

Supplemental Table 1. Dichotomized antibody responses to *Plasmodium falciparum* antigens among cases and controls, by age category*.

Antigen	Dichotomized response					
	Age < 5 years		Age 5 to 14 years		Age 15 to 64 years	
	Cases (N=43) n (%)	Controls (N=129) n (%)	Cases (N=61) n (%)	Controls (N=183) n (%)	Cases (N=49) n (%)	Controls (N=147) n (%)
AMA-1 3D7	27 (62.8)	98 (76.0)	61 (100.0)	178 (97.3)	48 (98.0)	147 (100.0)
AMA-1 FVO	24 (55.8)	89 (69.0)	60 (98.4)	175 (95.6)	49 (100.0)	146 (99.3)
EBA-175	6 (14.0)	24 (18.6)	28 (45.9)	89 (48.6)	46 (93.9)	127 (86.4)
EBP-2	2 (4.7)	9 (7.0)	19 (31.1)	51 (27.9)	37 (75.5)	94 (63.9)
GLURP-R0	9 (20.9)	43 (33.3)	39 (63.9)	112 (61.2)	34 (69.4)	127 (86.4)
GLURP-R2	3 (7.0)	39 (30.2)	33 (54.1)	102 (55.7)	40 (81.6)	131 (89.1)
LSA-1	9 (20.9)	47 (36.4)	35 (57.4)	132 (72.1)	42 (85.7)	126 (85.7)
MSP-1 ₄₂ 3D7	11 (25.6)	37 (28.7)	49 (80.3)	147 (80.3)	47 (95.9)	139 (94.6)
MSP-1 ₄₂ FVO	14 (32.6)	59 (45.7)	54 (88.5)	162 (88.5)	48 (98.0)	145 (98.6)
MSP-3	26 (60.5)	84 (65.1)	54 (88.5)	162 (88.5)	42 (85.7)	135 (91.8)
CSP	11 (26.6)	31 (24.0)	41 (67.2)	111 (62.7)	25 (51.0)	107 (73.3)

*Age 65 and older not shown due to low numbers (n = 1 case and n = 3 controls).

Supplemental Table 2a. Continuous antibody levels (AU) to *Plasmodium falciparum* antigens among cases and controls, by age category*.

Antigen	Continuous response					
	Age < 5 years		Age 5 to 14 years		Age 15 to 64 years	
	Cases (N=43) Median (IQR)	Controls (N=129) Median (IQR)	Cases (N=61) Median (IQR)	Controls (N=183) Median (IQR)	Cases (N=49) Median (IQR)	Controls (N=147) Median (IQR)
AMA-1 3D7	1.6 (0.8–3.8)	2.2 (1.0–5.2)	16.4 (5.1–43.2)	10.7 (4.5–39.6)	42.0 (23.7–48.0)	38.8 (18.5–56.7)
AMA-1 FVO	1.2 (0.6–3.1)	1.9 (0.8–3.5)	13.3 (5.9–36.9)	9.9 (3.2–30.1)	35.9 (17.5–41.6)	33.0 (14.6–47.2)
EBA-175	0.3 (0.2–0.7)	0.4 (0.2–0.7)	0.9 (0.5–4.6)	1.0 (0.5–3.4)	13.9 (2.2–18.2)	13.2 (2.5–19.5)
EBP-2	0.1 (0.1–0.3)	0.2 (0.1–0.3)	0.4 (0.2–1.1)	0.5 (0.2–1.3)	2.3 (1.0–4.4)	2.1 (0.7–4.5)
GLURP-R0	0.7 (0.4–1.0)	0.7 (0.5–1.1)	1.2 (0.8–2.9)	1.3 (0.8–2.5)	2.7 (0.9–8.7)	4.6 (1.7–11.1)
GLURP-R2	0.3 (0.1–0.4)	0.5 (0.2–1.2)	1.2 (0.5–4.1)	1.3 (0.5–4.4)	6.9 (1.5–12.6)	8.0 (1.9–20.7)
LSA-1	0.4 (0.3–0.9)	0.7 (0.4–1.6)	1.7 (0.7–4.2)	1.9 (0.9–4.2)	3.0 (1.6–7.7)	4.4 (1.9–9.8)
MSP-1 ₄₂ 3D7	0.6 (0.3–1.3)	0.7 (0.5–1.2)	5.4 (1.6–13.1)	3.5 (1.3–10.1)	17.3 (7.0–31.5)	16.2 (7.3–33.8)
MSP-1 ₄₂ FVO	0.7 (0.4–2.5)	1.0 (0.6–3.3)	18.0 (4.2–51.4)	15.8 (2.9–43.1)	54.1 (30.6–70.6)	55.1 (24.6–82.4)
MSP-3	1.4 (0.6–2.4)	1.3 (0.8–2.3)	2.8 (1.5–4.9)	2.3 (1.5–5.1)	4.2 (1.9–18.0)	5.3 (1.9–12.2)
CSP	0.7 (0.3–1.1)	0.7 (0.5–1.0)	1.3 (0.9–2.1)	1.2 (0.8–1.6)	1.1 (0.6–1.6)	1.5 (1.0–2.2)

IQR = interquartile range. *Age 65 and older not shown due to low numbers (n = 1 case and n = 3 controls).

Supplemental Table 2b. Continuous antibody levels (MFI or OD) to *Plasmodium falciparum* antigens among cases and controls, by age category*.

Antigen	Continuous response					
	Age < 5 years		Age 5 to 14 years		Age 15 to 64 years	
	Cases (N=43) Median (IQR)	Controls (N=129) Median (IQR)	Cases (N=61) Median (IQR)	Controls (N=183) Median (IQR)	Cases (N=49) Median (IQR)	Controls (N=147) Median (IQR)
AMA-1 3D7	596 (343–1182)	963.5 (463–2127)	5356 (1630–15021)	4271 (1680.5–14589)	16679.5 (8336–22570)	18102 (7948–22652)
AMA-1 FVO	491 (286–1469)	956.5 (385–1764.5)	5003 (2233.5–16118)	4871 (1547–13879)	15111 (7782–20835)	17288 (6166–21729)
EBA-175	256 (195–626)	391 (267–697)	906 (501–4198)	984 (459.5–3175)	14324 (2079–18683)	12649.5 (2284–20586)
EBP-2	498 (252–1189)	658 (385–1385)	1636 (908.5–4206)	1819 (911–4973)	11654 (3041.5–18570)	9404.5 (2621–20274)
GLURP- R0	234 (174.5–405)	322 (197–488.5)	553.5 (284.5–1113.5)	520 (324–1117.5)	1336.5 (416–3646.5)	1622.5 (682–5456.5)
GLURP- R2	127 (70–204.5)	201 (102.5–494)	492 (226–1725.5)	485.5 (228–1594)	2838 (740–6247)	3640 (745–8676)
LSA-1	266.5 (174–497)	369 (219.5–763)	1074.5 (442.5–2783.5)	1031.5 (483.5–2519)	1928 (940–4852)	2555 (1002.5–5639)
MSP-1 ₄₂ 3D7	314 (205–637)	388 (276.5–711)	2463 (673.5–7114)	1781 (727–6383.5)	10203.5 (3324–17965.5)	9911 (3471–17886)
MSP-1 ₄₂ FVO	130.5 (101–441)	221 (137.5–726)	4241 (749–10370)	3098 (635–9686)	11873 (5742–17101.5)	13263.5 (5196.5–19809)
MSP-3	242 (115–362)	270.5 (170–448.5)	405.5 (219–650)	499 (292–979)	849 (351–2468)	964 (361–2472)
CSP	0.22 (0.17–0.34)	0.20 (0.15–0.28)	0.38 (0.26–0.46)	0.32 (0.24–0.43)	0.36 (0.29–0.47)	0.40 (0.30–0.53)

IQR = interquartile range. *Age 65 and older not shown due to low numbers (n = 1 case and n = 3 controls).

Supplemental Data

Among 272 samples tested (68 cases and 104 controls), the adjusted OR for positive antibody responses to the 4 antigens that were associated with protection over 3-year follow-up were: LSA-1, OR = 0.42, 95% CI: 0.22–0.82, $P = 0.01$; GLURP-R2, OR = 0.55, 95% CI: 0.27–1.11, $P = 0.095$; GLURP-R0, OR = 0.73, 95% CI: 0.38–1.41, $P = 0.350$; CSP, OR = 0.56, 95% CI: 0.30–1.04, $P = 0.066$. For every 10-fold increase in antibody level, the adjusted OR were: LSA-1, OR = 0.53, 95% CI: 0.29–0.99, $P = 0.046$; GLURP-R2, OR = 0.62, 95% CI: 0.37–1.05, $P = 0.078$; GLURP-R0, OR = 0.87, 95% CI: 0.45–1.69, $P = 0.686$; CSP, OR = 0.41, 95% CI: 0.14–1.17, $P = 0.096$.