

GEPHE SUMMARY

	Gephebase Gene	GephelID
Agouti-related peptide 2 (agrp2) (https://www.gephebase.org/search-criteria/?and+Gene Gephebase="Agouti-related peptide 2 (agrp2)"#gephebase-summary-title)	GP00001764	
Published	Entry Status	Main curator
	Santos	

PHENOTYPIC CHANGE

	Trait Category
Morphology (https://www.gephebase.org/search-criteria/?and+Trait Category="Morphology">#gephebase-summary-title)	Trait
Coloration (stripes) (https://www.gephebase.org/search-criteria/?and+Trait=^Coloration (stripes)"#gephebase-summary-title)	Trait State in Taxon A
nonstriped	Trait State in Taxon B
striped	Ancestral State
Unknown	Taxonomic Status
Interspecific (https://www.gephebase.org/search-criteria/?and+Taxonomic Status="Interspecific">#gephebase-summary-title)	

Taxon A	Latin Name
Pundamilia nyererei (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Pundamilia+nyererei #gephebase-summary-title)	
-	Common Name
Haplochromis nyererei; Pundamilia nyererei (Witte-Maas & Witte, 1985); Pundamilia neyereri	Synonyms
species	Rank
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Actinopterygii; Actinopteri; Neopterygii; Teleostei; Osteoglossocephalai; Clupeocephala; Euteleosteomorpha; Neoteleosteoi; Eurypterygia; Ctenosquamata; Acanthomorphata; Euacanthomorphacea; Percomorphacea; Ovalentaria; Cichlomorphae; Cichliformes; Cichlidae; African cichlids; Pseudocrenilabrinae; Haplochromini; Pundamilia	Lineage
Pundamilia () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 195936)	Parent
303518 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 303518)	NCBI Taxonomy ID
No	is Taxon A an Infraspecies?

Taxon B #1	Latin Name
Haplochromis sauvagei (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Haplochromis+sauvagei #gephebase-summary-title)	
-	Common Name
Ctenochromis sauvagei; Haplochromis 'rock kribensis'; Paralabidochromis rockkribensis; Ptyochromis sauvagei; Ctenochromis sauvagei Pfeffer, 1896; Ptyochromis sauvagei (Pfeffer, 1896); ZMB 22.222; ZMB:22.222	Synonyms
species	Rank
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Actinopterygii; Actinopteri; Neopterygii; Teleostei; Osteoglossocephalai; Clupeocephala; Euteleosteomorpha; Neoteleosteoi; Eurypterygia; Ctenosquamata; Acanthomorphata; Euacanthomorphacea; Percomorphacea; Ovalentaria; Cichlomorphae; Cichliformes; Cichlidae; African cichlids; Pseudocrenilabrinae; Haplochromini; Haplochromis	Lineage
Haplochromis () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 8121)	Parent
77313 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 77313)	NCBI Taxonomy ID
No	is Taxon B an Infraspecies?

Taxon B #2	Latin Name
Haplochromis chilotes (https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Haplochromis+chilotes #gephebase-summary-title)	
-	Common Name
Paralabidochromis chilotes; Paratilapia chilotes; Haplochromis chilotes (Boulenger, 1911); Paratilapia chilotes Boulenger, 1911	Synonyms
species	Rank
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Actinopterygii; Actinopteri; Neopterygii; Teleostei; Osteoglossocephalai; Clupeocephala; Euteleosteomorpha; Neoteleosteoi; Eurypterygia;	Lineage

Ctenosquamata; Acanthomorphata; Euacanthomorphacea; Percomorphacea;
Ovalentaria; Cichlomorphae; Cichliformes; Cichlidae; African cichlids;
Pseudocrenilabrinae; Haplochromini; Haplochromis

Parent

Haplochromis () - (Rank: genus)

(<https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=8121>)

NCBI Taxonomy ID

257977

(<https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=257977>)

is Taxon B an Infraspecies?

No

GENOTYPIC CHANGE

asip2b	Generic Gene Name	J3JQX9 (http://www.uniprot.org/uniprot/J3JQX9)	UniProtKB <i>Danio rerio</i>
A2; asip; agrp2; asip2; AgRP2	Synonyms	102202936 (https://www.ncbi.nlm.nih.gov/nucore/102202936)	GenebankID or UniProtKB
-	String		
-	Sequence Similarities		
GO:0070996 : type 1 melanocortin receptor binding (https://www.ebi.ac.uk/QuickGO/term/GO:0070996)	GO - Molecular Function		
GO:0009755 : hormone-mediated signaling pathway (https://www.ebi.ac.uk/QuickGO/term/GO:0009755)	GO - Biological Process		
GO:0043473 : pigmentation (https://www.ebi.ac.uk/QuickGO/term/GO:0043473)	GO - Cellular Component		
GO:0005576 : extracellular region (https://www.ebi.ac.uk/QuickGO/term/GO:0005576)			
No (https://www.gephebase.org/search-criteria/?and+Presumptive+Null=%No%#gephebase-summary-title)			Presumptive Null
Cis-regulatory (https://www.gephebase.org/search-criteria/?and+Molecular+Type=%Cis-regulatory%#gephebase-summary-title)			Molecular Type
Unknown (https://www.gephebase.org/search-criteria/?and+Aberration+Type=%Unknown%#gephebase-summary-title)			Aberration Type
Causal mutation(s) are in a 1.1-kb interval within the first agrp2 intron			Molecular Details of the Mutation
Linkage Mapping (https://www.gephebase.org/search-criteria/?and+Experimental+Evidence=%Linkage+Mapping%#gephebase-summary-title)			Experimental Evidence
Agouti-related peptide 2 facilitates convergent evolution of stripe patterns across cichlid fish radiations. (2018) (https://pubmed.ncbi.nlm.nih.gov/30361373)			Main Reference
Kratochwil CF; Liang Y; Gerwin J; Woltering JM; Urban S; Henning F; Machado-Schiaffino G; Hulsey CD; Meyer A			Authors
The color patterns of African cichlid fishes provide notable examples of phenotypic convergence. Across the more than 1200 East African rift lake species, melanic horizontal stripes have evolved numerous times. We discovered that regulatory changes of the gene agouti-related peptide 2 (agrp2) act as molecular switches controlling this evolutionarily labile phenotype. Reduced agrp2 expression is convergently associated with the presence of stripe patterns across species flocks. However, cis-regulatory mutations are not predictive of stripes across radiations, suggesting independent regulatory mechanisms. Genetic mapping confirms the link between the agrp2 locus and stripe patterns. The crucial role of agrp2 is further supported by a CRISPR-Cas9 knockout that reconstitutes stripes in a nonstriped cichlid. Thus, we unveil how a single gene affects the convergent evolution of a complex color pattern.			Abstract
Copyright © 2018 The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works.			
Evolutionary Dynamics of Structural Variation at a Key Locus for Color Pattern Diversification in Cichlid Fishes. (2019) (https://pubmed.ncbi.nlm.nih.gov/31821504)			Additional References

RELATED GEPHE

No matches found.

Related Genes

1 ([https://www.gephebase.org/search-criteria/?or+Gene+Gephebase=%Agouti-related+peptide+2+\(agrp2\)%/and+Taxon+ID=%303518%or+Gene+Gephebase=%Agouti-related+peptide+2+\(agrp2\)%/and+Taxon+ID=%77313%or+Gene+Gephebase=%Agouti-related+peptide+2+\(agrp2\)%/and+Taxon+ID=%257977%#gephebase-summary-title](https://www.gephebase.org/search-criteria/?or+Gene+Gephebase=%Agouti-related+peptide+2+(agrp2)%/and+Taxon+ID=%303518%or+Gene+Gephebase=%Agouti-related+peptide+2+(agrp2)%/and+Taxon+ID=%77313%or+Gene+Gephebase=%Agouti-related+peptide+2+(agrp2)%/and+Taxon+ID=%257977%#gephebase-summary-title))

Related Haplotypes

EXTERNAL LINKS

COMMENTS

@Parallelism ; tandem duplication of the terminal exon in cichlid lineage may have facilitated a functional shift of the protein