

GEPHE SUMMARY

fibrinogen-related protein 1 (FREP1) (https://www.gephebase.org/search-criteria?/and+Gene=Gephebase+fibrinogen-related+protein+1+(FREP1)+#gephebase-summary-title)	Gephebase Gene	GepheID
	GP00001465	
	Prigent	Main curator
Published	Entry Status	

PHENOTYPIC CHANGE

Physiology (#gephebase-summary-title)		Trait Category		
Pathogen resistance (Plasmodium; malaria parasite) (https://www.gephebase.org/search-criteria?/and+Trait=Pathogen+resistance+(Plasmodium;malaria+parasite)+#gephebase-summary-title)		Trait		
Anopheles gambiae susceptible to Plasmodium falciparum infection		Trait State in Taxon A		
Anopheles gambiae resistant to Plasmodium falciparum infection		Trait State in Taxon B		
Taxon A		Ancestral State		
Intraspecific (#gephebase-summary-title)		Taxonomic Status		
Taxon A		Taxon B		
Anopheles gambiae (#gephebase-summary-title)		Latin Name	Anopheles gambiae (#gephebase-summary-title)	
African malaria mosquito		Common Name	African malaria mosquito	
Anopheles gambiae S; African malaria mosquito; Anopheles gambiae Giles, 1902; Anopheles gambia		Synonyms	Anopheles gambiae S; African malaria mosquito; Anopheles gambiae Giles, 1902; Anopheles gambia	
species		Rank	species	
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		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	
gambiae species complex () - (Rank: no rank) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=44542)		Parent	gambiae species complex () - (Rank: no rank) (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=44542)	
7165 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7165)		NCBI Taxonomy ID	7165 (https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=7165)	
No		is Taxon A an Intraspecies?	No	
		is Taxon B an Intraspecies?		

GENOTYPIC CHANGE

3290292	Generic Gene Name	UniProtKB Anopheles gambiae
AgaP_AGAP007031	Synonyms	Q5TWN1 (http://www.uniprot.org/uniprot/Q5TWN1)
7165.AGAP007031-PA (http://string-db.org/newstring.cgi/show_network_section.pl?identifier=7165.AGAP007031-PA)	String	GenebankID or UniProtKB XM_565171 (https://www.ncbi.nlm.nih.gov/nuccore/XM_565171)
-	Sequence Similarities	
-	GO - Molecular Function	
-	GO - Biological Process	

-

Presumptive Null

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

Molecular Type

Coding (<https://www.gephebase.org/search-criteria?/and+Molecular Type=~Coding^#gephebase-summary-title>)

Aberration Type

SNP (<https://www.gephebase.org/search-criteria?/and+Aberration Type=~SNP^#gephebase-summary-title>)

SNP Coding Change

Nonsynonymous

Molecular Details of the Mutation

c.T1325A p.Q442L

Experimental Evidence

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

	Taxon A	Taxon B	Position
Codon	-	-	-
Amino-acid	-	-	-

Genome-block expression-assisted association studies discover malaria resistance genes in Anopheles gambiae. (2013) (<https://pubmed.ncbi.nlm.nih.gov/24297936>)

Main Reference

Li J; Wang X; Zhang G; Githure JI; Yan G; James AA

Authors

The malaria parasite-resistance island (PRI) of the African mosquito vector, Anopheles gambiae, was mapped to five genomic regions containing 80 genes, using coexpression patterns of genomic blocks. High-throughput sequencing identified 347 nonsynonymous single-nucleotide polymorphisms within these genes in mosquitoes from malaria-endemic areas in Kenya. Direct association studies between nonsynonymous single-nucleotide polymorphisms and Plasmodium falciparum infection identified three naturally occurring genetic variations in each of three genes (An. gambiae adenosine deaminase, fibrinogen-related protein 30, and fibrinogen-related protein 1) that were associated significantly with parasite infection. A role for these genes in the resistance phenotype was confirmed by RNA interference knockdown assays. Silencing fibrinogen-related protein 30 increased parasite infection significantly, whereas ablation of fibrinogen-related protein 1 transcripts resulted in mosquitoes nearly free of parasites. The discovered genes and single-nucleotide polymorphisms are anticipated to be useful in the development of tools for malaria control in endemic areas in Africa.

Abstract

Additional References

RELATED GEPHE

4 (adenosine deaminase (AgADA), APL1 cluster, fibrinogen-related protein 30 (FBN30), thioester-containing protein 1) (<https://www.gephebase.org/search-criteria?/or+Taxon ID=~7165^/and+Trait=Pathogen resistance/and+groupHaplotypes=true#gephebase-summary-title>)

Related Genes

No matches found.

Related Haplotypes

EXTERNAL LINKS

COMMENTS

the role of the gene is confirmed by RNA interference knockdown assays. Silencing of the gene resulted in a reduction in infection by P. berghei