

GEPHE SUMMARY

Sox5/6 ( <a href="https://www.gephebase.org/search-criteria?/and+Gene">https://www.gephebase.org/search-criteria?/and+Gene</a> Gephebase= <sup>^</sup> Sox5/6 <sup>^</sup> #gephebase-summary-title)	Gephebase Gene	GP00002429	GepheID
Published	Entry Status	Courtier	Main curator

PHENOTYPIC CHANGE

Morphology ( <a href="https://www.gephebase.org/search-criteria?/and+Trait">https://www.gephebase.org/search-criteria?/and+Trait</a> Category= <sup>^</sup> Morphology <sup>^</sup> #gephebase-summary-title)	Trait Category		
Coloration (wing; mimicry) ( <a href="https://www.gephebase.org/search-criteria?/and+Trait=&lt;sup&gt;^&lt;/sup&gt;Coloration">https://www.gephebase.org/search-criteria?/and+Trait=<sup>^</sup>Coloration</a> (wing; mimicry) <sup>^</sup> #gephebase-summary-title)	Trait		
Hypolimnas misippus - form misippus	Trait State in Taxon A		
Hypolimnas misippus - form immima/inaria	Trait State in Taxon B		
Unknown	Ancestral State		
Intraspecific ( <a href="https://www.gephebase.org/search-criteria?/and+Taxonomic">https://www.gephebase.org/search-criteria?/and+Taxonomic</a> Status= <sup>^</sup> Intraspecific <sup>^</sup> #gephebase-summary-title)	Taxonomic Status		
	Taxon A	Taxon B	
	Latin Name	Latin Name	
Hypolimnas misippus ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon">https://www.gephebase.org/search-criteria?/and+Taxon</a> and Synonyms= <sup>^</sup> Hypolimnas misippus <sup>^</sup> #gephebase-summary-title)	Hypolimnas misippus ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon">https://www.gephebase.org/search-criteria?/and+Taxon</a> and Synonyms= <sup>^</sup> Hypolimnas misippus <sup>^</sup> #gephebase-summary-title)	Hypolimnas misippus ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon">https://www.gephebase.org/search-criteria?/and+Taxon</a> and Synonyms= <sup>^</sup> Hypolimnas misippus <sup>^</sup> #gephebase-summary-title)	
-	Common Name	-	Common Name
	Synonyms		Synonyms
Papilio misippus; Hypolimnas misippus (Linnaeus, 1764); Papilio misippus Linnaeus, 1764; Hypolimnas missipus	Papilio misippus; Hypolimnas misippus (Linnaeus, 1764); Papilio misippus Linnaeus, 1764; Hypolimnas missipus	Papilio misippus; Hypolimnas misippus (Linnaeus, 1764); Papilio misippus Linnaeus, 1764; Hypolimnas missipus	
species	Rank	species	Rank
	Lineage		Lineage
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Endopterygota; Amphiesmenoptera; Lepidoptera; Glossata; Neolepidoptera; Heteroneura; Dityrsia; Obtectomera; Papilionoidea; Nymphalidae; Nymphalinae; Junoniini; Hypolimnas	cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Endopterygota; Amphiesmenoptera; Lepidoptera; Glossata; Neolepidoptera; Heteroneura; Dityrsia; Obtectomera; Papilionoidea; Nymphalidae; Nymphalinae; Junoniini; Hypolimnas	cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Endopterygota; Amphiesmenoptera; Lepidoptera; Glossata; Neolepidoptera; Heteroneura; Dityrsia; Obtectomera; Papilionoidea; Nymphalidae; Nymphalinae; Junoniini; Hypolimnas	
	Parent		Parent
Hypolimnas (eggflies) - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=76214">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=76214</a> )	Hypolimnas (eggflies) - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=76214">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=76214</a> )	Hypolimnas (eggflies) - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=76214">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=76214</a> )	
124412 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=124412">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=124412</a> )	NCBI Taxonomy ID	124412 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=124412">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=124412</a> )	NCBI Taxonomy ID
Yes	is Taxon A an Intraspecies?	Yes	is Taxon B an Intraspecies?
	Taxon A Description		Taxon B Description
Hypolimnas misippus - form misippus	Hypolimnas misippus - form immima/inaria	Hypolimnas misippus - form immima/inaria	

GENOTYPIC CHANGE

-	Generic Gene Name	0	UniProtKB
-	Synonyms	0	GenebankID or UniProtKB
-	String		
-	Sequence Similarities		
-	GO - Molecular Function		
-	GO - Biological Process		
-	GO - Cellular Component		

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=))

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=))

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=))

Molecular Details of the Mutation

A 10 kb intergenic region located 48kb upstream of the Sox5/6 gene is strongly associated with the wing phenotype. This cis-regulatory change may also affect another neighboring gene, such as pink.

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=))

Main Reference

Butterfly Mimicry Polymorphisms Highlight Phylogenetic Limits of Gene Reuse in the Evolution of Diverse Adaptations. (2019) (<https://pubmed.ncbi.nlm.nih.gov/31504750>)

Authors

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Abstract

Some genes have repeatedly been found to control diverse adaptations in a wide variety of organisms. Such gene reuse reveals not only the diversity of phenotypes these unique genes control but also the composition of developmental gene networks and the genetic routes available to and taken by organisms during adaptation. However, the causes of gene reuse remain unclear. A small number of large-effect Mendelian loci control a huge diversity of mimetic butterfly wing color patterns, but reasons for their reuse are difficult to identify because the genetic basis of mimicry has primarily been studied in two systems with correlated factors: female-limited Batesian mimicry in *Papilio swallowtails* (Papilionidae) and non-sex-limited MÃ¼llerian mimicry in *Heliconius longwings* (Nymphalidae). Here, we break the correlation between phylogenetic relationship and sex-limited mimicry by identifying loci controlling female-limited mimicry polymorphism *Hypolimnas misippus* (Nymphalidae) and non-sex-limited mimicry polymorphism in *Papilio clytia* (Papilionidae). The *Papilio clytia* polymorphism is controlled by the genome region containing the gene *cortex*, the classic P supergene in *Heliconius numata*, and loci controlling color pattern variation across Lepidoptera. In contrast, female-limited mimicry polymorphism in *Hypolimnas misippus* is associated with a locus not previously implicated in color patterning. Thus, although many species repeatedly converged on *cortex* and its neighboring genes over 120 My of evolution of diverse color patterns, female-limited mimicry polymorphisms each evolved using a different gene. Our results support conclusions that gene reuse occurs mainly within a ~410 My and highlight the puzzling diversity of genes controlling seemingly complex female-limited mimicry polymorphisms.

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Additional References

## RELATED GEPHE

No matches found.

Related Genes

No matches found.

Related Haplotypes

## EXTERNAL LINKS

## COMMENTS

@Parallelism @SexualTrait