

GEPHE SUMMARY

Pax7 (https://www.gephebase.org/search-criteria?/and+GeneGephebase=~Pax7~#gephebase-summary-title)	Gephebase Gene	GP00000857	GepheID
	Entry Status	Martin	Main curator
	Published		

PHENOTYPIC CHANGE

Morphology (https://www.gephebase.org/search-criteria?/and+TraitCategory=~Morphology~#gephebase-summary-title)		Trait Category	
Coloration (scales) (https://www.gephebase.org/search-criteria?/and+Trait=~Coloration(scales)~#gephebase-summary-title)		Trait	
Labeotropheus fuelleborni		Trait State in Taxon A	
Metriaclima zebra + others		Trait State in Taxon B	
Data not curated		Ancestral State	
Interspecific (https://www.gephebase.org/search-criteria?/and+TaxonomicStatus=~Interspecific~#gephebase-summary-title)		Taxonomic Status	
Taxon A		Taxon B	
Labeotropheus fuelleborni (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Labeotropheus fuelleborni~#gephebase-summary-title)		Maylandia zebra (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Maylandia zebra~#gephebase-summary-title)	
blue mbuna		zebra mbuna	
blue mbuna; Labeotropheus fuelleborni Ahl, 1926		Metriaclima zebra; Pseudotropheus sp. ‘Pseudotropheus zebra complex’; Pseudotropheus zebra; zebra mbuna; Maylandia zebra (Boulenger, 1899)	
species		species	
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Actinopterygii; Actinopteri; Neopterygii; Teleostei; Osteoglossocephalai; Clupeccephala; Euteleosteomorpha; Neoteleostei; Eurypterygia; Ctenosquamata; Acanthomorpha; Euacanthomorpha; Percomorphaceae; Ovalentaria; Cichlomorphae; Cichliformes; Cichlidae; African cichlids; Pseudocrenilabrinae; Haplochromini; Labeotropheus		cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Actinopterygii; Actinopteri; Neopterygii; Teleostei; Osteoglossocephalai; Clupeccephala; Euteleosteomorpha; Neoteleostei; Eurypterygia; Ctenosquamata; Acanthomorpha; Euacanthomorpha; Percomorphaceae; Ovalentaria; Cichlomorphae; Cichliformes; Cichlidae; African cichlids; Pseudocrenilabrinae; Haplochromini; Maylandia; Maylandia zebra complex	
Labeotropheus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 57306)		Maylandia zebra complex () - (Rank: species group) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 57445)	
57307 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 57307)		106582 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 106582)	
No		No	
		is Taxon A an Intraspecies?	
		is Taxon B an Intraspecies?	

GENOTYPIC CHANGE

Pax7	Generic Gene Name	UniProtKB Mus musculus
	Synonyms	P47239 (http://www.uniprot.org/uniprot/P47239)
	String	XP_012773893 (https://www.ncbi.nlm.nih.gov/nucore/XP_012773893)
10090.ENSMUSP00000030508 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=10090.ENSMUSP00000030508)		
Belongs to the paired homeobox family.		
GO:0003700 : DNA-binding transcription factor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0003700)		
GO:0043565 : sequence-specific DNA binding		

(<https://www.ebi.ac.uk/QuickGO/term/GO:0043565>)
GO:0000983 : transcription factor activity, RNA polymerase II core promoter sequence-specific DNA binding (<https://www.ebi.ac.uk/QuickGO/term/GO:0000983>)

GO - Biological Process

GO:0045944 : positive regulation of transcription by RNA polymerase II
(<https://www.ebi.ac.uk/QuickGO/term/GO:0045944>)
GO:0006355 : regulation of transcription, DNA-templated
(<https://www.ebi.ac.uk/QuickGO/term/GO:0006355>)
GO:0009887 : animal organ morphogenesis
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009887>)
GO:0051216 : cartilage development (<https://www.ebi.ac.uk/QuickGO/term/GO:0051216>)
GO:0006338 : chromatin remodeling (<https://www.ebi.ac.uk/QuickGO/term/GO:0006338>)
GO:0010468 : regulation of gene expression
(<https://www.ebi.ac.uk/QuickGO/term/GO:0010468>)
GO:0010453 : regulation of cell fate commitment
(<https://www.ebi.ac.uk/QuickGO/term/GO:0010453>)
GO:0007519 : skeletal muscle tissue development
(<https://www.ebi.ac.uk/QuickGO/term/GO:0007519>)
GO:2000288 : positive regulation of myoblast proliferation
(<https://www.ebi.ac.uk/QuickGO/term/GO:2000288>)
GO:0021904 : dorsal/ventral neural tube patterning
(<https://www.ebi.ac.uk/QuickGO/term/GO:0021904>)
GO:0048706 : embryonic skeletal system development
(<https://www.ebi.ac.uk/QuickGO/term/GO:0048706>)
GO:0060415 : muscle tissue morphogenesis
(<https://www.ebi.ac.uk/QuickGO/term/GO:0060415>)
GO:0048663 : neuron fate commitment
(<https://www.ebi.ac.uk/QuickGO/term/GO:0048663>)
GO:0031062 : positive regulation of histone methylation
(<https://www.ebi.ac.uk/QuickGO/term/GO:0031062>)
GO:0043393 : regulation of protein binding
(<https://www.ebi.ac.uk/QuickGO/term/GO:0043393>)
GO:0014813 : skeletal muscle satellite cell commitment
(<https://www.ebi.ac.uk/QuickGO/term/GO:0014813>)
GO:0043403 : skeletal muscle tissue regeneration
(<https://www.ebi.ac.uk/QuickGO/term/GO:0043403>)
GO:0021527 : spinal cord association neuron differentiation
(<https://www.ebi.ac.uk/QuickGO/term/GO:0021527>)

GO - Cellular Component

GO:0005634 : nucleus (<https://www.ebi.ac.uk/QuickGO/term/GO:0005634>)
GO:0005667 : transcription factor complex
(<https://www.ebi.ac.uk/QuickGO/term/GO:0005667>)

	Presumptive Null
Unknown (https://www.gephebase.org/search-criteria?/and+Presumptive Null=~Unknown^#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
Not identified	
	Experimental Evidence
Linkage Mapping (https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Linkage Mapping^#gephebase-summary-title)	
	Main Reference
Sexual conflict resolved by invasion of a novel sex determiner in Lake Malawi cichlid fishes. (2009) (https://pubmed.ncbi.nlm.nih.gov/19797625)	
	Authors
Roberts RB; Ser JR; Kocher TD	
	Abstract

Sex determination mechanisms differ among animal species, but it is not clear how these differences evolve. New sex determiners may arise in response to sexual conflicts, which occur when traits benefit one sex but hinder the other. We identified the genetic basis for the orange-blotch (OB) color pattern, a trait under sexually antagonistic selection in the cichlid fish of Lake Malawi, East Africa. The OB phenotype is due to a cis-regulatory mutation in the Pax7 gene. OB provides benefits of camouflage to females but disrupts the species-specific male color patterns used for mate recognition. We suggest that the resulting sexual conflict over the OB allele has been resolved by selection for a novel female sex determination locus that has invaded populations with an ancestral male sex determination system.

Additional References

RELATED GEPHE

	Related Genes
4 (eph4rin-a4, pax3a, pax3b, zeb1a) (https://www.gephebase.org/search-criteria?/or+Taxon ID=~57307^/and+Trait=Coloration/or+Taxon ID=~106582^/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title)	
No matches found.	Related Haplotypes

EXTERNAL LINKS

