

GEPHE SUMMARY

<p>goldentouch (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=^goldentouch^#gephebase-summary-title)</p> <p>Published</p>	<p>Gephebase Gene</p> <p>Entry Status</p>	<p>GP00002362</p> <p>Santos</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 (https://www.gephebase.org/search-criteria?/and+Trait=^Coloration^#gephebase-summary-title)</p> <p>dark morph</p> <p>golden morph</p> <p>Unknown</p> <p>Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=^Intraspecific^#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></p> <p></p> <p></p> <p></p> <p></p> <p></p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p></p>
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Taxon A	Latin Name	Taxon B	Latin Name
Amphilophus citrinellus (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Amphilophus+citrinellus^#gephebase-summary-title)		Amphilophus citrinellus (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=^Amphilophus+citrinellus^#gephebase-summary-title)	
Midas cichlid	Common Name	Midas cichlid	Common Name
Archocentrus citrinellum; Cichlasoma citrinellum; Herichthys citrinellus; Heros citrinellus; Midas cichlid; red devil; red devil cichlid; Amphilophus citrinellus (Guenther, 1864); Heros citrinellus Guenther, 1864; Heros citrinellus Gunther, 1864; Amphilophus citrenellus; Amphilophus citrinellum; Cichlosoma citrinellum	Synonyms	Archocentrus citrinellum; Cichlasoma citrinellum; Herichthys citrinellus; Heros citrinellus; Midas cichlid; red devil; red devil cichlid; Amphilophus citrinellus (Guenther, 1864); Heros citrinellus Guenther, 1864; Heros citrinellus Gunther, 1864; Amphilophus citrenellus; Amphilophus citrinellum; Cichlosoma citrinellum	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Actinopterygii; Actinopteri; Neopterygii; Teleostei; Osteoglossocephalai; Clupeocephala; Euteleostomorpha; Neoteleostei; Eurypterygia; Ctenosquamata; Acanthomorpha; Euacanthomorpha; Percomorphaceae; Ovalentaria; Cichlomorphae; Cichliformes; Cichlidae; New World cichlids; Cichlasomatinae; Heroini; Amphilophus	Lineage	cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Deuterostomia; Chordata; Craniata; Vertebrata; Gnathostomata; Teleostomi; Euteleostomi; Actinopterygii; Actinopteri; Neopterygii; Teleostei; Osteoglossocephalai; Clupeocephala; Euteleostomorpha; Neoteleostei; Eurypterygia; Ctenosquamata; Acanthomorpha; Euacanthomorpha; Percomorphaceae; Ovalentaria; Cichlomorphae; Cichliformes; Cichlidae; New World cichlids; Cichlasomatinae; Heroini; Amphilophus	Lineage
Amphilophus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=61818)	Parent	Amphilophus () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=61818)	Parent
61819 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=61819)	NCBI Taxonomy ID	61819 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=61819)	NCBI Taxonomy ID
No	is Taxon A an Intraspecies?	No	is Taxon B an Intraspecies?

GENOTYPIC CHANGE

<p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</p> <p>-</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>GO - Cellular Component</p>	<p>0</p> <p>0</p> <p></p> <p></p> <p></p> <p></p> <p></p>	<p>UniProtKB</p> <p>GenebankID or UniProtKB</p>
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No ([https://www.gephebase.org/search-criteria?/and+Presumptive Null=^No^#gephebase-summary-title](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](https://www.gephebase.org/search-criteria?/and+Molecular+Type+^Cis-regulatory^#gephebase-summary-title))

Molecular Type

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

Aberration Type

1-10 kb

Insertion Size

Molecular Details of the Mutation

“Using a new haplotype-resolved long-read assembly we discover an 8.2â€‰kb, transposon-derived inverted repeat in an intron of an undescribed gene, which we term goldentouch in reference to the Greek myth of King Midas. The gene goldentouch is differentially expressed between morphs, presumably due to structural implications of inverted repeats in both DNA and/or RNA (cruciform and hairpin formation). The near-perfect association of the insertion with the phenotype across independent populations suggests that it likely underlies this trans-specific, stable polymorphism.”

Experimental Evidence

Association Mapping ([https://www.gephebase.org/search-criteria?/and+Experimental Evidence=^Association Mapping^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Experimental+Evidence+^Association+Mapping^#gephebase-summary-title))

Main Reference

An intronic transposon insertion associates with a trans-species color polymorphism in Midas cichlid fishes. (2022) (<https://pubmed.ncbi.nlm.nih.gov/35027541>)

Authors

Kratochwil CF; Kautt AF; Nater A; HÄƒrner A; Liang Y; Henning F; Meyer A

Abstract

Polymorphisms have fascinated biologists for a long time, but their genetic underpinnings often remain elusive. Here, we aim to uncover the genetic basis of the gold/dark polymorphism that is eponymous of Midas cichlid fish (*Amphilophus* spp.) adaptive radiations in Nicaraguan crater lakes. While most Midas cichlids are of the melanic “dark morph”, about 10% of individuals lose their melanic pigmentation during their ontogeny and transition into a conspicuous “gold morph”. Using a new haplotype-resolved long-read assembly we discover an 8.2â€‰kb, transposon-derived inverted repeat in an intron of an undescribed gene, which we term goldentouch in reference to the Greek myth of King Midas. The gene goldentouch is differentially expressed between morphs, presumably due to structural implications of inverted repeats in both DNA and/or RNA (cruciform and hairpin formation). The near-perfect association of the insertion with the phenotype across independent populations suggests that it likely underlies this trans-specific, stable polymorphism.

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Additional References

RELATED GEPHE

No matches found.

Related Genes

No matches found.

Related Haplotypes

EXTERNAL LINKS

COMMENTS