

## GEPHE SUMMARY

|   |                |              |
|---|----------------|--------------|
|   | Gephebase Gene | GephelD      |
| ABC transporter pvmrp1 ( <a href="https://www.gephebase.org/search-criteria/?and+Gene">https://www.gephebase.org/search-criteria/?and+Gene</a><br>Gephebase=^ABC transporter pvmrp1^#gephebase-summary-title) | GP00001486     | Main curator |
| Published   | Entry Status   | Prigent      |

## PHENOTYPIC CHANGE

|   | Trait Category              |   |                             |
|---|-----------------------------|---|-----------------------------|
| Physiology ( <a href="https://www.gephebase.org/search-criteria/?and+Trait">https://www.gephebase.org/search-criteria/?and+Trait</a><br>Category=^Physiology^#gephebase-summary-title)  | Trait                       |   |                             |
| Xenobiotic resistance (multiresistance to antimalarial drugs)<br>( <a href="https://www.gephebase.org/search-criteria/?and+Trait=^Xenobiotic+resistance">https://www.gephebase.org/search-criteria/?and+Trait=^Xenobiotic+resistance</a><br>(multiresistance to antimalarial drugs)^#gephebase-summary-title) | Trait State in Taxon A      |   |                             |
| Malaria parasite - sensitive  | Trait State in Taxon B      |   |                             |
| Malaria parasite - resistant  | Ancestral State             |   |                             |
| Unknown   | Taxonomic Status            |   |                             |
| Intraspecific ( <a href="https://www.gephebase.org/search-criteria/?and+Taxonomic">https://www.gephebase.org/search-criteria/?and+Taxonomic</a><br>Status=^Intraspecific^#gephebase-summary-title)  |                             |   |                             |
| Taxon A   |                             | Taxon B   |                             |
| Plasmodium vivax<br>( <a href="https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Plasmodium+vivax^#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Plasmodium+vivax^#gephebase-summary-title</a> )   | Latin Name                  | Plasmodium vivax<br>( <a href="https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Plasmodium+vivax^#gephebase-summary-title">https://www.gephebase.org/search-criteria/?and+Taxon+and+Synonyms=^Plasmodium+vivax^#gephebase-summary-title</a> ) | Latin Name                  |
| malaria parasite P. vivax   | Common Name                 | malaria parasite P. vivax   | Common Name                 |
| Haemamoeba vivax; malaria parasite P. vivax   | Synonyms                    | Haemamoeba vivax; malaria parasite P. vivax   | Synonyms                    |
| species   | Rank                        | species   | Rank                        |
| cellular organisms; Eukaryota; Alveolata; Apicomplexa; Aconoidasida; Haemosporida;<br>Plasmodiidae; Plasmodium; Plasmodium (Plasmodium)   | Lineage                     | cellular organisms; Eukaryota; Alveolata; Apicomplexa; Aconoidasida; Haemosporida;<br>Plasmodiidae; Plasmodium; Plasmodium (Plasmodium)   | Lineage                     |
| Plasmodium (Plasmodium) () - (Rank: subgenus)<br>( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 418103">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 418103</a> )  | Parent                      | Plasmodium (Plasmodium) () - (Rank: subgenus)<br>( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 418103">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 418103</a> )  | Parent                      |
| 5855<br>( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 5855">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 5855</a> )   | NCBI Taxonomy ID            | 5855<br>( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 5855">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 5855</a> )   | NCBI Taxonomy ID            |
| No  | is Taxon A an Infraspecies? | No  | is Taxon B an Infraspecies? |

## GENOTYPIC CHANGE

|  |                         |   |
|--|-------------------------|---|
| PVX_097025   | Generic Gene Name       | UniProtKB Plasmodium vivax (strain Salvador I)<br>A5KCN4 ( <a href="http://www.uniprot.org/uniprot/A5KCN4">http://www.uniprot.org/uniprot/A5KCN4</a> )              |
| PVX_097025   | Synonyms                | GenebankID or UniProtKB<br>XM_001612630.1 ( <a href="https://www.ncbi.nlm.nih.gov/nuccore/XM_001612630.1">https://www.ncbi.nlm.nih.gov/nuccore/XM_001612630.1</a> ) |
| 5855.PVX_097025<br>( <a href="http://string-db.org/newstring_cgi/show_network_section.pl?identifier= 5855.PVX_097025">http://string-db.org/newstring_cgi/show_network_section.pl?identifier= 5855.PVX_097025</a> )   | String                  |   |
| -  | Sequence Similarities   |   |
| GO:0005524 : ATP binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005524">https://www.ebi.ac.uk/QuickGO/term/GO:0005524</a> )<br>GO:0042626 : ATPase activity, coupled to transmembrane movement of substances<br>( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0042626">https://www.ebi.ac.uk/QuickGO/term/GO:0042626</a> ) | GO - Molecular Function |   |
| -  | GO - Biological Process |   |
| GO:0016021 : integral component of membrane<br>( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0016021">https://www.ebi.ac.uk/QuickGO/term/GO:0016021</a> )   | GO - Cellular Component |   |

|  |                                   |
|--|-----------------------------------|
| Unknown ( <a href="https://www.gephebase.org/search-criteria?/and+Presumptive Null=^Unknown">#gephebase-summary-title)</a>   | Presumptive Null                  |
| Unknown ( <a href="https://www.gephebase.org/search-criteria?/and+Molecular Type=^Unknown">#gephebase-summary-title)</a>   | Molecular Type                    |
| Unknown ( <a href="https://www.gephebase.org/search-criteria?/and+Aberration Type=^Unknown">#gephebase-summary-title)</a>  | Aberration Type                   |
| unknown  | Molecular Details of the Mutation |
| Association Mapping ( <a href="https://www.gephebase.org/search-criteria?/and+Experimental Evidence=^Association Mapping">#gephebase-summary-title)</a>  | Experimental Evidence             |
| Genomic analysis of local variation and recent evolution in <i>Plasmodium vivax</i> . (2016) ( <a href="https://pubmed.ncbi.nlm.nih.gov/27348299">https://pubmed.ncbi.nlm.nih.gov/27348299</a> )   | Main Reference                    |
| Pearson RD; Amato R; Auburn S; Miotto O; Almagro-Garcia J; Amaralunga C; Suon S; Mao S; Noviyanti R; Trimarsanto H; Marfurt J; Anstey NM; William T; Boni MF; Dolecek C; Hien TT; White NJ; Michon P; Siba P; Tavul L; Harrison G; Barry A; Mueller I; Ferreira MU; Karunaweera N; Randrianarvelosoa M; Gao Q; Hubbard C; Hart L; Jeffery B; Drury E; Mead D; Kekre M; Campino S; Manske M; Cornelius VJ; MacInnis B; Rockett KA; Miles A; Rayner JC; Fairhurst RM; Nosten F; Price RN; Kwiatkowski DP   | Authors                           |
| The widespread distribution and relapsing nature of <i>Plasmodium vivax</i> infection present major challenges for the elimination of malaria. To characterize the genetic diversity of this parasite in individual infections and across the population, we performed deep genome sequencing of >200 clinical samples collected across the Asia-Pacific region and analyzed data on >300,000 SNPs and nine regions of the genome with large copy number variations. Individual infections showed complex patterns of genetic structure, with variation not only in the number of dominant clones but also in their level of relatedness and inbreeding. At the population level, we observed strong signals of recent evolutionary selection both in known drug resistance genes and at new loci, and these varied markedly between geographical locations. These findings demonstrate a dynamic landscape of local evolutionary adaptation in the parasite population and provide a foundation for genomic surveillance to guide effective strategies for control and elimination of <i>P. vivax</i> . | Abstract                          |
|  | Additional References             |

## RELATED GEPHE

|  |                    |
|--|--------------------|
| 5 (Dihydrofolate reductase (pvdhfr), Dihydropteroate synthase (pvdhps), Multidrug resistance protein 1 (pvmdr1), PVX_084940, PVX_101445) ( <a )<="" a="" href="https://www.gephebase.org/search-criteria?/or+Taxon ID=^5855/and+Trait=Xenobiotic resistance/and+groupHaplotypes=true#gephebase-summary-title"></a> | Related Genes      |
| No matches found.  | Related Haplotypes |

## EXTERNAL LINKS

## COMMENTS

With strong evidence of recent selection in western Thailand and western Cambodia. The signal of selection encompasses 4 genes on chromosome 2 such that we cannot be certain of the specific gene under selection. Pvmrp1 is a noteworthy candidate that has been implicated as a drug resistance candidate and whose *P. falciparum* homologues are associated with resistance to multiple anti-malarial drugs