

GEPHE SUMMARY

	Gephebase Gene	GepheID
WntA (https://www.gephebase.org/search-criteria?/and+Gene Gephebase="WntA">#gephebase-summary-title)	GP00001208	
	Entry Status	Main curator
Published	Courtier	

PHENOTYPIC CHANGE

	Trait Category
Morphology (https://www.gephebase.org/search-criteria?/and+Trait Category="Morphology">#gephebase-summary-title)	Trait
Coloration (wing; Batesian mimicry) (https://www.gephebase.org/search-criteria?/and+Trait=^Coloration+(wing;+Batesian+mimicry)^#gephebase-summary-title)	Trait State in Taxon A
Limenitis arthemis arthemis - White Admiral (with White Band)	Trait State in Taxon B
Limenitis arthemis astyanax - Red Spotted Purple (melanic morph without a white band ; mimic of Pipevine Swallowtail in southern range of the species distribution)	Ancestral State
Unknown	Taxonomic Status
Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic Status="Intraspecific">#gephebase-summary-title)	

Taxon A		Taxon B	
	Latin Name		Latin Name
Limenitis arthemis (#gephebase-summary-title")	Limenitis arthemis (#gephebase-summary-title")		
white admiral	Common Name	white admiral	Common Name
Basilarchia arthemis; white admiral; Basilarchia arthemis (Drury, 1773)	Synonyms	Basilarchia arthemis; white admiral; Basilarchia arthemis (Drury, 1773)	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Holometabola; Amphiesmenoptera; Lepidoptera; Glossata; Neolepidoptera; Heteroneura; Ditrysia; Obtectomera; Papilionoidea; Nymphalidae; Limenitidinae; Limenitidini; Limenitis	Lineage	cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Holometabola; Amphiesmenoptera; Lepidoptera; Glossata; Neolepidoptera; Heteroneura; Ditrysia; Obtectomera; Papilionoidea; Nymphalidae; Limenitidinae; Limenitidini; Limenitis	Lineage
Limenitis (admirals) - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=124410)	Parent	Limenitis (admirals) - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=124410)	Parent
124411 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=124411)	NCBI Taxonomy ID	124411 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=124411)	NCBI Taxonomy ID
is Taxon A an Infraspecies?		is Taxon B an Infraspecies?	
Yes	Taxon A Description	Yes	Taxon B Description
Limenitis arthemis arthemis - White Admiral (with White Band)		Limenitis arthemis astyanax - Red Spotted Purple (melanic morph without a white band ; mimic of Pipevine Swallowtail in southern range of the species distribution)	

GENOTYPIC CHANGE

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

(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)	Molecular Type
Cis-regulatory (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)	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)	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 ; Mimicry ; @Fitness Adaptive ; Linkage + Association Mapping