

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>GP00001208</p> <p>Courtier</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 (wing; Batesian mimicry) (https://www.gephebase.org/search-criteria?/and+Trait=~Coloration (wing; Batesian mimicry)^#gephebase-summary-title)</p> <p>Limnitis arthemis arthemis - White Admiral (with White Band)</p> <p>Limnitis arthemis astyanax - Red Spotted Purple (melanic morph without a white band ; mimic of Pipevine Swallowtail in southern range of the species distribution)</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>Taxon A</p> <p>Latin Name</p> <p>Limnitis arthemis (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Limnitis arthemis^#gephebase-summary-title)</p> <p>Common Name</p> <p>white admiral</p> <p>Synonyms</p> <p>Basilarchia arthemis; white admiral; Basilarchia arthemis (Drury, 1773)</p> <p>Rank</p> <p>species</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; Dityisia; Obtectomera; Papilionoidea; Nymphalidae; Limenitidinae; Limenitidini; Limenitis</p> <p>Parent</p> <p>Limnitis (admirals) - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=124410)</p> <p>NCBI Taxonomy ID</p> <p>124411 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=124411)</p> <p>is Taxon A an Intraspecies?</p> <p>Yes</p> <p>Taxon A Description</p> <p>Limnitis arthemis arthemis - White Admiral (with White Band)</p>	<p>Taxon B</p> <p>Latin Name</p> <p>Limnitis arthemis (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Limnitis arthemis^#gephebase-summary-title)</p> <p>Common Name</p> <p>white admiral</p> <p>Synonyms</p> <p>Basilarchia arthemis; white admiral; Basilarchia arthemis (Drury, 1773)</p> <p>Rank</p> <p>species</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; Dityisia; Obtectomera; Papilionoidea; Nymphalidae; Limenitidinae; Limenitidini; Limenitis</p> <p>Parent</p> <p>Limnitis (admirals) - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=124410)</p> <p>NCBI Taxonomy ID</p> <p>124411 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=124411)</p> <p>is Taxon B an Intraspecies?</p> <p>Yes</p> <p>Taxon B Description</p> <p>Limnitis arthemis astyanax - Red Spotted Purple (melanic morph without a white band ; mimic of Pipevine Swallowtail in southern range of the species distribution)</p>
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GENOTYPIC CHANGE

<p>WntA</p> <p>-</p> <p>-</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</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>A0A077DF90 (http://www.uniprot.org/uniprot/A0A077DF90)</p> <p>()</p>	<p>UniProtKB Vanessa cardui</p> <p>GenebankID or UniProtKB</p>
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(<https://www.ebi.ac.uk/QuickGO/term/GO:0007275>)

GO:0016055 : Wnt signaling pathway

(<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

Complex Haplotype in first intron perfectly associated with phenotype: 173 fixed single-nucleotide polymorphisms (SNPs) in complete linkage disequilibrium (LD) located 23

Experimental Evidence

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

Main Reference

Ancient homology underlies adaptive mimetic diversity across butterflies. (2014) (<https://pubmed.ncbi.nlm.nih.gov/25198507>)

Authors

Gallant JR; Imhoff VE; Martin A; Savage WK; Chamberlain NL; Pote BL; Peterson C; Smith GE; Evans B; Reed RD; Kronforst MR; Mullen SP

Abstract

Convergent evolution provides a rare, natural experiment with which to test the predictability of adaptation at the molecular level. Little is known about the molecular basis of convergence over macro-evolutionary timescales. Here we use a combination of positional cloning, population genomic resequencing, association mapping and developmental data to demonstrate that positionally orthologous nucleotide variants in the upstream region of the same gene, WntA, are responsible for parallel mimetic variation in two butterfly lineages that diverged >65 million years ago. Furthermore, characterization of spatial patterns of WntA expression during development suggests that alternative regulatory mechanisms underlie wing pattern variation in each system. Taken together, our results reveal a strikingly predictable molecular basis for phenotypic convergence over deep evolutionary time.

Additional References

RELATED GEPHE

No matches found.

Related Genes

No matches found.

Related Haplotypes

EXTERNAL LINKS

COMMENTS

@TE ; @Fitness Adaptive ; Linkage + Association Mapping