
Supplementary information

mRNA booster immunization elicits potent neutralizing serum activity against the SARS-CoV-2 Omicron variant

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Supplementary Table 1. Study participant demographics.

a

Vaccinated cohort	
Participants - <i>n</i>	30
Gender	
Male - <i>n</i> (%)	13 (43%)
Female - <i>n</i> (%)	17 (57%)
Age - median years (range)	49 (27-78)
Reported comorbidities	
Cardiovascular disease - <i>n</i> (%)	10 (33.3%)
Respiratory disease - <i>n</i> (%)	4 (13.3%)
Rheumatoid arthritis - <i>n</i> (%)	2 (6.6%)
Diabetes - <i>n</i> (%)	1 (3.3%)
Polymyalgia rheumatica - <i>n</i> (%)	1 (3.3%)
Autoimmune hepatitis - <i>n</i> (%)	1 (3.3%)
Body mass index - median (IQR, range) *	26.0 (24.2-29.6; 18.8-37.2)
Vaccination received	BNT162b2
Sampling time point - median weeks (IQR; range)	
Early (after second dose)	3.9 (3.7-4.2; 2.9-6.0)
Late (after second dose)	21.0 (20.3-22.9; 18.7-31.1)
Booster (after second dose)	40.6 (36.8-41.8; 29.7-44.0)
Time between second and third dose - median weeks (IQR; range)	36.6 (32.2-38.5; 26.9-40.9)

* available for 29 participants.

b

Convalescent cohort	
Participants - <i>n</i>	30
Gender	
Male - <i>n</i> (%)	14 (47%)
Female - <i>n</i> (%)	16 (53%)
Age - median years (range)	52 (22-68)
Reported comorbidities	
Arterial hypertension - <i>n</i> (%)	3 (10%)
Tumor - <i>n</i> (%)	3 (10%)
Asthma - <i>n</i> (%)	3 (10%)
Diabetes - <i>n</i> (%)	1 (3.3%)
Multiple sclerosis - <i>n</i> (%)	1 (3.3%)
Coagulation disorder - <i>n</i> (%)	1 (3.3%)
Time period of SARS-CoV-2 infection	February - March 2020
COVID-19 severity	
Mild symptoms - <i>n</i> (%)	29 (97%)
Hospitalized - <i>n</i> (%)	1 (3%)
Vaccination received	BNT162b2
Sampling time point - median weeks (IQR; range)	
Early (after disease onset)	6.0 (4.7-7.0; 3.6-10)
Late (after disease onset)	52.9 (51.4-56.8; 49.4-59.4)
Hybrid (after disease onset)	66.8 (65.3-68.4; 62.4-71.4)
Time between infection and vaccination - median weeks (IQR; range)	60.9 (58.9-61.8; 52.4-66.1)

Supplementary Table 2. Serum neutralizing activity against Wu01 and Omicron.

Vaccinated cohort							Convalescent cohort						
Study ID	Wu01 Serum ID ₅₀			Omicron Serum ID ₅₀			Study ID	Wu01 Serum ID ₅₀			Omicron Serum ID ₅₀		
	Early	Late	Boost	Early	Late	Boost		Early	Late	Hybrid	Early	Late	Hybrid
Pt. #001	41	<10	5,079	<10	<10	324	R014	330	<10	5,178	<10	<10	141
Pt. #002	37	14	2,537	<10	<10	624	R047	2,927	566	8,932	<10	<10	1,657
Pt. #003	293	28	2,545	<10	<10	516	R056	1,355	88	4,137	<10	<10	74
Pt. #004	242	75	1,849	<10	<10	2,410	R082	3,144	108	7,948	<10	<10	2,188
Pt. #005	264	41	7,706	<10	<10	2,907	R090	623	119	8,650	<10	<10	4,528
Pt. #006	1,749	339	11,807	12	<10	2,872	R102	862	90	27,730	<10	<10	3,187
Pt. #007	689	231	6,149	<10	11	1,485	R137	204	141	8,581	<10	<10	430
Pt. #008	588	267	9,734	<10	<10	1,690	R164	669	70	5,818	<10	<10	725
Pt. #009	254	115	2,948	<10	<10	756	R212	217	80	5,347	<10	<10	343
Pt. #010	1,478	467	22,912	28	<10	881	R238	731	140	14,687	87	76	11,001
Pt. #011	1,342	372	22,833	33	37	5,510	R244	2,505	119	24,552	<10	<10	5,843
Pt. #012	726	94	6,211	<10	<10	1,148	R247	1,032	142	13,058	<10	14	2,034
Pt. #013	963	430	6,909	35	44	1,741	R256	8,735	397	23,738	<10	31	16,570
Pt. #014	3,336	817	11,718	114	21	3,050	R257	394	353	9,332	<10	20	907
Pt. #015	1,006	165	5,567	15	<10	428	R285	264	75	3,450	<10	<10	3,888
Pt. #016	521	101	10,154	<10	<10	2,484	R289	217	153	7,964	<10	<10	1,676
Pt. #017	823	54	3,077	<10	<10	1,185	R297	547	89	30,227	<10	<10	3,397
Pt. #018	1,128	265	8,731	<10	11	924	R299	73	30	5,709	<10	<10	1,233
Pt. #019	1,008	239	6,461	<10	<10	601	R317	438	133	9,163	<10	<10	2,205
Pt. #020	1,334	225	6,269	<10	14	450	R399	76	26	2,338	<10	<10	474
Pt. #021	695	535	11,128	<10	36	2,645	R401	59	38	4,610	<10	<10	1,278
Pt. #022	1,600	326	19,819	49	134	7,851	R434	473	137	5,264	<10	<10	430
Pt. #023	294	227	7,643	<10	<10	868	R440	1,250	381	21,847	<10	11	1,375
Pt. #024	311	98	11,463	23	53	3,514	R458	171	14	2,553	<10	<10	874
Pt. #025	474	160	3,768	<10	<10	1,312	R484*	971	289	15,642	17	34	8,297
Pt. #026	551	327	6,078	<10	<10	1,571	R491	421	99	7,680	<10	17	806
Pt. #027	831	112	6,317	10	<10	625	R527	37	18	2,979	<10	<10	400
Pt. #028	408	118	7,307	<10	23	1,454	R715	91	55	6,999	<10	<10	2,381
Pt. #029	270	93	3,676	<10	21	2,239	R749	11,008	95	4,579	79	31	8,028
Pt. #030	352	68	609	<10	<10	21	R849	219	160	7,640	<10	11	4,546

Serum ID₅₀ >2,500 250-2,500 50-250 10-50 <10

* Participant R484 received two BNT162b2 vaccinations three weeks apart.