Additional Information

Comparative kinetics of SARS-CoV-2 anti-spike protein RBD IgGs and
neutralizing antibodies in convalescent and naïve recipients of the BNT162b2
mRNA vaccine *versus* COVID-19 patients

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Figure Legends

Figure S1. **Anti-S-RBD IgGs and NAbs kinetics in vaccinated individuals at D1-D50.** Paired

values of evolving anti-S-RBD IgGs and NAbs following BNT162b2 mRNA vaccination for P2

(see Fig. 2)/NEG groups.

Figure S2. **qRT-PCR positivity of individuals found positive or negative at D1 for anti-S-**

RBD-IgGs or NAbs. Mean duration for donors of P1 group since testing 6±4.51 months

(range 1.5-11 months) and for all donors (P1/P2 groups) 4.19±3.44 months (range 1.5-11

months).

Figure S3. Correlation of the anti-S-RBD IgGs and NAbs evolving titers at groups P1 and P2/NEG at D1, D22, D36 and D50. Values of anti-S-RBD IgGs and NAbs titers (each spot correspond to both values per donor) following vaccination at D1 (P1 group) and D22, D36 and D50 (P2/NEG donors). Correlation (R) and significance (P) values per analysis and time point are indicated.

Figure S4. Comparative analysis of sensitivity (%) and specificity (%) of anti-S-RBD IgGs (U/mL) values *versus* NAbs (%) inhibition levels of >30% (moderate protection), >50% (high protection) and >75% (very high protection). Donors (*n*) for each threshold in the NAbs assay are indicated in the upper right part of each graph. Area under the curve (AUC), Std. Error and Significance (P) are also shown. Values of the anti-S-RBD IgGs assay that predict NAbs inhibition values >30%, >50% and >75% (sensitivity >90%) are indicated at the lower left part of the Figure.

Figure S5. Anti-S-RBD IgGs kinetics in COVID-19 patients with moderate (groups 1a, 1b) and severe (group 2) disease at D1, D7 and D30. For the specific clinical characteristics per group see Table S2.

Figure S6. NAbs kinetics in COVID-19 patients with moderate (groups 1a, 1b) and severe (group 2) disease at D1, D7 and D30. The specific clinical characteristics per group are reported in Table S2.

Figure S7. Kinetics (median with 95% CI) of humoral responses [NAbs, (%) inhibition] at the indicated time points (D1 to M5) in vaccinated recipients (n=21) assayed at M5 for the presence of SARS-CoV-2 S protein specific T cells clones (see Fig. 5). M5, five-months post-vaccination.

Tables

Table S1. BNT162b2 mRNA vaccinated participants (n=250).

Mean Age ± SD (years)	48.14 ± 12.45(24-77)
Median Age	49
Gender	
Male (%)	91 (36.4%)
Female (%)	159 (63.6%)
Hospitalization status	
Never hospitalized (%)	250 (100%)
Hospitalized (%)	-
Unknown if hospitalized (%)	-
Sample Collection Dates	January-April 2021
SARS-CoV-2 PCR Positivity	
Positive	18 (7.2%)
Negative	232 (92.8%)
Not performed	-
Unknown	-
NAbs assayed (all time points)	250 (100%)
Anti-S-RBD IgGs assayed (all time points)	250 (100%)
BNT162b2 mRNA vaccination (both doses)	250 (100%)

Table S2. COVID-19 hospitalized patients (n=60).

Mean Age ± SD (years)	52.06 ± 11.53 (27-87)
Median Age	53
Gender	
Male (%)	38 (63.3%)
Female (%)	22 (36.7 %)
Hospitalization status	
Never hospitalized (%)	-
Hospitalized (%)	60 (100%)
Unknown if hospitalized (%)	-
Sample Collection Dates	February-April 2021
Multiple Time Point Donors (D10, D17, D39 from symptoms onset) (%)	60 (100%)
SARS-CoV-2 PCR Positivity	
Positive	60 (100%)
Negative	-
Not performed	-
Unknown	-
Severity of disease	
Moderate disease: No oxygenation (fever/other symptoms) (score 1a) (%); Median Age	15 (7M/8F) (25%); 49 y.o.
Moderate disease: Respiratory failure (up to MV: 40%) (score 1b) (%); Median Age	22 (13M/9F) (36.7%); 52 y.o.

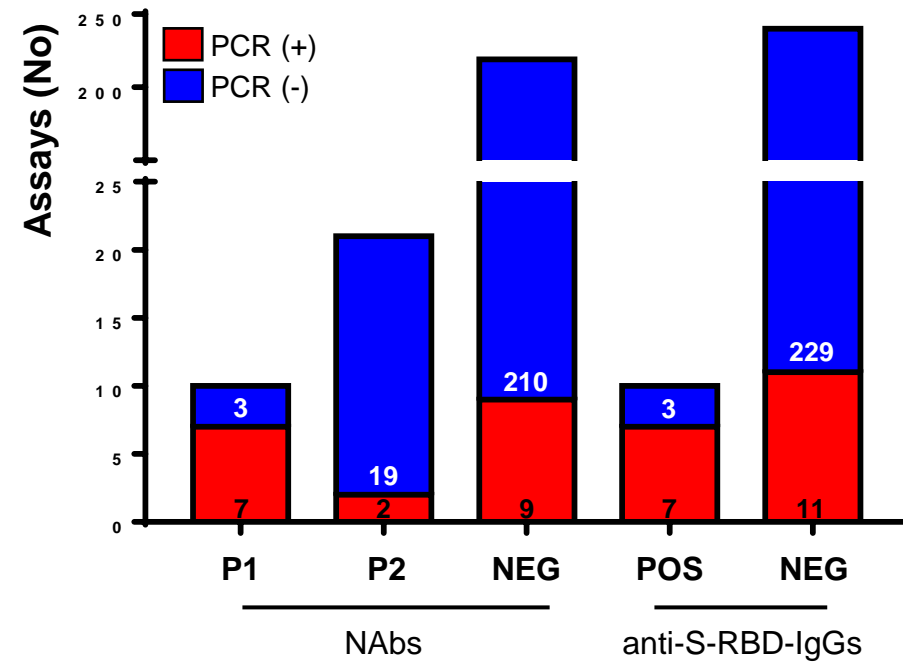|	
Severe disease: Respiratory failure, oxygenation (MV 40%), HNFO, ICU (score 2) (%); Median Age	23 (18M/5F) (38.3%); 56 y.o.
Days Post Symptom Onset at first collection (D1)	
Score 1a (mean ± SD)	10.64 ± 4.14 (median 9)
Score 1b (mean ± SD)	8.77 ± 3.26 (median 8)
Score 2 (mean ± SD)	9.71 ± 2.28 (median 9)
Administered therapeutics	Patients in groups 1b, 2: Remdesivir, dexamethasone, immunomodulators (i.e., anakinra, baricitinib, tocilizumab).
Disease outcome	
Recovery (%)	59 (98.33%)
Death (%)	1 (1.66%)

Fig. S1

Fig. S2

A

R=0.7585
P=0.0110
P1 (D1)

n=10

anti-S-RBD-IgGs

NAbs

B

R=0.2975
P<0.0001
P2, NEG (D22)

n=240

anti-S-RBD-IgGs

NAbs

C

R=0.3148
P<0.0001
P2, NEG (D36)

n=240

anti-S-RBD-IgGs
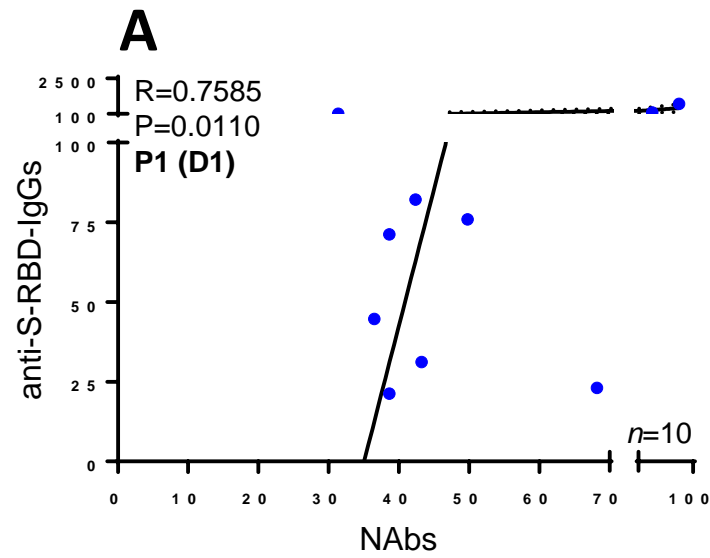
NAbs

D

R=0.4941
P<0.0001
P2, NEG (D50)
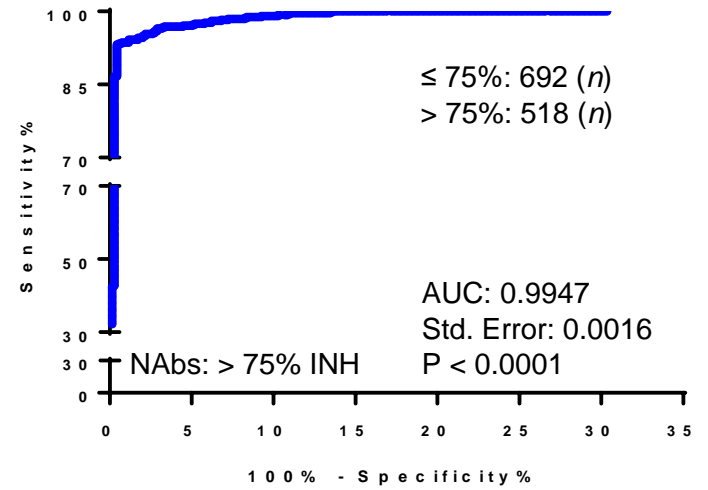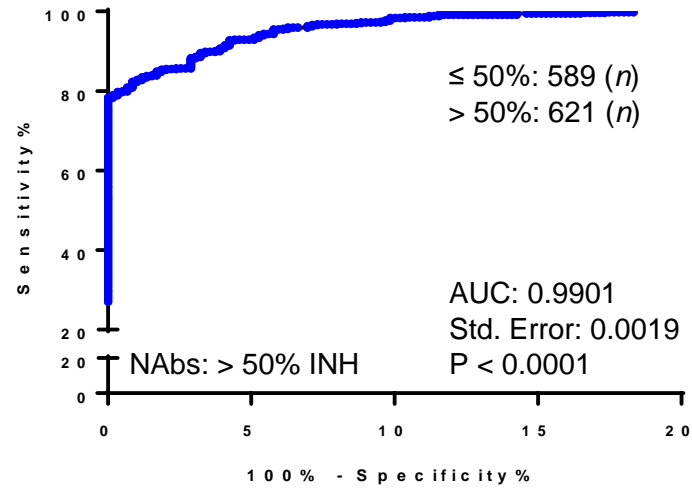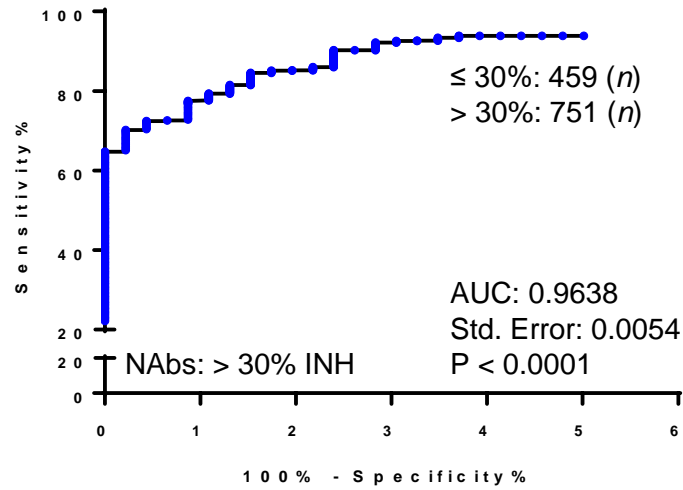
n=240

anti-S-RBD-IgGs
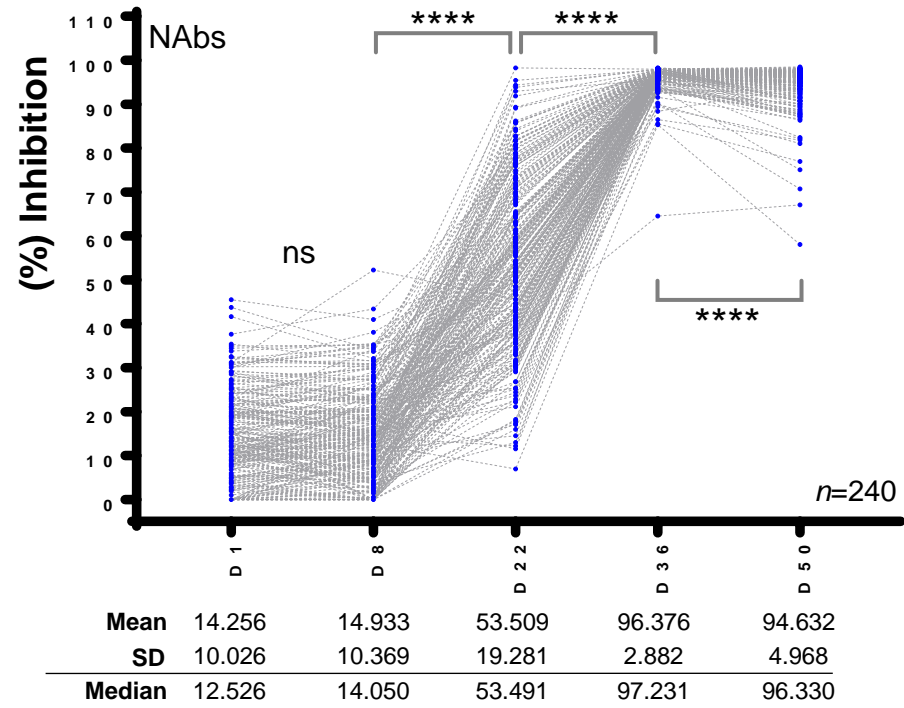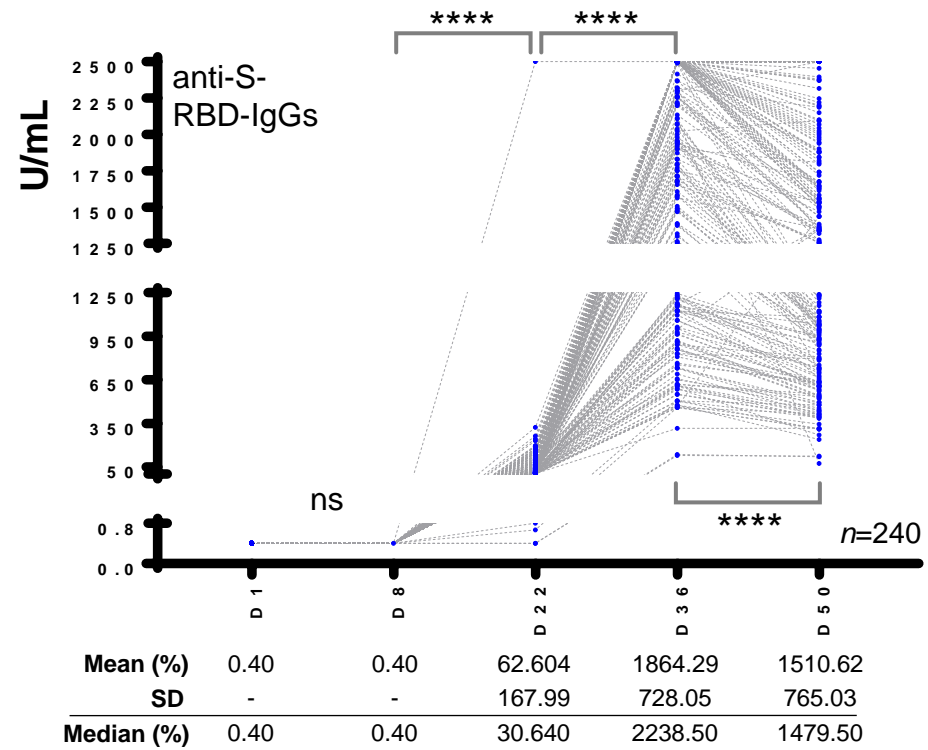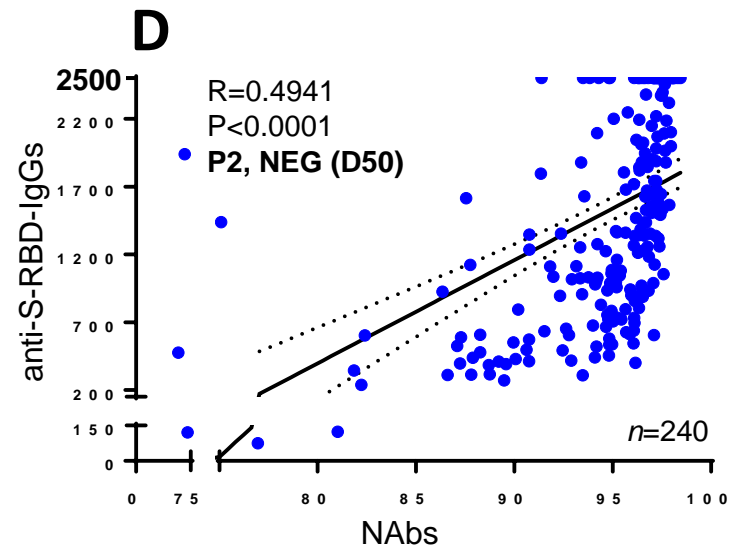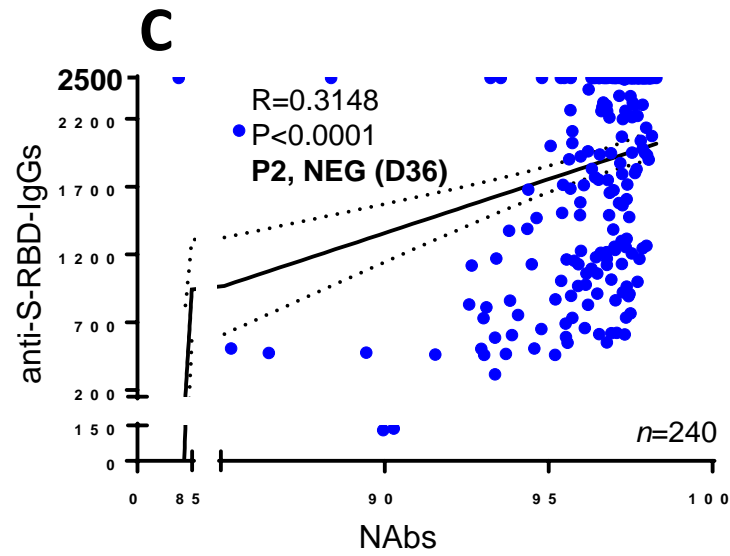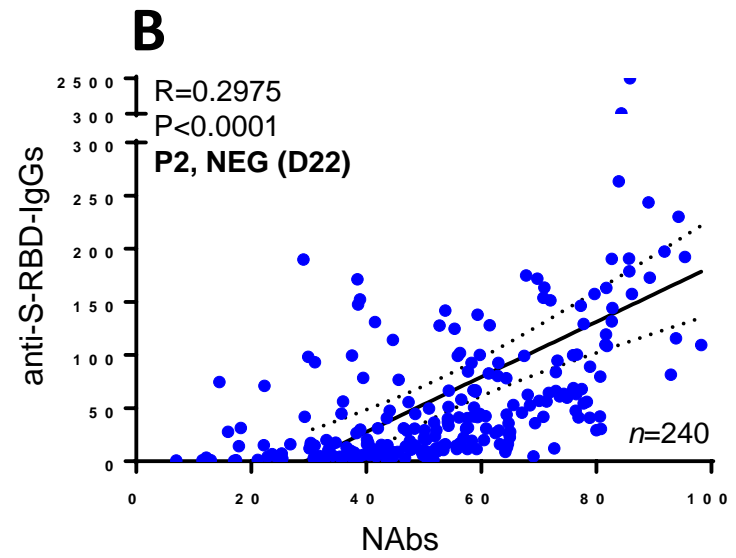
NAbs

Regression slopes deviation from zero:
P=0.0110 (A), P<0.0001 (B, C, D)

Fig. S3

Anti-S-RBD (U/mL)	Sensitivity%	95% CI	Specificity%	95% CI	Likelihood ratio	NAbs (% inhibition)
> 8.315	90.01	87.64% to 92.06%	97.6	95.75% to 98.8%	37.56	> 30%
> 44.66	90.02	87.38% to 92.26%	96.26	94.4% to 97.64%	24.1	> 50%
> 334.2	90.15	87.26% to 92.58%	99.57	98.74% to 99.91%	208	> 75%

Fig. S4

	D1	D7	D30		D1	D7	D30		D1	D7	D30
Mean	8.895	34.094	88.322		91.193	81.280	410.927		59.010	217.297	880.032
SD	17.963	53.113	64.429		386.404	170.372	400.895		195.833	296.221	980.917
Median	0.400	17.910	85.620		0.400	11.605	392.00		0.929	137.000	568.800

Fig. S5

	D1	D7	D30
Mean	28.428	58.127	64.205
SD	29.564	19.339	19.231
Median	18.652	63.420	68.975

	D1	D7	D30
Mean	26.465	67.826	82.209
SD	26.758	23.661	13.739
Median	20.597	71.342	88.068

	D1	D7	D30
Mean	39.099	86.322	85.282
SD	29.040	9.214	13.855
Median	23.653	87.621	90.020

Fig. S6

Fig. S7