

SUPPLEMENTARY MATERIAL

IgG subclass-specific responses against *Plasmodium falciparum* merozoite antigens are associated with control of parasitemia and protection from symptomatic illness

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Table S1: Characteristics of antibody responses to *P. falciparum* merozoite antigens among the longitudinal cohort of children.

	n	Proportion Positive (%)¹	Median²	IQR²	T33²	T67²
AMA-1						
IgG	206	99.5	0.85	[0.46, 1.10]	0.60	1.01
IgG1	206	94.2	0.97	[0.45, 1.26]	0.70	1.17
IgG3	206	76.2	0.09	[0.02, 1.43]	0.02	0.30
MSP1-19						
IgG	206	96.6	1.19	[0.43, 1.68]	0.76	1.51
IgG1	206	69.9	0.17	[0.03, 0.77]	0.06	0.52
IgG3	206	63.6	0.03	[0.01, 0.11]	0.01	0.06
MSP2 3D7						
IgG	206	85.9	0.54	[0.25, 0.79]	0.36	0.69
IgG1	206	41.3	0.01	[0.00, 0.02]	0.00	0.02
IgG3	203	84.2	0.74	[0.20, 1.18]	0.39	1.09
MSP2 FC27						
IgG	206	83.0	0.30	[0.13, 0.60]	0.19	0.49
IgG1	206	51.5	0.02	[0.01, 0.11]	0.01	0.05
IgG3	202	80.7	0.70	[0.13, 1.11]	0.33	0.98

Notes:

1. Represents the proportion of samples that were classified as positive to each antigen (defined as optical density > mean + 3SD of the non-exposed control samples).

2. Values represent optical density measured by ELISA

Abbreviations: IQR, Inter-quartile range; T33: 33.33% tertile, T67: 66.67% tertile; AMA-1, Apical Membrane Antigen 1; MSP1-19, 19kDa C-terminal region of Merozoite Surface Protein 1; MSP2, Merozoite Surface Protein 2 (3D7 and FC27 alleles).

Table S2: The prevalence of IgG1 and IgG3 to merozoite antigens of *P. falciparum* among the longitudinal cohort of children in relation to age and infection.

Antigens	Prevalence¹ <=9 yrs (%) n = 91	Prevalence >9 yrs (%) n = 115	p- value³	Prevalence Pf pos (%)² n = 139	Prevalence Pf neg (%) n = 67	p- value
AMA-1						
IgG1	87.9	99.1	0.001	97.8	86.6	0.001
IgG3	62.6	87.0	<0.001	83.5	61.2	<0.001
MSP1-19						
IgG1	59.3	78.3	0.003	75.5	58.2	0.011
IgG3	51.7	73.0	0.002	72.7	44.8	<0.001
MSP2 3D7						
IgG1	42.9	40.0	0.679	48.2	26.9	0.004
IgG3	73.0	93.0	<0.001	87.6	77.3	0.059
MSP2 FC27						
IgG1	45.1	56.5	0.102	59.7	34.3	0.001
IgG3	68.9	90.2	<0.001	82.6	76.6	0.311

Notes:

1. Samples were classified as positive if the optical density was greater than the mean + 3SD of the non-exposed control samples. Children were divided into 2 age groups: >9 and <9 years to determine the effect of age on the IgG subclass response.

2. *P. falciparum* infection was detected by PCR.

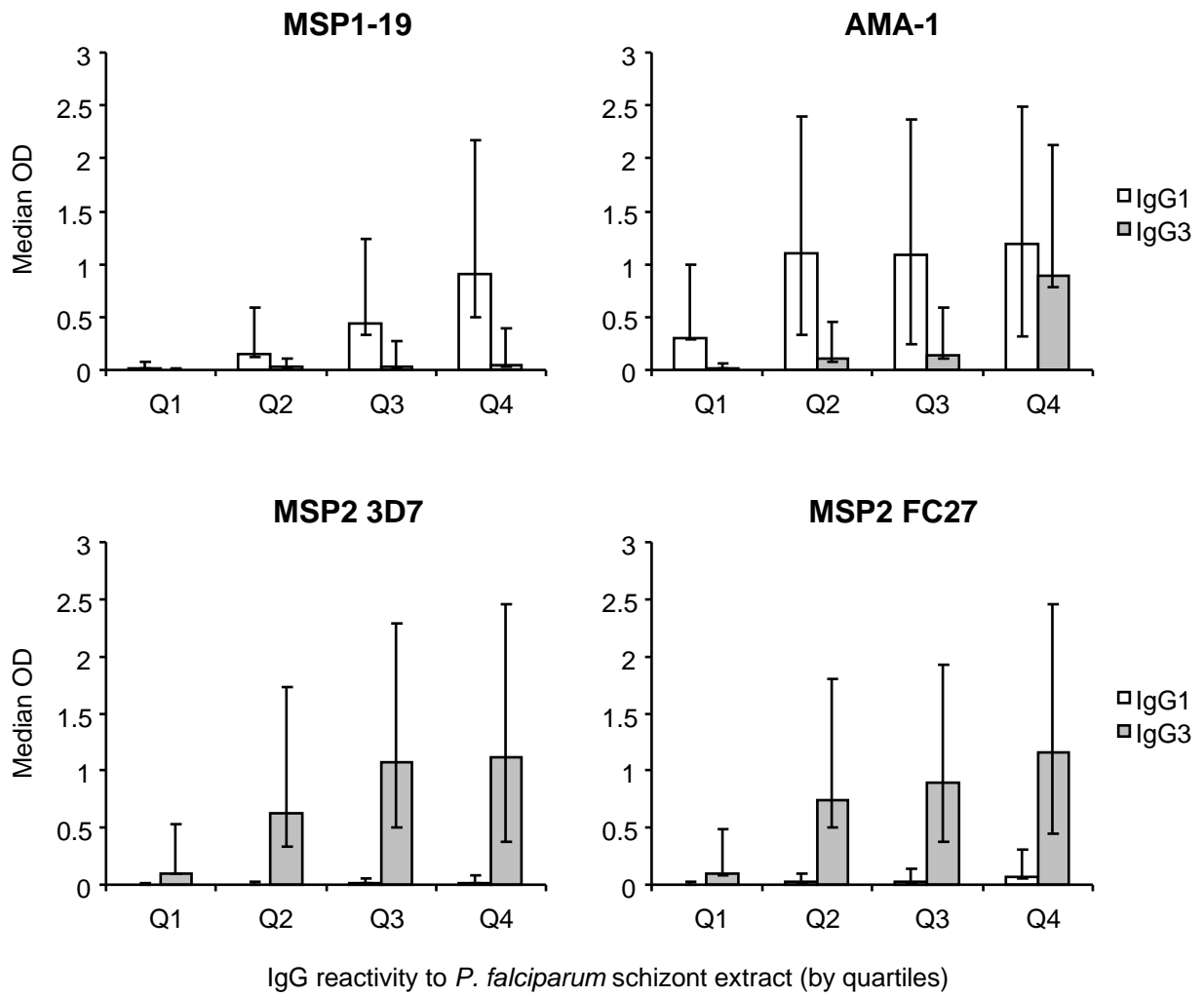
3. P values determined by Chi square test.

Abbreviations: Pf: *Plasmodium falciparum*; pos, positive; neg, negative; AMA-1, Apical Membrane Antigen 1; MSP1-19, 19kDa C-terminal region of Merozoite Surface Protein 1; MSP2, Merozoite Surface Protein 2 (3D7 and FC27 alleles).

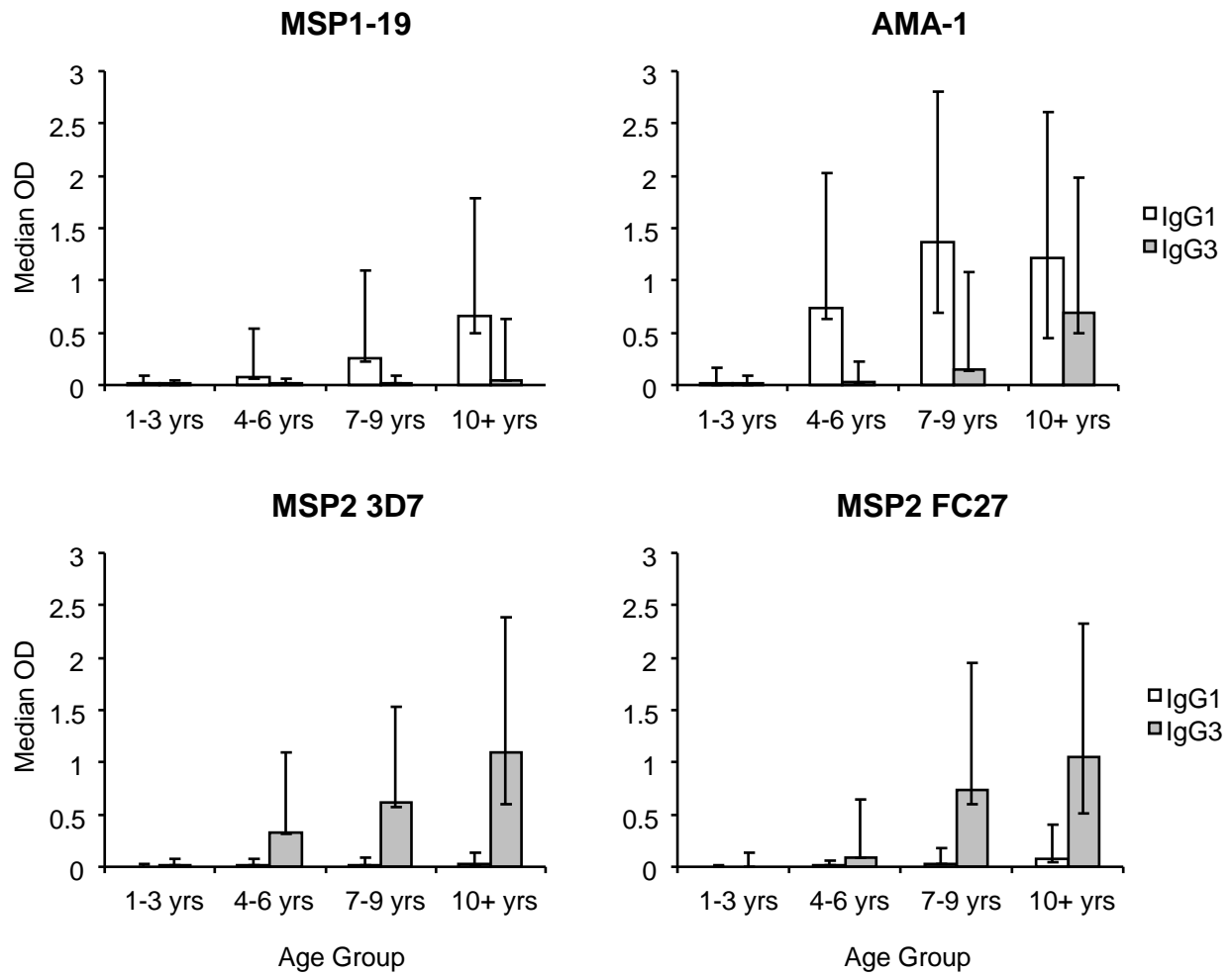
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Figure S1: The effect of exposure on the IgG subclass responses to merozoite antigens in Papua New Guinean children. IgG1: unshaded bars; IgG3: light gray bars. Median ODs for IgG1 and IgG3; y error bars indicate lower and upper quartiles. Exposure was determined by antibody responsiveness to *P. falciparum* schizont extract; these responses were divided into quartiles (Q1-4, where Q1 is the lowest quartile).

Figure S2: Changes to IgG subclass antibody responses to different merozoite antigens in association with age for individuals 0-3 years (n=50), 4-6 years (n=48), 7-9 years (n=50) and >10 years (n=59). IgG1: unshaded bars; IgG3: light gray bars. Median ODs for IgG1 and IgG3; y error bars indicate lower and upper quartiles.



Supplementary Figure S1



Supplementary Figure S2