

Supplementary Information

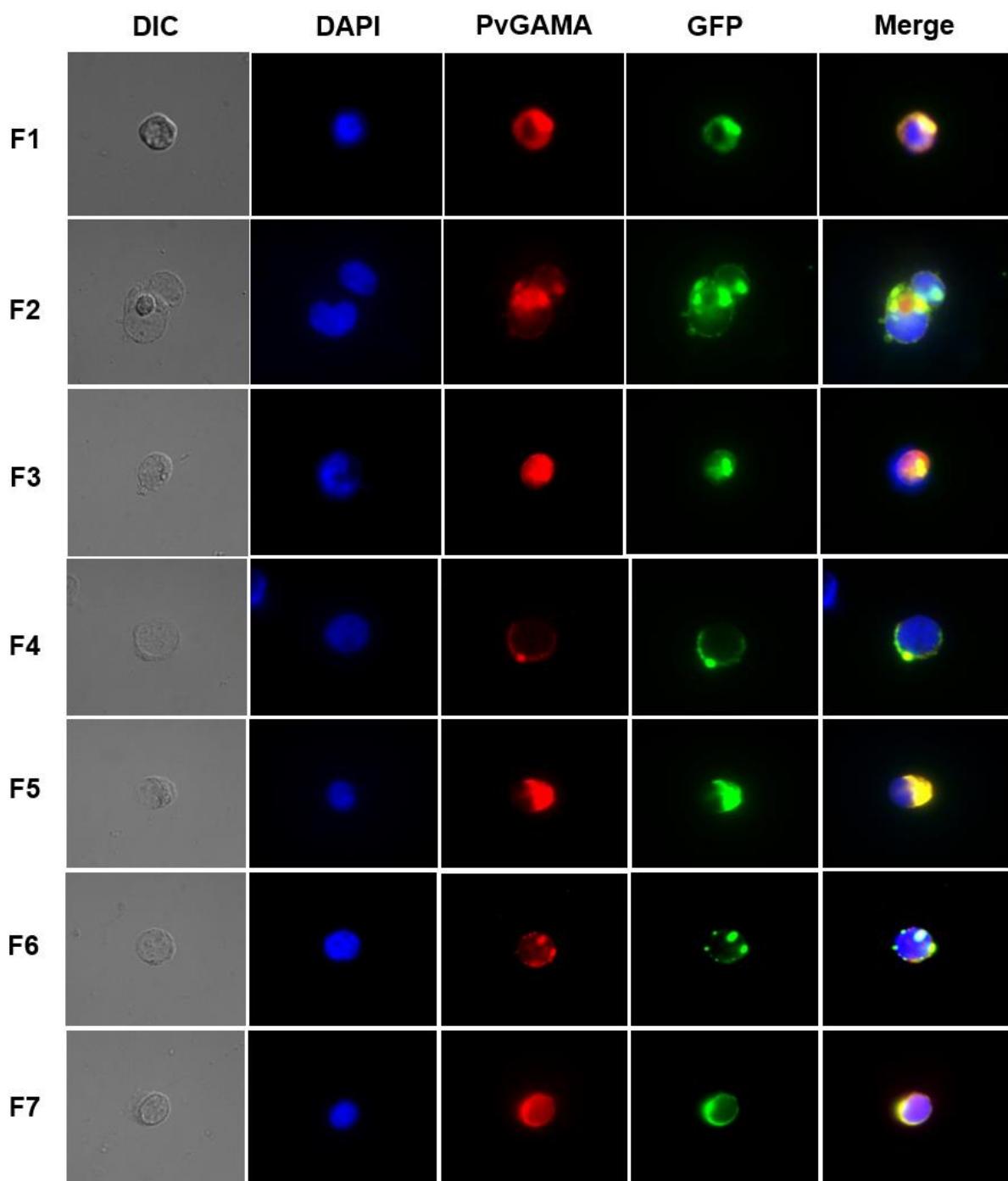
***Plasmodium vivax* GPI-anchored micronemal antigen (PvGAMA) binds human erythrocytes independent of Duffy antigen status**

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PfGAMA	MKYYTSLYVALIIALCQAVSALIRNSNTPQAFLIPELNNNEKNEFNNNEKNEMNNNLNE	60
PvGAMA	MKCNASSLVLLSALLSAANALIRNGNNPQALVPEKGADP-----SGGQNNR	46
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PfGAMA	FNNNEENCDIQKIAEEMMENLLNENDMYTNIMLSLQRNLSDDYLCSEPKYENICIHEKDK	120
PvGAMA	SGENQDTCEIQKMAEEMMEKMMKEKDVSSIMEPLQSKLTDDHLC SKMKYTNICLHEKDK	106
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PfGAMA	ISLSFP CSNPKYEKLHFKTLCKNSKAFFNNTLLKSFIEEDEEQNTFSMLKQFKILL	180
PvGAMA	TPLTFPC TSPQYEQLIHRFTYKKL CNSKVAFSNVLLKSFIDKKNEENTFNTIIQNYKVL	166
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PfGAMA	TCVDELKDIYKESIDLVLKTSITELTQKLWSGKMNVLKKREFLITGILCELNRNGNK	240
PvGAMA	TCIDDLKDIYNASI ELFSDIRTSVTEITEKLWSKNMIEVLKTREQTIA GILCELNRNGNN	226
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PfGAMA	SPLISKSLEFENLGILKMNN EELLNEAYNAFS DYYYPYFIQKLLEKGGMIERLIK IHE	300
PvGAMA	SPLVSNSFSYENFGILKVNYEGLLNQAYAAFSDYYSYFPFAISMLEKGGLVDRLVAIHE	286
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PfGAMA	NLT KYRTKDMVN KINA QSKGEV LNNEDILNKL NAYKHYTKHGAT SF IQSREV KIVN QNVN	360
PvGAMA	SLT NYRT RTRN ILKKIN EKSKNE VLNNE EIMHS LSSYKHAGGTRGA FLQS RDV RVE TQGDV	346
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PfGAMA	NDDTTKNQQQN VN NNEKLN NNNNNNNNNQQV NNNNNNNNNQQV NNNNNNNNNQV NNNNNNNNN	420
PvGAMA	SVDEKGDRATTAGGNQSASVAAA PDKDAGPTV AAPNTAATLKTAASPNAATNTAAPP NM	406
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PfGAMA	NQVNNNNYNNN QVNNNNNNNNQVNNNNNNYNNQ LNNNNFNNNLQVN KNDKHVPKNNHTTA	480
PvGAMA	G-----	407
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PfGAMA	THTNNI LYNPLYSINPEPKD I KLLKD I KYLHIVKFENNEPTTN I DEEGIRKLLENS F	540
PvGAMA	--ATSP LSNPLY GTSS LQPKD VA LVRDLK NTNI IKFENNE PTSQM DDEI KKLI ESS F	465
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PfGAMA	FDLN DDLI VRL LKP QT VILT VIQS FMLT PPSR DAK CKA LIND QL VP NT DNL	600
PvGAMA	FDL SDNT MRL LLIK PQA AILLIIES FIMMTPSPTR DAK TYCK KALV NGQ LIET S DNAA	525
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PfGAMA	SEEN ELVNN FST KYV L IYE KM K LQ E L K M E E S K L K M K Y S K T N L S A L Q V T N P Q N N K D K N D A	660
PvGAMA	TEED DLINE FSS RY NLFY ER LK LEEL RE I E Q NR K AL K N S K G T L S V L E V A N S Q N A P D G K G V	585
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PfGAMA	S-----	661
PvGAMA	NGSG NAANANAANANAANANAANANAANGN LANAN LANANA ANADA ANANA ANANA ANA	645
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PfGAMA	----- NKNNNPNN SST	672
PvGAMA	AANAN LANAN LANAN LANAN LANAN LANANA ANANA ANANA ANA NGNAP NSN GGS	705
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PfGAMA	PLIA VVT DLS GEK TED I INN NV DIAT LSVG VQ NT FQGP NAK AGS L IN H L SY AT FL FFS FI	732
PvGAMA	PLIV VVG ADL GEK TED I I KN NV DVA ALT ADV EQAF KNL E LQ SG SF SAN L SH ALV L SS IA	765
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PfGAMA	LIN LLN	738
PvGAMA	LLL FIF	771
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Supplementary Figure S1. Amino acid sequence alignment of PfGAMA and PvGAMA. Cys residues with yellow areas indicate Cys residues conserved among both sequences and those with dark areas

masks indicate conserved Asn residues region. High conserved region between PvGAMA and PfGAMA was marked with green. Blue line indicated PvGAMA-F2. Ala/Asn-riched region marked with red at the C-terminus of PfGAMA. Dashes indicate a deletion. Asterisks, colons and dots under the alignment indicated identical, conserved, and semi-conserved substitutions, respectively, based on BLOSUM.



Supplementary Figure S2. Transfection induced expression of PvDBPII and PvGAMA fragments on the surface of HEK 293T cells. Expression of PvDBPII and each fragment of PvGAMA on HEK 293T cells transfected with pEGFP-HSVgD1_PvDBPII, and _PvGAMA-F1 to -F7 (Fig. 1a) plasmid DNA were detected by IFA. Green fluorescent protein (GFP) (green, control), Alexa Fluor 568-conjugated goat anti-rabbit antibody (red, PvGAMA fragments) were used and visualized by confocal microscopy. Rabbit antisera against Phosphate-buffered saline (PBS) was used as negative control.