

## Supplementary material

**Supplementary Table 1. Prevalence of side effects in participants (n=90) after the second dose of Comirnaty vaccine and severity score**

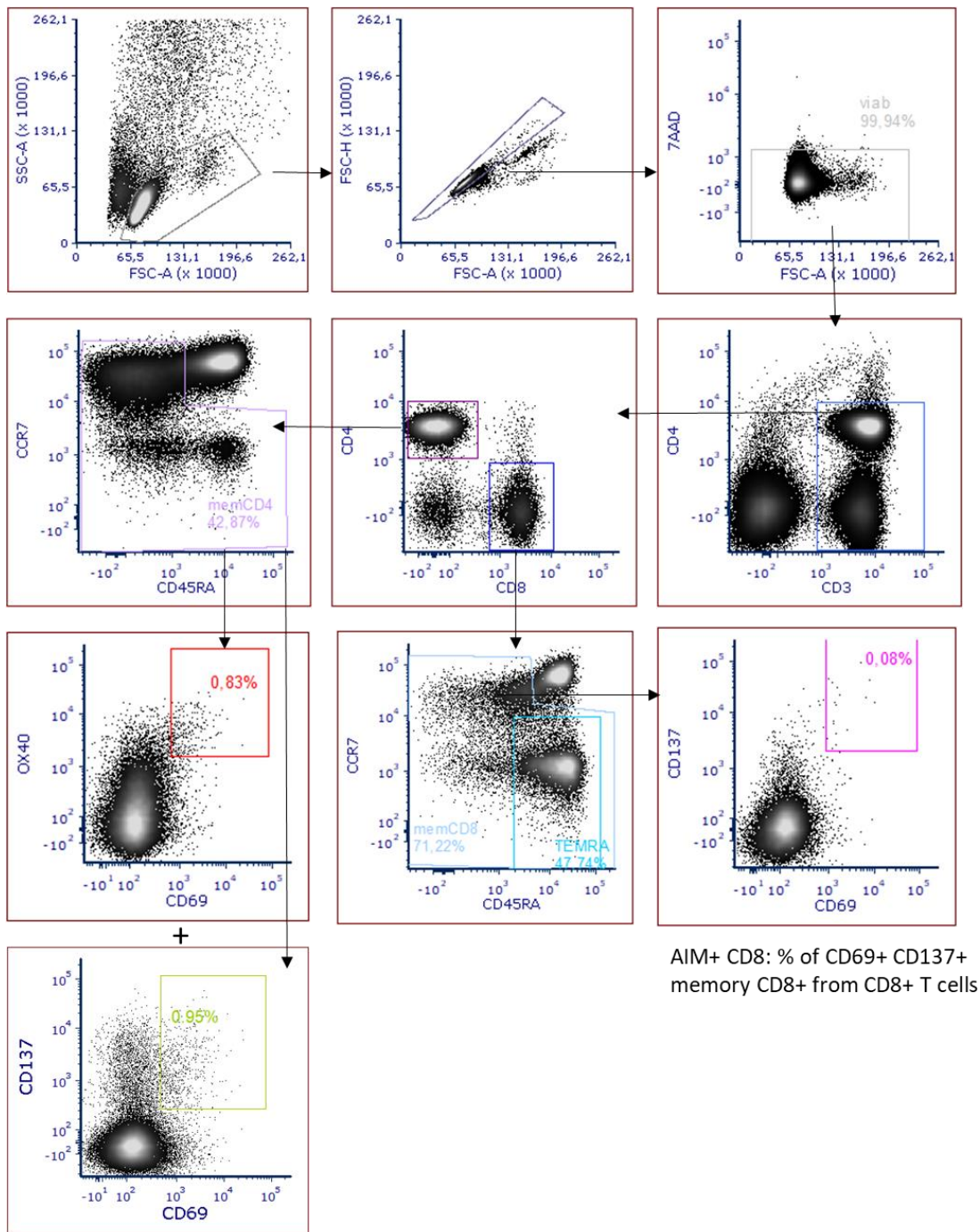
Side effects	% of participants			
	Any score	Score 1*	Score 2	Score 3
<b>Injection site pain or swelling</b>	84	56	26	3
<b>Injection site redness</b>	20	18	2	0
<b>Injection site pruritus</b>	18	14	3	0
<b>Headache</b>	42	12	22	8
<b>Fatigue</b>	64	20	31	13
<b>Malaise</b>	50	13	24	12
<b>Chills</b>	41	14	22	4
<b>Fever</b>	34	12	17	6
<b>Myalgia</b>	34	10	20	4
<b>Arthralgia</b>	21	7	12	2
<b>Pain in extremity</b>	13	3	8	2
<b>Insomnia</b>	12	6	7	0
<b>Nausea</b>	11	6	4	1
<b>Diarrhea</b>	3	3	0	0
<b>Lymphadenopathy</b>	8	4	3	0
<b>Facial sensitivity disorder</b>	2	2	0	0
<b>Hypersensitivity/allergic reaction</b>	0	0	0	0

\*Score: 1- mild symptoms that did not disturb daily life; 2- moderate symptoms that somewhat disturbed the activities of daily living; 3- symptoms that last days and/or caused absence from work

**Supplementary Table 2. Correlation between vaccination side-effects, age and S-RBD IgG amount at different time points**

Side-effect	Correlation: exact p-values/Spearman correlation coefficient					
	age	IgG B2D	IgG 1wA2D	IgG 6wA2D	IgG 12wA2D	IgG 6mA2D
Injection site pain or swelling	0·03	0·13	0·57	0·3	0·27	0·58
	-0·23	0·17	0·06	0·12	0·12	0·06
Injection site redness	0·65	0·27	0·11	0·24	0·18	0·10
	-0·05	0·12	0·18	0·13	0·15	0·19
Injection site pruritus	0·69	0·44	0·32	0·52	0·44	0·43
	-0·04	0·08	0·11	0·07	0·09	0·09
Headache	<b>0·003</b>	<b>0·008</b>	<b>0·007</b>	<b>0·005</b>	<b>0·01</b>	0·12
	<b>-0·31</b>	<b>0·29</b>	<b>0·29</b>	<b>0·31</b>	<b>0·27</b>	0·18
Fatigue	<b>&lt;0·0001</b>	<b>0·005</b>	<b>0·01</b>	<b>0·001</b>	<b>0·004</b>	0·08
	<b>-0·45</b>	<b>0·30</b>	<b>0·28</b>	<b>0·35</b>	<b>0·31</b>	0·2
Malaise	<b>0·0005</b>	<b>0·003</b>	<b>0·0009</b>	<b>0·001</b>	<b>0·005</b>	<b>0·046</b>
	<b>-0·36</b>	<b>0·32</b>	<b>0·35</b>	<b>0·36</b>	<b>0·31</b>	<b>0·23</b>
Chills	0·09	<b>0·001</b>	<b>0·001</b>	<b>0·0005</b>	<b>0·006</b>	<b>0·006</b>
	-0·18	<b>0·35</b>	<b>0·35</b>	<b>0·37</b>	<b>0·30</b>	<b>0·31</b>
Fever	0·19	<b>0·0002</b>	<b>0·0001</b>	<b>&lt;0·0001</b>	<b>&lt;0·0001</b>	<b>&lt;0·0001</b>
	-0·14	<b>0·40</b>	<b>0·40</b>	<b>0·50</b>	<b>0·42</b>	<b>0·44</b>
Myalgia	0·18	0·41	0·19	0·1	0·23	0·75
	-0·14	0·09	0·14	0·18	0·13	0·04
Arthralgia	0·42	0·32	0·51	<b>0·03</b>	0·09	<b>0·02</b>
	-0·09	0·11	0·07	<b>0·24</b>	0·19	<b>0·26</b>
Pain in extremity	0·35	0·24	0·27	0·14	0·25	0·36
	-0·10	0·13	0·12	0·16	0·13	0·11
Insomnia	<b>0·048</b>	<b>0·04</b>	<b>0·03</b>	0·11	<b>0·04</b>	<b>0·048</b>
	<b>-0·21</b>	<b>0·22</b>	<b>0·23</b>	0·18	<b>0·23</b>	<b>0·23</b>
Nausea	0·07	<b>0·04</b>	<b>0·04</b>	<b>0·008</b>	<b>0·02</b>	0·08
	-0·20	<b>0·23</b>	<b>0·23</b>	<b>0·29</b>	<b>0·25</b>	0·20
Diarrhea	0·78	0·18	0·38	<b>0·046</b>	0·06	<b>0·048</b>
	0·03	0·15	0·10	<b>0·22</b>	0·21	<b>0·23</b>
Lymphadenopathy	0·12	0·52	0·73	0·73	0·45	0·43
	-0·17	0·07	0·04	0·04	0·08	0·09
Facial sensitivity disorder	0·21	0·56	0·89	0·27	0·63	0·29
	-0·13	0·06	0·02	-0·12	0·05	-0·12
Total score of symptoms	<b>0·0002</b>	<b>0·0003</b>	<b>0·0002</b>	<b>&lt;0·0001</b>	<b>0·0004</b>	<b>0·006</b>
	<b>-0·38</b>	<b>0·39</b>	<b>0·39</b>	<b>0·45</b>	<b>0·38</b>	<b>0·32</b>

S-RBD IgG levels before the second dose (B2D, n=84), 1 week (1wA2D, n=85), 6 weeks (6wA2D, n=82), and

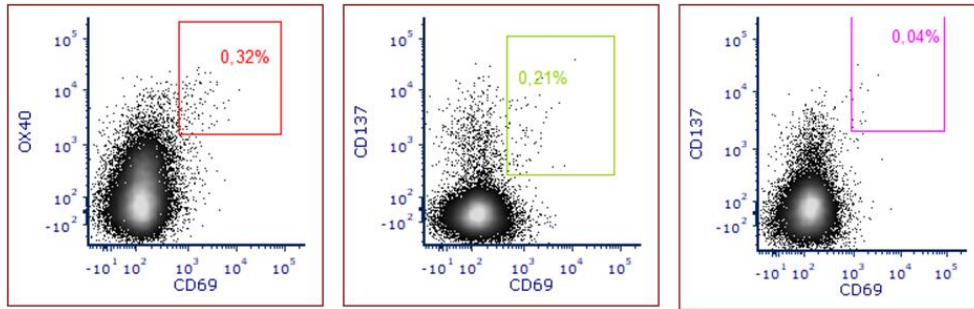


AIM+ CD8: % of CD69+ CD137+  
memory CD8+ from CD8+ T cells

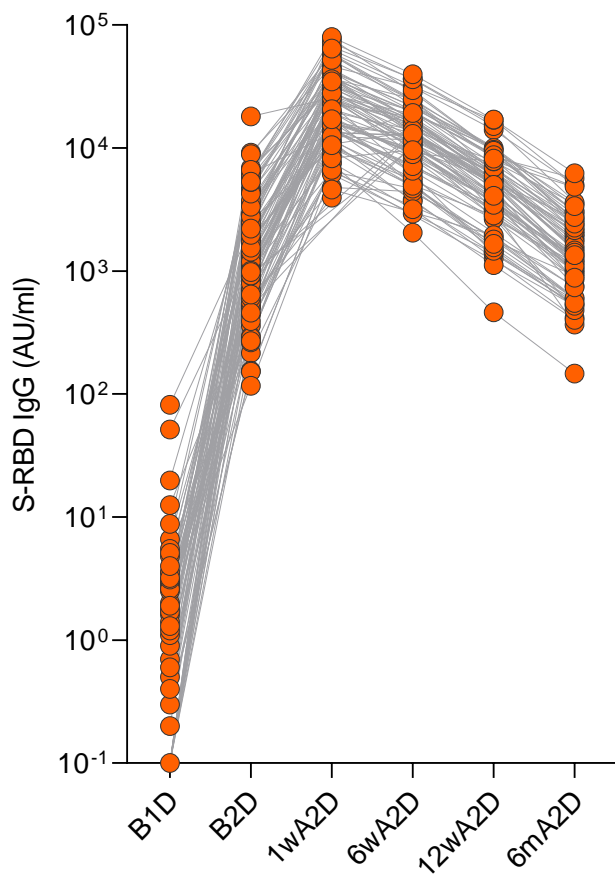
AIM+ CD4: % of OX40+ CD69+  
CD137+ memory CD4+ from  
CD4+ T cells

12 weeks (12wA2D, n=82), and 6 months (6mA2D; n=75) after the second dose. Significant correlations are in bold.

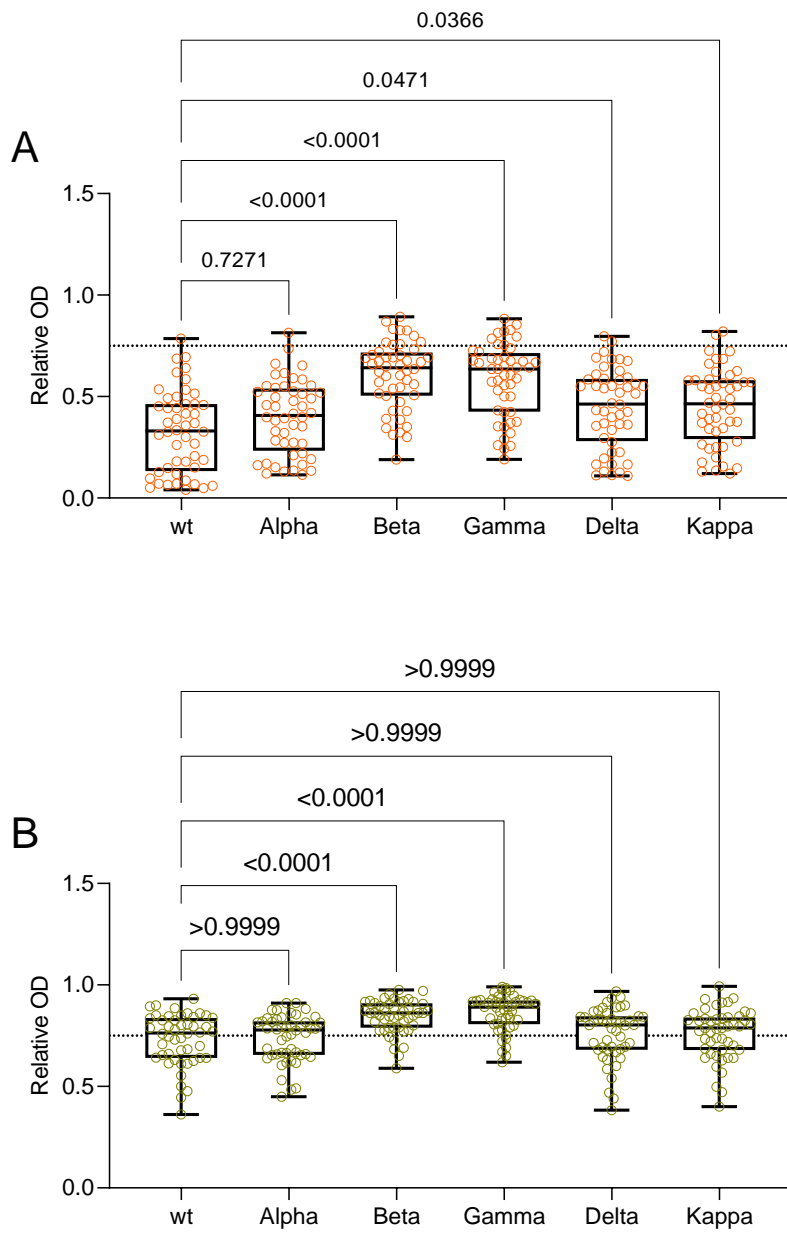
Negative control stimulation



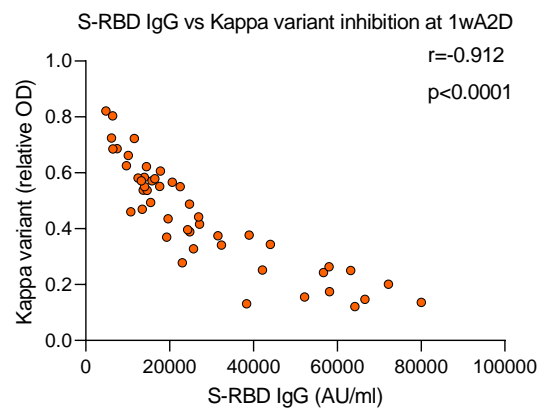
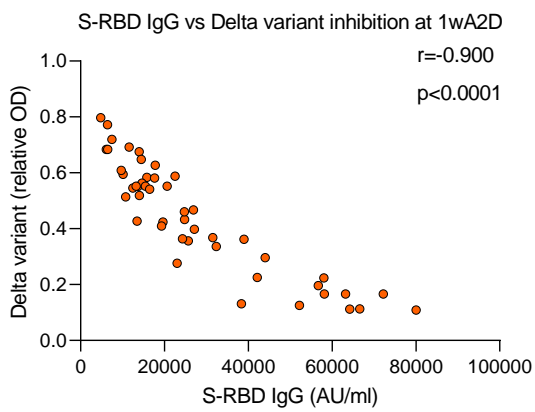
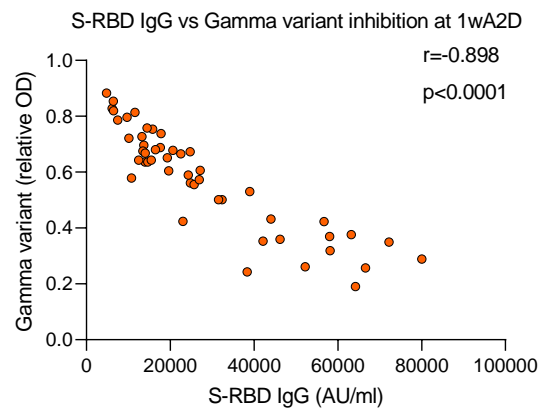
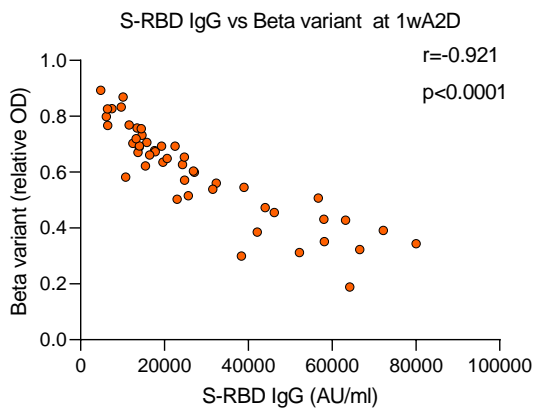
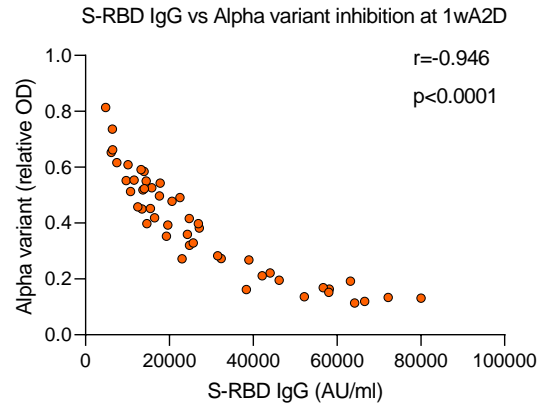
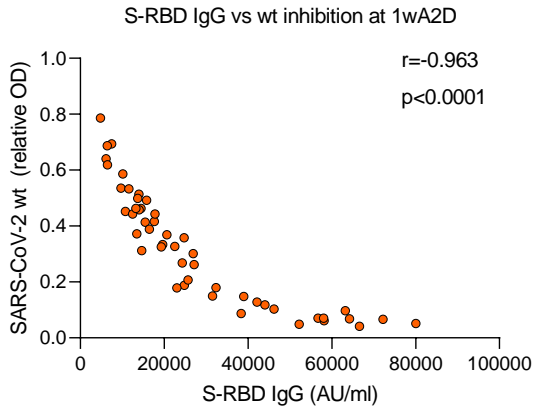
**Supplementary Figure 1. Gating strategy to define SARS-CoV-2 Spike-specific T cells, and TEMRA cells after their overnight stimulation with overlapping peptide pools from S protein.** Activation induced marker positive (AIM<sup>+</sup>) CD4<sup>+</sup> cells were gated as singlet, viable CD3<sup>+</sup> CD4<sup>+</sup> memory T cells that had upregulated activation markers OX40, CD69 and CD137. AIM<sup>+</sup> CD8<sup>+</sup> cells were gated as singlet, viable CD3<sup>+</sup> CD8<sup>+</sup> memory T cells that had upregulated activation markers CD69 and CD137. The result was expressed as background stimulation subtracted percentages from total CD4<sup>+</sup> or CD8<sup>+</sup> T cells respectively. CD8<sup>+</sup> TEMRA cells were gated as CD3<sup>+</sup> CD8<sup>+</sup> CD45RA<sup>+</sup> CCR7<sup>-</sup> T cells and calculated as percentage from CD8<sup>+</sup> T cells.

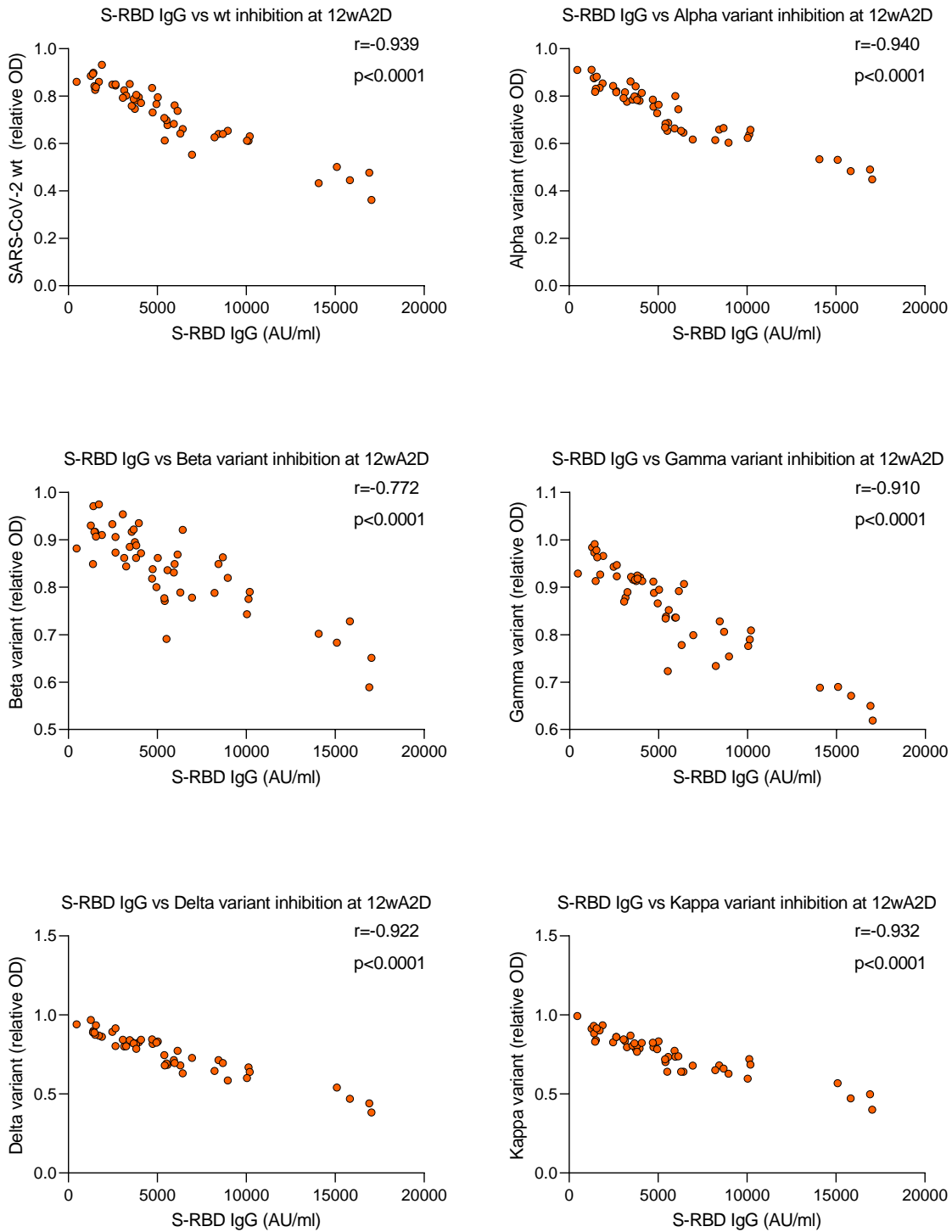


**Supplementary Figure 2. Dynamics of S-RBD IgG antibodies in individuals.** Line chart to show the results of S-RBD IgG antibody levels and dynamics between the sample values before the vaccination (B1D), before the second dose (B2D), and 1 (1wA2D), 6 (6wA2D), 12 (12wA2D) weeks, and 6 months (6mA2D) after the second dose.



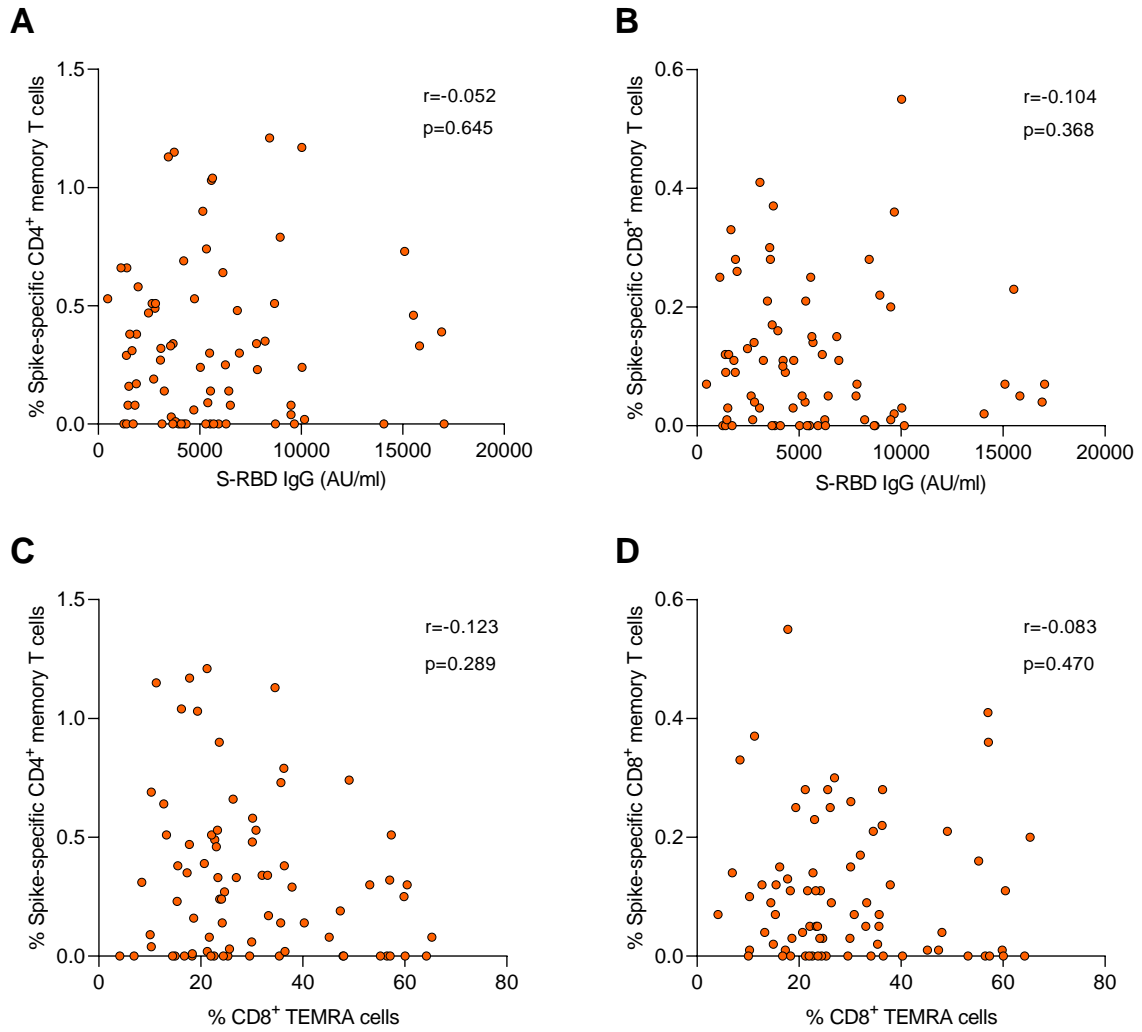
**Supplementary Figure 3.** Comparison of the median relative OD values between the wild type (wt) and VOCs (Alpha, Beta, Gamma, Delta and Kappa) characterizing serum antibody capacities to block the interaction of ACE2 receptor and Spike protein at (A) one week after the second dose (1wA2D) and (B) twelve weeks after the second dose (12wA2D) timepoints (Kruskal-Wallis test with Dunn's multiple testing correction).





**Supplementary Figure 4.** S-RBD IgG antibody responses correlate negatively with relative OD values of wild type (wt) and VOCs (Alpha, Beta, Gamma, Delta and Kappa) at one week after the second dose (1wA2D) and twelve weeks after the second dose (12wA2D). Lower OD values show higher serum antibody capacities to block the interaction of ACE2 receptor and Spike protein. Spearman correlation coefficient and exact p-values are given.





**Supplementary Figure 5.** Correlation analysis between the frequency of Spike-specific memory T cells and RBD IgG values (A and B) and CD8+ TEMRA cell percentages (C and D). Spearman correlation coefficient and exact p-values are given.