

GEPHE SUMMARY

cortex (https://www.gephebase.org/search-criteria?/and+Gene+Gephebase+^cortex+^#gephebase-summary-title)	Gephebase Gene	GP00002416	GepheID
Published	Entry Status	Courtier	Main curator

PHENOTYPIC CHANGE

Morphology (https://www.gephebase.org/search-criteria?/and+Trait+Category+^Morphology+^#gephebase-summary-title)	Trait Category		
Coloration (wing ; leaf mimicry ; camouflage) (https://www.gephebase.org/search-criteria?/and+Trait+^Coloration+^#gephebase-summary-title)	Trait		
scrambled form	Trait State in Taxon A		
rippled form	Trait State in Taxon B		
Taxon A	Ancestral State		
Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic+Status+^Intraspecific+^#gephebase-summary-title)	Taxonomic Status		
	Taxon A		Taxon B
	Latin Name		Latin Name
Kallima inachus (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+^Kallima+inachus+^#gephebase-summary-title)	Latin Name	Kallima inachus (https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms+^Kallima+inachus+^#gephebase-summary-title)	Latin Name
orange oakleaf	Common Name	orange oakleaf	Common Name
Kallima inachus eucerca; orange oakleaf; dead leaf; dead leaf butterfly; Kallima inachus (Boisduval, 1846); Kallima inachus	Synonyms	Kallima inachus eucerca; orange oakleaf; dead leaf; dead leaf butterfly; Kallima inachus (Boisduval, 1846); Kallima inachus	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Endopterygota; Amphiesmenoptera; Lepidoptera; Glossata; Neolepidoptera; Heteroneura; Ditrysia; Obtectomera; Papilionoidea; Nymphalidae; Nymphalinae; Kallimini; Kallima	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; Ditrysia; Obtectomera; Papilionoidea; Nymphalidae; Nymphalinae; Kallimini; Kallima	Lineage
Kallima () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=127345)	Parent	Kallima () - (Rank: genus) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=127345)	Parent
311037 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=311037)	NCBI Taxonomy ID	311037 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=311037)	NCBI Taxonomy ID
Yes	is Taxon A an Intraspecies?	Yes	is Taxon B an Intraspecies?
Kallima inachus - scrambled morph	Taxon A Description	Kallima inachus - rippled morph	Taxon B Description

GENOTYPIC CHANGE

cort	Generic Gene Name	Q960N3 (http://www.uniprot.org/uniprot/Q960N3)	UniProtKB Drosophila melanogaster
CG11330; cor; Cort; Dmel\CG11330	Synonyms	()	GenebankID or UniProtKB
7227.FBpp0078949 (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=7227.FBpp0078949)	String		
Belongs to the WD repeat CORT family.	Sequence Similarities		
GO:0010997 : anaphase-promoting complex binding (https://www.ebi.ac.uk/QuickGO/term/GO:0010997)	GO - Molecular Function		

GO:0097027 : ubiquitin-protein transferase activator activity
(<https://www.ebi.ac.uk/QuickGO/term/GO:0097027>)

GO - Biological Process

GO:0048477 : oogenesis (<https://www.ebi.ac.uk/QuickGO/term/GO:0048477>)

GO:0045143 : homologous chromosome segregation
(<https://www.ebi.ac.uk/QuickGO/term/GO:0045143>)

GO:0031145 : anaphase-promoting complex-dependent catabolic process
(<https://www.ebi.ac.uk/QuickGO/term/GO:0031145>)

GO:0007349 : cellularization (<https://www.ebi.ac.uk/QuickGO/term/GO:0007349>)

GO:0007343 : egg activation (<https://www.ebi.ac.uk/QuickGO/term/GO:0007343>)

GO:0007144 : female meiosis I (<https://www.ebi.ac.uk/QuickGO/term/GO:0007144>)

GO:0007147 : female meiosis II (<https://www.ebi.ac.uk/QuickGO/term/GO:0007147>)

GO:0007143 : female meiotic nuclear division
(<https://www.ebi.ac.uk/QuickGO/term/GO:0007143>)

GO:0007279 : pole cell formation (<https://www.ebi.ac.uk/QuickGO/term/GO:0007279>)

GO:1905786 : positive regulation of anaphase-promoting complex-dependent catabolic
process (<https://www.ebi.ac.uk/QuickGO/term/GO:1905786>)

GO:1904668 : positive regulation of ubiquitin protein ligase activity
(<https://www.ebi.ac.uk/QuickGO/term/GO:1904668>)

GO - Cellular Component

GO:0005737 : cytoplasm (<https://www.ebi.ac.uk/QuickGO/term/GO:0005737>)

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

Large inversion and many mutations in the large inverted region.

Experimental Evidence

Association Mapping (<https://www.gephebase.org/search-criteria?/and+Experimental Evidence=~Association Mapping~#gephebase-summary-title>)

Main Reference

The evolution and diversification of oakleaf butterflies. (2022) (<https://pubmed.ncbi.nlm.nih.gov/35926506>)

Authors

Wang S; Teng D; Li X; Yang P; Da W; Zhang Y; Zhang Y; Liu G; Zhang X; Wan W; Dong Z; Wang D; Huang S; Jiang Z; Wang Q; Lohman DJ; Wu Y; Zhang L; Jia F; Westerman E; Zhang L; Wang W; Zhang W

Abstract

Oakleaf butterflies in the genus *Kallima* have a polymorphic wing phenotype, enabling these insects to masquerade as dead leaves. This iconic example of protective resemblance provides an interesting evolutionary paradigm that can be employed to study biodiversity. We integrated multi-omic data analyses and functional validation to infer the evolutionary history of *Kallima* species and investigate the genetic basis of their variable leaf wing patterns. We find that *Kallima* butterflies diversified in the eastern Himalayas and dispersed to East and Southeast Asia. Moreover, we find that leaf wing polymorphism is controlled by the wing patterning gene cortex, which has been maintained in *Kallima* by long-term balancing selection. Our results provide macroevolutionary and microevolutionary insights into a model species originating from a mountain ecosystem.

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Additional References

RELATED GEPHE

Related Genes

No matches found.

Related Haplotypes

3 (<https://www.gephebase.org/search-criteria?/or+Gene Gephebase=~cortex~/and+Taxon ID=~311037~/or+Gene Gephebase=~cortex~/and+Taxon ID=~311037~#gephebase-summary-title>)

EXTERNAL LINKS

COMMENTS

@Parallelism - There are at least 5 distinct cortex haplotypes associated with 5 wing morphs. These diverse haplotypes are also found in closely related species of *Kallima* butterflies, suggesting that the balanced polymorphism has been maintained over millions of years. @Inversion

