

ADDITIONAL FILE 13: SUPPLEMENTARY TABLES

Genetic Determinants Of Anti-Malarial Acquired Immunity In A Large Multi-Centre Study

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This file contains:

Additional Table ST7A: Results of site-specific linear regression analysis investigating the effect of age, gender and malaria status as determined by microscopy on antibody levels to AMA1. Also adjusted for village (>20), ethnicity (>20) and sample month (>20), where data were available for site.

Additional Table ST7B: Results of linear regression analysis investigating the effect of age, gender and malaria status as determined by microscopy on antibody levels to MSP1 at each site.

Additional Table ST7C: Results of site-specific linear regression analysis investigating the effect of age, gender and malaria status as determined by microscopy on antibody levels to MSP2 at each site. Also adjusted for village (>20), ethnicity (>20) and sample month (>20), where data were available for site.

Additional Table ST7D: Results of site-specific linear regression analysis investigating the effect of age, gender and malaria status as determined by microscopy on antibody levels to NANP at each site. Also adjusted for village (>20), ethnicity (>20) and sample month (>20), where data were available for site. Data not available for Tanzania (Moshi).

Additional Table ST7E: Results of site-specific linear regression analysis investigating the effect of age, gender and malaria status as determined by microscopy on total IgE levels at each site. Also adjusted for village (>20), ethnicity (>20) and sample month (>20), where data were available for site. Data not available for Tanzania (Moshi).

Additional Table ST7A: Results of site-specific linear regression analysis investigating the effect of age, gender and malaria status as determined by microscopy on antibody levels to AMA1. Also adjusted for village (>20), ethnicity (>20) and sample month (>20), where data were available for site.

	Senegal (n=489)		Mali – Pongonon (n=276)		Mali – Manteourou (n=643)		Burkina Faso (n=1827)		Sudan (n=81)	
Factor	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value
<i>Age (years)</i>										
<1	0		-		-		0		-	
1-2	-0.02 (-0.86 to 0.83)	0.969	0		-		0.42 (0 to 0.84)	0.052	-	
2-5	0.20 (-0.55 to 0.96)	0.599	-0.40 (-1.24 to 0.44)	0.354	0		1.19 (0.84 to 1.53)	<0.001	-	
5-15	1.11 (0.39 to 1.83)	0.003	-0.25 (-1.08 to 0.59)	0.565	-0.15 (-0.38 to 0.08)	0.193	1.48 (1.16 to 1.81)	<0.001	0	
15-30	1.66 (0.93 to 2.38)	<0.001	0.03 (-1.32 to 1.38)	0.968	-0.10 (-0.35 to 0.15)	0.428	1.16 (0.83 to 1.49)	<0.001	0.15 (-0.30 to 0.61)	0.513
>30	1.43 (0.70 to 2.16)	<0.001	-0.46 (-1.51 to 0.60)	0.396	-0.19 (-0.44 to 0.05)	0.127	0.93 (0.60 to 1.26)	<0.001	0.18 (-0.37 to 0.72)	0.530
<i>Gender</i>										
Female	0		0		0		0		0	
Male	-0.03 (-0.18 to 0.12)	0.693	-0.23 (-0.51 to 0.04)	0.096	0.01 (-0.12 to 0.14)	0.884	-0.12 (-0.22 to -0.03)	0.012	-0.06 (-0.49 to 0.37)	0.793
<i>Microscopy result</i>										
Negative	-		-		0		0		-	
Positive	-		-		-0.13 (-0.28 to 0.03)	0.120	0.13 (0.02 to 0.24)	0.016	-	

	Kenya (n=1808)		Tanzania - Moshi (n=6011)		Tanzania – SP1 (n=536)		Tanzania – SP2 (n=490)		Sri Lanka (n=792)	
Factor	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value
<i>Age (years)</i>										
<1	-		0		-		0		-	
1-2	-		0 (-0.11 to 0.10)	0.966	0		-0.13 (-0.95 to 0.69)	0.760	-	
2-5	-		0.13 (0.04 to 0.21)	0.003	0.51 (-0.54 to 1.55)	0.344	-0.12 (-0.64 to 0.39)	0.638	-	
5-15	-		0.39 (0.31 to 0.46)	<0.001	1.19 (0.15 to 2.23)	0.025	0.67 (0.22 to 1.12)	0.004	0	
15-30	-		0.49 (0.41 to 0.57)	<0.001	1.33 (0.25 to 2.41)	0.016	0.83 (0.36 to 1.30)	<0.001	-0.03 (-0.64 to 0.59)	0.932
>30	-		0.56 (0.47 to 0.64)	<0.001	-		0.37 (-0.014 to 0.88)	0.156	0.14 (-0.47 to 0.75)	0.660
<i>Gender</i>										
Female	0		0		0		0		0	
Male	-0.02 (-0.13 to 0.09)	0.725	0.02 (-0.02 to 0.05)	0.322	-0.06 (-0.23 to 0.12)	0.545	-0.27 (-0.44 to -0.10)	0.002	-0.04 (-0.13 to 0.05)	0.407
<i>Microscopy result</i>										
Negative	0		0		0		0		-	
Positive	0.02 (-0.13 to 0.17)	0.775	0.12 (0.08 to 0.17)	<0.001	0.12 (-0.10 to 0.34)	0.273	0.39 (0.21 to 0.58)	<0.001	-	

Additional Table ST7B: Results of linear regression analysis investigating the effect of age, gender and malaria status as determined by microscopy on antibody levels to MSP1 at each site.

	Senegal (n=489)		Mali – Pongonon (n=277)		Mali – Manteourou (n=643)		Burkina Faso (n=1827)		Sudan (n=81)	
Factor	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value
<i>Age (years)</i>										
<1	0		-		-		0		-	
1-2	0.59 (-0.11 to 1.30)	0.101	0		-		-0.12 (-0.48 to 0.25)	0.528	-	
2-5	0.66 (0.04 to 1.29)	0.037	-0.01 (-0.78 to 0.76)	0.984	0		0.15 (-0.15 to 0.44)	0.333	-	
5-15	0.85 (0.25 to 1.44)	0.005	-0.01 (-0.78 to 0.76)	0.979	-0.03 (-0.33 to 0.26)	0.825	0.47 (0.19 to 0.75)	0.001	0	
15-30	1.39 (0.79 to 1.99)	<0.001	-0.32 (-1.56 to 0.92)	0.612	-0.10 (-0.42 to 0.23)	0.558	0.56 (0.28 to 0.85)	<0.001	0.13 (-0.35 to 0.61)	0.608
>30	1.50 (0.90 to 2.10)	<0.001	-0.28 (-1.29 to 0.73)	0.589	0.03 (-0.30 to 0.36)	0.863	0.71 (0.42 to 1.00)	<0.001	0.56 (0.01 to 1.12)	0.049
<i>Gender</i>										
<i>Female</i>	0		0		0		0		0	
<i>Male</i>	-0.15 (-0.29 to -0.01)	0.040	-0.05 (-0.31 to 0.21)	0.725	-0.06 (-0.24 to 0.11)	0.475	-0.27 (-0.36 to -0.19)	<0.001	-0.25 (-0.69 to 0.19)	0.273
<i>Microscopy result</i>										
<i>Negative</i>	-		-		0		0		-	
<i>Positive</i>	-		-		-0.01 (-0.22 to 0.20)	0.922	0.01 (-0.09 to 0.10)	0.882	-	

	Kenya (n=1808)		Tanzania - Moshi (n=6004)		Tanzania – SP1 (n=536)		Tanzania – SP2 (n=505)		Sri Lanka (n=790)	
Factor	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value
<i>Age (years)</i>										
<1	-		0		0		0		-	
1-2	-		-0.12 (-0.24 to 0.01)	0.063	-0.52 (-2.17 to 1.12)	0.532	0.20 (-0.46 to 0.86)	0.553	-	
2-5	-		0.05 (-0.04 to 0.15)	0.262	-0.37 (-1.85 to 1.11)	0.626	-0.27 (-0.71 to 0.17)	0.226	-	
5-15	-		0.34 (0.25 to 0.43)	<0.001	0 (-1.48 to 1.47)	0.997	0.36 (-0.02 to 0.74)	0.061	0	
15-30	-		0.68 (0.59 to 0.78)	<0.001	0.34 (-1.15 to 1.84)	0.652	0.71 (0.31 to 1.10)	<0.001	0.07 (-0.51 to 0.64)	0.825
>30	-		0.85 (0.76 to 0.94)	<0.001	-		0.72 (0.29 to 1.15)	0.001	0.26 (-0.32 to 0.83)	0.378
<i>Gender</i>										
<i>Female</i>	0		0		0		0		0	
<i>Male</i>	-0.03 (-0.10 to 0.05)	0.475	-0.01 (-0.05 to 0.04)	0.776	-0.11 (-0.26 to 0.03)	0.136	-0.35 (-0.49 to -0.21)	<0.001	0.01 (-0.07 to 0.10)	0.737
<i>Microscopy result</i>										
<i>Negative</i>	0		0		0		0		-	
<i>Positive</i>	0.03 (-0.08 to 0.13)	0.602	0.25 (0.19 to 0.31)	<0.001	0.17 (-0.01 to 0.35)	0.059	0.23 (0.07 to 0.39)	0.004	-	

Additional Table ST7C: Results of site-specific linear regression analysis investigating the effect of age, gender and malaria status as determined by microscopy on antibody levels to MSP2 at each site. Also adjusted for village (>20), ethnicity (>20) and sample month (>20), where data were available for site.

	Senegal (n=489)		Mali – Pongonon (n=275)		Mali – Manteourou (n=643)		Burkina Faso (n=1824)		Sudan (n=81)	
Factor	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value
<i>Age (years)</i>										
<1	0		-		-		0		-	
1-2	0.22 (-0.37 to 0.81)	0.464	0		-		0.52 (0.20 to 0.84)	0.001	-	
2-5	0.33 (-0.20 to 0.86)	0.221	-0.04 (-0.77 to 0.69)	0.913	0		1.11 (0.85 to 1.37)	<0.001	-	
5-15	0.94 (0.44 to 1.44)	<0.001	0.16 (-0.56 to 0.89)	0.658	-0.10 (-0.34 to 0.13)	0.386	1.56 (1.31 to 1.80)	<0.001	0	
15-30	1.48 (0.97 to 1.99)	<0.001	-0.20 (-1.37 to 0.96)	0.733	-0.10 (-0.36 to 0.15)	0.430	1.43 (1.18 to 1.68)	<0.001	0.36 (-0.02 to 0.75)	0.070
>30	1.55 (1.04 to 2.06)	<0.001	-0.14 (-1.05 to 0.77)	0.761	-0.04 (-0.30 to 0.21)	0.739	1.34 (1.09 to 1.59)	<0.001	0.35 (-0.09 to 0.80)	0.126
<i>Gender</i>										
<i>Female</i>	0		0		0		0		0	
<i>Male</i>	-0.02 (-0.14 to 0.10)	0.756	0.10 (-0.13 to 0.34)	0.396	0.10 (-0.03 to 0.24)	0.138	-0.17 (-0.24 to -0.09)	<0.001	-0.25 (-0.60 to 0.11)	0.180
<i>Microscopy result</i>										
<i>Negative</i>	-		-		0		0		-	
<i>Positive</i>	-		-		0.01 (-0.15 to 0.18)	0.867	0.23 (0.14 to 0.31)	<0.001	-	

	Kenya (n=1808)		Tanzania - Moshi (n=6026)		Tanzania – SP1 (n=533)		Tanzania – SP2 (n=491)		Sri Lanka (n=790)	
Factor	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value
<i>Age (years)</i>										
<1	-		0		-		0		-	
1-2	-		0.14 (0.03 to 0.25)	0.010	0		-0.03 (-0.77 to 0.71)	0.936	-	
2-5	-		0.19 (0.11 to 0.28)	<0.001	0.05 (-0.61 to 0.70)	0.891	-0.16 (-0.63 to 0.30)	0.486	-	
5-15	-		0.43 (0.35 to 0.51)	<0.001	0.63 (-0.02 to 1.29)	0.057	0.43 (0.02 to 0.83)	0.039	0	
15-30	-		0.61 (0.53 to 0.69)	<0.001	1.10 (0.40 to 1.81)	0.002	0.79 (0.36 to 1.21)	<0.001	0.26 (-0.32 to 0.85)	0.377
>30	-		0.66 (0.58 to 0.74)	<0.001	-		0.49 (0.03 to 0.95)	0.037	0.36 (-0.23 to 0.94)	0.231
<i>Gender</i>										
<i>Female</i>	0		0		0		0		0	
<i>Male</i>	-0.04 (-0.13 to 0.04)	0.339	0.01 (-0.02 to 0.05)	0.427	-0.18 (-0.33 to -0.03)	0.017	-0.21 (-0.36 to -0.06)	0.006	-0.01 (-0.09 to 0.07)	0.823
<i>Microscopy result</i>										
<i>Negative</i>	0		0		0		0		-	
<i>Positive</i>	0.15 (0.03 to 0.26)	0.013	0.16 (0.11 to 0.20)	<0.001	0.29 (0.11 to 0.48)	0.002	0.37 (0.20 to 0.53)	<0.001	-	

Additional Table ST7D: Results of site-specific linear regression analysis investigating the effect of age, gender and malaria status as determined by microscopy on antibody levels to NANP at each site. Also adjusted for village (>20), ethnicity (>20) and sample month (>20), where data were available for site. Data not available for Tanzania (Moshi).

	Senegal (n=489)		Mali – Pongonon (n=276)		Mali – Manteourou (n=643)		Burkina Faso (n=1841)		Sudan (n=81)	
Factor	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value
<i>Age (years)</i>										
<1	0		-		-		0		-	
1-2	0.21 (-0.26 to 0.67)	0.379	0		-		0.36 (0.09 to 0.62)	0.008	-	
2-5	0.32 (-0.11 to 0.74)	0.143	0.13 (-0.82 to 1.07)	0.795	0		0.60 (0.39 to 0.81)	<0.001	-	
5-15	0.80 (0.40 to 1.21)	<0.001	-0.15 (-1.09 to 0.79)	0.753	0.13 (-0.07 to 0.33)	0.195	1.02 (0.81 to 1.22)	<0.001	0	
15-30	1.06 (0.65 to 1.47)	<0.001	-0.57 (-2.02 to 0.89)	0.448	0.28 (0.06 to 0.49)	0.014	1.24 (1.03 to 1.45)	<0.001	0.19 (-0.07 to 0.45)	0.165
>30	1.35 (0.94 to 1.76)	<0.001	-0.70 (-1.88 to 0.48)	0.247	0.29 (0.07 to 0.51)	0.010	1.44 (1.23 to 1.65)	<0.001	0.50 (0.19 to 0.81)	0.002
<i>Gender</i>										
<i>Female</i>	0		0		0		0		0	
<i>Male</i>	0.05 (-0.04 to 0.14)	0.272	-0.20 (-0.49 to 0.09)	0.177	-0.02 (-0.14 to 0.10)	0.747	-0.10 (-0.16 to -0.03)	0.004	-0.14 (-0.38 to 0.10)	0.269
<i>Microscopy result</i>										
<i>Negative</i>	-		-		0		0		-	
<i>Positive</i>	-		-		0.05 (-0.09 to 0.19)	0.509	0 (-0.08 to 0.07)	0.937	-	

	Kenya (n=1808)		Tanzania – SP1 (n=536)		Tanzania – SP2 (n=494)		Sri Lanka (n=790)	
Factor	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value
<i>Age (years)</i>								
<1	-		-		0		-	
1-2	-		0		-0.06 (-0.57 to 0.45)	0.816	-	
2-5	-		0.13 (-0.25 to 0.51)	0.505	-0.23 (-0.56 to 0.09)	0.164	-	
5-15	-		0.37 (-0.01 to 0.74)	0.055	0.21 (-0.08 to 0.49)	0.158	0	
15-30	-		0.70 (0.28 to 1.12)	0.001	0.51 (0.21 to 0.80)	0.001	-0.01 (-0.44 to 0.42)	0.957
>30	-		-		0.24 (-0.08 to 0.57)	0.145	0.09 (-0.34 to 0.52)	0.684
<i>Gender</i>								
<i>Female</i>	0		0		0		0	
<i>Male</i>	0.02 (-0.03 to 0.07)	0.486	0 (-0.11 to 0.10)	0.930	-0.02 (-0.12 to 0.09)	0.736	0.05 (-0.01 to 0.11)	0.097
<i>Microscopy result</i>								
<i>Negative</i>	0		0		0		-	
<i>Positive</i>	0.04 (-0.03 to 0.11)	0.236	0.10 (-0.03 to 0.23)	0.149	-0.01 (-0.13 to 0.10)	0.817	-	

Additional Table ST7E: Results of site-specific linear regression analysis investigating the effect of age, gender and malaria status as determined by microscopy on total IgE levels at each site. Also adjusted for village (>20), ethnicity (>20) and sample month (>20), where data were available for site. Data not available for Tanzania (Moshi).

	Senegal (n=489)		Mali – Pongonon (n=282)		Mali – Manteourou (n=643)		Burkina Faso (n=1848)		Sudan (n=82)	
Factor	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value
<i>Age (years)</i>										
<1	0		-		-		0		-	
1-2	-0.35 (-0.96 to 0.27)	0.268	0		-		-0.09 (-0.41 to 0.22)	0.566	-	
2-5	0.03 (-0.48 to 0.55)	0.894	-0.41 (-0.96 to 0.14)	0.145	0		0.04 (-0.23 to 0.31)	0.761	-	
5-15	0.21 (-0.28 to 0.69)	0.399	-0.49 (-1.04 to 0.05)	0.077	-0.09 (-0.26 to 0.08)	0.309	-0.02 (-0.27 to 0.24)	0.906	0	
15-30	-0.07 (-0.56 to 0.43)	0.795	-0.40 (-1.24 to 0.44)	0.348	-0.08 (-0.27 to 0.11)	0.406	0.09 (-0.16 to 0.35)	0.476	0.21 (-0.40 to 0.81)	0.507
>30	-0.10 (-0.59 to 0.39)	0.690	-0.51 (-1.19 to 0.16)	0.139	-0.06 (-0.25 to 0.13)	0.548	-0.10 (-0.36 to 0.16)	0.431	-0.39 (-1.14 to 0.36)	0.309
<i>Gender</i>										
Female	0		0		0		0		0	
Male	0.15 (0.01 to 0.29)	0.037	0.13 (-0.05 to 0.31)	0.150	-0.06 (-0.16 to 0.04)	0.238	0.17 (0.10 to 0.24)	<0.001	0.47 (-0.10 to 1.04)	0.110
<i>Microscopy result</i>										
Negative	-		-		0		0		-	
Positive	-		-		0.05 (-0.07 to 0.18)	0.383	0.08 (0 to 0.15)	0.041	-	

	Kenya (n=1808)		Tanzania – SP1 (n=509)		Tanzania – SP2 (n=553)		Sri Lanka (n=793)	
Factor	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value	beta (95% CI) ^b	p-value
<i>Age (years)</i>								
<1	-		0		0		-	
1-2	-		0.34 (-0.95 to 1.64)	0.602	0.23 (-0.76 to 1.21)	0.655	-	
2-5	-		0.38 (-0.81 to 1.57)	0.529	-0.04 (-0.54 to 0.47)	0.883	-	
5-15	-		0.73 (-0.46 to 1.92)	0.230	0.51 (0.06 to 0.96)	0.028	0	
15-30	-		0.90 (-0.31 to 2.10)	0.146	0.67 (0.20 to 1.14)	0.005	-0.32 (-0.91 to 0.27)	0.290
>30	-		-		0.45 (-0.05 to 0.96)	0.078	-0.21 (-0.80 to 0.38)	0.483
<i>Gender</i>								
Female	0		0		0		0	
Male	0.01 (-0.06 to 0.07)	0.845	0.13 (0.01 to 0.25)	0.033	0.10 (-0.05 to 0.26)	0.189	0.30 (0.22 to 0.39)	<0.001
<i>Microscopy result</i>								
Negative	0		0		0		-	
Positive	0 (-0.09 to -0.09)	0.989	-0.01 (-0.16 to 0.14)	0.898	0.13 (-0.04 to 0.31)	0.136	-	