

## GEPHE SUMMARY

	Gephebase Gene	GephelD
Clock ( <a href="https://www.gephebase.org/search-criteria/?and+GeneGephebase=%22Clock%22#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+GeneGephebase=%22Clock%22#gephebase-summary-title</a> )	GP00002409	Main curator
Published	Entry Status	Courtier

## PHENOTYPIC CHANGE

	Trait Category		
Physiology ( <a href="https://www.gephebase.org/search-criteria/?and+TraitCategory=%22Physiology%22#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+TraitCategory=%22Physiology%22#gephebase-summary-title</a> )	Trait		
Circadian rhythm ( <a href="https://www.gephebase.org/search-criteria/?and+Trait=%22Circadianrhythm%22#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Trait=%22Circadianrhythm%22#gephebase-summary-title</a> )	Trait State in Taxon A		
Bombyx mori - local strains	Trait State in Taxon B		
Bombyx mori - domesticated strains	Ancestral State		
Taxon A	Taxonomic Status		
Domesticated ( <a href="https://www.gephebase.org/search-criteria/?and+TaxonomicStatus=%22Domesticated%22#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+TaxonomicStatus=%22Domesticated%22#gephebase-summary-title</a> )			
Taxon A	Latin Name	Taxon B	Latin Name
Bombyx mori ( <a href="https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=%22Bombyxmori%22#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=%22Bombyxmori%22#gephebase-summary-title</a> )		Bombyx mori ( <a href="https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=%22Bombyxmori%22#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=%22Bombyxmori%22#gephebase-summary-title</a> )	
domestic silkworm	Common Name	domestic silkworm	Common Name
domestic silkworm; silk moth; silkworm; Bombyx mori Linnaeus, 1758	Synonyms	domestic silkworm; silk moth; silkworm; Bombyx mori Linnaeus, 1758	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; Bombycoidea; Bombycidae; Bombycinae; Bombyx	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; Bombycoidea; Bombycidae; Bombycinae; Bombyx	Lineage
Bombyx () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7090">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7090</a> )	Parent	Bombyx () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7090">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7090</a> )	Parent
7091 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7091">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7091</a> )	NCBI Taxonomy ID	7091 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7091">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7091</a> )	NCBI Taxonomy ID
No	is Taxon A an Infraspecies?	No	is Taxon B an Infraspecies?

## GENOTYPIC CHANGE

Clk	Generic Gene Name	UniProtKB Drosophila melanogaster
bHLHe10; CG7391; clk; CLK; clock; CLOCK; dClk; delk; dClk; dCLK; dCLK/JRK; dClock; dCLOCK; Dmel\CG7391; Jerk; jrk; Jrk; PAS1	Synonyms	GenebankID or UniProtKB
7227.FBpp0099478 ( <a href="http://string-db.org/newstring_cgi/show_network_section.pl?identifier=7227.FBpp0099478">http://string-db.org/newstring_cgi/show_network_section.pl?identifier=7227.FBpp0099478</a> )	String	
-	Sequence Similarities	
GO:0046982 : protein heterodimerization activity ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0046982">https://www.ebi.ac.uk/QuickGO/term/GO:0046982</a> )	GO - Molecular Function	
GO:0008134 : transcription factor binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0008134">https://www.ebi.ac.uk/QuickGO/term/GO:0008134</a> )		
GO:0003677 : DNA binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0003677">https://www.ebi.ac.uk/QuickGO/term/GO:0003677</a> )		

GO:0003682 : chromatin binding (<https://www.ebi.ac.uk/QuickGO/term/GO:0003682>)  
GO:0000981 : DNA-binding transcription factor activity, RNA polymerase II-specific  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0000981>)  
GO:0000978 : RNA polymerase II proximal promoter sequence-specific DNA binding  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0000978>)

#### GO - Biological Process

GO:0009416 : response to light stimulus  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009416>)  
GO:0043066 : negative regulation of apoptotic process  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0043066>)  
GO:0045944 : positive regulation of transcription by RNA polymerase II  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0045944>)  
GO:0006357 : regulation of transcription by RNA polymerase II  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0006357>)  
GO:0000122 : negative regulation of transcription by RNA polymerase II  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0000122>)  
GO:0045893 : positive regulation of transcription, DNA-templated  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0045893>)  
GO:0032922 : circadian regulation of gene expression  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0032922>)  
GO:0007623 : circadian rhythm (<https://www.ebi.ac.uk/QuickGO/term/GO:0007623>)  
GO:0045187 : regulation of circadian sleep/wake cycle, sleep  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0045187>)  
GO:0045475 : locomotor rhythm (<https://www.ebi.ac.uk/QuickGO/term/GO:0045475>)  
GO:0009266 : response to temperature stimulus  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009266>)  
GO:0048148 : behavioral response to cocaine  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0048148>)  
GO:0008062 : eclosion rhythm (<https://www.ebi.ac.uk/QuickGO/term/GO:0008062>)  
GO:0009649 : entrainment of circadian clock  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0009649>)  
GO:0007622 : rhythmic behavior (<https://www.ebi.ac.uk/QuickGO/term/GO:0007622>)  
GO:0003053 : circadian regulation of heart rate  
(<https://www.ebi.ac.uk/QuickGO/term/GO:0003053>)

#### GO - Cellular Component

GO:0005737 : cytoplasm (<https://www.ebi.ac.uk/QuickGO/term/GO:0005737>)  
GO:0005654 : nucleoplasm (<https://www.ebi.ac.uk/QuickGO/term/GO:0005654>)  
GO:0005634 : nucleus (<https://www.ebi.ac.uk/QuickGO/term/GO:0005634>)  
GO:1990513 : CLOCK-BMAL transcription complex  
(<https://www.ebi.ac.uk/QuickGO/term/GO:1990513>)

Presumptive Null

No (<https://www.gepheebase.org/search-criteria?/and+Presumptive+Null=%No%#gepheebase-summary-title>)

Molecular Type

Unknown (<https://www.gepheebase.org/search-criteria?/and+Molecular+Type=%Unknown%#gepheebase-summary-title>)

Aberration Type

Unknown (<https://www.gepheebase.org/search-criteria?/and+Aberration+Type=%Unknown%#gepheebase-summary-title>)

Molecular Details of the Mutation

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Experimental Evidence

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

Main Reference

The evolutionary road from wild moth to domestic silkworm. (2018) (<https://pubmed.ncbi.nlm.nih.gov/29967484/>)

Authors

Xiang H; Liu X; Li M; Zhu Y; Wang L; Cui Y; Liu L; Fang G; Qian H; Xu A; Wang W; Zhan S

Abstract

The Silk Road, which derives its name from the trade of silk produced by the domestic silkworm *Bombyx mori*, was an important episode in the development and interaction of human civilizations. However, the detailed history behind silkworm domestication remains ambiguous, and little is known about the underlying genetics with respect to important aspects of its domestication. Here, we reconstruct the domestication processes and identify selective sweeps by sequencing 137 representative silkworm strains. The results present an evolutionary scenario in which silkworms may have been initially domesticated in China as trimoultling lines, then subjected to independent spreads along the Silk Road that gave rise to the development of most local strains, and further improved for modern silk production in Japan and China, having descended from diverse ancestral sources. We find that genes with key roles in nitrogen and amino acid metabolism may have contributed to the promotion of silk production, and that circadian-related genes are generally selected for their adaptation. We additionally identify associations between several candidate genes and important breeding traits, thereby advancing the applicable value of our resources.

Additional References

High-resolution silkworm pan-genome provides genetic insights into artificial selection and ecological adaptation. (2022) (<https://pubmed.ncbi.nlm.nih.gov/36153338/>)

## RELATED GEPHE

#### Related Genes

1 (Cryptochrome 2 (CRY2)) (<https://www.gepheebase.org/search-criteria?/or+Taxon+ID=%7091%and+Trait=Circadian+rhythm/and+groupHaplotypes=true%#gepheebase-summary-title>)

Related Haplotypes

No matches found.

## EXTERNAL LINKS

## COMMENTS