

Supplementary Table 1 | Epidemiologic characteristics of resistant and susceptible individuals used in differential screening assays

Variable	Resistant	Susceptible	P value [*]
Number of subjects	12	14	-
Hemoglobin Phenotype (% Sickle trait)	25	14.3	0.918
Sex (% female)	25	50	0.190
Weeks of follow-up (median [IQR])	143 [23.5]	158 [16]	0.047
# Of blood smears from age 2-3.5 years (median [IQR])	14 [7.4]	21 [8.5]	0.0102
# Of positive blood smears from age 2-3.5 years (median [IQR])	2.1 [1]	5.8 [3.5]	0.0024
# Of anti-malarial treatment before 2 (median [IQR])	1.3 [1.1]	2.3 [3.1]	0.133
Pregnancy malaria (%)	25	21.4	0.300
Maternal age (yrs, median [IQR])	27 [8]	26.5 [6]	0.833
Birth Season (% in high season [†])	41.7	42.9	0.952
Subjects using bed net (%)	0	100	<0.001
# Of previous pregnancies (median [IQR] [†])	2 [2]	2.3 [2.1]	0.760
Parasite density (parasites per 200 WBCs [§]) at 2 year blood draw	0	0	1
Mean Parasite density (parasites per 200 WBCs) from age 0-2 years (median [IQR])	623 [952]	1400 [736]	0.1569
Mean Parasite density (parasites per 200 WBCs) from age 2 -3.5 years (median [IQR])	7.1 [2.9]	2258 [1569]	<0.001

^{*} Comparisons of categorical variables by 2 tailed Fisher's exact test. Comparisons of continuous variables by two-sided Mann-Whitney U test

[†] Interquartile range

[‡] May-October

[§] White blood cells

Supplementary Table 2 | Parasite genes identified by differential bio-panning of phage display library. Results represent sequencing data from 100 phage clones.

Gene name	Gene ID & length in bp (Introns spliced out)	% Of Clones	Fragment size & nt. position in the gene
Glutamic acid-rich protein (GARP)	PF3D7_0113000 (2022)	37	465 (1558-2022)
Glutamic acid-rich protein (GARP)	PF3D7_0113000 (2022)	5	246 (1777-2022)
Glutamic acid-rich protein (GARP)	PF3D7_0113000 (2022)	2	801 (1222-2022)
Heat shock protein 110 (HSP110)	PF3D7_0708800 (2622)	2	650 (1764-2414)
Knob-associated histidine-rich protein (KAHRP)	PF3D7_0202000 (2312)	4	241(1309-1549)
Conserved Plasmodium protein	PF3D7_0418300 (2979)	2	643 (1811-2453)
Rhoptry-associated membrane antigen (RAMA)	PF3D7_0707300 (2115)	3	451 (953-1403)
High mobility group protein B1 (HMGPB1)	PF3D7_1202900 (294)	2	140 (153-294)
Plasmodium exported protein (PHISTc)	PF3D7_0936800 (1152)	3	303 (695-998)
Serine/threonine protein kinase, FIKK family	PF3D7_1039000 (3107)	1	390 (1156-1546)
Ornithine aminotransferase	PF3D7_0608800 (1245)	1	332 (914-1245)
18S ribosomal RNA	PF3D7_0531600 (2092)	26	670 (399-1068)
60S ribosomal protein L5, putative	PF3D7_1424100 (549)	11	460 (1-459)

Supplementary Table 3 | Primers used in construction of 3D7-PfGARP KD and 3D7-PfGARP KO parasites.

Oligo Number	Sequence
oJDD1027	gtacgcggccgcCCAAGTCCATTGACAGACG
oJDD4507	CTTgTGgTTgTCcCTcCTaGGgACaACgTTgACiCGaCCaATiGTACCTATTAATTGCTCTTGATGGATAAG
oJDD2933	CTGCTGCTGAGTACTATCAAGTC
oJDD4279	CTACTTTGTTCTGATCATATG
oJDD4280	TTCTTTTTTGGGGGGCTTTCATG
oJDD4506	CaATiGGiCGaGTcAAcGTiGTcCCiAGgAGgGAcAAcCacAAGAAGAAAAATGGCAAAAATAGAAGAAGCAG
oJDD3566	tgcatgccatggTATTTTTGCATTTTTCTTAAATTC
oJDD3563	CAAAAAGAAAAATCTTAgatatcCCAAGTCCATTGACAGACGTAACCTACACCAG
oJDD4507	CTTgTGgTTgTCcCTcCTaGGgACaACgTTgACiCGaCCaATiGTACCTATTAATTGCTCTTGATGGATAAG
oJDD3561	catgcagcggccgcTGTCTGTTTTATTTGTAATGTTTTATTG
oJDD3562	TCTGTCAATGGACTTGGgatatcTAAGATTTTTCTTTTTTGGGGGGCTTTC
oJDD3058	TTATATATAAGAACATATTTATAAATCTAgaattcGGATTTCTACACATCTTGAGGTTT
oJDD4088	GCTCTAAACtaggaacgtgttaatgtagtacAATATTATATACTTAATATGAAATATG
oJDD3059	GTAAGGAGAAAAATACCGCATCAGGCGCCAGCCTAGGTTTATGGTAGCCTTAAAAACTTCA
oJDD4089	TATAATATTgtactacattaacacgtcctaGTTTTAGAGCTAGAAATAGCAAGTTAA
oJDD4077	catgcgcgcgcATTCTATAAACCTGTTAGGAATAAAGGTTAG
oJDD4979	cttaagGTTTTCTGTATTTATATATATATATATATATATTACGTTTTTAAATATAC
oJDD5029	catggaattcCCAGAAAGAGATAATCATAAG
oJDD4083	gatccctaggGGCTTGATTATTTTAAGGGAATAGAAC
caPfGARP	AAGAAGAAAATGGCAAAAATAGAAGAAGCAGAATTACAAAAACAAAACATGTTGATAAAGAAGAAGATAAAAAAGAAGAAAGTTGAAGAAGAAA GTAAAGAAGTTCAAGAAGATGAAGAAGAAGTTGAAGAGGATGAAGAAGAGGAAGAGGAGGAAGAGGAAGAAGAGGAGGAAGAAGAGGAAGAAGAGG AAGAGGAAGATGAAGTAGAAGAAGATGAAGATGATGCAGAAGAAGACGAAGATGATGCTGAGGAAGATGAAGATGATGCAGAAGAAGACGATGATGCTG AAGAAGATGATGATGCTGAAGAAGATGATGATGAAGATGAGGATGAAGATGAAGAAGAAGAAGAAGATGAGGAAGAAGAAGAGGAGAGTAAAAAGAAA ATAAAAAAGAAATTAAGAAAAATGCAAAAATA