aesculapii*. Mutant *D. aesculapii* indicate a lower complexity in chromatophore interactions and a minor role of iridophores in patterning. Reciprocal hemizyosity tests identify the potassium channel gene *obelix/Kcnj13* as evolved between the two species. Complementation tests suggest evolutionary change through divergence in *Kcnj13* function in two additional *Danio* species. Thus, our results point towards repeated and independent evolution of this gene during colour pattern diversification.

Additional References

## RELATED GEPHE

Related Genes

2 (csf1a, edn3b) ([https://www.gephebase.org/search-criteria?/or+Taxon ID="+7955^/and+Trait=Coloration/or+Taxon ID="+1142201^/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon+ID=))

Related Haplotypes

No matches found.

## EXTERNAL LINKS

## COMMENTS