

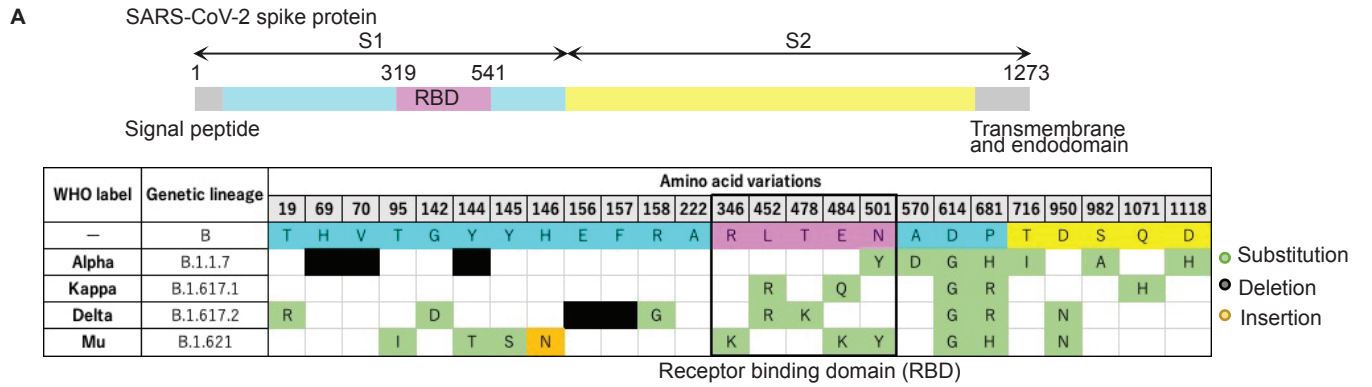
Supplemental Table 1. NT50 value against each variant for all patients

		Vaccinated cohort (30 dyads)										Infected cohort (30 dyads)									
		Maternal					Cord					Maternal					Cord				
		WT	Alpha	Kappa	Delta	Mu	WT	Alpha	Kappa	Delta	Mu	WT	Alpha	Kappa	Delta	Mu	WT	Alpha	Kappa	Delta	Mu
1 st	127	106	81	24	28	125	177	197	50	34	140	137	144	80	108	206	171	77	116	42	
	66	15	26	15	15	16	19	35	15	128	15	15	15	15	15	15	15	15	15	15	
	25	48	45	15	48	57	82	69	15	42	114	145	135	30	15	85	149	92	21	15	
	104	117	15	15	59	124	253	51	15	15	45	107	87	15	173	115	187	60	44	49	
	15	65	15	15	15	15	15	26	N/A	N/A	88	121	78	N/A	46	178	299	93	N/A	N/A	
2 nd	55	39	15	55	15	44	59	15	93	15	30	31	15	15	96	15	37	34	15	346	
	121	108	149	93	15	497	152	482	725	100	265	210	215	1192	65	1111	214	1122	2846	18	
	279	477	163	127	15	145	379	61	106	15	33	63	15	31	15	27	15	15	42	15	
	68	108	156	123	41	215	194	183	107	82	165	297	147	79	37	154	241	364	51	103	
	322	385	66	46	40	257	374	87	98	52	133	88	77	57	63	75	148	42	23	25	
	15	30	40	15	15	18	40	43	15	65	551	1383	318	1165	21	825	1839	250	425	15	
	206	275	110	89	219	1850	1850	217	207	269	838	838	188	327	112	332	332	313	154	N/A	
	638	674	294	139	205	877	644	366	167	640	479	640	526	98	106	826	1544	892	154	188	
	159	152	128	108	19	138	251	106	50	20	132	108	102	22	175	291	163	88	48	38	
	339	818	86	19	52	485	1100	131	78	287	136	325	125	15	15	215	428	110	15	15	
	71	28	256	111	106	194	139	81	489	250	170	142	267	55	100	105	87	138	15	N/A	
	643	380	200	110	47	1746	1145	795	261	213	121	228	142	38	69	185	272	306	59	46	
3 rd	328	151	175	162	165	271	220	467	968	83	494	212	217	262	204	107	249	160	114	202	
	300	180	92	87	77	212	62	104	17	39	1275	982	1093	2532	359	1281	1367	736	663	64	
	144	57	62	41	71	439	139	160	315	136	304	152	80	680	47	203	95	79	262	200	
	733	1116	285	463	148	453	1025	188	530	106	86	186	75	53	15	51	102	45	16	15	
	121	78	247	44	15	132	153	118	219	15	43	234	177	57	15	29	431	598	15	15	
	369	471	260	79	268	342	467	221	102	67	199	104	136	75	N/A	85	155	147	33	846	
	474	209	751	156	19	639	298	503	246	230	290	255	427	154	182	19	22	32	31	104	
	266	282	161	94	217	428	471	269	307	98	591	1629	492	174	234	414	1337	388	171	405	
	1229	1819	910	621	547	1071	824	568	550	219	466	183	481	N/A	45	245	311	163	N/A	N/A	
	926	2281	536	275	147	574	425	242	161	148	76	152	30	15	21	26	61	40	22	175	
	1431	1203	471	348	240	682	399	390	324	258	148	80	96	135	15	97	110	60	20	17	
	1820	4419	527	892	104	1584	5749	690	1340	211	110	128	61	32	29	87	166	19	15	16	
4416	1026	859	907	425	2646	1488	585	1530	196	118	82	39	1342	N/A	169	119	36	N/A	128		

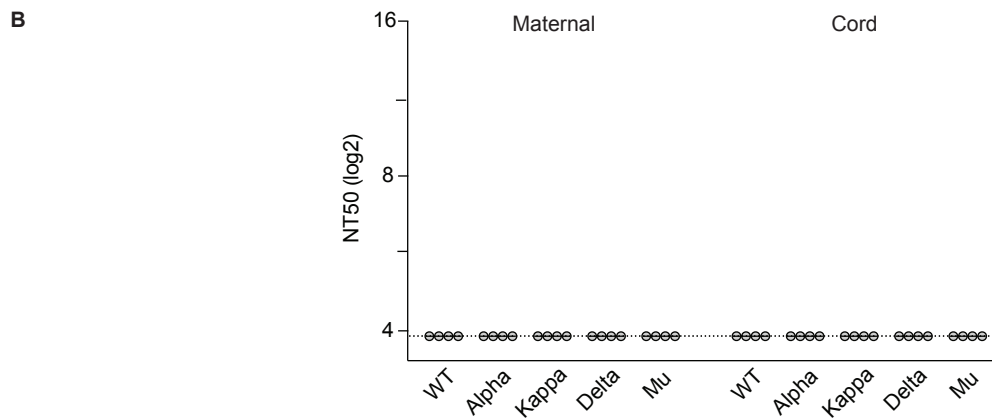
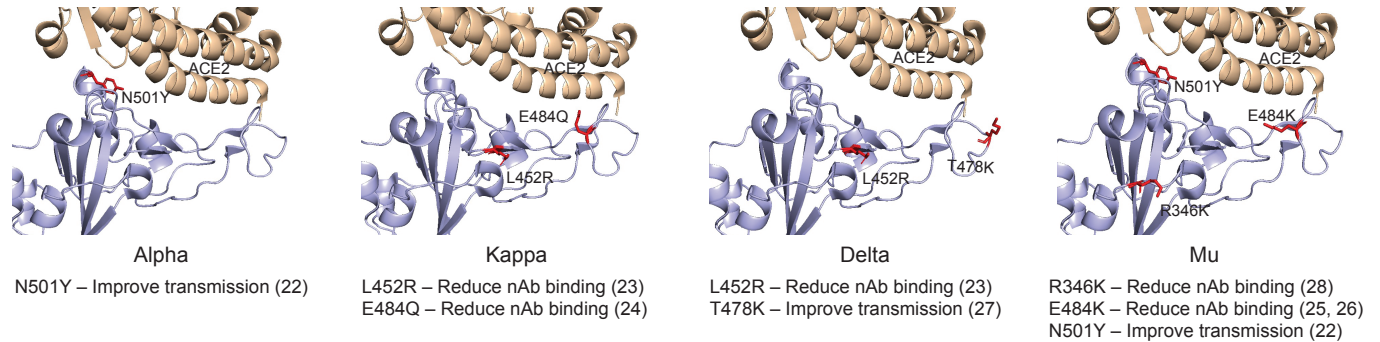
NT50, neutralizing titer-50; WT, wild type; N/A, not available.

1st, 2nd and 3rd refer to trimesters.

Supplemental Figure 1

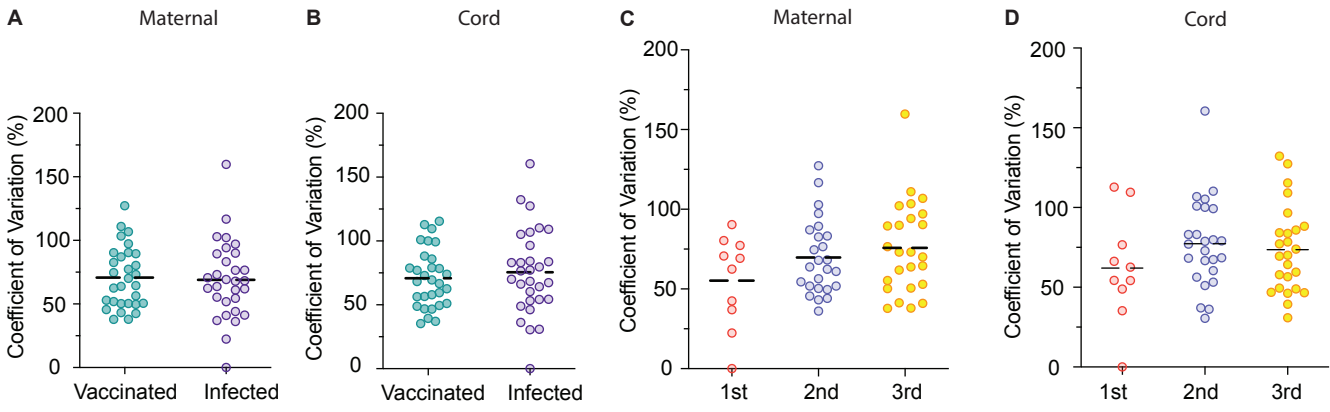


Positions of amino acid substitutions in the spike RBD



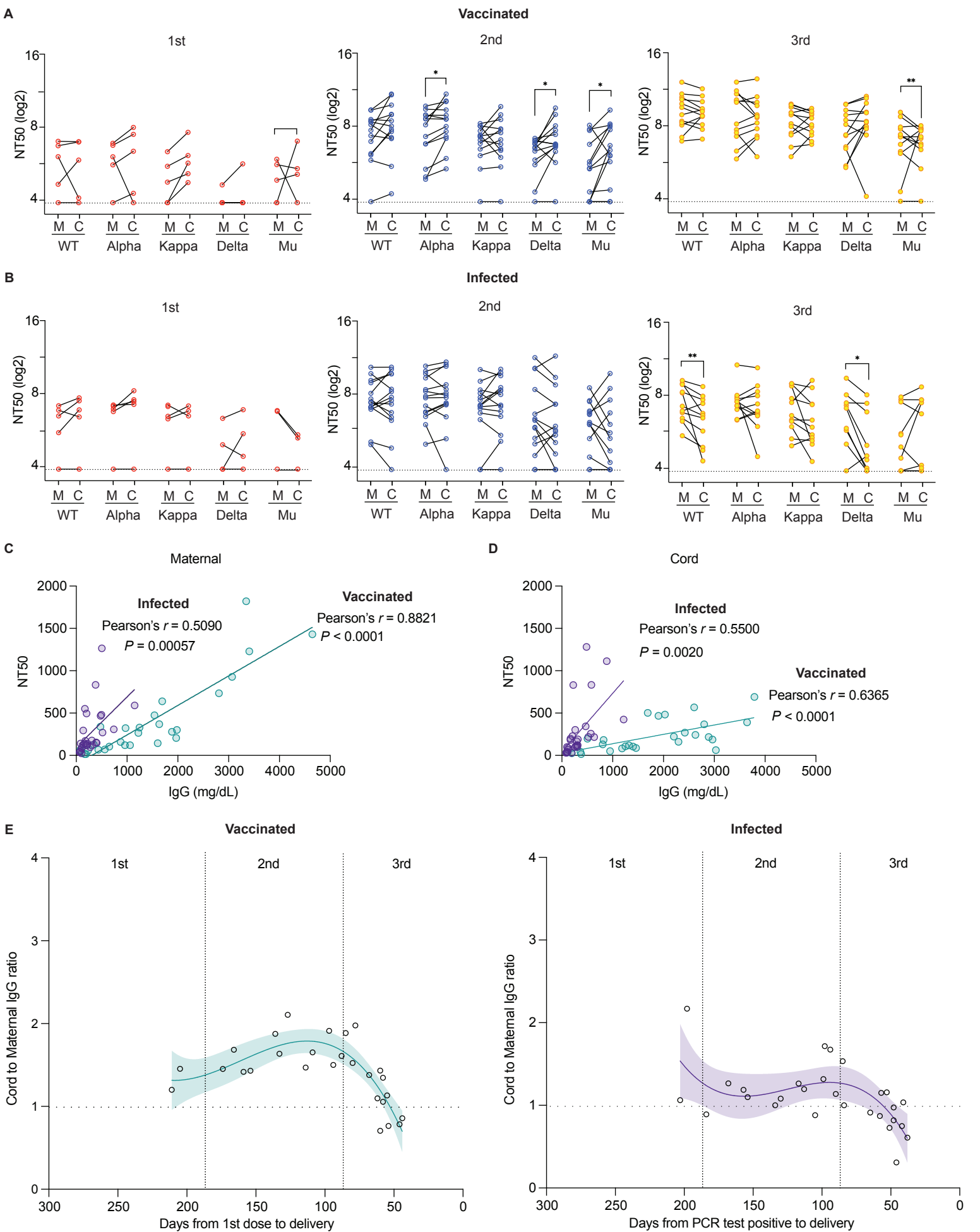
Supplemental Figure 1. (A) Positions of mutated amino acid residues in the Spike proteins from four variants. The residues L452R, T478K, R346K, E484K, and N501Y are labeled in red. The crystal structure of SARS-CoV-2 spike RBD and ACE2 (PDB: 6M0J) (1) was used as the template. All structure figures were generated with PyMol (2). **(B)** NT50 values for four dyads who were neither vaccinated nor infected and delivered in the same period were included as negative controls. The dotted line indicates the cut-off threshold of this assay.

Supplemental Figure 2



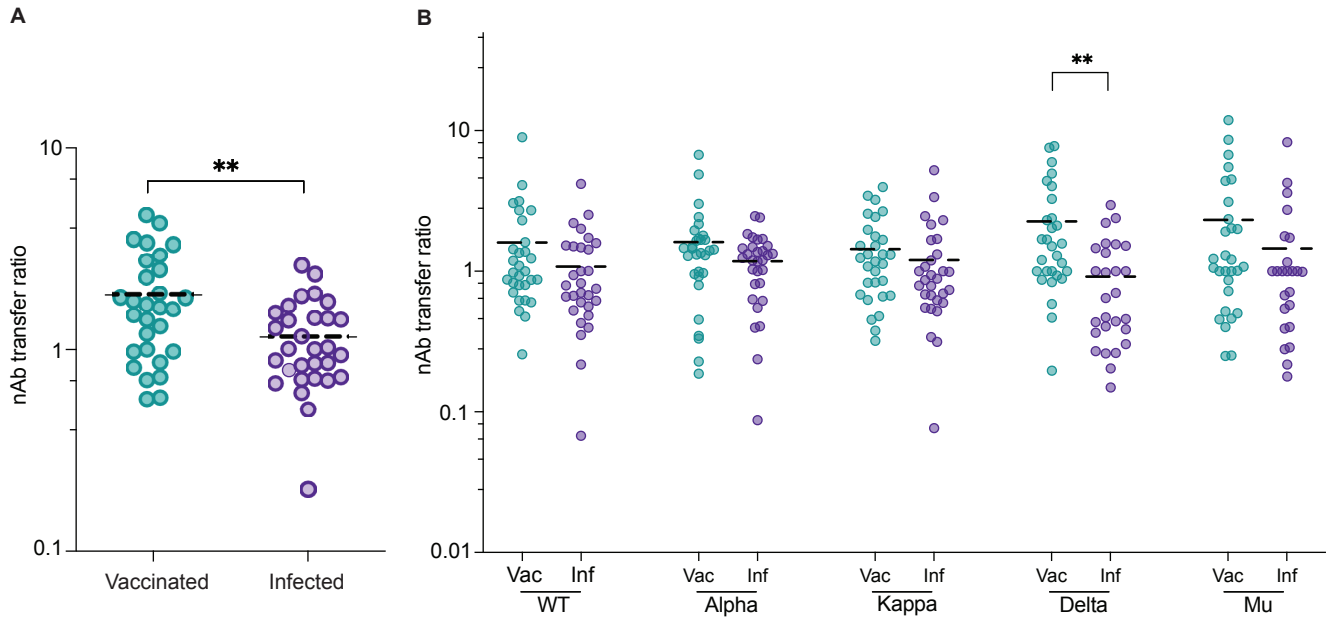
Supplemental Figure 2. Maternal blood (A) and cord blood (B) coefficient of variation (CV) values were compared between vaccinated and infected cohorts by multiple linear regression. Maternal blood (C) and cord blood (D) CV values were compared by trimesters. Dashed black bars represent the mean of CV values.

Supplemental Figure 3



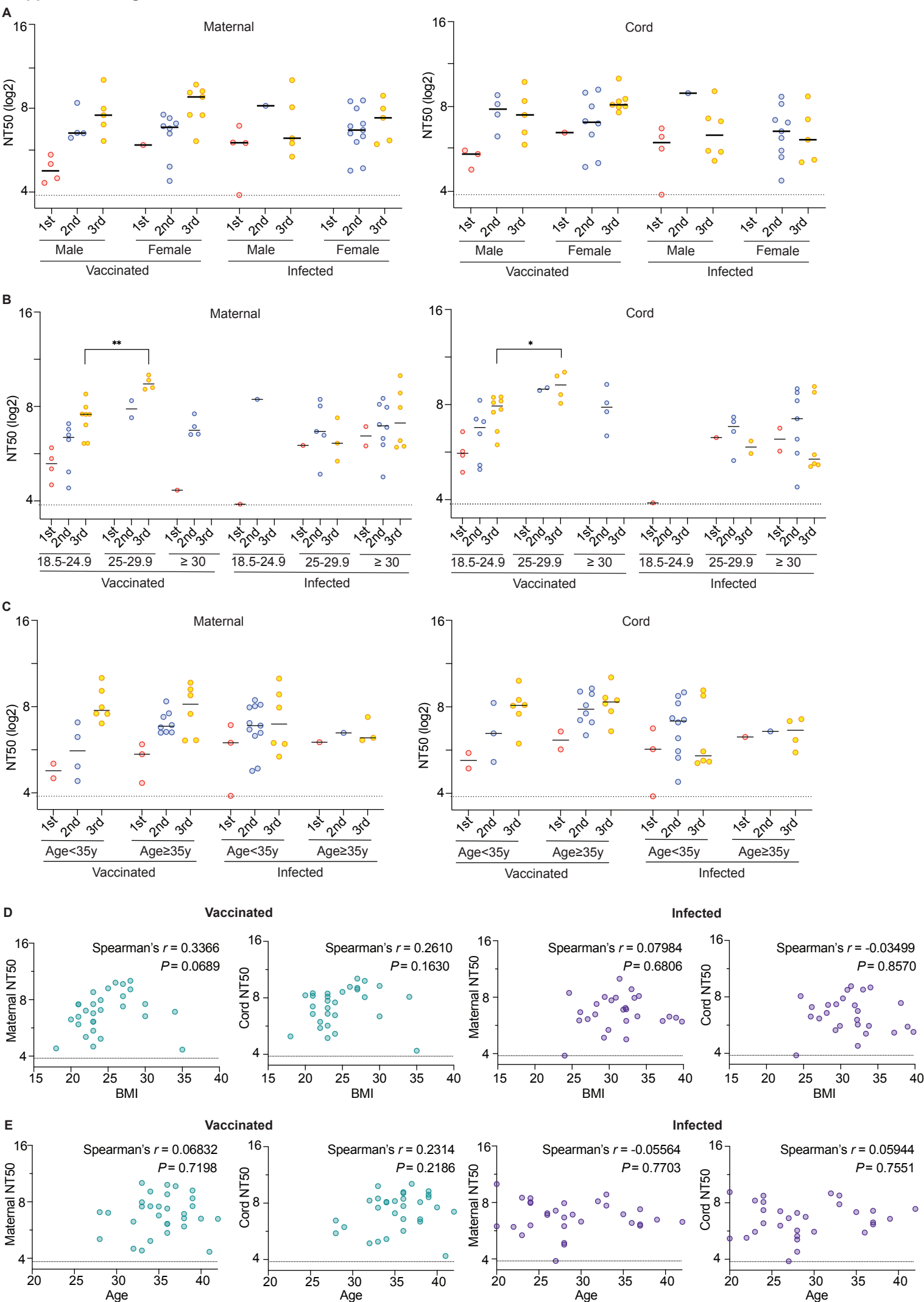
Supplemental Figure 3. (A, B) Comparison of neutralizing antibody transfer by trimester and by five strains. Dot plots represent NT50 values of nAb against each variant in maternal or cord plasma. (C, D) Correlation between NT50 values and the IgG values were calculated with Pearson correlation coefficient in maternal (C) and cord (D) plasma samples. (E) Cord to maternal IgG antibody transfer ratios were plotted using IgG values tested by the Pylon 3D automated immunoassay system in order of the timing on the first vaccine dose (left) or the first positive PCR result (right). * $P < 0.05$; ** $P < 0.01$ (Wilcoxon signed rank test).

Supplemental Figure 4



Supplemental Figure 4. (A) Transfer ratios (TRs) for all five strains were compared between vaccinated and infected cohorts. (B) TRs were stratified by SARS-CoV-2 strains and compared between vaccinated and infected cohorts. Dashed black bars represent the mean of TR values. Vac, vaccinated cohort; Inf, infected cohort. **P < 0.01 (Pearson's rank test).

Supplemental Figure 5



Supplemental Figure 5. Neutralizing activity and clinical factors. Maternal and cord NT50 values were compared in vaccinated versus infected mothers, stratified by trimester of exposure and by (A) Fetal sex, (B) Maternal Body Mass Index (BMI) and (C) Maternal age. The BMI at the time of delivery was divided into three groups: 18.5 to 24.9, 25 to 29.9, and 30 or more and compared. Maternal age was divided into two groups: older than 35 years and younger than 35 years. Dot plots represent mean NT50 against variants. Black lines indicate median. Trimester of exposure is indicated by color (Red, first trimester; blue, second trimester; yellow, third trimester). **P < 0.01; (Mann-Whitney test or Friedman's test with Dunn's multiple comparisons). (D, E) Correlations between NT50 values and maternal BMI (D) and maternal age (E) were calculated with Spearman's rank correlation in maternal and cord plasma from vaccinated or infected groups, separately.