

GEPHE SUMMARY

	Gephebase Gene	GephelD
FST/MOCS2 (#gephebase-summary-title)	GP00002125	Main curator
Published	Entry Status	Santos

PHENOTYPIC CHANGE

	Trait Category
Morphology (#gephebase-summary-title)	Trait
coloration (head feathers) (<a and+taxonomic="" href="https://www.gephebase.org/search-criteria?/and+Trait=^coloration (head feathers)^#gephebase-summary-title)</td><td>Trait State in Taxon A</td></tr> <tr> <td>Black head feathers</td><td>Trait State in Taxon B</td></tr> <tr> <td>Red head feathers</td><td>Ancestral State</td></tr> <tr> <td>Unknown</td><td>Taxonomic Status</td></tr> <tr> <td>Intraspecific (#gephebase-summary-title)	

Taxon A	Latin Name	Taxon B	Latin Name
Erythrura gouldiae (#gephebase-summary-title))		Erythrura gouldiae (#gephebase-summary-title))	
Gouldian finch	Common Name	Gouldian finch	Common Name
Chloebia gouldiae; Chloebia gouldiae gouldiae; Gouldian finch; Erythrura gouldiae (Gould, 1844)	Synonyms	Chloebia gouldiae; Chloebia gouldiae gouldiae; Gouldian finch; Erythrura gouldiae (Gould, 1844)	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Sauropsida; Sauria; Archelosauria; Archosauria; Dinosauria; Saurischia; Theropoda; Coelurosauria; Aves; Neognathae; Passeriformes; Passeroidea; Estrildidae; Erythrura	Lineage	cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Sarcopterygii; Dipnotetrapodomorpha; Tetrapoda; Amniota; Sauropsida; Sauria; Archelosauria; Archosauria; Dinosauria; Saurischia; Theropoda; Coelurosauria; Aves; Neognathae; Passeriformes; Passeroidea; Estrildidae; Erythrura	Lineage
Erythrura () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 44315)	Parent	Erythrura () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 44315)	Parent
44316 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 44316)	NCBI Taxonomy ID	44316 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 44316)	NCBI Taxonomy ID
No	is Taxon A an Infraspecies?	No	is Taxon B an Infraspecies?

GENOTYPIC CHANGE

-	Generic Gene Name	UniProtKB
-	0	
-	Synonyms	GenebankID or UniProtKB
-	0	
-	String	
-	Sequence Similarities	
-	GO - Molecular Function	
-	GO - Biological Process	
-	GO - Cellular Component	
-		Presumptive Null
No (#gephebase-summary-title)		

Cis-regulatory (https://www.gephebase.org/search-criteria/?and+Molecular Type=%22Cis-regulatory%22#gephebase-summary-title)	Molecular Type
Unknown (https://www.gephebase.org/search-criteria/?and+Aberration Type=%22Unknown%22#gephebase-summary-title)	Aberration Type
candidate locus is a small (approx. 70 kb) non-coding region mapping to the Z chromosome near the FST and MOCS2	Molecular Details of the Mutation
Association Mapping (https://www.gephebase.org/search-criteria/?and+Experimental Evidence=%22Association Mapping%22#gephebase-summary-title)	Experimental Evidence
A non-coding region near Follistatin controls head colour polymorphism in the Gouldian finch. (2018) (https://pubmed.ncbi.nlm.nih.gov/30282656)	Main Reference
Toomey MB; Marques CI; Andrade P; Araújo PM; Sabatino S; Gazda MA; Afonso S; Lopes RJ; Corbo JC; Carneiro M	Authors
Discrete colour morphs coexisting within a single population are common in nature. In a broad range of organisms, sympatric colour morphs often display major differences in other traits, including morphology, physiology or behaviour. Despite the repeated occurrence of this phenomenon, our understanding of the genetics that underlie multi-trait differences and the factors that promote the long-term maintenance of phenotypic variability within a freely interbreeding population are incomplete. Here, we investigated the genetic basis of red and black head colour in the Gouldian finch (<i>Erythrura gouldiae</i>), a classic polymorphic system in which naturally occurring colour morphs also display differences in aggressivity and reproductive success. We show that the candidate locus is a small (approx. 70 kb) non-coding region mapping to the Z chromosome near the Follistatin (FST) gene. Unlike recent findings in other systems where phenotypic morphs are explained by large inversions containing hundreds of genes (so-called supergenes), we did not identify any structural rearrangements between the two haplotypes using linked-read sequencing technology. Nucleotide divergence between the red and black alleles was high when compared to the remainder of the Z chromosome, consistent with their maintenance as balanced polymorphisms over several million years. Our results illustrate how pleiotropic phenotypes can arise from simple genetic variation, probably regulatory in nature.	

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Additional References

Genetics and evidence for balancing selection of a sex-linked colour polymorphism in a songbird. (2019) (<https://pubmed.ncbi.nlm.nih.gov/31015412>)

RELATED GEPHE

No matches found.

Related Genes

No matches found.

Related Haplotypes

EXTERNAL LINKS

COMMENTS

@parallelism Candidate locus is a small (approx. 70 kb) non-coding region mapping to the Z chromosome near the FST and MOCS2, it is unclear which one is the causative locus.