

GEPHE SUMMARY

csf1a (https://www.gephebase.org/search-criteria?/and+GeneGephebase=~csf1a~#gephebase-summary-title)	Gephebase Gene	GP00002123	GepheID
	Entry Status	Santos	Main curator
	Published		

PHENOTYPIC CHANGE

		Trait Category	
Morphology (https://www.gephebase.org/search-criteria?/and+TraitCategory=~Morphology~#gephebase-summary-title)		Trait	
Coloration (loss of stripes) (https://www.gephebase.org/search-criteria?/and+Trait=~Coloration (loss of stripes)~#gephebase-summary-title)		Trait State in Taxon A	
Stripes		Trait State in Taxon B	
Absence of stripes		Ancestral State	
Taxon A		Taxonomic Status	
Interspecific (https://www.gephebase.org/search-criteria?/and+TaxonomicStatus=~Interspecific~#gephebase-summary-title)			
Taxon A		Taxon B	
Danio rerio (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=~Danio rerio~#gephebase-summary-title)		Danio albolineatus (https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms=~Danio albolineatus~#gephebase-summary-title)	
zebrafish		pearl danio	
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		Brachydanio albolineatus; pearl danio; Danio albolineatus (Blyth, 1860)	
species		species	
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Actinopterygii; Actinopteri; Neopterygii; Teleostei; Osteoglossocephalai; Clupecocephala; Otomorpha; Ostariophysi; Otophysii; Cypriniphysae; Cypriniformes; Cyprinoidei; Cyprinidae; Danio		cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Actinopterygii; Actinopteri; Neopterygii; Teleostei; Osteoglossocephalai; Clupecocephala; Otomorpha; Ostariophysi; Otophysii; Cypriniphysae; Cypriniformes; Cyprinoidei; Cyprinidae; Danio	
Danio () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7954)		Danio () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7954)	
7955 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7955)		27699 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 27699)	
No		No	
		is Taxon A an Intraspecies?	
		is Taxon B an Intraspecies?	

GENOTYPIC CHANGE

		Generic Gene Name	
csf1a		A0A0B5JQ49 (http://www.uniprot.org/uniprot/A0A0B5JQ49)	
		Synonyms	
-		A0A0B5JQ49 (https://www.ncbi.nlm.nih.gov/nuccore/A0A0B5JQ49)	
		String	
-			
		Sequence Similarities	
-			
		GO - Molecular Function	
GO:0005125 : cytokine activity (https://www.ebi.ac.uk/QuickGO/term/GO:0005125)			
GO:0008083 : growth factor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0008083)			
		GO - Biological Process	
-			
		GO - Cellular Component	
GO:0016021 : integral component of membrane (https://www.ebi.ac.uk/QuickGO/term/GO:0016021)			

GO:0005615 : extracellular space (https://www.ebi.ac.uk/QuickGO/term/GO:0005615)	Presumptive Null
No (https://www.gephebase.org/search-criteria?/and+Presumptive Null=^No^#gephebase-summary-title)	Molecular Type
Cis-regulatory (https://www.gephebase.org/search-criteria?/and+Molecular Type=^Cis-regulatory^#gephebase-summary-title)	Aberration Type
Unknown (https://www.gephebase.org/search-criteria?/and+Aberration Type=^Unknown^#gephebase-summary-title)	Molecular Details of the Mutation
-	Experimental Evidence
Candidate Gene (https://www.gephebase.org/search-criteria?/and+Experimental Evidence=^Candidate Gene^#gephebase-summary-title)	Main Reference
Pigment cell interactions and differential xanthophore recruitment underlying zebrafish stripe reiteration and Danio pattern evolution. (2014) (https://pubmed.ncbi.nlm.nih.gov/25374113)	Authors
Patterson LB; Bain EJ; Parichy DM	Abstract
Fishes have diverse pigment patterns, yet mechanisms of pattern evolution remain poorly understood. In zebrafish, <i>Danio rerio</i> , pigment-cell autonomous interactions generate dark stripes of melanophores that alternate with light interstripes of xanthophores and iridophores. Here, we identify mechanisms underlying the evolution of a uniform pattern in <i>D. albolineatus</i> in which all three pigment cell classes are intermingled. We show that in this species xanthophores differentiate precociously over a wider area, and that cis regulatory evolution has increased expression of xanthogenic Colony Stimulating Factor-1 (Csf1). Expressing Csf1 similarly in <i>D. rerio</i> has cascading effects, driving the intermingling of all three pigment cell classes and resulting in the loss of stripes, as in <i>D. albolineatus</i> . Our results identify novel mechanisms of pattern development and illustrate how pattern diversity can be generated when a core network of pigment-cell autonomous interactions is coupled with changes in pigment cell differentiation.	
	Additional References

RELATED GEPHE

2 (edn3b, Kcnj13) (https://www.gephebase.org/search-criteria?/or+Taxon ID=^7955^/and+Trait=Coloration/or+Taxon ID=^27699^/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title)	Related Genes
No matches found.	Related Haplotypes

EXTERNAL LINKS

COMMENTS