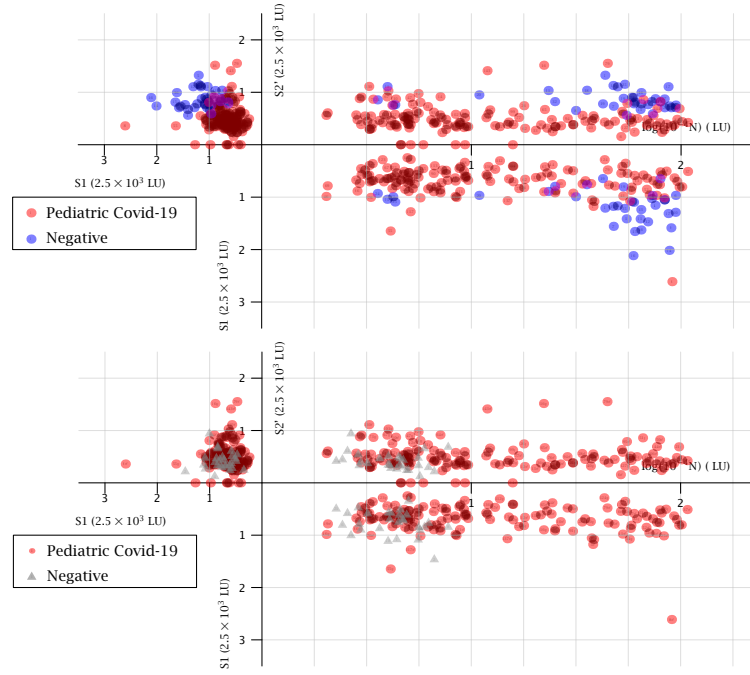
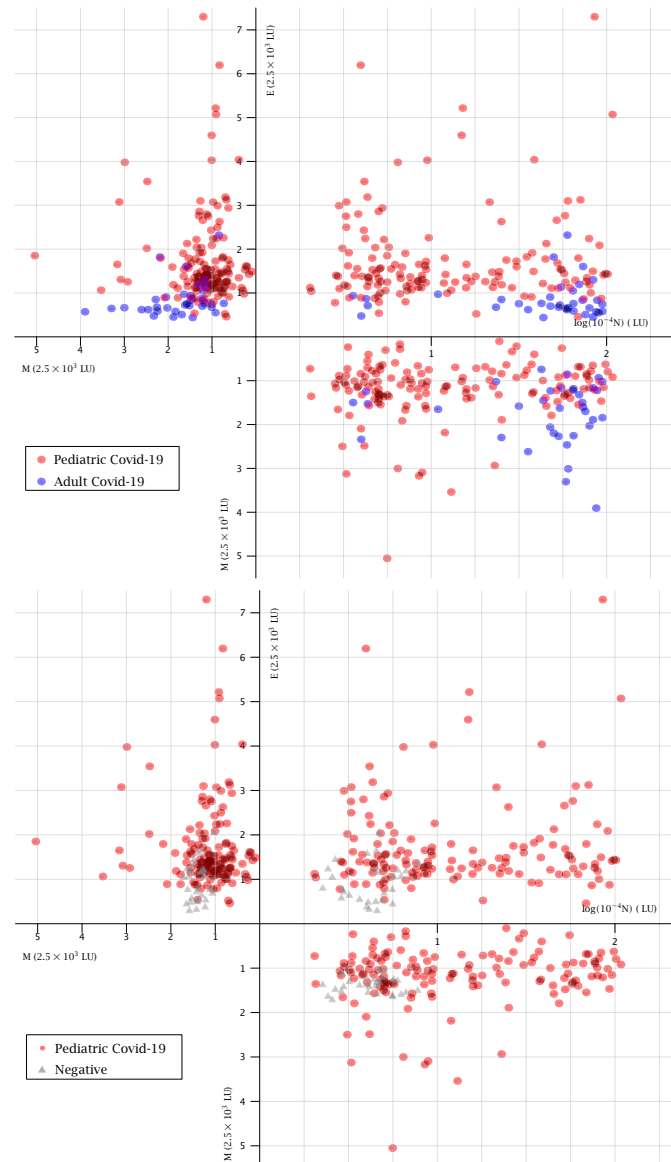


Supplementary figure 1. (a) Levels of total IgG (g/L) in plasma measured by ELISA in the pediatrics COVID (n=254), adults COVID (n=36), negatives (n=33), and pediatrics negatives (n=20), adults negatives (n=13). (b-e) Pie charts of the cumulative antibody responses to the 14 relevant SARS-CoV-2 structural and non-structural protein antigens in COVID-19 children (b, c) and adults (d, e). Due to the differences in scale between N and all other 10 antigens, a second pie-chart excluding N responses was done to focus on other antibody responses (c, e). * shows statistical significance. Two-sided P values were calculated using a Chi-square test between the “observed” (pediatric) versus “expected” (adult) distributions. **** p<0,0001.

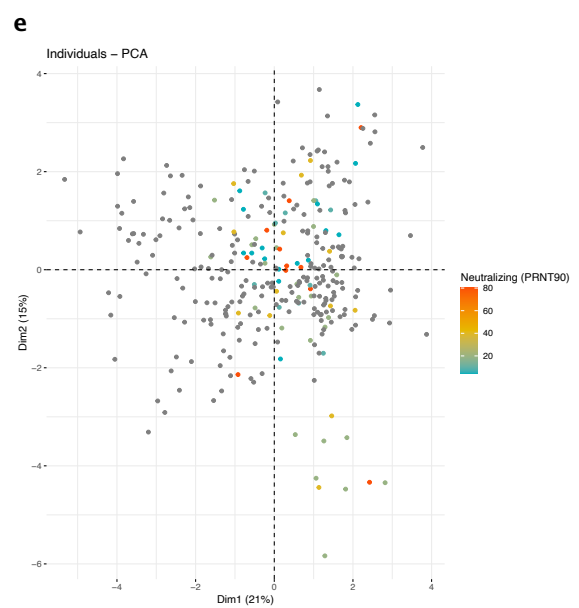
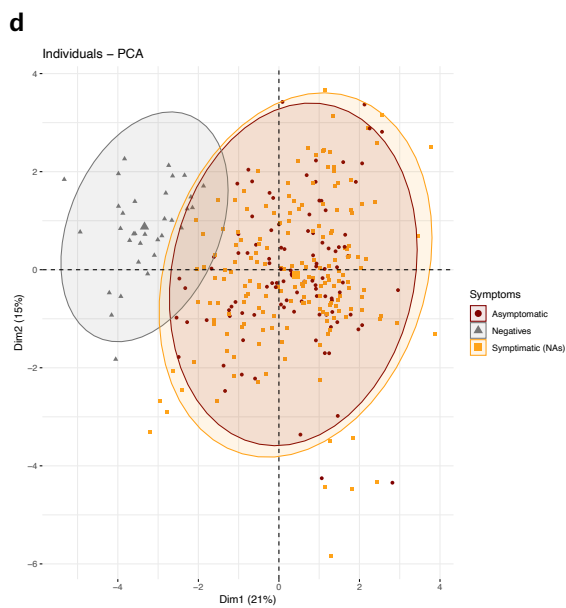
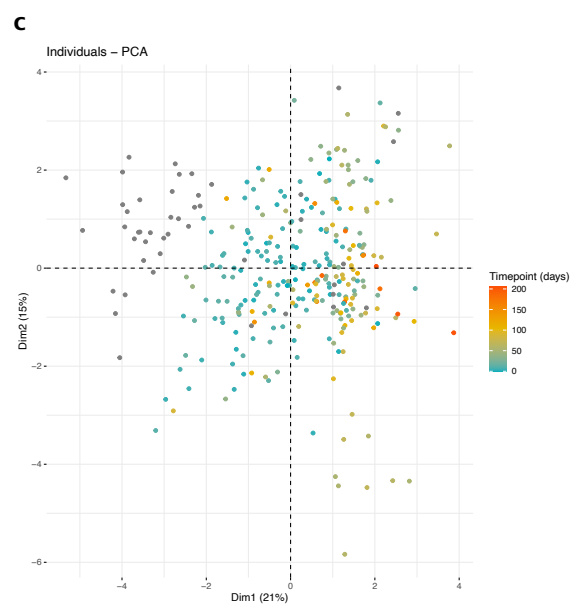
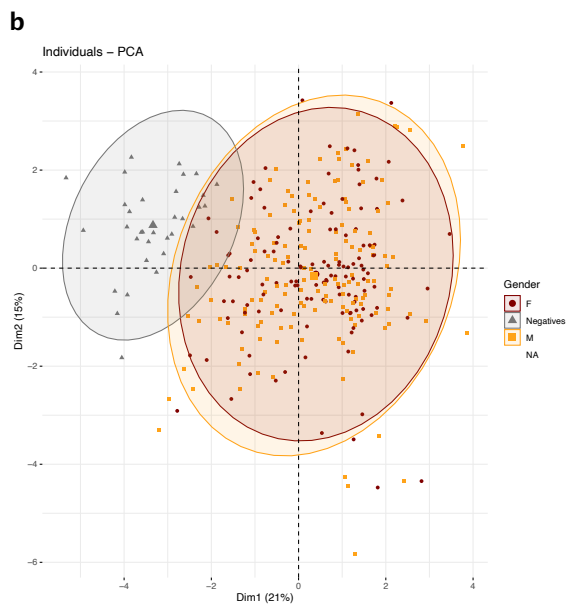
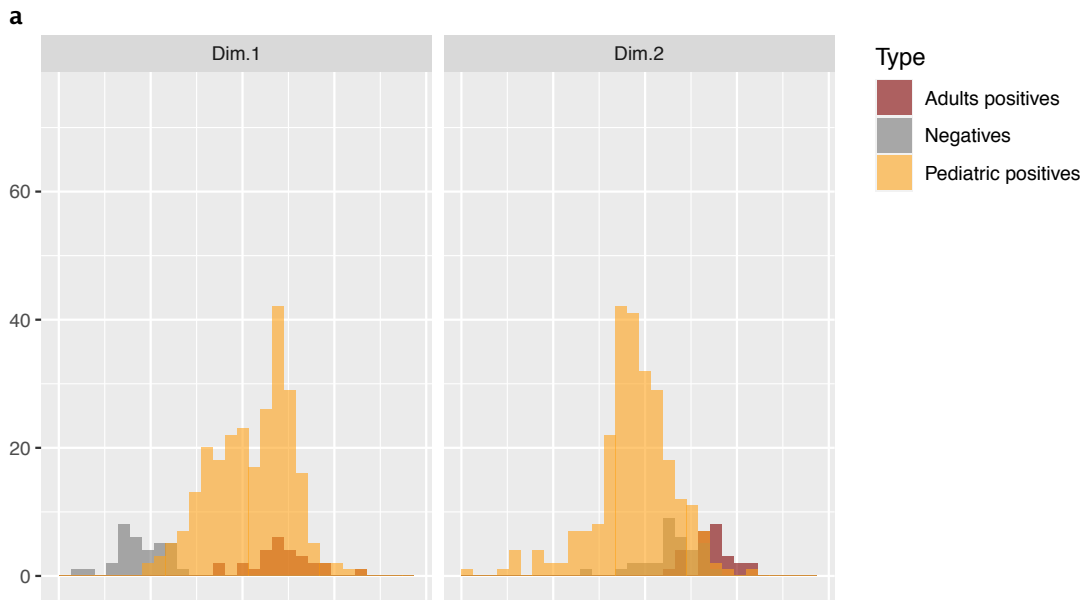
a



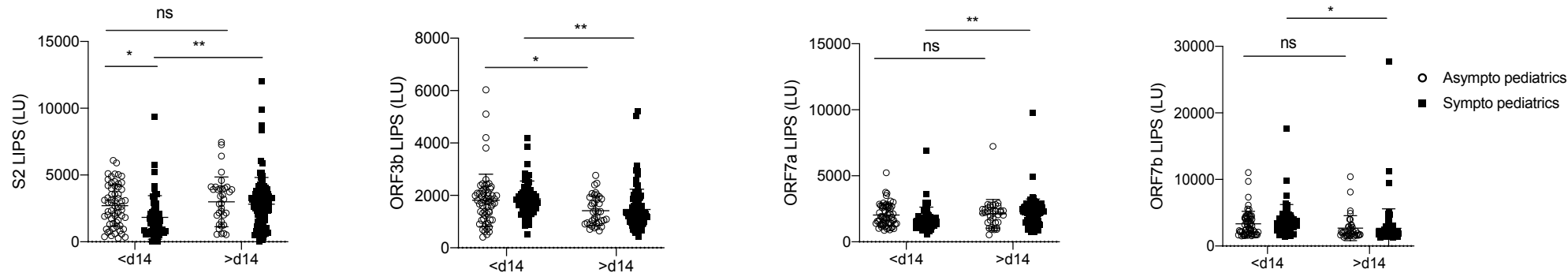
b



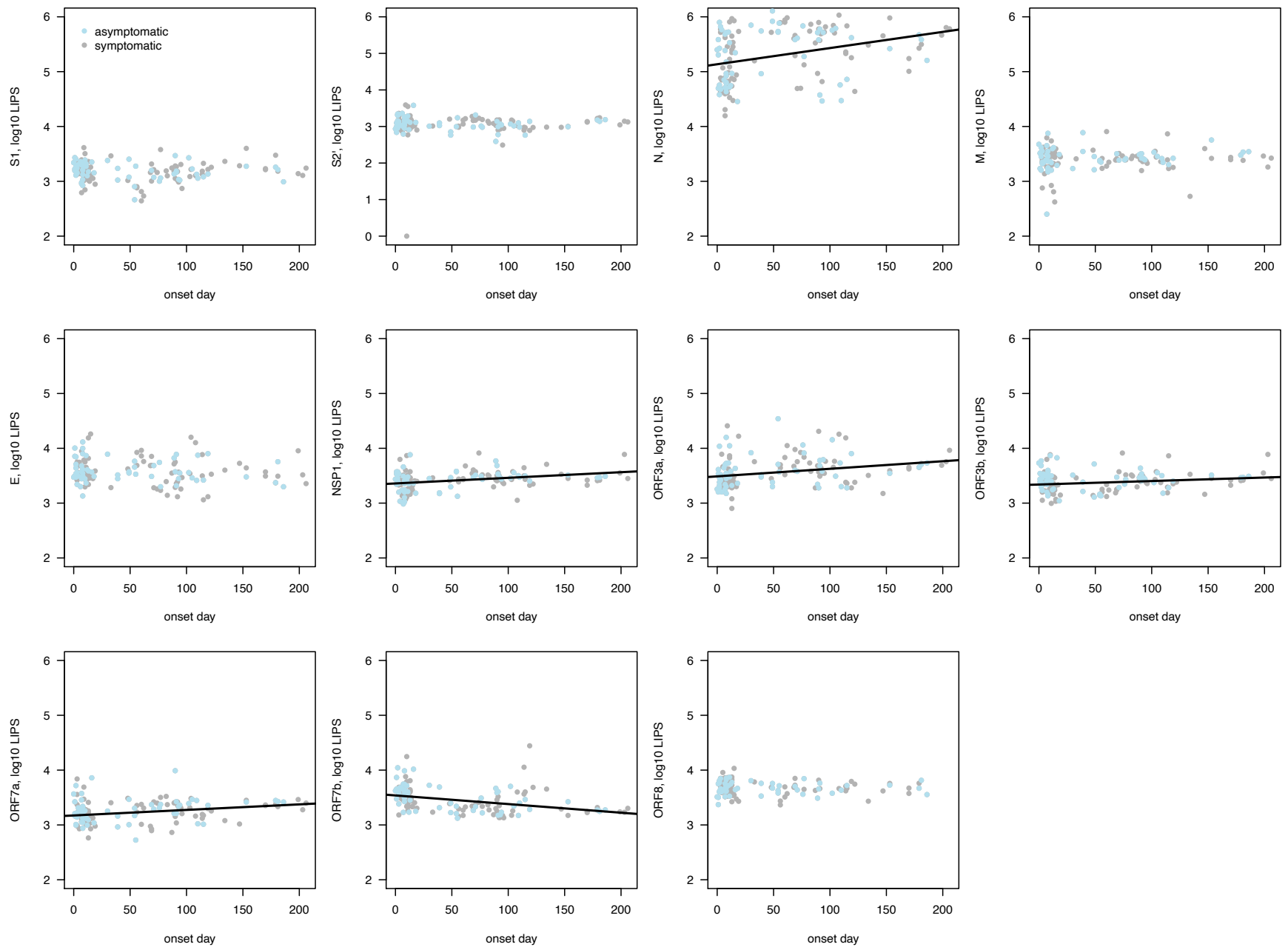
Supplemental Figure 2. Representation of the pediatric COVID-19 population as a cluster of points. (a) N, S1, S2' antibodies combination for the pediatric COVID-19 population versus the adult COVID-19 population (top) and for the pediatric COVID-19 population versus the negative population (bottom). (b) N, M, E antibodies combination for the pediatric COVID-19 population versus the adult COVID-19 population (top) and for the pediatric COVID-19 population versus the negative population (bottom). Patients are presented according to their values of SARS-CoV-2 individual antibodies as (x, y, z) in the space. COVID-19 children patients (n=144) are represented as red dots. COVID-19 adult patients (n=36) are represented in blue. The negative population (n=28) is represented in gray.



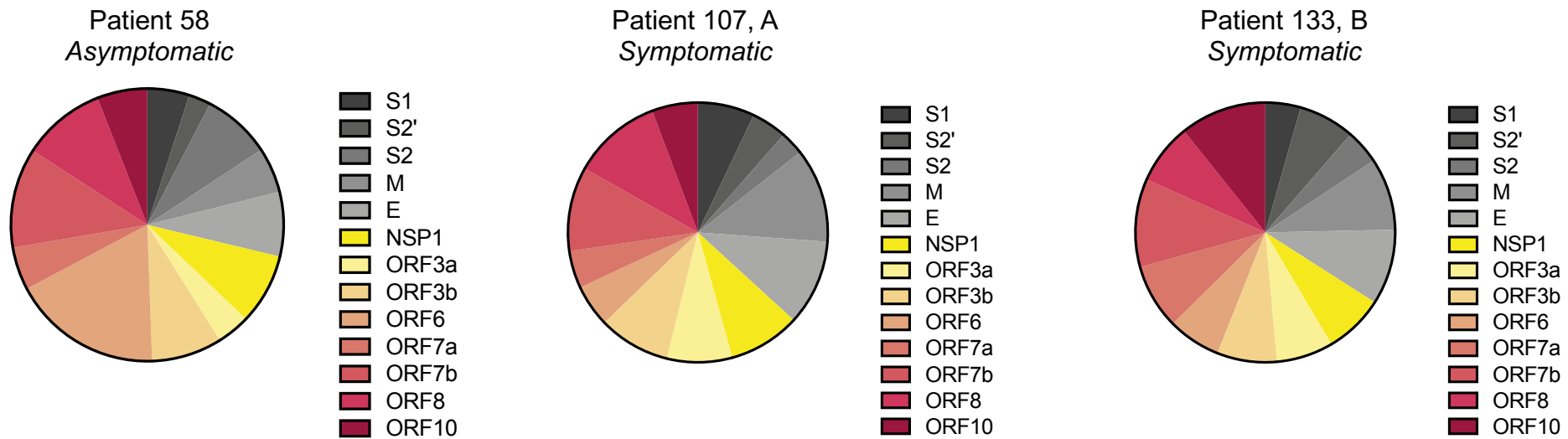
Supplemental Figure 3. Principal Component Analysis. (a) Distributions of the Principal Components (Dim1 and Dim2) colored by sample-type: Pediatric positives, Adult positives, Negatives. (b-e) Factorial plot of PCA on dimension 1 and 2 for gender (b), time-point (c), symptoms (d) and neutralization data (PRNT90) (e).



Supplemental Figure 4. Stratification of S2, ORF3b, ORF7a and ORF7b antibody levels measured by LIPS according to symptoms and time-point of sampling (prior day 14 or after day 14). Two-sided P values were calculated using the Mann-Whitney U test. * shows statistical significance between symptomatic and asymptomatic samples or between early and late samples. * $p < 0.05$, ** $p < 0.01$.



Supplemental Figure 5. Longitudinal antibody responses in asymptomatic and symptomatic COVID-19 children. Longitudinal analysis of 11 relevant antibody responses for structural (S1, S2', N, M, E) and non-structural (NSP-1, ORF3a, ORF3b, ORF7a, ORF7b, ORF8) SARS-CoV-2 proteins in asymptomatic (light blue) and symptomatic (grey) COVID-19 children.



Supplemental Figure 6. Single pie charts of the cumulative antibody responses to the relevant SARS-CoV-2 structural and non-structural protein antigens (excluding N) for the COVID-19 pediatric patients producing the highest levels of IFN- α . (from Figure 7).

Supplemental Table 1. Correlation between variables and Principal Components 1 and 2 (Dimension 1 and 2 of 14, represented in Figure 3d-f).

Dimension	Variable	Correlation	p.value
1	N	0.5921686	0.00000
1	S1	0.0906619	0.10884
1	S2'	0.1981899	0.00041
1	S2	0.4552057	0.00000
1	ORF7a	0.5495707	0.00000
1	ORF3b	0.6786038	0.00000
1	ORF7b	-0.0681466	0.22853
1	NSP1	0.6656403	0.00000
1	ORF10	-0.2925584	0.00000
1	E	0.275052	0.00000
1	M	-0.1509175	0.00739
1	ORF6	-0.3774847	0.00000
1	ORF8	0.6342754	0.00000
1	ORF3a	0.6259408	0.00000
2	N	-0.0821349	0.14648
2	S1	0.6981859	0.00000
2	S2'	0.131899	0.01938
2	S2	0.3052223	0.00000
2	ORF7a	0.5271245	0.00000
2	ORF3b	0.3465305	0.00000
2	ORF7b	0.5554244	0.00000
2	NSP1	-0.1296366	0.02158
2	ORF10	0.608538	0.00000
2	E	-0.44982	0.00000
2	M	0.3325727	0.00000
2	ORF6	0.2425214	0.00001
2	ORF8	-0.1286999	0.02255
2	ORF3a	-0.0883815	0.11807