

Table s1: Primers used in the study

Locus	Primer sequence 5'-3'	Probe	Chromosome	SSR linked gene	Annealing (°C)
<b>Microsatellite analysis</b>					
Poly $\alpha$ -R	ATCAGATAATTGTTGGTA		4	DNA Poly $\alpha$	42
Poly $\alpha$ -F	AAAATATAGACGAACAGA				42
Poly $\alpha$ -3(IR)	GAAATTATAACTTACCA	6-FAM			45
PFPK2-3R	CCTCAGACTGAAATGCAT		12	Protein Kinase	42
PFPK2-F	CTTTCATCGATACTACGA				42
PFPK2-R	AAAGAAGGAACAAGCAGA	HEX			45
TA81-3F	GAAGAAATAAGGGAAGGT		5		42
TA81-R	TTTCACACAACACAGGATT				42
TAA81-F	TGGACAAATGGGAAAGGATA	Atto 565			45
ARA2-3(F)	GTACATATGAATCACCAA		11	Asparagine Rich Protein	42
ARA2-R	GCTTTGAGTATTATTAATA				42
ARA2-F	GAATAAACAAAGTATTGCT	6-FAM			45
TA87-3F	ATGGGTAAATGAGGTACA		6		42
TA87-R	ACATGTTTCATATTACTCAC				42
TA87-F	AATGGCAACACCATTCAAC	HEX			45
TA40 Rev-1	GAAATTGGCACCACCACA		10		42
TA40 For	AAGGGATTGCTGCAAGGT				42
TA40 Rev-2	CATCAATAAAATCACTACTA	Atto 565			45
<b>18S rRNA gene of <i>P. falciparum</i></b>					
rPLU6	5'TTAAAATTGTTGCAGTTAAAACG3'				
rPLU5	5'CYTGTGTTGCCTTAAACTTC3'				55
rFAL1	5'TTAAACTGGTTTGGGAAAACCAAATATATT-3'				
rFAL2	5'-ACACAATAGACTCAATCATGACTACCCGTC-3'				58

Table S2. Microsatellite analysis

## 2a. Genetic diversity

Site	Loci	N	Na	He
Ada rainy season	Poly_a	14	8.0	0.829
	Pfpk2	18	5.0	0.568
	TAA81	18	7.0	0.773
	ARA2	16	3.0	0.227
	TA87	19	7.0	0.709
	TA40	16	4.0	0.547
Konong rainy season	Poly_a	19	11.0	0.784
	Pfpk2	19	9.0	0.839
	TAA81	18	11.0	0.877
	ARA2	17	7.0	0.746
	TA87	18	13.0	0.856
Pagaza rainy season	TA40	19	4.0	0.620
	Poly_a	26	12.0	0.886
	Pfpk2	25	14.0	0.776

	TAA81	27	10.0	0.818
	ARA2	22	6.0	0.735
	TA87	26	11.0	0.767
	TA40	22	8.0	0.840
<b>Ada dry season</b>	Poly_a	18	10.0	0.776
	Pfpk2	18	4.0	0.338
	TAA81	19	10.0	0.787
	ARA2	19	2.0	0.188
	TA87	19	10.0	0.812
	TA40	18	8.0	0.762
<b>Konong dry season</b>	Poly_a	21	9.0	0.805
	Pfpk2	10	6.0	0.710
	TAA81	16	4.0	0.609
	ARA2	17	8.0	0.708
	TA87	20	5.0	0.600
	TA40	13	4.0	0.725
<b>Pagaza dry season</b>	Poly_a	10	7.0	0.705
	Pfpk2	6	4.0	0.514
	TAA81	10	3.0	0.515
	ARA2	9	2.0	0.444
	TA87	10	3.0	0.585
	TA40	6	3.0	0.611

2b. Complete Microsatellite data set

Sample ID	Site/Season	Poly_a	PFPK2	TAA81	ARA2	TA87	TA40
ADA 078	Ada/Rainy	145,160	170	120	65,70	100	210
ADA 113	Ada/Rainy	0	150,165	120	65	65,95	210
ADA 061	Ada/Rainy	140,150	165	0	65	95	200,220
ADA 110	Ada/Rainy	148	160,165	130	65	90,95	215,220
ADA 120	Ada/Rainy	160	165	115,118	0	95,100	220
ADA 114	Ada/Rainy	135,140	160	120,125	65	60,95	220
ADA 155	Ada/Rainy	145,160	160,165	118,125	65	95,100	220
ADA 153	Ada/Rainy	145	165,170	122	0	100,110	220
ADA 148	Ada/Rainy	150,155	160	118	65	90,95	215
ADA 126	Ada/Rainy	140,148	165	120	0	100	220
ADA 098	Ada/Rainy	145,150	165,175	120,125	60	100,115	0
ADA 009	Ada/Rainy	145	0	120,135	65	100,115	0
ADA 128	Ada/Rainy	0	165,170	120,125	65,70	95,100	0
ADA 098	Ada/Rainy	0	165	118	65	100,115	210,220
ADA 072	Ada/Rainy	140	165,160	125,130,135	65	100,115	220
ADA 077	Ada/Rainy	160	165	120	65	95,100	215
ADA 086	Ada/Rainy	0	165,170	120,125	65	100,115	220
ADA 068	Ada/Rainy	0	165	118	65	100,115	220
ADA 132	Ada/Rainy	170	165	120,130	65	95,100	215,225
ADA 085	Ada/Dry	0	165	0	65	60,95	225,220
ADA 066	Ada/Dry	148,165	165	112,120	65	90,100	220
ADA 070	Ada/Dry	0	160,165	120,130	65	155,160	120,130
ADA 090	Ada/Dry	140,155	165	0	65	90,100	210,215
ADA 113	Ada/Dry	145,148	165	125,130	65	90	210
ADA 095	Ada/Dry	148,160	165	115,118	65	90,95	220
ADA 106	Ada/Dry	145,148	165	120,125	65	90,95	215
ADA 031	Ada/Dry	160,148	160,165	112,125	65	90,100	210,220
ADA 059	Ada/Dry	145,148	165	122,125	65	95	220

ADA 063	Ada/Dry	148,150	165	118,122	65	90,100	210,220
ADA 105	Ada/Dry	148	165	120	65	100,110	220
ADA 116	Ada/Dry	148,150	160,165	120,125	65	90,95	215
ADA 119	Ada/Dry	148	0	125,145	65	100	220
ADA 112	Ada/Dry	148	0	120,130	65	90,115	0
ADA 100	Ada/Dry	148,160	0	120	65	100,115	210,220
ADA 086	Ada/Dry	0	165	120	0	0	0
ADA 088	Ada/Dry	160	165	120	0	0	0
ADA 095	Ada/Dry	168	165	130	65	90	210
ADA 119	Ada/Dry	150	165	120	60	85	200
ADA 120	Ada/Dry	118	163	135	65	80	195
ADA 105	Ada/Dry	178	155	123	60	80	195
KG 040	Konongo/Rainy	140,145,150	160	120,125,130	0	80,90,95	225
KG 062	Konongo/Rainy	148,160	160,170,175,178	145,150,155,160	65,70,75	75,80,90	220
KG 112	Konongo/Rainy	155	170	12	62	150,175,180	200
KG 060	Konongo/Rainy	150	170	120	68	155	220
KG 079	Konongo/Rainy	155	165,170	125,130,135	70	85,90	225
KG 115	Konongo/Rainy	140,148,175	170	130,135,145	65,75,85	100,115	215,220
KG 119	Konongo/Rainy	150,165,170	160,165,172	118,130	65	95	200,215,220
KG 039	Konongo/Rainy	148,150	165	135	70	90,95,120	225
KG 015	Konongo/Rainy	150,160	170,175	0	65	95	215,220
KG 099	Konongo/Rainy	150	170,174	122,130	65,70	80,90,95	220
KG 008	Konongo/Rainy	147,150,155	0	135,140	65	95,100	220
KG 068	Konongo/Rainy	150	160,170	125,130,145	65,70	85,90,115	220
KG 106	Konongo/Rainy	140,150	160,165,170	120,128,135,140	65,75,80	85,95	220
KG 108	Konongo/Rainy	147,150	175,196	122,125,135	65,68	95	0
KG 124	Konongo/Rainy	148,150	160,196	135,140,145,170	70	90	215,220
KG 104	Konongo/Rainy	150,152,160	172,196	125,128,130	75,80	90,110	220,225
KG 033	Konongo/Rainy	150,170	172,196	122,128	65,75	100,120	215,220
KG 088	Konongo/Rainy	150,151	172,196	122,128	65	95	215
KG 054	Konongo/Rainy	150,165	172,195	125,130	0	0	225
KG 115	Konongo/Rainy	0	172	0	0	0	220

KD 005	Konongo/Dry	140,152,155	0	0	50,55,60,75	85,90	220
KD 003	Konongo/Dry	150,170	0	120	60	90	210
KD 103	Konongo/Dry	150,170,175	155,178	0	60	98	225
KD 042	Konongo/Dry	155,160	175	120	50,55,60,75,80	95	220
KD 107	Konongo/Dry	160,165	150	0	0	95	0
KD 108	Konongo/Dry	155,160	175	125	65	90	215
KD 106	Konongo/Dry	145,150,170,175	160,175	125	95		0
KD 51	Konongo/Dry	150	175	0	60	95	215
KD 080	Konongo/Dry	150,160	0	0	0	0	0
KD 111	Konongo/Dry	145,150,155,160	160	120	0	95	0
KD 013	Konongo/Dry	150,155,165	175	125	60	90	210
KD 001	Konongo/Dry	150	160	120	70	90,95	0
KD 009	Konongo/Dry	150,160,165	0	125	50	95,100	0
KD 015	Konongo/Dry	150	0	125	60	100	0
KD 0711	Konongo/Dry	150,155	0	155	65	90,95	215,225
KD 068	Konongo/Dry	150,155,170	0	125	60	95	0
KD 109	Konongo/Dry	155,160	0	120	0	95	0
KD 015	Konongo/Dry	150,155,160,165	0	125	60	95	220
KD 054	Konongo/Dry	0	190	130	60,65	100	210
KD 179	Konongo/Dry	130,145,150,155	0	120	60	95	220
KD 033	Konongo/Dry	160	0	120	60	95	225
KD 088	Konongo/Dry	150,160	0	0	0	95	220
PZ 096	Tamale/Rainy	150	140	120	0	0	200
PZ 024	Tamale/Rainy	130	170	110,118	68	82	175
PZ 034	Tamale/Rainy	140,145,155,160,164	165	120,130,133	60	70	175
PZ 090	Tamale/Rainy	150,155	168	120	62	90	175
PZ 051	Tamale/Rainy	170	160	118	65	90	175
PZ 194	Tamale/Rainy	130,135	163	122	65	105	170
PZ 100	Tamale/Rainy	0	180	130	60	90	165
PZ 013	Tamale/Rainy	164	0	115	65	90	165
PZ 055	Tamale/Rainy	170,151	170,181	122,125	60,65,75	90,95,100	0
PZ 085	Tamale/Rainy	151,155,160	170,172	122,130	70,75	95,100,125	215

PZ 093	Tamale/Rainy	151	170,172	122	65	90,95	215,225
PZ 019	Tamale/Rainy	145,151,158	170	122,125	65	95	215,220
PZ 170	Tamale/Rainy	150,155	170,175	122,130,140	0	95,100	215,220
PZ 194	Tamale/Rainy	125,150	152,170	122,160	0	90,95	215
PZ 047	Tamale/Rainy	150,175	151,170	122	0	90,100	215,225
PZ 043	Tamale/Rainy	150,170	160,175	120,125,130	60	100	
PZ 104	Tamale/Rainy	140,145,152,155,160	165,170	115,125	60,65	90,115	
PZ 054	Tamale/Rainy	145,155	0	115,120,130	60,65,70	90,100	0
PZ113	Tamale/Rainy	140,145	170,175	112,118	60	100,115,120	210,220
PZ 004	Tamale/Rainy	145,160,170	170,172	122	65,75	100	215,220
PZ 028	Tamale/Rainy	145,151,165	170	125,130	75	90,100	215,225
PZ 160	Tamale/Rainy	150,160,165,170	170,175	120,130	65,70	90,95	220,225
PZ 187	Tamale/Rainy	150,170	170,175	122,130	65	90,95	
PZ 178	Tamale/Rainy	145,160	170,195	122,130	60,65,70	90,100	210,215
PZ 078	Tamale/Rainy	151,170	170,196	122	60	90,115	0
PZ 155	Tamale/Rainy	140,170	170	118,122	75	90,110	210,225
PZ 048	Tamale/Rainy	151,170	151,170	122,130	0	80,90,95	210,225
PAG 027	Tamale/Dry	150	0	120	65	85,90	0
PAG 087	Tamale/Dry	150	0	120	65	85	210
PAG 014	Tamale/Dry	148	0	120	65	80,85,90	210
PAG 057	Tamale/Dry	150,165	170	135	60	85	175
PAG 050	Tamale/Dry	152	160,180	120	65	90	175
PAG 048	Tamale/Dry	150,165	0	130	0	90	0
PAG 051	Tamale/Dry	145,155	170	120	60	85	0
PAG 020	Tamale/Dry	140	170	120	65	85	175
PAG 043	Tamale/Dry	150	165	130	60	80	165
PAG 026	Tamale/Dry	150	170	120,135	65	85	0

S3. Results of the Bayesian inference for the 119 samples collected from the three zones

# of cluster	1	2	3	4	5
	-2500.9	-2317.2	-2270.8	-2201.8	-2197.7
	-2501.5	-2317.6	-2267.7	-2201.9	-2201.5
	-2500.5	-2317.4	-2270.3	-2201.1	-2200.8
	-2501.3	-2317.3	-2267.2	-2202.3	-2202.9
	-2501	-2317.6	-2270.1	-2200.8	-2199.2
	-2501.1	-2317.6	-2266	-2202	-2213.7
	-2501.3	-2317.3	-2272	-2201.1	-2203
	-2501	-2317.7	-2268.8	-2200.7	-2195.5
	-2501.3	-2317.1	-2283.6	-2202.8	-2190.4
	-2501.4	-2317.6	-2267.9	-2203.9	-2189.5
mean	-2501.1	-2317.4	-2270.4	-2201.8	-2199.4
standard deviation	0.295	0.207	4.975	0.994	6.938

K-Plot

mean		183.7	47.0	68.6	2.4
L'(K)		183.7	47.0	68.6	2.4
L''(K)		136.7	21.6	66.2	2.4
$\Delta K$	0	661.748	4.342	66.611	0.349

