SUPPLEMENTAL MATERIAL

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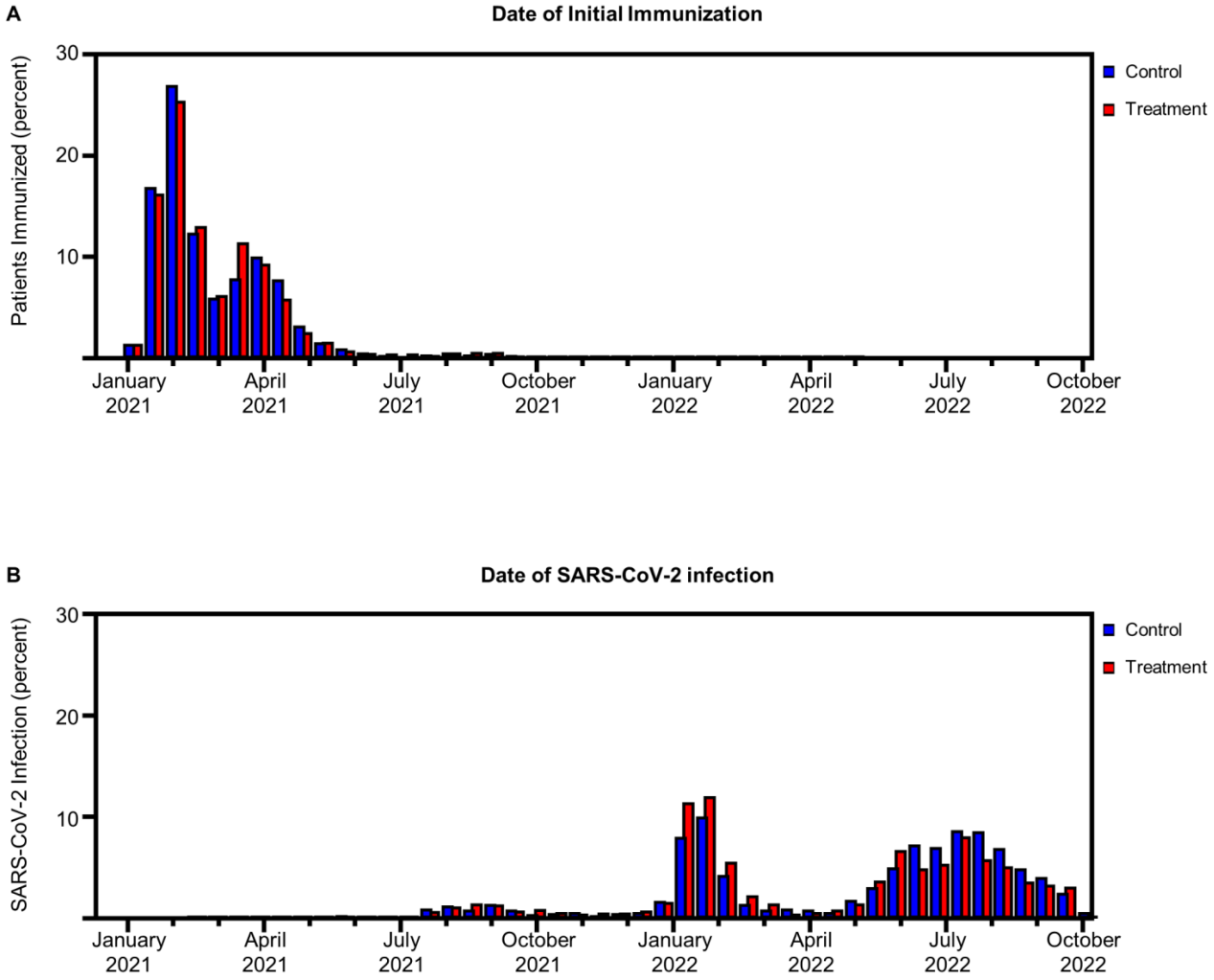
Supplemental Figure 1

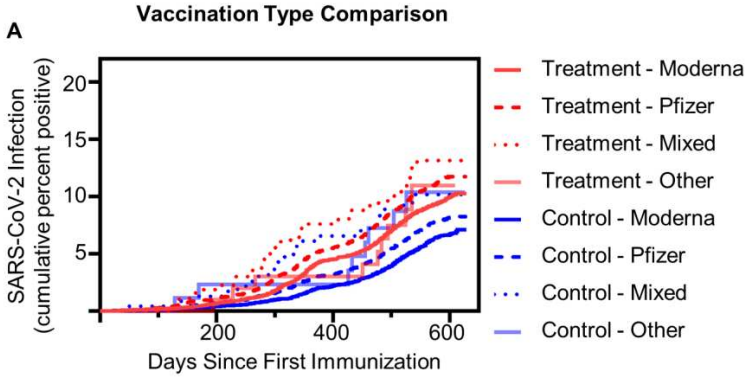


Supplemental Figure 1. WHO ATC L medicine treated and control patients were immunized and tested positive at similar temporal pattern.

(A) Frequency distribution of date of initial immunization of all immunosuppressed (n=13362) and matched immunocompetent (n=13362) patients.

(B) Frequency distribution of date of SARS-CoV-2 infection of all immunosuppressed (n=1334) and matched immunocompetent (n=907) patients.

Supplemental Figure 2

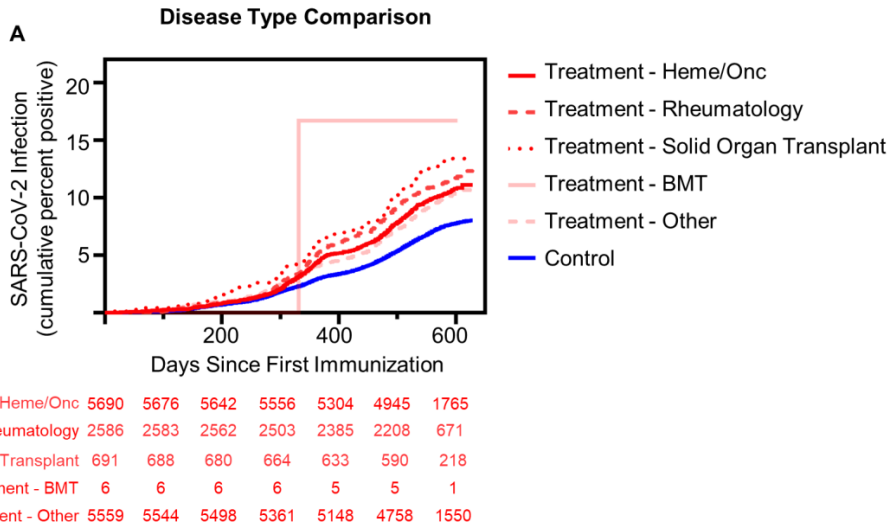


Treatment - Moderna	6852	6838	6801	6692	6464	6119	2356
Treatment - Pfizer	6145	6128	6073	5923	5609	5096	1464
Treatment - Mixed	265	265	260	248	233	209	10
Treatment - Other	100	100	99	95	93	78	3
Control - Moderna	6941	6935	6910	6848	6719	6443	2661
Control - Pfizer	6104	6091	6058	5988	5748	5288	1450
Control - Mixed	231	230	228	220	206	187	13
Control - Other	86	86	84	83	81	63	2

Supplemental Figure 2. Treated patients remained at increased risk of SARS-CoV-2 infection regardless of vaccine manufacturer.

A) Effect of initial immunization type (first two doses) on SARS-CoV-2 infection cumulative incidence post-immunization in treated and control patients (Treated: Moderna n=6852, Pfizer n=6145, Mixed n=265, Other n=100; Control: Moderna n=6941, Pfizer n=6104, Mixed n=231, Other n=86). Mixed is defined as having one Moderna and one Pfizer immunization in the first two immunizations of COVID-19 immunization series. Other is defined as having not Moderna nor Pfizer in first two immunizations of COVID-19 immunization series (for example, Janssen).

Supplemental Figure 3

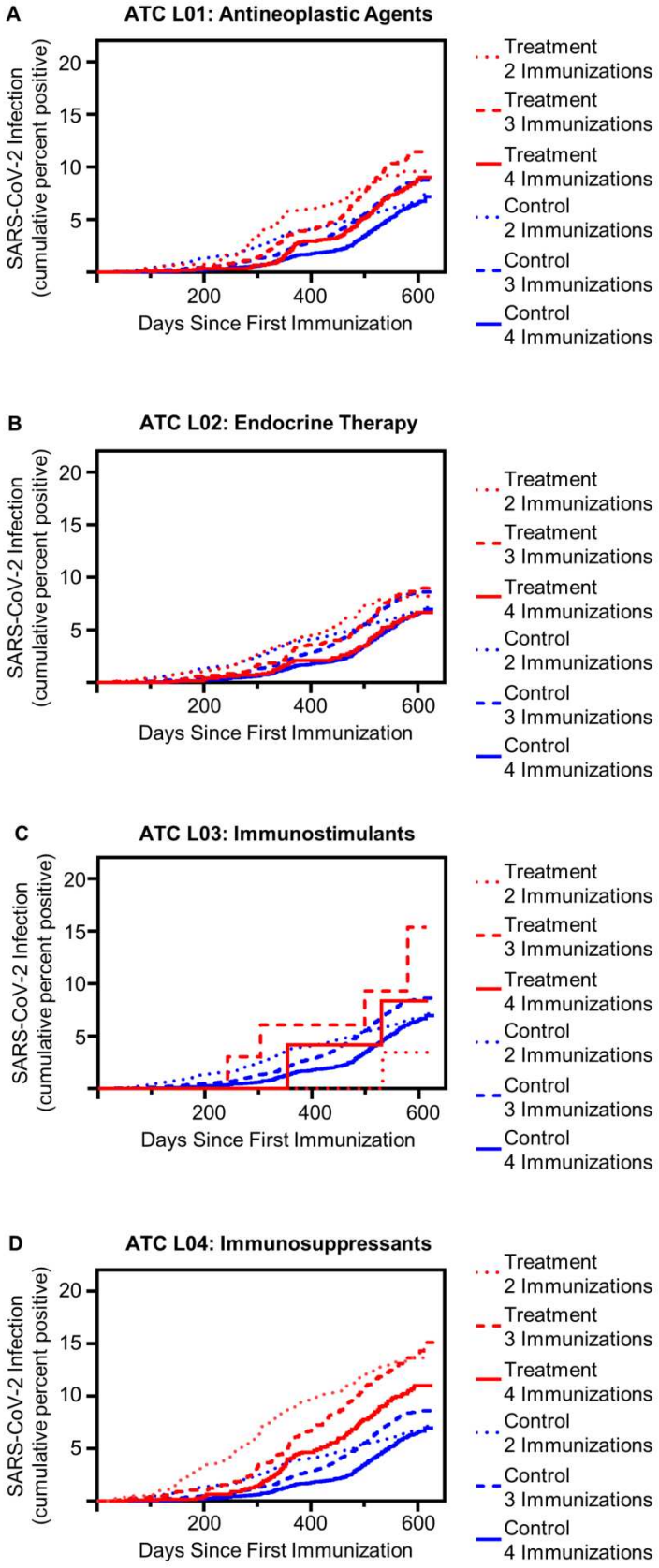


Treatment - Heme/Onc	5690	5676	5642	5556	5304	4945	1765
Treatment - Rheumatology	2586	2583	2562	2503	2385	2208	671
Treatment - Solid Organ Transplant	691	688	680	664	633	590	218
Treatment - BMT	6	6	6	6	5	5	1
Treatment - Other	5559	5544	5498	5361	5148	4758	1550

Supplemental Figure 3. Treated patients remained at increased risk of SARS-CoV-2 infection across immunodeficiency disease states.

A) Effect of immunization type on SARS-CoV-2 infection cumulative incidence post-immunization in treated and control patients. Disease states were identified by the following methodology between the timeframe of July 1, 2020, through June 30, 2021 to identify patients with a disease-related encounter within 6 months of initial immunization: Hematology/oncology status was determined by cancer-related diagnostic encounters, while bone marrow transplant recipients were identified through transplant procedures. Rheumatology and solid organ transplant statuses were ascertained via respective departmental outpatient visits. Patients presenting with overlapping criteria, such as a cancer diagnosis and rheumatology visits, were recorded in multiple categories. Those treated patients not aligning with these specified categories were classified as “treatment – other.” Control represents the entire population of matched, control patients not prescribed treatment medications (n=13,362).

Supplemental Figure 4



Supplemental Figure 4. The effectiveness of multiple immunizations in reducing risk of SARS-CoV-2 infection after immunization varies by antineoplastic and immunomodulating class.

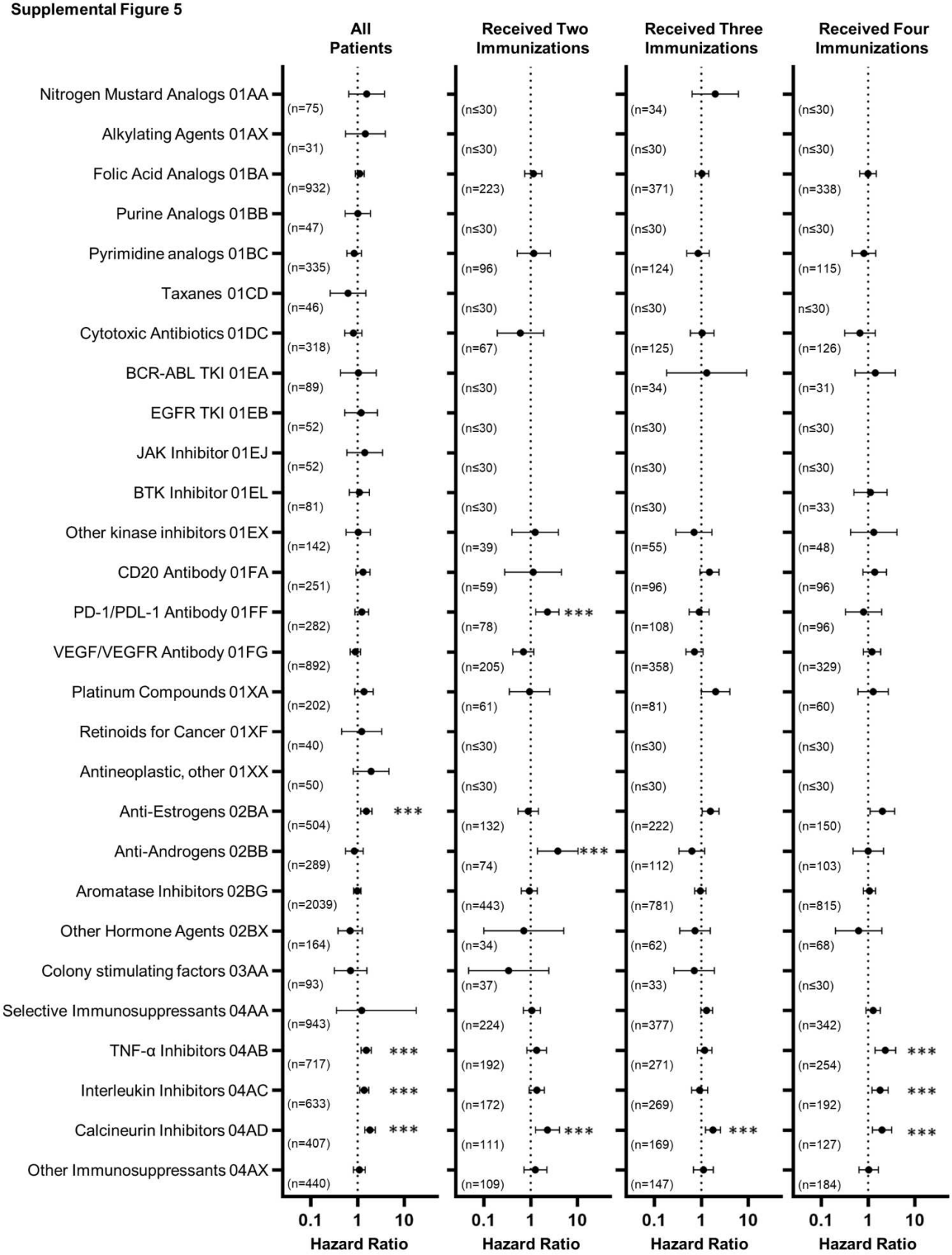
(A) Effect of multiple immunizations on SARS-CoV-2 infection cumulative incidence post-immunization in immunosuppressed patients prescribed L01 antineoplastic agents, patients prescribed multiple medications excluded from analysis (Immunosuppressed: 2 immunizations n=1044, 3 immunizations n=1587, 4 immunizations n=1493; Immunocompetent: 2 immunizations n=3245, 3 immunizations n=5352, 4 immunizations n=4756).

(B) Effect of multiple immunizations on SARS-CoV-2 infection cumulative incidence post-immunization in immunosuppressed patients prescribed L02 endocrine therapy, patients prescribed multiple medications excluded from analysis (Immunosuppressed: 2 immunizations n=683, 3 immunizations n=1178, 4 immunizations n=1138; Immunocompetent: 2 immunizations n=3245, 3 immunizations n=5352, 4 immunizations n=4756).

(C) Effect of multiple immunizations on SARS-CoV-2 infection cumulative incidence post-immunization in immunosuppressed patients prescribed L03 Immunostimulants, patients prescribed multiple medications excluded from analysis (Immunosuppressed: 2 immunizations n=37, 3 immunizations n=33, 4 immunizations n=34; Immunocompetent: 2 immunizations n=3245, 3 immunizations n=5352, 4 immunizations n=4756).

(D) Effect of multiple immunizations on SARS-CoV-2 infection cumulative incidence post-immunization in immunosuppressed patients prescribed L04 Immunosuppressants, patients prescribed multiple medications excluded from analysis (Immunosuppressed: 2 immunizations n=808, 3 immunizations n=1233, 4 immunizations n=1099; Immunocompetent: 2 immunizations n=3245, 3 immunizations n=5352, 4 immunizations n=4756).

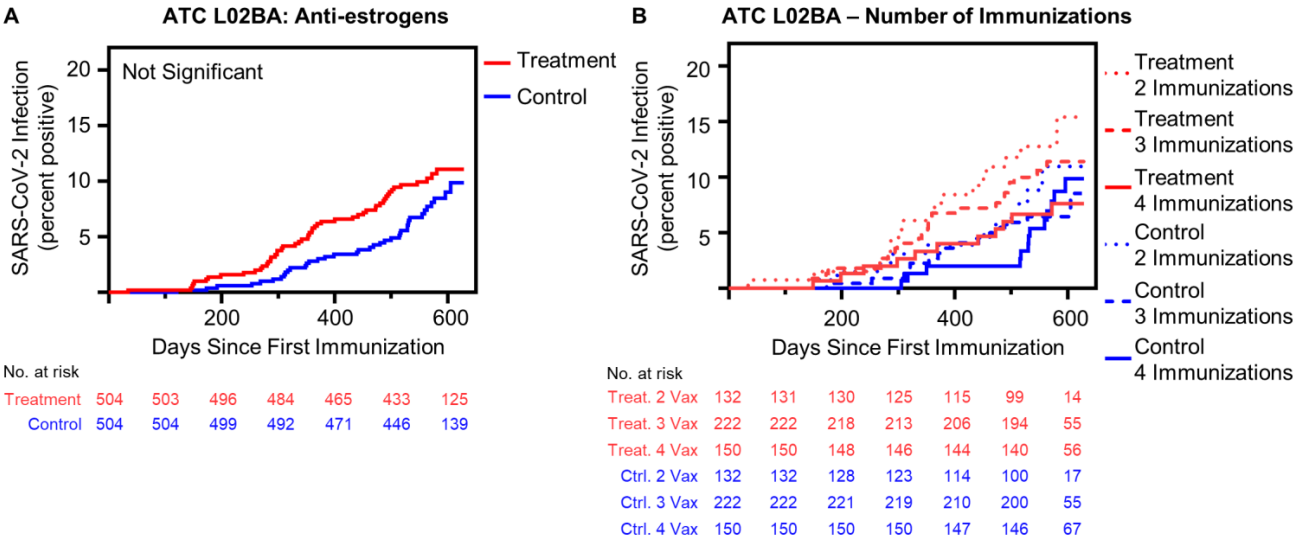
Supplemental Figure 5



Supplemental Figure 5. Subcategories of antineoplastic and immunomodulating agents demonstrate therapeutic class effect on risk of post-immunization SARS-CoV-2 infection.

Forest plot demonstrating therapeutic subcategory effects by hazard ratio of post-immunization SARS-CoV-2 infection relative to immunocompetent cohort with matched immunizations. Subcategories with less than 30 patients in immunosuppressed cohort excluded from analysis. ***p<0.001.

Supplemental Figure 6

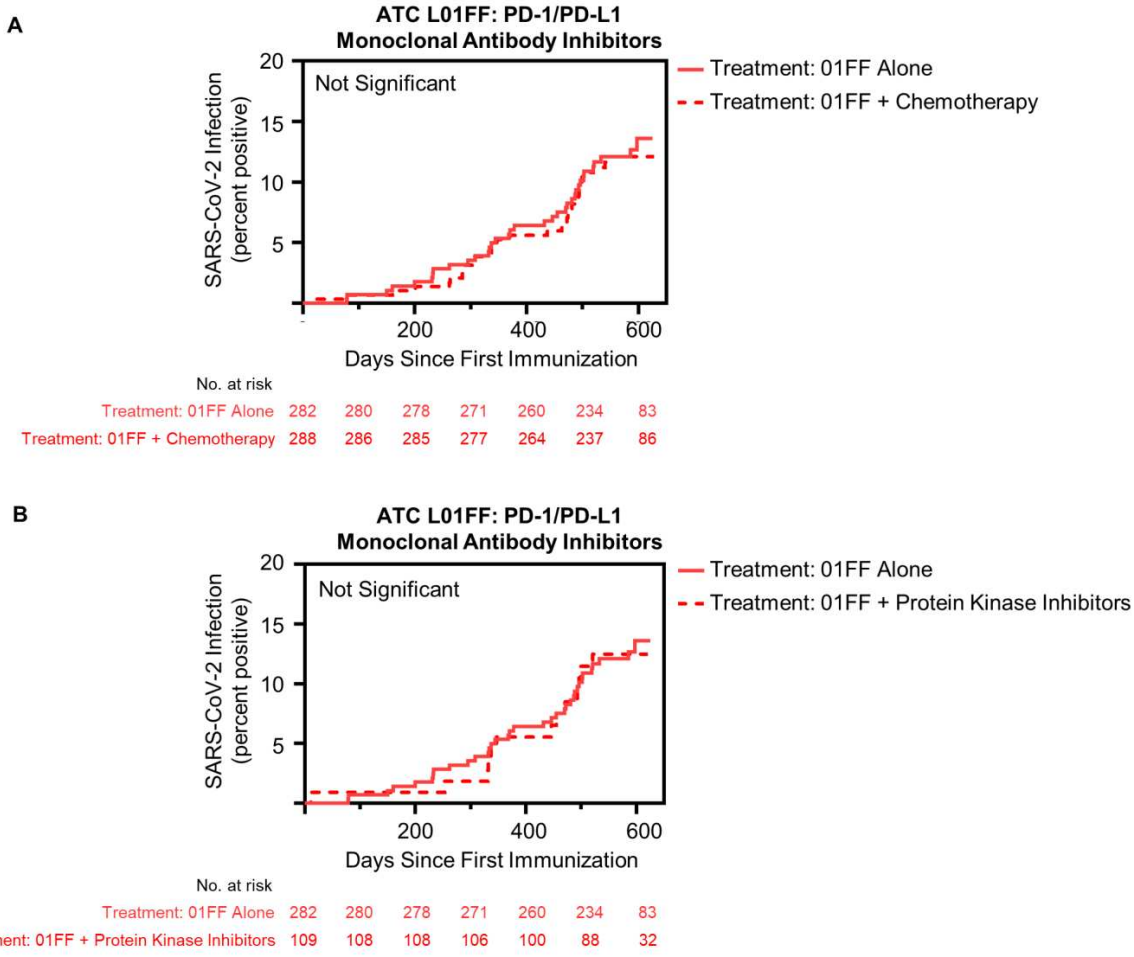


Supplemental Figure 6. Anti-estrogens are not associated with increased risk of post-immunization SARS-CoV-2 infection

(A) Cumulative incidence of SARS-CoV-2 infection following initial immunization in all patients prescribed L02BA anti-estrogens (n=504) compared to matched control patients (n=504) ($p>0.05$ by Log-rank).

(B) Effect of multiple immunizations on SARS-CoV-2 infection cumulative incidence following initial immunization in patients prescribed L02BA anti-estrogens compared to matched control patients (Immunosuppressed: 2 immunizations n=132, 3 immunizations n=222, 4 immunizations n=150; Immunocompetent: 2 immunizations n=132, 3 immunizations n=222, 4 immunizations n=150).

Supplemental Figure 7

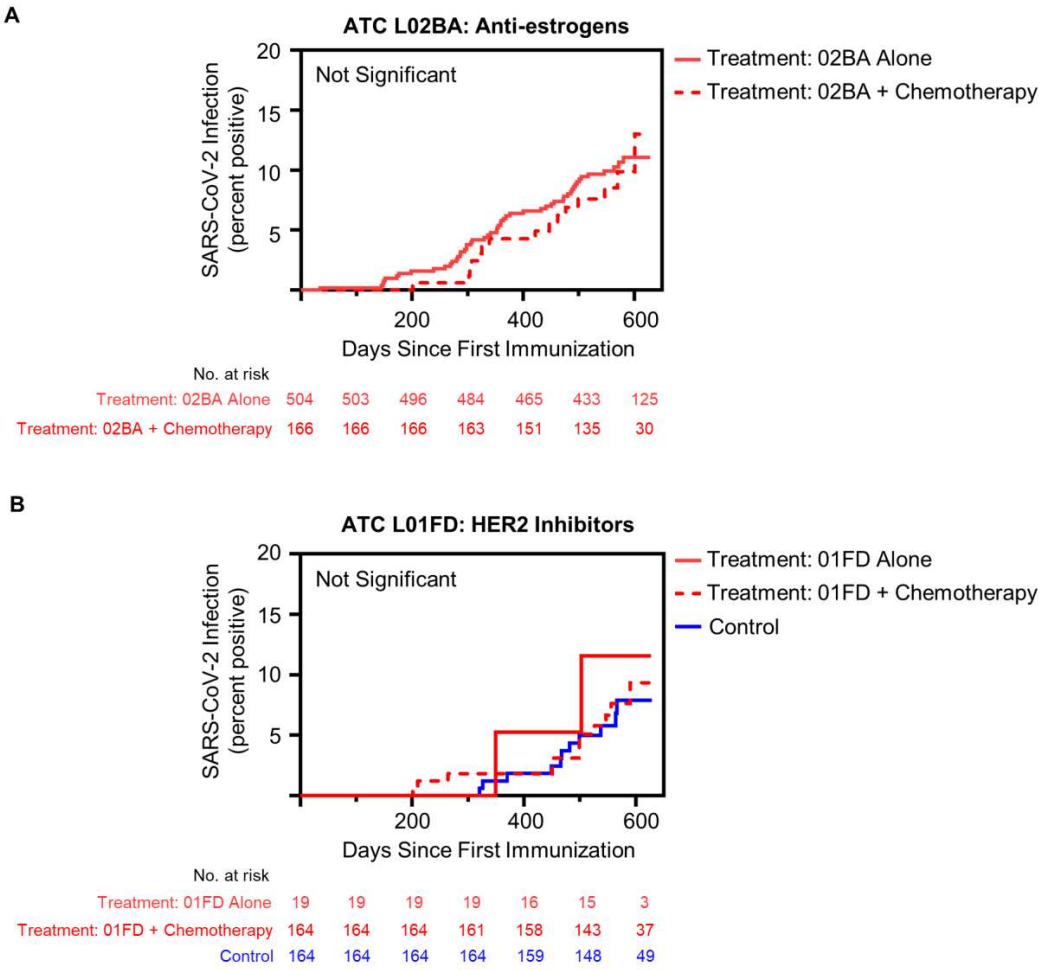


Supplemental Figure 7. PD-1/PD-L1 monoclonal antibody and combination therapy effects on SARS-CoV-2 infection risk post-immunization.

(A) Cumulative incidence of SARS-CoV-2 infection following initial immunization in patients prescribed L01FF as a single therapy or in combination with chemotherapy (defined as the combined categories of L01A, L01B, L01C and L01D) ($p>0.05$ by Log-rank).

(B) Cumulative incidence of SARS-CoV-2 infection following initial immunization in patients prescribed L01FF as a single therapy or in combination with protein kinase inhibitor ($p>0.05$ by Log-rank).

Supplemental Figure 8

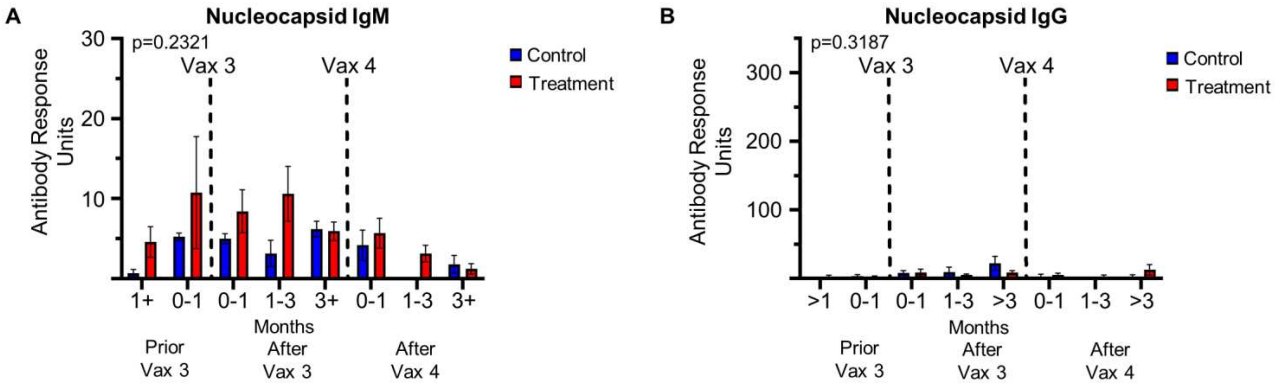


Supplemental Figure 8. Combination of chemotherapy with anti-estrogen or HER2 therapy effects on SARS-CoV-2 infection risk post-immunization.

(A) Cumulative incidence of SARS-CoV-2 infection following initial immunization in patients prescribed L02BA as a single therapy or in combination with chemotherapy (defined as the combined categories of L01A, L01B, L01C and L01D) ($p>0.05$ by Log-rank).

(B) Cumulative incidence of SARS-CoV-2 infection following initial immunization in patients prescribed 01FD as a single therapy or in combination with chemotherapy (defined as the combined categories of L01A, L01B, L01C and L01D). Control population of patients not prescribed WHO ATC L treatment medications is matched to L01FD in combination with chemotherapy ($p>0.05$ by Log-rank).

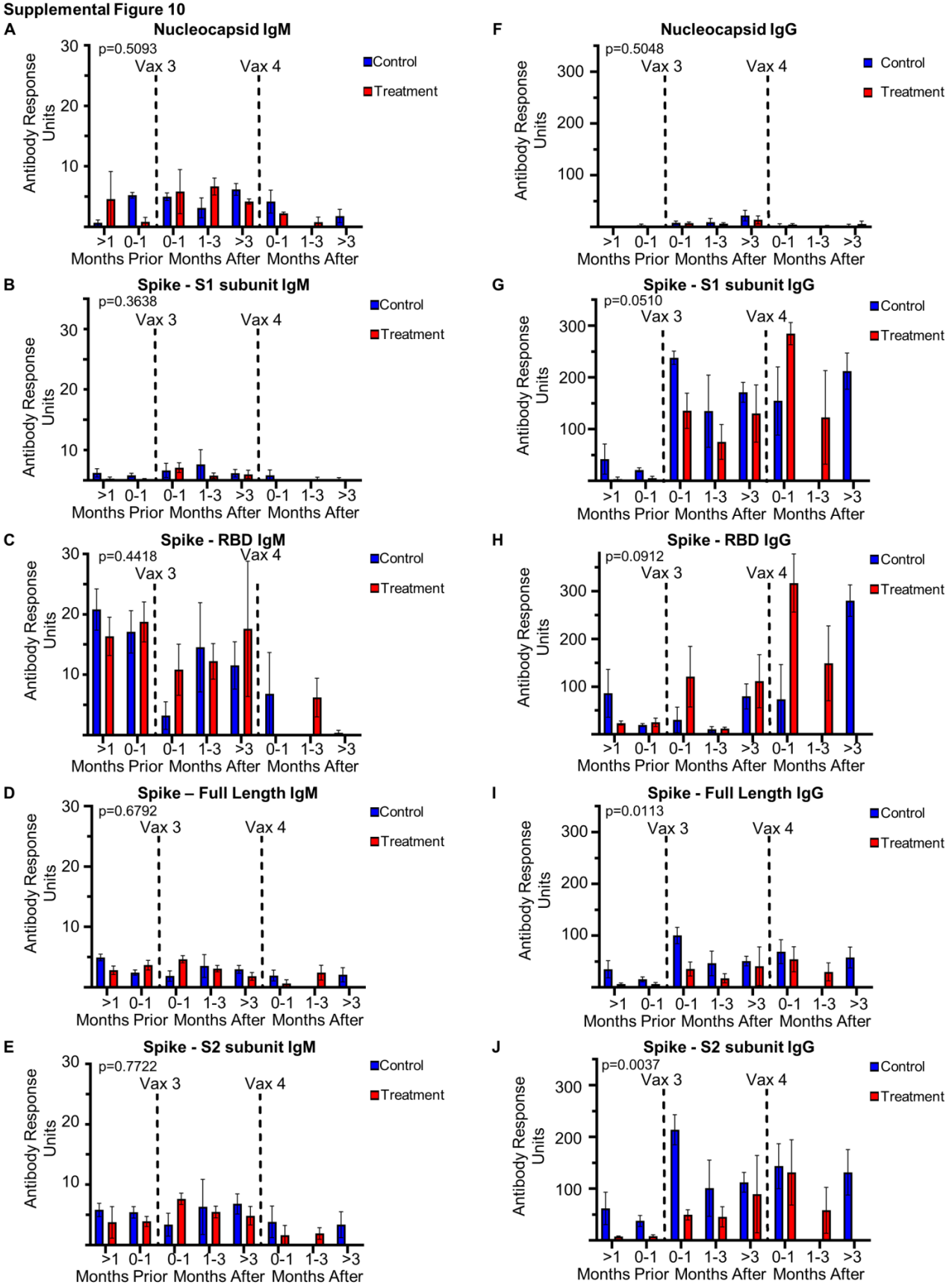
Supplemental Figure 9



Supplemental Figure 9. No difference observed in COVID-19 nucleocapsid antibody response.

(A) IgM and (B) IgG antibody response to respective SARS-CoV-2 epitopes at time points following third (Vax 3) and fourth (Vax 4) COVID-19 immunization in patients prescribed antineoplastic and immunomodulating agents (Treatment) and immunocompetent patients (Control) (Immunocompetent: greater than 1 month prior to Vax 3 n=4, 0-1 month prior to Vax 3 n=9, 0-1 month following Vax 3 n=9, 1-3 months following Vax 3 n=3, greater than 3 months following Vax 3 n=17, 0-1 month following Vax 4 n=2, 1-3 months following Vax 4 n=0, greater than 3 months following Vax 4 n=4; Immunosuppressed: greater than 1 month prior to Vax 3 n=5, 0-1 month prior to Vax 3 n=18, 0-1 month following Vax 3 n=20, 1-3 months following Vax 3 n=19, greater than 3 months following Vax 3 n=36, 0-1 month following Vax 4 n=28, 1-3 months following Vax 4 n=17, greater than 3 months following Vax 4 n=27). Dashed lines indicate Vax 3 and Vax 4. Antibody response reported as antibody response units. Not significant indicates $p>0.05$ by ANOVA.

Supplemental Figure 10



Supplemental Figure 10. Calcineurin inhibitors impair immunoglobulin class switching to SARS-CoV-2 Spike subunits.

Antibody response to respective SARS-CoV-2 epitopes at time points following third (Vax 3) and fourth (Vax 4) COVID-19 immunization in patients prescribed calcineurin inhibitors and immunocompetent patients (Immunocompetent: greater than 1 month prior to Vax 3 n=4, 0-1 month prior to Vax 3 n=9, 0-1 month following Vax 3 n=9, 1-3 months following Vax 3 n=3, greater than 3 months following Vax 3 n=17, 0-1 month following Vax 4 n=2, 1-3 months following Vax 4 n=0, greater than 3 months following Vax 4 n=4; Immunosuppressed: greater than 1 month prior to Vax 3 n=2, 0-1 month prior to Vax 3 n=5, 0-1 month following Vax 3 n=5, 1-3 months following Vax 3 n=6, greater than 3 months following Vax 3 n=5, 0-1 month following Vax 4 n=2, 1-3 months following Vax 4 n=3, greater than 3 months following Vax 4 n=0). Antibody response reported as antibody response units. Not significant indicates p>0.05 by ANOVA.

(A) IgM antibody response to nucleocapsid epitope
(B) IgM antibody response to Spike S1 subunit epitope
(C) IgM antibody response to Spike S1 RBD epitope
(D) IgM antibody response to Spike full length epitope
(E) IgM antibody response to Spike S2 subunit epitope
(F) IgG antibody response to nucleocapsid epitope
(G) IgG antibody response to Spike S1 subunit epitope
(H) IgG antibody response to Spike S1 RBD epitope
(I) IgG antibody response to Spike full length epitope
(J) IgG antibody response to Spike S2 subunit epitope

Supplemental Table 1. Multiple immunizations reduce risk of post-immunization SARS-CoV-2 infection

Characteristic	N (SARS-CoV-2 Positive/ Total Patients)	HR (95% CI)	p-value
Matched Control Patients			
2 Immunizations	193/3245	2.36 (1.97 – 2.83)	<0.001
3 Immunizations	417/5352	1.42 (1.22 – 1.65)	<0.001
4 Immunizations	297/4765	1 [Reference]	[Reference]
WHO ATC L-Treated Patients			
2 Immunizations	335/3333	2.76 (2.36 – 3.24)	<0.001
3 Immunizations	569/5174	1.55 (1.35 – 1.79)	<0.001
4 Immunizations	430/4855	1.23 (1.06 – 1.43)	0.006

Supplemental Table 2. Treated patients remain at increased risk of post-immunization SARS-CoV-2 infection regardless of vaccine manufacturer.

Characteristic	N (SARS-CoV-2 Positive/ Total Patients)	HR (95% CI)	p-value
Matched Control Patients			
Moderna	432/6941	1 [Reference]	[Reference]
Pfizer	445/6104	1.24 (1.09 – 1.42)	0.0013
Mixed	22/231	1.82 (1.18 – 2.79)	0.0063
Other	8/86	1.84 (0.91 – 3.71)	0.0868
WHO ATC L-Treated Patients			
Moderna	642/6852	1.54 (1.37 – 1.74)	<0.001
Pfizer	651/6145	1.85 (1.64 – 2.09)	<0.001
Mixed	32/265	2.33 (1.63 – 3.34)	<0.001
Other	9/100	1.76 (0.91 – 3.40)	0.0941

Supplemental Table 3. Multiple immunizations reduce risk of post-immunization SARS-CoV-2 infection in patients who received antineoplastic or immunosuppressing medications

Characteristic	N (SARS-CoV-2 Positive/ Total Patients)	HR (95% CI)	p-value
L01 Antineoplastic Agents			
Matched Control Patients			
2 Immunizations	193/3245	2.43 (2.02 – 2.91)	<0.001
3 Immunizations	417/5352	1.45 (1.25 – 1.69)	<0.001
4 Immunizations	297/4765	1 [Reference]	[Reference]
L01-Treated Patients			
2 Immunizations	91/1044	2.76 (2.18 – 3.51)	<0.001
3 Immunizations	168/1587	1.45 (1.20 – 1.75)	<0.001
4 Immunizations	125/1493	1.09 (0.89 – 1.35)	0.006
L04 Immunosuppressant Agents			
Matched Control Patients			
2 Immunizations	193/3245	2.36 (1.97 – 2.84)	<0.001
3 Immunizations	417/5352	1.42 (1.22 – 1.65)	<0.001
4 Immunizations	297/4765	1 [Reference]	[Reference]
L04-Treated Patients			
2 Immunizations	100/808	3.32 (2.64 – 4.18)	<0.001
3 Immunizations	159/1233	1.72 (1.42 – 2.10)	<0.001
4 Immunizations	115/1099	1.43 (1.15 – 1.77)	0.0012

Supplemental Table 4. Baseline demographics of matched L01FA: CD20 monoclonal antibody inhibitors

Characteristic	Matched Control (n=251)	Treated Patients (n=251)
Age – Median (IQR) - years	66.1 (51.0 – 81.3)	66.6 (51.3 – 81.9)
BMI – Median (IQR) – kg/m^2	27.0 (21.8 – 32.1)	27.3 (20.9 – 33.68)
Sex – no. (%)		
Male	86 (34.3)	97 (38.6)
Female	165 (65.7)	154 (61.4)
Race – no. (%)		
White	204 (81.3)	205 (81.7)
Asian	12 (4.8)	14 (5.6)
African American/Black	7 (2.8)	5 (2.0)
Native Hawaiian/Pacific Islander	1 (0.4)	1 (0.4)
American Indian/Native American	0 (0.0)	1 (0.4)
Other/Unknown	27 (10.8)	25 (10.0)
Ethnicity – no. (%)		
Hispanic/Latino	35 (13.9)	34 (13.5)
Not Hispanic/Latino	215 (85.7)	212 (84.5)
Other/Unknown	1 (0.4)	5 (2.0)
Immunizations Received – no. (%)		
2	58 (23.1)	59 (23.5)
3	103 (41.0)	96 (38.2)
4	90 (35.9)	96 (38.2)
Vaccination 1 Manufacturer – no. (%)		
Pfizer-BioNTech	114 (45.4)	121 (48.2)
Moderna	136 (54.2)	122 (48.6)
Janssen	1 (0.4)	8 (3.2)
Vaccination 2 Manufacturer – no. (%)		
Pfizer-BioNTech	116 (46.2)	125 (49.8)
Moderna	134 (53.4)	123 (49.0)
Janssen	1 (0.4)	3 (1.2)
Vaccination 3 Manufacturer – no. (%)		
Pfizer-BioNTech	86 (34.3)	99 (39.4)
Moderna	107 (42.6)	93 (37.1)
Janssen	0 (0.0)	0 (0.0)
None	58 (23.1)	59 (23.5)
Vaccination 4 Manufacturer – no. (%)		
Pfizer-BioNTech	38 (15.1)	42 (16.7)
Moderna	52 (20.7)	54 (21.5)
None	161 (64.1)	155 (61.8)

Supplemental Table 5. Baseline demographics of matched L01FF: PD-1/PDL-1 inhibiting monoclonal antibody

Characteristic	Matched Control (n=282)	Treated Patients (n=282)
Age – Median (IQR) - years	72.6 (59.7 – 85.5)	72.3 (60.3 – 84.3)
BMI – Median (IQR) – kg/m^2	27.6 (22.5 – 32.7)	27.3 (22.5 – 32.1)
Sex – no. (%)		
Male	179 (63.5)	172 (61.0)
Female	103 (36.5)	110 (39.0)
Race – no. (%)		
White	253 (89.7)	243 (86.2)
Asian	15 (5.3)	18 (6.4)
African American/Black	3 (1.1)	3 (1.1)
Native Hawaiian/Pacific Islander	1 (0.4)	2 (0.7)
American Indian/Native American	0 (0.0)	0 (0.0)
Other/Unknown	10 (3.6)	16 (5.7)
Ethnicity – no. (%)		
Hispanic/Latino	21 (7.5)	23 (8.2)
Not Hispanic/Latino	258 (91.5)	251 (89.1)
Other/Unknown	3 (1.1)	8 (2.8)
Immunizations Received – no. (%)		
2	66 (23.4)	78 (27.7)
3	119 (42.2)	108 (38.3)
4	97 (34.4)	96 (34.0)
Vaccination 1 Manufacturer – no. (%)		
Pfizer-BioNTech	117 (41.5)	133 (47.2)
Moderna	164 (58.2)	142 (50.4)
Janssen	1 (0.4)	7 (2.5)
Vaccination 2 Manufacturer – no. (%)		
Pfizer-BioNTech	118 (41.8)	134 (47.5)
Moderna	162 (57.5)	144 (51.1)
Janssen	2 (0.7)	4 (1.4)
Vaccination 3 Manufacturer – no. (%)		
Pfizer-BioNTech	91 (32.3)	99 (35.1)
Moderna	124 (44.0)	105 (37.2)
Janssen	1 (0.4)	0 (0.0)
None	66 (23.4)	78 (27.7)
Vaccination 4 Manufacturer – no. (%)		
Pfizer-BioNTech	43 (15.3)	46 (16.3)
Moderna	54 (19.1)	50 (17.7)
None	185 (65.6)	186 (66.0)

Supplemental Table 6. Baseline demographics of matched L02BA: anti-estrogens

Characteristic	Matched Controls (n=504)	Treated Patients (n=504)
Age – Median (IQR) - years	59.5 (42.9 – 76.1)	60.8 (45.8 – 75.8)
BMI – Median (IQR) – kg/m^2	25.4 (20.8 – 30.0)	25.6 (20.0 – 31.2)
Sex – no. (%)		
Male	28 (5.6)	28 (5.6)
Female	476 (94.4)	476 (94.4)
Race – no. (%)		
White	385 (76.4)	376 (74.6)
Asian	67 (13.3)	79 (15.7)
African American/Black	15 (3.0)	11 (2.2)
Native Hawaiian/Pacific Islander	0 (0.0)	1 (0.2)
American Indian/Native American	0 (0.0)	1 (0.2)
Other/Unknown	37 (7.3)	36 (7.1)
Ethnicity – no. (%)		
Hispanic/Latino	38 (7.5)	47 (9.3)
Not Hispanic/Latino	458 (90.9)	446 (88.5)
Other/Unknown	8 (1.6)	11 (2.2)
Immunizations Received – no. (%)		
2	132 (26.2)	132 (26.2)
3	222 (44.1)	222 (44.1)
4	150 (29.8)	150 (29.8)
Vaccination 1 Manufacturer – no. (%)		
Pfizer-BioNTech	244 (48.4)	262 (52.0)
Moderna	249 (49.4)	231 (45.8)
Janssen	11 (2.2)	11 (2.2)
Vaccination 2 Manufacturer – no. (%)		
Pfizer-BioNTech	246 (48.8)	265 (52.6)
Moderna	252 (50.0)	235 (46.6)
Janssen	6 (1.2)	4 (0.8)
Vaccination 3 Manufacturer – no. (%)		
Pfizer-BioNTech	167 (33.1)	189 (37.5)
Moderna	203 (40.3)	182 (36.1)
Janssen	2 (0.4)	1 (0.2)
None	132 (26.2)	132 (26.2)
Vaccination 4 Manufacturer – no. (%)		
Pfizer-BioNTech	64 (12.7)	79 (15.7)
Moderna	86 (17.1)	71 (14.1)
None	354 (70.2)	354 (70.2)

Supplemental Table 7. Baseline demographics of matched L04AD: calcineurin inhibitors

Characteristic	Matched Controls (n=407)	Immunosuppressed (n=407)
Age – Median (IQR) - years	61.5 (45.8 – 77.2)	59.3 (45.1 – 73.5)
BMI – Median (IQR) – kg/m^2	27.6 (22.0 – 33.2)	27.4 (21.7 – 33.1)
Sex – no. (%)		
Male	234 (57.5)	227 (55.8)
Female	173 (42.5)	180 (44.2)
Race – no. (%)		
White	303 (74.5)	294 (72.2)
Asian	44 (10.8)	47 (11.6)
African American/Black	16 (3.9)	17 (4.2)
Native Hawaiian/Pacific Islander	2 (0.5)	2 (0.5)
American Indian/Native American	2 (0.5)	2 (0.5)
Other/Unknown	40 (9.8)	45 (11.1)
Ethnicity – no. (%)		
Hispanic/Latino	102 (25.1)	114 (28.0)
Not Hispanic/Latino	303 (74.5)	288 (70.8)
Other/Unknown	2 (0.5)	5 (1.2)
Immunizations Received – no. (%)		
2	101 (24.8)	111 (27.3)
3	179 (44.0)	169 (41.5)
4	127 (31.2)	127 (31.2)
Vaccination 1 Manufacturer – no. (%)		
Pfizer-BioNTech	180 (44.2)	171 (42.1)
Moderna	217 (53.3)	223 (54.8)
Janssen	10 (2.5)	13 (3.2)
Vaccination 2 Manufacturer – no. (%)		
Pfizer-BioNTech	182 (44.7)	170 (41.8)
Moderna	222 (54.6)	235 (57.7)
Janssen	3 (0.7)	2 (0.5)
Vaccination 3 Manufacturer – no. (%)		
Pfizer-BioNTech	138 (33.9)	118 (27.3)
Moderna	167 (41.0)	177 (43.5)
Janssen	1 (0.3)	1 (0.3)
None	101 (24.8)	111 (27.3)
Vaccination 4 Manufacturer – no. (%)		
Pfizer-BioNTech	54 (13.3)	44 (10.8)
Moderna	73 (17.9)	83 (20.4)
None	280 (68.8)	280 (68.8)

Supplemental Table 8. Multiple immunizations reduce risk conferred by L01FA: CD20 inhibiting monoclonal antibody

Characteristic	N (SARS-CoV-2 Positive/ Total Patients)	HR (95% CI)	p-value
Control Patients			
2 Immunizations	3/58	3.11 (0.70 – 13.90)	0.137
3 Immunizations	8/95	1.08 (0.34 – 3.37)	0.900
4 Immunizations	5/85	1 [Reference]	[Reference]
Treated Patients			
2 Immunizations	2/57	2.86 (0.53 – 15.50)	0.224
3 Immunizations	19/77	1.83 (0.65 – 5.14)	0.249
4 Immunizations	12/84	1.19 (0.41 – 3.47)	0.738

Supplemental Table 9. Multiple immunizations reduce risk conferred by L01FF: PD-1/PDL-1 inhibiting monoclonal antibody

Characteristic	N (SARS-CoV-2 Positive/ Total Patients)	HR (95% CI)	p-value
Matched Control Patients			
2 Immunizations	5/61	13.0 (1.28 – 132.17)	0.0299
3 Immunizations	10/109	0.57 (0.07 – 4.60)	0.5977
4 Immunizations	1/96	1 [Reference]	[Reference]
Treated Patients			
2 Immunizations	13/65	11.65 (1.33 – 102.21)	0.0267
3 Immunizations	17/91	0.88 (0.11 – 6.83)	0.9035
4 Immunizations	5/91	0.48 (0.05 – 4.50)	0.5192

Supplemental Table 10. Multiple immunizations do not reduce risk conferred by L04AD: calcineurin inhibitors

Characteristic	N (SARS-CoV-2 Positive/ Total Patients)	HR (95% CI)	p-value
Matched Control Patients			
2 Immunizations	7/101	2.33 (1.03 – 5.30)	0.0422
3 Immunizations	12/179	2.04 (0.95 – 4.41)	0.0692
4 Immunizations	5/127	1 [Reference]	[Reference]
Treated Patients			
2 Immunizations	12/111	2.79 (1.33 – 5.85)	0.0065
3 Immunizations	31/169	2.89 (1.43 – 5.81)	0.0029
4 Immunizations	18/127	2.51 (1.11 – 5.67)	0.0276

Supplemental Table 11. Baseline Demographics of Serial Serologic Samples

Characteristic	Controls (n=19)	WHO ATC L-Treated Patients (n=68)
Age – Median (IQR) - years	36.5 (30.0 – 53.3)	64.5 (57.5 – 68.0)
BMI – Median (IQR) – kg/m^2	24.2 (21.9 – 26.0)	26.9 (22.4 – 31.9)
Sex – no. (%)		
Male	10 (52.6)	25 (36.8)
Female	9 (47.4)	43 (63.2)
Other	0 (0.0)	0 (0.0)
Race – no. (%)		
White	9 (47.4)	56 (82.4)
Asian	3 (15.8)	3 (4.4)
African American/ Black	1 (5.3)	3 (4.4)
Native Hawaiian/ Pacific Islander	0 (0.0)	0 (0.0)
American Indian/ Native American	0 (0.0)	0 (0.0)
Other/Unknown	6 (31.6)	6 (8.8)
Ethnicity – no. (%)		
Hispanic/Latino	0 (0.0)	6 (8.8)
Not Hispanic/Latino	14 (73.7)	60 (88.2)
Other/Unknown	5 (26.3)	2 (2.9)
Immunizations Received – no. (%)		
2	0 (0.0)	1 (1.5)
3	15 (78.9)	18 (26.5)
4	4 (21.1)	49 (72.1)
Vaccination 1 Manufacturer – no. (%)		
Pfizer-BioNTech	17 (89.5)	30 (44.1)
Moderna	2 (10.5)	35 (51.5)
Janssen	0 (0.0)	3 (4.4)
AstraZeneca	0 (0.0)	0 (0.0)
Vaccination 2 Manufacturer – no. (%)		
Pfizer-BioNTech	17 (89.5)	31 (45.6)
Moderna	2 (10.5)	37 (54.4)
Janssen	0 (0.0)	0 (0.0)
AstraZeneca	0 (0.0)	0 (0.0)
Vaccination 3 Manufacturer – no. (%)		
Pfizer-BioNTech	16 (84.2)	30 (44.1)
Moderna	3 (15.8)	37 (54.4)
Janssen	0 (0.0)	0 (0.0)
None	0 (0.0)	0 (0.0)
Vaccination 4 Manufacturer – no. (%)		
Pfizer-BioNTech	1 (5.3)	22 (32.4)
Moderna	3 (15.8)	27 (39.7)
Janssen	0 (0.0)	0 (0.0)
None	15 (78.9)	19 (27.9)
Medication Class – no. (%)		
L01	n/a	22 (32.4)
L02	n/a	27 (39.7)
L03	n/a	0 (0.0)
L04	n/a	19 (27.9)
Patients Prescribed Multiple Medication Classes	n/a	37 (54.4)