

## GEPHE SUMMARY

	Gephebase Gene	GephelD
APL1 cluster ( <a href="https://www.gephebase.org/search-criteria/?and+Gene Gephebase=^APL1 cluster^#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Gene Gephebase=^APL1 cluster^#gephebase-summary-title</a> )	GP00000098	Main curator
Published	Entry Status	Martin

## PHENOTYPIC CHANGE

Trait Category  
 Physiology (<https://www.gephebase.org/search-criteria/?and+Trait Category=^Physiology^#gephebase-summary-title>)

Trait  
 Pathogen resistance (Plasmodium; malaria parasite) ([https://www.gephebase.org/search-criteria/?and+Trait=^Pathogen resistance \(Plasmodium; malaria parasite\)^#gephebase-summary-title](https://www.gephebase.org/search-criteria/?and+Trait=^Pathogen resistance (Plasmodium; malaria parasite)^#gephebase-summary-title))

Trait State in Taxon A

Anopheles gambiae - sensitive

Trait State in Taxon B

Anopheles gambiae - resistant

Ancestral State

Taxon A

Taxonomic Status

Intraspecific (<https://www.gephebase.org/search-criteria/?and+Taxonomic Status=^Intraspecific^#gephebase-summary-title>)

Taxon A

Latin Name

Anopheles gambiae  
 (<https://www.gephebase.org/search-criteria/?and+Taxon and Synonyms=^Anopheles gambiae^#gephebase-summary-title>)

Common Name

African malaria mosquito

Synonyms

Anopheles gambiae S; African malaria mosquito; Anopheles gambiae Giles, 1902;  
 Anopheles gambia

Rank

species

Lineage

cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia;  
 Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta;  
 Dicondylia; Pterygota; Neoptera; Holometabola; Diptera; Nematocera; Culicomorpha;  
 Culicoidea; Culicidae; Anophelinae; Anopheles; Cellia; Pyretophorus; gambiae species  
 complex

Parent

gambiae species complex () - (Rank: no rank)

(<https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 44542>)

NCBI Taxonomy ID

7165

(<https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7165>)

is Taxon A an Infraspecies?

No

Taxon B

Latin Name

Anopheles gambiae  
 (<https://www.gephebase.org/search-criteria/?and+Taxon and Synonyms=^Anopheles gambiae^#gephebase-summary-title>)

Common Name

African malaria mosquito

Synonyms

Anopheles gambiae S; African malaria mosquito; Anopheles gambiae Giles, 1902;  
 Anopheles gambia

Rank

species

Lineage

cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia;  
 Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta;  
 Dicondylia; Pterygota; Neoptera; Holometabola; Diptera; Nematocera; Culicomorpha;  
 Culicoidea; Culicidae; Anophelinae; Anopheles; Cellia; Pyretophorus; gambiae species  
 complex

Parent

gambiae species complex () - (Rank: no rank)

(<https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 44542>)

NCBI Taxonomy ID

7165

(<https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 7165>)

is Taxon B an Infraspecies?

No

## GENOTYPIC CHANGE

APL1A	Generic Gene Name	UniProtKB Anopheles gambiae
AGAP007036	Synonyms	GenebankID or UniProtKB
-	String	JX656351 ( <a href="https://www.ncbi.nlm.nih.gov/nuccore/JX656351">https://www.ncbi.nlm.nih.gov/nuccore/JX656351</a> )
-	Sequence Similarities	
-	GO - Molecular Function	
-	GO - Biological Process	
-	GO - Cellular Component	
-		Presumptive Null

Unknown ([https://www.gephebase.org/search-criteria?/and+Presumptive Null=%5EUnknown%5E#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Presumptive+Null=%5EUnknown%5E#gephebase-summary-title))

Molecular Type

Unknown ([https://www.gephebase.org/search-criteria?/and+Molecular Type=%5EUnknown%5E#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Molecular+Type=%5EUnknown%5E#gephebase-summary-title))

Aberration Type

Unknown ([https://www.gephebase.org/search-criteria?/and+Aberration Type=%5EUnknown%5E#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration+Type=%5EUnknown%5E#gephebase-summary-title))

Molecular Details of the Mutation

Not identified

Experimental Evidence

Linkage Mapping ([https://www.gephebase.org/search-criteria?/and+Experimental Evidence=%5ELinkage Mapping%5E#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Experimental+Evidence=%5ELinkage+Mapping%5E#gephebase-summary-title))

Main Reference

Natural malaria infection in *Anopheles gambiae* is regulated by a single genomic control region. (2006) (<https://pubmed.ncbi.nlm.nih.gov/16645095>)

Authors

Riehle MM; Markianos K; Niaré O; Xu J; Li J; Touré AM; Podiougou B; Oduol F; Diawara S; Diallo M; Coulibaly B; Ouatara A; Kruglyak L; Traoré SF; Vernick KD

Abstract

We surveyed an *Anopheles gambiae* population in a West African malaria transmission zone for naturally occurring genetic loci that control mosquito infection with the human malaria parasite, *Plasmodium falciparum*. The strongest *Plasmodium* resistance loci cluster in a small region of chromosome 2L and each locus explains at least 89% of parasite-free mosquitoes in independent pedigrees. Together, the clustered loci form a genomic *Plasmodium*-resistance island that explains most of the genetic variation for malaria parasite infection of mosquitoes in nature. Among the candidate genes in this chromosome region, RNA interference knockdown assays confirm a role in *Plasmodium* resistance for *Anopheles* *Plasmodium*-responsive leucine-rich repeat 1 (APL1), encoding a leucine-rich repeat protein that is similar to molecules involved in natural pathogen resistance mechanisms in plants and mammals.

Additional References

Exceptional diversity, maintenance of polymorphism, and recent directional selection on the APL1 malaria resistance genes of *Anopheles gambiae*. (2011) (<https://pubmed.ncbi.nlm.nih.gov/21408087>)

## RELATED GEPHE

Related Genes

4 (adenosine deaminase (AgADA), fibrinogen-related protein 1 (FREP1), fibrinogen-related protein 30 (FBN30), thioester-containing protein 1) ([https://www.gephebase.org/search-criteria?/or+Taxon ID=%5E7165%5E/and+Trait=Pathogen resistance/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon+ID=%5E7165%5E/and+Trait=Pathogen+resistance/and+groupHaplotypes=true#gephebase-summary-title))

Related Haplotypes

No matches found.

## EXTERNAL LINKS

## COMMENTS

Cluster of paralogous genes