

GEPHE SUMMARY

<p>ephrin-a4 (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=~ephrin-a4^#gephebase-summary-title)</p> <p>Published</p>	<p>Gephebase Gene</p> <p>Entry Status</p>	<p>GP00001420</p> <p>Prigent</p>	<p>GepheID</p> <p>Main curator</p>
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PHENOTYPIC CHANGE

<p>Morphology (https://www.gephebase.org/search-criteria?/and+Trait+Category=~Morphology^#gephebase-summary-title)</p> <p>Coloration (scales) (https://www.gephebase.org/search-criteria?/and+Trait=~Coloration(scales)^#gephebase-summary-title)</p> <p>Labeotropheus fuelleborni with more xanthophore on caudal region of the flank</p> <p>Tropheops red cheek with less xanthophores on caudal region of the flank</p> <p>Unknown</p> <p>Interspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=~Interspecific^#gephebase-summary-title)</p>	<p>Trait Category</p> <p>Trait</p> <p>Trait State in Taxon A</p> <p>Trait State in Taxon B</p> <p>Ancestral State</p> <p>Taxonomic Status</p>	<p>Tropheops sp. 'red cheek' (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Tropheops+sp.&#039;red+cheek&#039;^#gephebase-summary-title)</p> <p>-</p> <p>Tropheops redcheek</p> <p>species</p> <p>cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Actinopterygii; Actinopteri; Neopterygii; Teleostei; Osteoglossocephalai; Clupecocephala; Euteleostomorpha; Neoteleostei; Eurypterygia; Ctenosquamata; Acanthomorpha; Euacanthomorpha; Percomorphaceae; Ovalentaria; Cichlomorphae; Cichliformes; Cichlidae; African cichlids; Pseudocrenilabrinae; Haplochromini; Labeotropheus</p> <p>Tropheops () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=702376)</p> <p>702379 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=702379)</p> <p>is Taxon B an Infrappecies?</p> <p>No</p>	<p>Latin Name</p> <p>Common Name</p> <p>Synonyms</p> <p>Rank</p> <p>Lineage</p> <p>Parent</p> <p>NCBI Taxonomy ID</p> <p>is Taxon B an Infrappecies?</p>
<p>blue mbuna</p> <p>blue mbuna; Labeotropheus fuelleborni Ahl, 1926</p> <p>species</p> <p>cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Actinopterygii; Actinopteri; Neopterygii; Teleostei; Osteoglossocephalai; Clupecocephala; Euteleostomorpha; Neoteleostei; Eurypterygia; Ctenosquamata; Acanthomorpha; Euacanthomorpha; Percomorphaceae; Ovalentaria; Cichlomorphae; Cichliformes; Cichlidae; African cichlids; Pseudocrenilabrinae; Haplochromini; Labeotropheus</p> <p>Labeotropheus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=57306)</p> <p>57307 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=57307)</p> <p>is Taxon A an Infrappecies?</p> <p>No</p>	<p>Taxon A</p> <p>Latin Name</p> <p>Common Name</p> <p>Synonyms</p> <p>Rank</p> <p>Lineage</p> <p>Parent</p> <p>NCBI Taxonomy ID</p> <p>is Taxon A an Infrappecies?</p>	<p>Labeotropheus fuelleborni (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Labeotropheus+fuelleborni^#gephebase-summary-title)</p> <p>-</p> <p>Tropheops redcheek</p> <p>species</p> <p>cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Actinopterygii; Actinopteri; Neopterygii; Teleostei; Osteoglossocephalai; Clupecocephala; Euteleostomorpha; Neoteleostei; Eurypterygia; Ctenosquamata; Acanthomorpha; Euacanthomorpha; Percomorphaceae; Ovalentaria; Cichlomorphae; Cichliformes; Cichlidae; African cichlids; Pseudocrenilabrinae; Haplochromini; Tropheops</p> <p>Tropheops () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=57306)</p> <p>57307 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=57307)</p> <p>is Taxon A an Infrappecies?</p> <p>No</p>	<p>Latin Name</p> <p>Common Name</p> <p>Synonyms</p> <p>Rank</p> <p>Lineage</p> <p>Parent</p> <p>NCBI Taxonomy ID</p> <p>is Taxon A an Infrappecies?</p>

GENOTYPIC CHANGE

<p>EFNA4</p> <p>EFL4; EPLG4; LERK4</p> <p>9606.ENSP00000414378 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=9606.ENSP00000414378)</p> <p>Belongs to the ephrin family.</p> <p>GO:0005005 : transmembrane-ephrin receptor activity (https://www.ebi.ac.uk/QuickGO/term/GO:0005005)</p> <p>GO:0046875 : ephrin receptor binding (https://www.ebi.ac.uk/QuickGO/term/GO:0046875)</p>	<p>Generic Gene Name</p> <p>Synonyms</p> <p>String</p> <p>Sequence Similarities</p> <p>GO - Molecular Function</p> <p>GO - Biological Process</p>	<p>P52798 (http://www.uniprot.org/uniprot/P52798)</p> <p>0</p> <p>UniProtKB Homo sapiens</p> <p>GenebankID or UniProtKB</p>
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GO:0007267 : cell-cell signaling (<https://www.ebi.ac.uk/QuickGO/term/GO:0007267>)

GO:0007411 : axon guidance (<https://www.ebi.ac.uk/QuickGO/term/GO:0007411>)

GO:0048013 : ephrin receptor signaling pathway

(<https://www.ebi.ac.uk/QuickGO/term/GO:0048013>)

GO:0030316 : osteoclast differentiation

(<https://www.ebi.ac.uk/QuickGO/term/GO:0030316>)

GO:0046849 : bone remodeling (<https://www.ebi.ac.uk/QuickGO/term/GO:0046849>)

GO - Cellular Component

GO:0005886 : plasma membrane (<https://www.ebi.ac.uk/QuickGO/term/GO:0005886>)

GO:0005576 : extracellular region (<https://www.ebi.ac.uk/QuickGO/term/GO:0005576>)

GO:0031225 : anchored component of membrane

(<https://www.ebi.ac.uk/QuickGO/term/GO:0031225>)

GO:0031226 : intrinsic component of plasma membrane

(<https://www.ebi.ac.uk/QuickGO/term/GO:0031226>)

Presumptive Null

Unknown (<https://www.gephebase.org/search-criteria?/and+Presumptive+Null=~Unknown^#gephebase-summary-title>)

Molecular Type

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

Aberration Type

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

Molecular Details of the Mutation

unknown

Experimental Evidence

Linkage Mapping (<https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=~Linkage+Mapping^#gephebase-summary-title>)

Main Reference

Genetic basis of continuous variation in the levels and modular inheritance of pigmentation in cichlid fishes. (2014) (<https://pubmed.ncbi.nlm.nih.gov/25156298>)

Authors

Albertson RC; Powder KE; Hu Y; Coyle KP; Roberts RB; Parsons KJ

Abstract

Variation in pigmentation type and levels is a hallmark of myriad evolutionary radiations, and biologists have long been fascinated by the factors that promote and maintain variation in coloration across populations. Here, we provide insights into the genetic basis of complex and continuous patterns of colour variation in cichlid fishes, which offer a vast diversity of pigmentation patterns that have evolved in response to both natural and sexual selection. Specifically, we crossed two divergent cichlid species to generate an F2 mapping population that exhibited extensive variation in pigmentation levels and patterns. Our experimental design is robust in that it combines traditional quantitative trait locus (QTL) analysis with population genomics, which has allowed us to move efficiently from QTL interval to candidate gene. In total, we detected 41 QTL and 13 epistatic interactions that underlie melanocyte- and xanthophore-based coloration across the fins and flanks of these fishes. We also identified 2 QTL and 1 interaction for variation in the magnitude of integration among these colour traits. This finding in particular is notable as there are marked differences both within and between species with respect to the complexity of pigmentation patterns. While certain individuals are characterized by more uniform 'integrated' colour patterns, others exhibit many more degrees of freedom with respect to the distribution of colour 'modules' across the fins and flank. Our data reveal, for the first time, a genetic basis for this difference. Finally, we implicate *pax3a* as a mediator of continuous variation in the levels of xanthophore-based colour along the cichlid flank.

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Additional References

RELATED GEPHE

Related Genes

4 (*pax3a*, *pax3b*, *zeb1a*, *Pax7*) (<https://www.gephebase.org/search-criteria?/or+Taxon+ID=~57307^/and+Trait=Coloration/or+Taxon+ID=~702379^/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title>)

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS

SNP adjacent to *ephrin-a4*