

GEPHE SUMMARY

opsin - (SWS1) (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=^opsin-(SWS1)^#gephebase-summary-title)		Gephebase Gene	GP00000764	GepheID
Published	Entry Status	Martin		Main curator

PHENOTYPIC CHANGE

Physiology (https://www.gephebase.org/search-criteria?/and+Trait+Category=^Physiology^#gephebase-summary-title)		Trait Category		
Color vision (UV-shift) (https://www.gephebase.org/search-criteria?/and+Trait=^Color+vision+(UV-shift)^#gephebase-summary-title)		Trait		
Other passeriforms	Trait State in Taxon A			
Taeniopygia guttata	Trait State in Taxon B			
Data not curated	Ancestral State			
Intergenic or Higher (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=^Intergenic+or+Higher^#gephebase-summary-title)		Taxonomic Status		
		Taxon A	Taxon B	
Passeriformes (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Passeriformes^#gephebase-summary-title)		Latin Name	Taeniopygia guttata (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Taeniopygia+guttata^#gephebase-summary-title)	Latin Name
-	Common Name	zebra finch		Common Name
-	Synonyms	Poephila guttata; Taenopygia guttata; zebra finch; Taeniopygia guttata (Vieillot, 1817)		Synonyms
order	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		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; Estrildinae; Taeniopygia	Lineage
Neognathae () - (Rank: superorder) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=8825)	Parent	Taeniopygia () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=59728)		Parent
9126 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=9126)	NCBI Taxonomy ID	59729 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=59729)		NCBI Taxonomy ID
No	is Taxon A an Intraspecies?	No		is Taxon B an Intraspecies?

GENOTYPIC CHANGE

OPN1SW	Generic Gene Name	P03999 (http://www.uniprot.org/uniprot/P03999)	UniProtKB Homo sapiens
BCP; BOP; CBT	Synonyms	AAP23977 (https://www.ncbi.nlm.nih.gov/nucore/AAP23977)	GenebankID or UniProtKB
9606.ENSPO0000249389 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=9606.ENSPO0000249389)	String		
Belongs to the G-protein coupled receptor 1 family. Opsin subfamily.		Sequence Similarities	
GO:0038023 : signaling receptor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0038023)	GO - Molecular Function		
GO:0008020 : G protein-coupled photoreceptor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0008020)			
GO:0007165 : signal transduction (https://www.ebi.ac.uk/QuickGO/term/GO:0007165)	GO - Biological Process		

GO:0007186 : G protein-coupled receptor signaling pathway
 (https://www.ebi.ac.uk/QuickGO/term/GO:0007186)
 GO:0001523 : retinoid metabolic process
 (https://www.ebi.ac.uk/QuickGO/term/GO:0001523)
 GO:0018298 : protein-chromophore linkage
 (https://www.ebi.ac.uk/QuickGO/term/GO:0018298)
 GO:0007601 : visual perception (https://www.ebi.ac.uk/QuickGO/term/GO:0007601)
 GO:0071482 : cellular response to light stimulus
 (https://www.ebi.ac.uk/QuickGO/term/GO:0071482)
 GO:0007602 : phototransduction (https://www.ebi.ac.uk/QuickGO/term/GO:0007602)
 GO - Cellular Component

GO:0005887 : integral component of plasma membrane
 (https://www.ebi.ac.uk/QuickGO/term/GO:0005887)
 GO:0001750 : photoreceptor outer segment
 (https://www.ebi.ac.uk/QuickGO/term/GO:0001750)
 GO:0097381 : photoreceptor disc membrane
 (https://www.ebi.ac.uk/QuickGO/term/GO:0097381)

Presumptive Null

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

Molecular Type

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

Aberration Type

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

SNP Coding Change

Nonsynonymous

Molecular Details of the Mutation

S90C

Experimental Evidence

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

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	Ser	Cys	90

Main Reference

Ultraviolet pigments in birds evolved from violet pigments by a single amino acid change. (2000) (https://pubmed.ncbi.nlm.nih.gov/10861005)

Authors

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Abstract

UV vision has profound effects on the evolution of organisms by affecting such behaviors as mating preference and foraging strategies. Despite its importance, the molecular basis of UV vision is not known. Here, we have transformed the zebra finch UV pigment into a violet pigment by incorporating one amino acid change, C84S. By incorporating the reverse mutations, we have also constructed UV pigments from the orthologous violet pigments of the pigeon and chicken. These results and comparative amino acid sequence analyses of the pigments in vertebrates demonstrate that many avian species have achieved their UV vision by S84C.

Additional References

The molecular evolution of avian ultraviolet- and violet-sensitive visual pigments. (2007) (https://pubmed.ncbi.nlm.nih.gov/17556758)

RELATED GEPHE

No matches found.

Related Genes

No matches found.

Related Haplotypes

EXTERNAL LINKS

COMMENTS

