

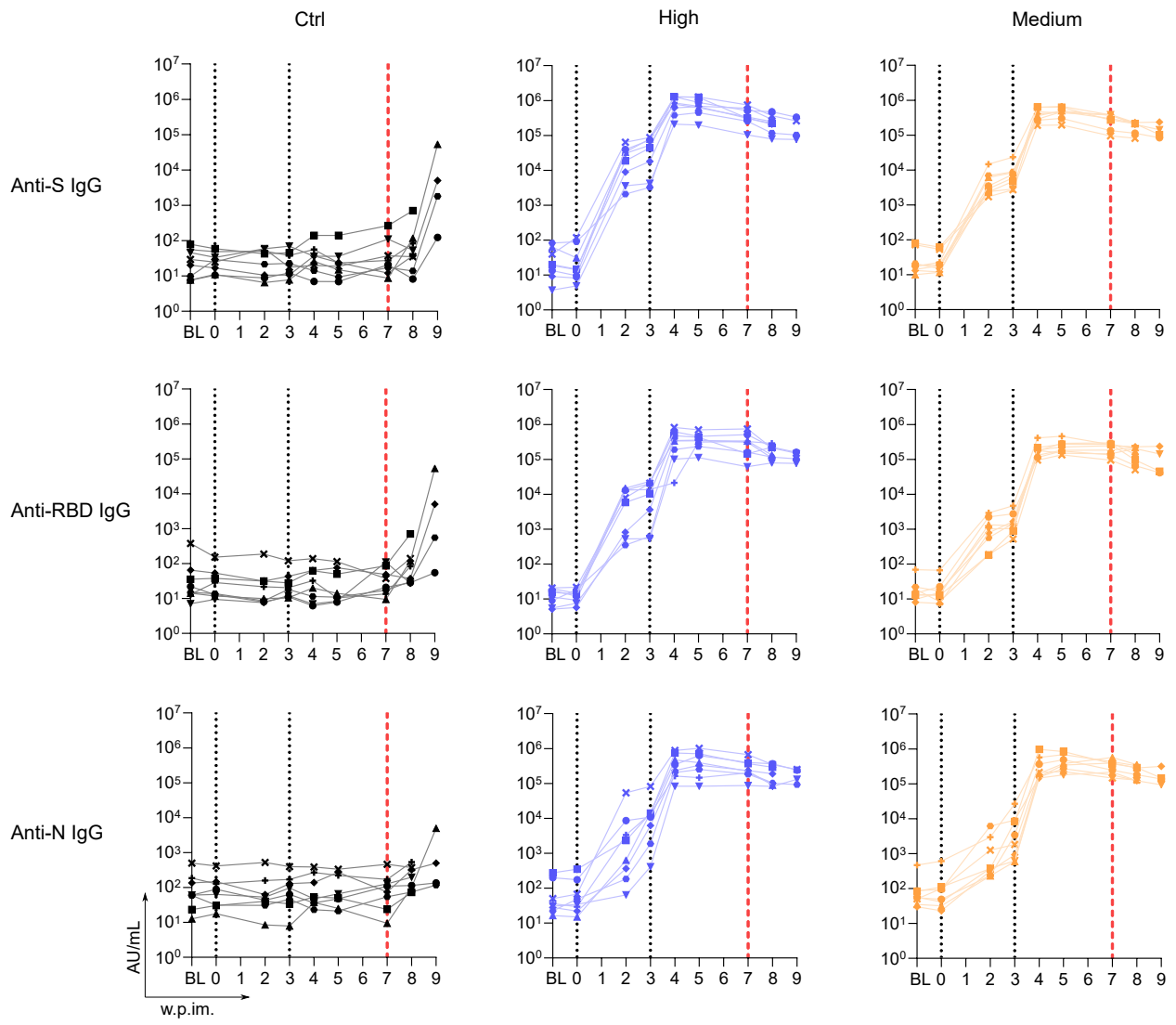
1 Supplementary Table 1. Characteristics of the animals included into the study.

ID	Experimental group	Sexe	Age at 1st immunization (months)	Weight at 1st immunization (kg)	Necropsy (days post exposure)	Symbol and color for figures
MF1	Ctrl	male	46.3	5.11	15	●
MF2	Ctrl	male	45.0	3.82	7	■
MF3	Ctrl	male	44.6	4.74	15	▲
MF4	Ctrl	male	44.7	3.67	7	▼
MF5	Ctrl	male	44.3	4.48	15	◆
MF6	Ctrl	male	45.5	4.32	15	⬢
MF7	Ctrl	male	44.5	5.50	7	×
MF8	Ctrl	male	43.8	3.89	7	+
MF9	High	male	46.2	4.46	15	●
MF10	High	male	45.8	4.58	7	■
MF11	High	male	46.1	5.00	7	▲
MF12	High	male	45.0	6.35	15	▼
MF13	High	male	45.1	4.25	7	◆
MF14	High	male	44.3	4.00	15	⬢
MF15	High	male	44.7	3.07	15	×
MF16	High	male	44.2	4.00	7	+
MF17	Medium	male	46.2	6.00	15	●
MF18	Medium	male	46.2	5.60	15	■
MF19	Medium	male	45.7	5.85	7	▲
MF20	Medium	male	44.8	3.28	15	▼
MF21	Medium	male	44.7	4.79	15	◆
MF22	Medium	male	45.1	4.82	7	⬢
MF23	Medium	male	44.5	4.23	7	×
MF24	Medium	male	43.7	4.60	7	+

- 2 **Supplementary Table 2. Histopathological score.** Histopathology scoring system used for SARS-CoV-2
- 3 induced pulmonary lesions.

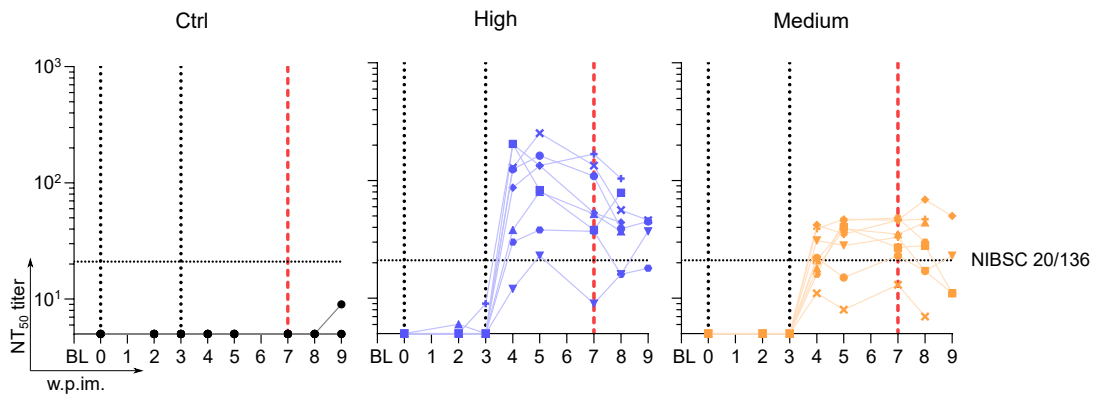
Parameters	Score	Description
Septal cellularity	0	Normal alveolar wall (AW)
	1	1-2 red blood cell (RBC), thick AW
	2	2-4 RBC, thick AW
	3	5-10 RBC, thick AW
	4	>10, thick AW
Septal fibrosis	0	Absent
	1	Present
Type II pneumocytes hyperplasia	0	Absent
	1	Present
Alveolar macrophages	0	Absent
	1	1-5 per x20 field of view (FOV)
	2	6-10 per x20 FOV
	3	11-15 per x20 FOV
	4	>15 per x20 FOV
Alveolar neutrophils	0	Absent
	1	1-5 per x20 FOV
	2	6-10 per x20 FOV
	3	11-15 per x20 FOV
	4	>15 per x20 FOV

4 **Supplementary Figure 1. Antibody responses in cynomolgus macaques.** Individual titers (AU/mL) of
5 IgG binding to SARS-CoV-2 S (upper), RBD (center) and N (lower) proteins measured in sera samples.
6 BL: baseline approximately 3 weeks before first immunization. Black dotted vertical lines represent
7 vaccinations (weeks 0 and 3). Red dotted vertical lines represent SARS-CoV-2 exposure (week 7).
8 Each animal is identified by distinct symbols (Supplementary Table 1 for matching symbols). Control
9 group is in black, High dose group is in blue and Medium dose group is in orange.



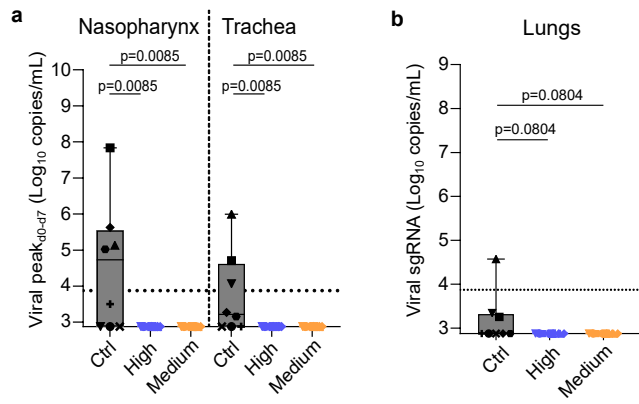
10 **Supplementary Figure 2. Neutralizing antibody responses in cynomolgus macaques.** Individual titers
11 of neutralizing antibody to SARS-CoV-2 (NT₅₀: 50 % neutralizing titer) in sera samples. BL: baseline
12 approximately 3 weeks before first immunization. Black vertical dotted lines represent vaccinations
13 (weeks 0 and 3). Red vertical dotted lines represent SARS-CoV-2 exposure (week 7). Graph starts at the
14 limit of quantification at 5. Dotted horizontal line indicates the titer of the WHO International Standard
15 for anti-SARS-CoV-2 immunoglobulin in human determined in the same assay.

16 Each animal is identified by distinct symbols (Supplementary Table 1 for matching symbols). Control
17 group is in black, High dose group is in blue and Medium dose group is in orange.



18 **Supplementary Figure 3. Subgenomic viral quantification (sgRNA) in fluids from respiratory tract**
19 **following SARS-CoV-2 exposure. a,** Peak of subgenomic viral RNA (sgRNA) quantification in
20 nasopharyngeal and tracheal fluids collected with swabs (Box and whiskers, min to max) (non-
21 parametric Kruskal-Wallis and Dunn's multiple comparisons tests; n=8 per group). Dotted horizontal
22 line represents the lower limit of quantification (LLOQ) at $3.87 \log_{10}$ copies/mL. Graphs start at the
23 lower limit of detection (LLOD) at $2.87 \log_{10}$ copies/mL. Values below the LLOD were plotted at
24 $2.87 \log_{10}$ copies/mL. **b,** Individual sgRNA quantification in fluids from bronchoalveolar lavages (BAL)
25 performed at day 3 post SARS-CoV-2 exposure (Box and whiskers, min to max) (non-parametric
26 Kruskal-Wallis and Dunn's multiple comparisons tests; n=8 per group). Dotted horizontal line
27 represents the LLOQ at $3.87 \log_{10}$ copies/mL. Graph starts at the LLOD at $2.87 \log_{10}$ copies/mL. Values
28 below the LLOD were plotted at $2.87 \log_{10}$ copies/mL.

29 Each animal is identified by distinct symbols (Supplementary Table 1 for matching symbols). Control
30 group is in black, High dose group is in blue and Medium dose group is in orange.



31 **Supplementary Figure 4. Illustrative images of CT acquisition following SARS-CoV-2 exposure.**
32 Representative transversal slices of chest CT scans performed at baseline (BL, week 5 post first
33 immunization), day 3 and day 10 post SARS-CoV-2 exposure showing typical lung lesions.
34 Control group is in black, High dose group is in blue and Medium dose group is in orange.

Ctrl

MF1

MF2

MF3

MF4

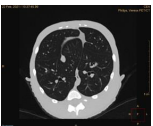
MF5

MF6

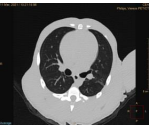
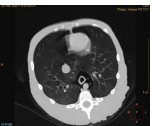
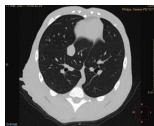
MF7

MF8

BL



d3



d10



High

MF9

MF10

MF11

MF12

MF13

MF14

MF15

MF16

BL



d3



d10



Medium

MF17

MF18

MF19

MF20

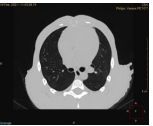
MF21

MF22

MF23

MF24

BL



d3



d10

