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Supplemental information

SARS-CoV-2 antibodies from children exhibit broad neutralization and belong to adult public clonotypes

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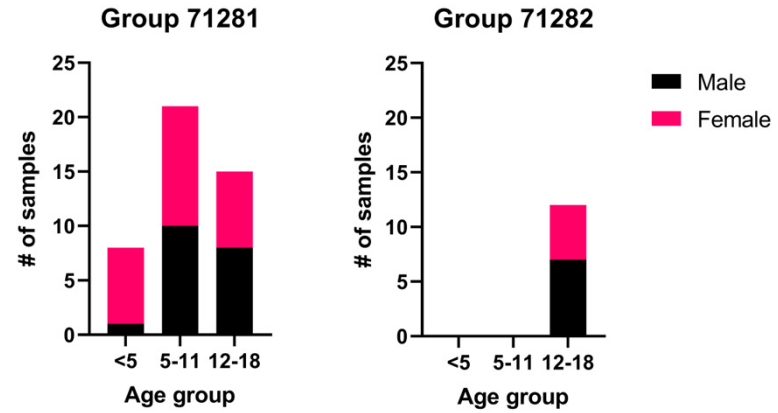
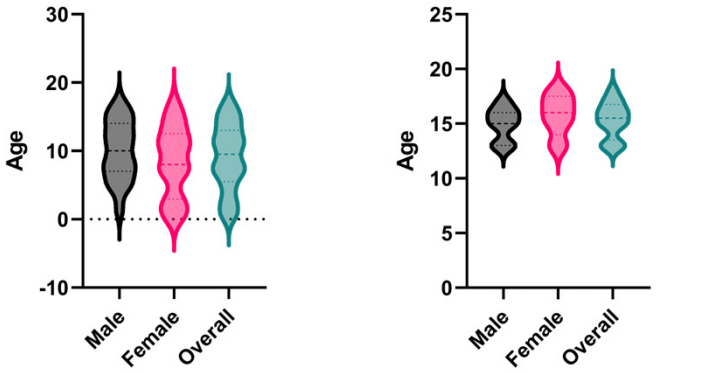
A



B



	Group 71281			Group 71282		
	Male	Female	Overall	Male	Female	Overall
Number of samples	19	25	44	7	5	12
Minimum age (years)	1.5	0.42	0.42	13	13	13
25% Percentile	7	2.96	5.5	13	14	13.5
Median age	10	8	9.5	15	16	15.5
75% Percentile	14	12.5	13	16	17.5	16.75
Maximum age	17	17	17	17	18	18
Range	15.5	16.58	16.58	4	5	5
Mean age	10.03	8.41	9.11	15	15.8	15.33
Std. Deviation	4.37	5.17	4.85	1.53	1.92	1.67
Std. Error of Mean	1	1.03	0.73	0.58	0.86	0.48
# vaccinated						6
# infected						6

Figure S1. Sample information for groups 71281 and 71282, Related to Figure 1. (A) Samples from groups 71281 and 71282 broken down by age group and gender. **(B)** Age distribution for each group for males (gray), females (pink), and overall (teal) are on the left and a summary of the age distribution for samples pooled in each experimental group is on the right. Additional vaccination and infection status of group 71282 is shown below the age information in the bottom right.

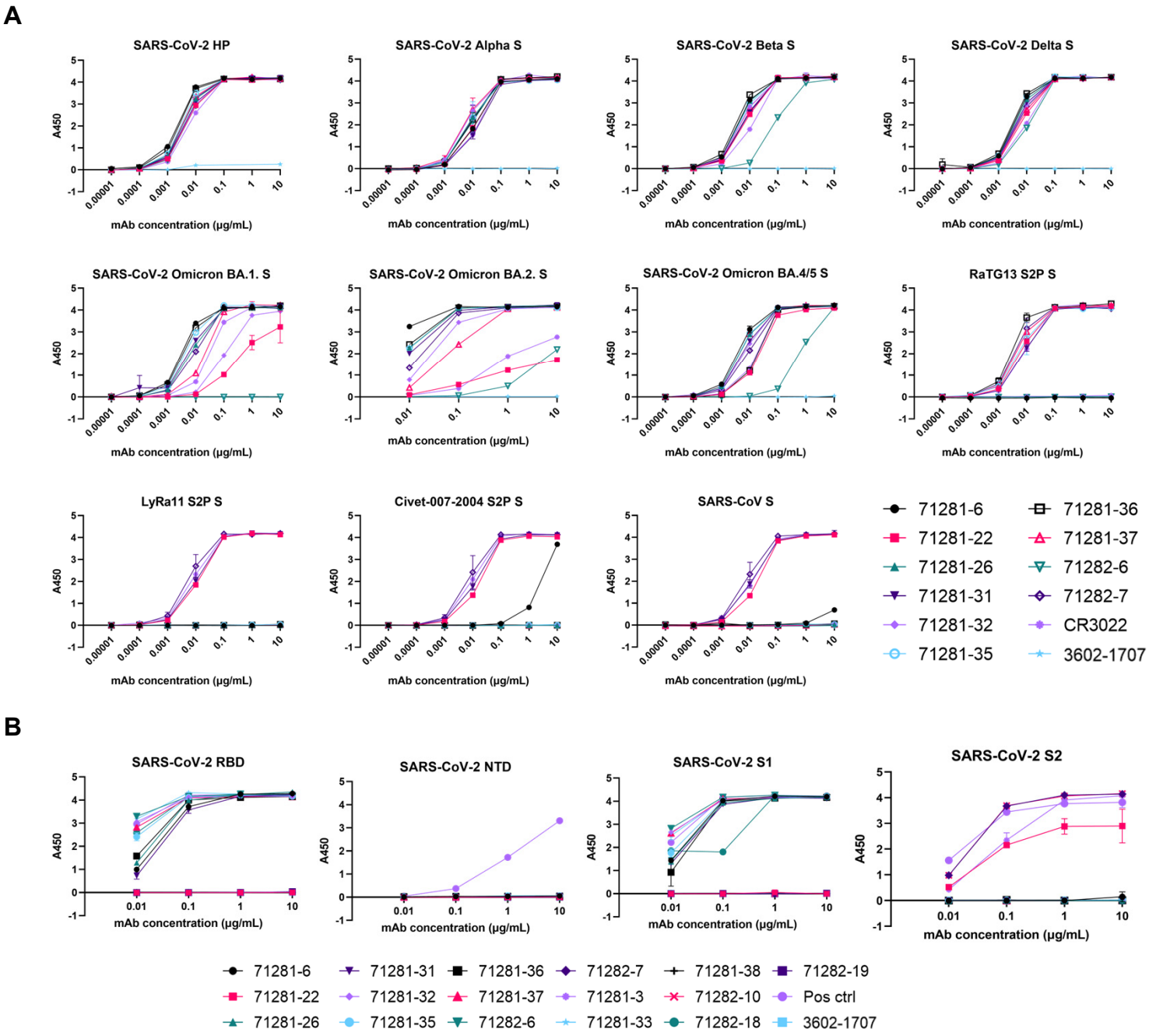


Figure S2. ELISA curves, Related to Figures 1 and 3. (A) Antibodies were tested for binding to a panel of CoV antigens by ELISA. The SARS-CoV-2/SARS-CoV cross reactive antibody CR3022 was used as a positive control. The influenza HA reactive antibody 3602-1707 was used as a negative control. **(B)** Antibodies were tested for binding to different subdomains of the SARS-CoV-2 spike glycoprotein (RBD, NTD, S1, and S2). The positive control for RBD and S1 was CR3022, the positive control for NTD was a known NTD binding antibody 5317-9, and the positive control for the S2 domain was an S2-reactive antibody 54043-5. ELISAs were performed in technical duplicates with at least 2 biological duplicates. Data are represented as means ± SEMs.

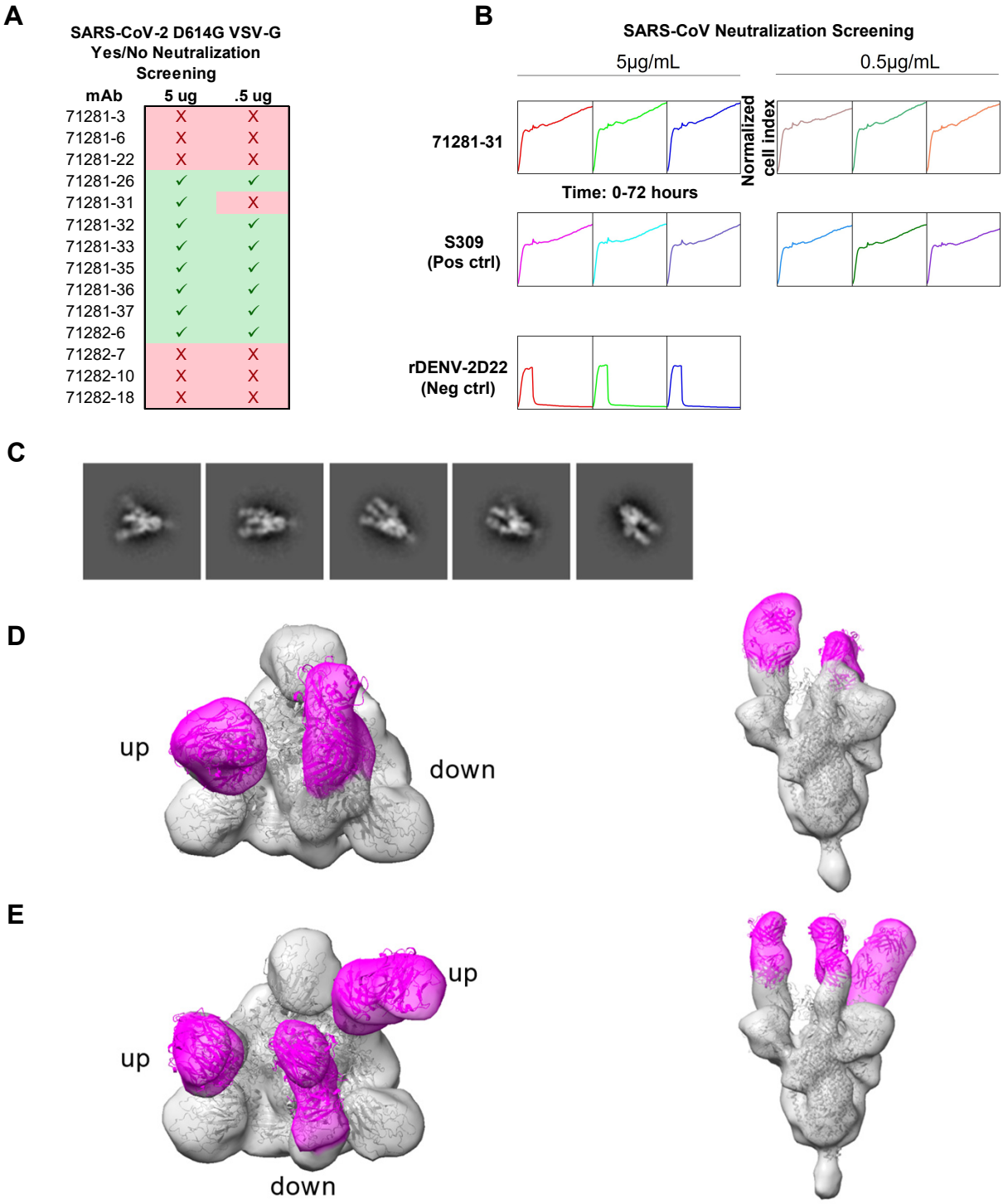


Figure S3. (A-B) Additional neutralization data for the SARS-CoV-2 antibodies from children and (C-E) nsEM of SARS-CoV-2 spike protein in complex with Fab 71281-33, Related to Figures 2 and 3. (A) VSV-G SARS-CoV-2 neutralization screening results for antibodies at two concentrations (0.5 µg/mL and 5 µg/mL). All antibodies that had a curve represented by the negative control rDENV-2D22 in panel **(B)** were considered negative and are denoted as a red X. All antibodies that had a curve represented by the positive neutralizing control, S309, were considered positive and denoted with a green check mark. **(B)** VSV-G SARS-CoV neutralization screenings were performed for antibody 71281-31 at two concentrations (0.5 µg/mL and 5 µg/mL). The data for 71281-31 is shown on the first row, positive control S309 on the second row, and negative control rDENV-2D22 on the 3rd in triplicate. For each plot, the X axis represents time from 0-72 hours, and the Y axis represents the normalized cell index. **(C)** Images of 2D classes of the complex. Box size 128 pixel (4.36 A/pix). **(D)** 3D map/model of spike (PDB 7XIW) complex with 2 Fab (PDB 12E8) (top and side view). One RBD is in the up position and the second is in the down position. Map color gray for spike and magenta for Fab. **(E)** 3D map/model of spike (PDB 7XIW) complex with 3 Fab (PDB 12E8) (top and side view). Two RBDs are in the up position and one is in the down position. Map color is gray for spike and magenta for Fab.

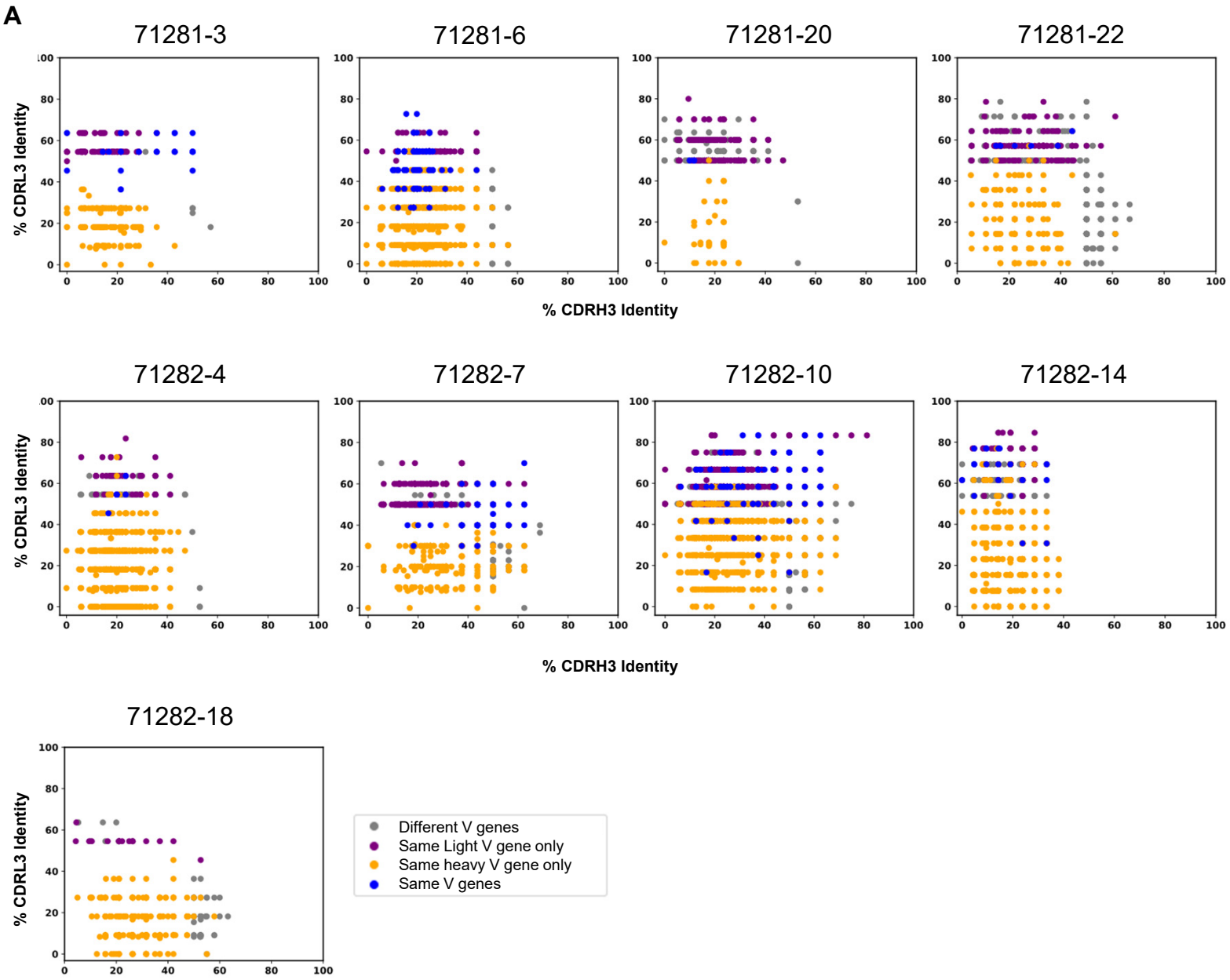


Figure S4. Public antibody analysis for non-neutralizing SARS-CoV-2 spike-binding antibodies, Related to Figure 4. (A) For each antibody from children (separate plot), shown are previously published adult antibodies (dots), with the respective CDRH3 (x-axis) and CDRL3 (y-axis) identity, colored according to V-gene usage: blue if both the VH and VL of the given child and adult antibodies match, orange if only the VH match, purple if only the VL match, and grey if neither match but at least one of the CDRH3 and CDRL3 have >50% sequence identity for the child vs. adult antibody.