

GEPHE SUMMARY

<p>WntA (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase=~WntA^#gephebase-summary-title)</p> <p>Published</p>	<p>Gephebase Gene</p> <p>Entry Status</p>	<p>GP00001205</p> <p>Martin</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>Trait Category</p>		
<p>Coloration (wing, Mullerian mimicry) (https://www.gephebase.org/search-criteria?/and+Trait=~Coloration+(wing,+Mullerian+mimicry)^#gephebase-summary-title)</p>		<p>Trait</p>		
<p>Heliconius erato emma - Peruvian amazon</p>		<p>Trait State in Taxon A</p>		
<p>Heliconius erato emma - Peruvian low-lands</p>		<p>Trait State in Taxon B</p>		
<p>Unknown</p>		<p>Ancestral State</p>		
<p>Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=~Intraspecific^#gephebase-summary-title)</p>		<p>Taxonomic Status</p>		
<p>Taxon A</p>	<p>Latin Name</p>	<p>Taxon B</p>	<p>Latin Name</p>	
<p>Heliconius erato (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Heliconius+erato^#gephebase-summary-title)</p>	<p>Heliconius erato (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Heliconius+erato^#gephebase-summary-title)</p>	<p>Heliconius erato (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Heliconius+erato^#gephebase-summary-title)</p>	<p>Heliconius erato (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Heliconius+erato^#gephebase-summary-title)</p>	
<p>crimson-patched longwing</p>	<p>Common Name</p>	<p>crimson-patched longwing</p>	<p>Common Name</p>	
<p>crimson-patched longwing; Heliconius erato (Linnaeus, 1764)</p>	<p>Synonyms</p>	<p>crimson-patched longwing; Heliconius erato (Linnaeus, 1764)</p>	<p>Synonyms</p>	
<p>species</p>	<p>Rank</p>	<p>species</p>	<p>Rank</p>	
<p>cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Holometabola; Amphimesnoptera; Lepidoptera; Glossata; Neolepidoptera; Heteroneura; Ditrysia; Obtectomera; Papilionoidea; Nymphalidae; Heliconiinae; Heliconiini; Heliconius</p>	<p>Lineage</p>	<p>cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Holometabola; Amphimesnoptera; Lepidoptera; Glossata; Neolepidoptera; Heteroneura; Ditrysia; Obtectomera; Papilionoidea; Nymphalidae; Heliconiinae; Heliconiini; Heliconius</p>	<p>Lineage</p>	
<p>Heliconius () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=33416)</p>	<p>Parent</p>	<p>Heliconius () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=33416)</p>	<p>Parent</p>	
<p>33431 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=33431)</p>	<p>NCBI Taxonomy ID</p>	<p>33431 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=33431)</p>	<p>NCBI Taxonomy ID</p>	
<p>Yes</p>	<p>is Taxon A an Intraspecies?</p>	<p>Yes</p>	<p>is Taxon B an Intraspecies?</p>	
<p>Heliconius erato emma - Peruvian amazon</p>	<p>Taxon A Description</p>	<p>Heliconius erato emma - Peruvian low-lands</p>	<p>Taxon B Description</p>	

GENOTYPIC CHANGE

<p>WntA</p> <p>-</p> <p>-</p>	<p>Generic Gene Name</p> <p>Synonyms</p> <p>String</p> <p>Sequence Similarities</p>	<p>A0A077DF90 (http://www.uniprot.org/uniprot/A0A077DF90)</p> <p>0</p>	<p>UniProtKB Vanessa cardui</p> <p>GenebankID or UniProtKB</p>
<p>Belongs to the Wnt family.</p> <p>GO:0005102 : signaling receptor binding (https://www.ebi.ac.uk/QuickGO/term/GO:0005102)</p> <p>GO:0007275 : multicellular organism development (https://www.ebi.ac.uk/QuickGO/term/GO:0007275)</p> <p>GO:0016055 : Wnt signaling pathway</p>	<p>GO - Molecular Function</p> <p>GO - Biological Process</p>		

(<https://www.ebi.ac.uk/QuickGO/term/GO:0016055>)

GO - Cellular Component

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

Presumptive Null

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))

Molecular Type

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))

Aberration Type

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

Molecular Details of the Mutation

unknown

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

Diversification of complex butterfly wing patterns by repeated regulatory evolution of a Wnt ligand. (2012) (<https://pubmed.ncbi.nlm.nih.gov/22802635>)

Authors

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Abstract

Although animals display a rich variety of shapes and patterns, the genetic changes that explain how complex forms arise are still unclear. Here we take advantage of the extensive diversity of Heliconius butterflies to identify a gene that causes adaptive variation of black wing patterns within and between species. Linkage mapping in two species groups, gene-expression analysis in seven species, and pharmacological treatments all indicate that cis-regulatory evolution of the WntA ligand underpins discrete changes in color pattern features across the Heliconius genus. These results illustrate how the direct modulation of morphogen sources can generate a wide array of unique morphologies, thus providing a link between natural genetic variation, pattern formation, and adaptation.

Additional References

RELATED GEPHE

Related Genes

1 (Optix) ([https://www.gephebase.org/search-criteria?/or+Taxon ID=~33431~/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon+ID=~33431~/and+Trait=Coloration/and+groupHaplotypes=true#gephebase-summary-title))

Related Haplotypes

3 ([https://www.gephebase.org/search-criteria?/or+Gene Gephebase=~WntA~/and+Taxon ID=~33431~/or+Gene Gephebase=~WntA~/and+Taxon ID=~33431~#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Gene+Gephebase=~WntA~/and+Taxon+ID=~33431~/or+Gene+Gephebase=~WntA~/and+Taxon+ID=~33431~#gephebase-summary-title))

EXTERNAL LINKS

COMMENTS

UPDATE: add Van Belleghem et al. reference