

SUPPLEMENTARY MATERIAL**Table S1: Local and systemic adverse events reported at days 14, 28 and 45 after first BNT162b2 dose in 126 SLE patients**

Adverse event	Day 14	Day 28	Day 42
Any adverse event	97 (77.0%)	46 (36.5%)	70 (56.5%)
Pain at injection site	85 (67.5%)	17 (13.5%)	49 (39.5%)
Fatigue	50 (39.7%)	26 (20.6%)	44 (35.5%)
Headache	32 (25.4%)	22 (17.5%)	23 (18.5%)
Fever	10 (7.9%)	3 (2.4%)	7 (5.6%)
Local redness	5 (4.0%)	1 (0.8%)	2 (1.6%)
Vomiting	8 (6.3%)	6 (4.8%)	6 (4.8%)
Diarrhea	13 (10.3%)	11 (8.7%)	9 (7.3%)
Muscle pain	19 (15.1%)	11 (8.7%)	17 (13.7%)
Joint pain	22 (17.5%)	11 (8.7%)	17 (13.7%)
Insomnia	17 (13.5%)	11 (8.7%)	10 (8.1%)

Variables are presented as n (%)

Table S2. Baseline predictors of day 42 anti-SARS-CoV-2 RBD IgG titers according to linear regression model. SLE activity is measured with SLEDAI.

	β	95% CI	p-value
Age, years	-0.47	-1.8, 0.88	0.5
Male sex	-55	-121, 10	0.10
SLEDAI 2K >4 on day 1	-19	-81, 42	0.5
C3, g/L	43	-70, 156	0.4
dsDNA antibodies, IU/mL	0.04	-0.05, 0.14	0.4
IFN	-2.9	-6.9, 1.1	0.2
IgA, g/L	0.62	-14, 15	>0.9
IgG, g/L	2.0	0.35, 3.6	0.018
IgM, g/L	12	-0.66, 25	0.063
Lymphocytes, day 1 (G/L)	9.0	-29, 47	0.6
Corticosteroids low	-18	-64, 28	0.4
Corticosteroids high	-51	-130, 28	0.2
Hydroxychloroquine	-22	-80, 36	0.5
Azathioprine	-128	-256, -0.22	0.050
Belimumab	-15	-89, 58	0.7
Mycophenolate mofetil	-77	-154	0.008
Other immunosuppressor [#]	63	-32, 157	0.2
Methotrexate	-120	-241	<0.001

β : see Material and methods; CI = Confidence Interval; dsDNA: double stranded DNA; IFN: Interferon; RBD: Receptor Binding Domain; SLEDAI: SLE Disease Activity Index; [#]Other immunosuppressors include: ciclosporine (n=1), revlimid (n=1), tacrolimus (n=1), thalidomide (n=1) and tofacitinib (n=1). Beta, CI and P-values were calculated using multivariate regression analysis.

Table S3. Baseline predictors of serum neutralizing activity at day 42 according to linear regression model

	β	95% CI	p-value
Age, years	-0.01	-0.02, 0.01	0.6
Male sex	-0.76	-1.7, 0.15	0.10
At least one BILAG score \geq B	-1.2	-2.1, -0.27	0.011
C3, g/L	0.81	-0.71, 2.3	0.3
dsDNA antibodies, IU/mL	0.00	0.00, 0.00	0.7
Detectable IFN alpha	-0.06	-0.11, 0.00	0.046
Total serum IgA, g/L	-0.02	-0.22, 0.17	0.8
Total serum IgG, g/L	0.01	-0.01, 0.04	0.3
Total serum IgM, g/L	0.05	-0.12, 0.23	0.5
Corticosteroids \leq 10mg/day	-0.04	-0.67, 0.59	>0.9
Corticosteroids >10mg/day	-0.07	-1.1, 1.0	>0.9
Hydroxychloroquine	-0.01	-0.83, 0.80	>0.9
Azathioprine	-1.4	-3.2, 0.30	0.10
Belimumab	0.26	-0.75, 1.3	0.6
Mycophenolate mofetil	-1.1	-1.9, -0.34	0.005
Methotrexate	-1.9	-2.7, -1.0	<0.001
Other immunosuppressor [#]	0.26	-1.0, 1.6	0.7

β : see Material and methods; BILAG: British Isles Lupus Assessment Group; CI = Confidence Interval; dsDNA: double stranded DNA; IFN: Interferon; [#]Other immunosuppressors include: ciclosporine (n=1), revlimid (n=1), tacrolimus (n=1), thalidomide (n=1) and tofacitinib (n=1). Beta, CI and P-values were calculated using multivariate regression analysis.

Table S4: Baseline B cell predictors of serum neutralizing activity at day 42 according to linear regression model

	β^*	95% CI	p-value
Corticosteroids ≤ 10 mg/day	-0.18	-0.79, 0.43	0.6
Corticosteroids > 10 mg/day	-1.0	-2.1, 0.19	0.10
Hydroxychloroquine	0.05	-0.90, 1.0	> 0.9
Azathioprine	-0.85	-2.8, 1.1	0.4
Belimumab	0.30	-1.1, 1.7	0.7
Mycophenolate mofetil	-1.6	-2.6, -0.69	0.001
Methotrexate	-1.4	-2.4, -0.39	0.007
Other immunosuppressor [#]	1.3	-1.1, 3.7	0.3
Marginal zone B lymphocytes, Day 1 (%)	-0.01	-0.04, 0.02	0.5
Autoreactive B lymphocytes, Day 1 (%)	-0.01	-0.04, 0.03	0.7
Naïve B lymphocytes, Day 1 (%)	0.04	0.01, 0.07	0.006
Double negative B lymphocytes, Day 1 (%)	-0.01	-0.08, 0.07	0.9
Memory B lymphocytes, Day 1 (%)	-0.02	-0.04, 0.00	0.10

β : see Material and methods; CI = Confidence Interval; *Log (D614G); [#]Other immunosuppressors include: ciclosporine (n=1), revlimid (n=1), tacrolimus (n=1), thalidomide (n=1) and tofacitinib (n=1). Autoreactive B cells (CD21lowCD38low); Double Negative B cells (CD27-IgD-); Marginal Zone B cells (CD27+IgD+); Memory B cells (CD27+IgD-); Naïve B cells (CD27-IgD+). B cell subsets frequencies are measured in total B cells. Beta, CI and P-values were calculated using multivariate regression analysis.

Table S5: Demographics and clinico-biological features of SLE patients included in SARS-CoV-2 T-cell analysis

	N = 38
Female sex	36 (94.7%)
Age, years	44.7 (30.6, 55.1)
Time from SLE onset, months	11.8 (7.2, 21.2)
Time from last flare, months	1.2 (0.3, 2.8)
SLEDAI 2K	2.0 (0.0, 4.0)
SLEDAI 2K > 4	8 (21.1%)
At least one BILAG score \geq B	3 (7.9%)
Hydroxychloroquine blood concentration, μ g/L	905.0 (773.0, 1,123.0)
Low complement C3 (< 0.7g/L)	8 (21.1%)
Increased dsDNA binding (> 30 IU/mL)	24 (63.2%)
Detectable interferon alpha (> 2 IU/mL)	3 (8.6%)
Hydroxychloroquine	34 (89.5%)
No corticosteroids	13 (34.2%)
Corticosteroids \leq 10mg/day	18 (47.7%)
Corticosteroids >10mg/day	7 (18.4%)
Belimumab	9 (23.7%)
Mycophenolate mofetil	11(28.9%)
Azathioprine	2 (5.3%)
Methotrexate	12 (31.6%)

Qualitative variables are presented as n (%); Quantitative variables are presented as median (Interquartile range); dsDNA: double stranded DNA; SLEDAI: SLE Disease activity score; BILAG: British Isles Lupus Assessment Group

Figure S1: Analysis of peripheral B cell subsets phenotyping

Representative flow cytometry gating strategy for CD27+IgD⁻ memory B cells (A), CD27+IgD⁺ Marginal Zone B cells (B), CD27-IgD⁻ Double Negative B cells (C), CD27-IgD⁺ Naïve B cells (D), CD21^{low}CD38^{low} B cells (E)

Figure S2: Local and systemic reactions reported throughout the vaccination schedule.**Figure S3: Baseline B cells influence SARS-CoV-2 antibody response**

- A. Comparison of serum anti-RBD IgG levels measured by photonic ring immunoassay (n=47) with B cell counts (number/ μ l). Pearson coefficient (r) and p value (p) are indicated.
- B. Comparison of serum anti-RBD IgG levels measured by photonic ring immunoassay (n=57) with naïve B cell frequency (%). Pearson coefficient (r) and p value (p) are indicated.
- C. Comparison of serum neutralizing activities measured as ID₅₀ (n=63) with B cell counts (number/ μ l). Pearson coefficient (r) and p value (p) are indicated.