

## GEPHE SUMMARY

	Gephebase Gene	GephelD
csf1a ( <a href="https://www.gephebase.org/search-criteria?/and+Gene">https://www.gephebase.org/search-criteria?/and+Gene</a> Gephebase=^csf1a^#gephebase-summary-title)	GP00002123	Main curator
Published	Entry Status	Santos

## PHENOTYPIC CHANGE

	Trait Category	
Morphology ( <a href="https://www.gephebase.org/search-criteria?/and+Trait">https://www.gephebase.org/search-criteria?/and+Trait</a> Category="Morphology^#gephebase-summary-title")	Trait	
Coloration (loss of stripes) ( <a href="https://www.gephebase.org/search-criteria?/and+Trait=^Coloration+(loss+of+stripes)^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait=^Coloration+(loss+of+stripes)^#gephebase-summary-title</a> )	Trait State in Taxon A	
Stripes	Trait State in Taxon B	
Absence of stripes	Ancestral State	
Taxon A	Taxonomic Status	
Interspecific ( <a href="https://www.gephebase.org/search-criteria?/and+Taxonomic">https://www.gephebase.org/search-criteria?/and+Taxonomic</a> Status="Interspecific^#gephebase-summary-title")		

Taxon A	Latin Name	Taxon B	Latin Name
Danio rerio ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Danio+rerio^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Danio+rerio^#gephebase-summary-title</a> )		Danio albolineatus ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Danio+albolineatus^#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Danio+albolineatus^#gephebase-summary-title</a> )	
zebrafish	Common Name	pearl danio	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	Brachydanio albolineatus; pearl danio; Danio albolineatus (Blyth, 1860)	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Actinopterygii; Actinopteri; Neopterygii; Teleoste; Osteoglossocephalai; Clupeocephala; Otomorpha; Ostariophysi; Otophysi; Cypriniphysae; Cypriniformes; Cyprinoidei; Cyprinidae; Danio	Lineage		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	27699 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=27699">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=27699</a> )	NCBI Taxonomy ID
			is Taxon B an Infraspecies?
No		No	

## GENOTYPIC CHANGE

csf1a	Generic Gene Name	UniProtKB Danio rerio
-	Synonyms	GenebankID or UniProtKB
-	String	
-	Sequence Similarities	
GO:0005125 : cytokine activity ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005125">https://www.ebi.ac.uk/QuickGO/term/GO:0005125</a> )	GO - Molecular Function	
GO:0008083 : growth factor activity ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0008083">https://www.ebi.ac.uk/QuickGO/term/GO:0008083</a> )		
	GO - Biological Process	
-		
GO:0016021 : integral component of membrane ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0016021">https://www.ebi.ac.uk/QuickGO/term/GO:0016021</a> )	GO - Cellular Component	

GO:0005615 : extracellular space (<https://www.ebi.ac.uk/QuickGO/term/GO.0005615>)

Presumptive Null

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

Molecular Type

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

Aberration Type

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

Molecular Details of the Mutation

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Experimental Evidence

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

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, *Danio rerio*, 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 *D. albolineatus* 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 Csft similarly in *D. rerio* has cascading effects, driving the intermingling of all three pigment cell classes and resulting in the loss of stripes, as in *D. albolineatus*. 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

Related Genes

2 (edn3b, Kcnj13) ([#gephebase-summary-title\)](https://www.gephebase.org/search-criteria?/or+Taxon+ID=^7955^/and+Trait=Coloration/or+Taxon+ID=^27699^/and+Trait=Coloration/and+groupHaplotypes=true)

Related Haplotypes

No matches found.

## EXTERNAL LINKS

## COMMENTS