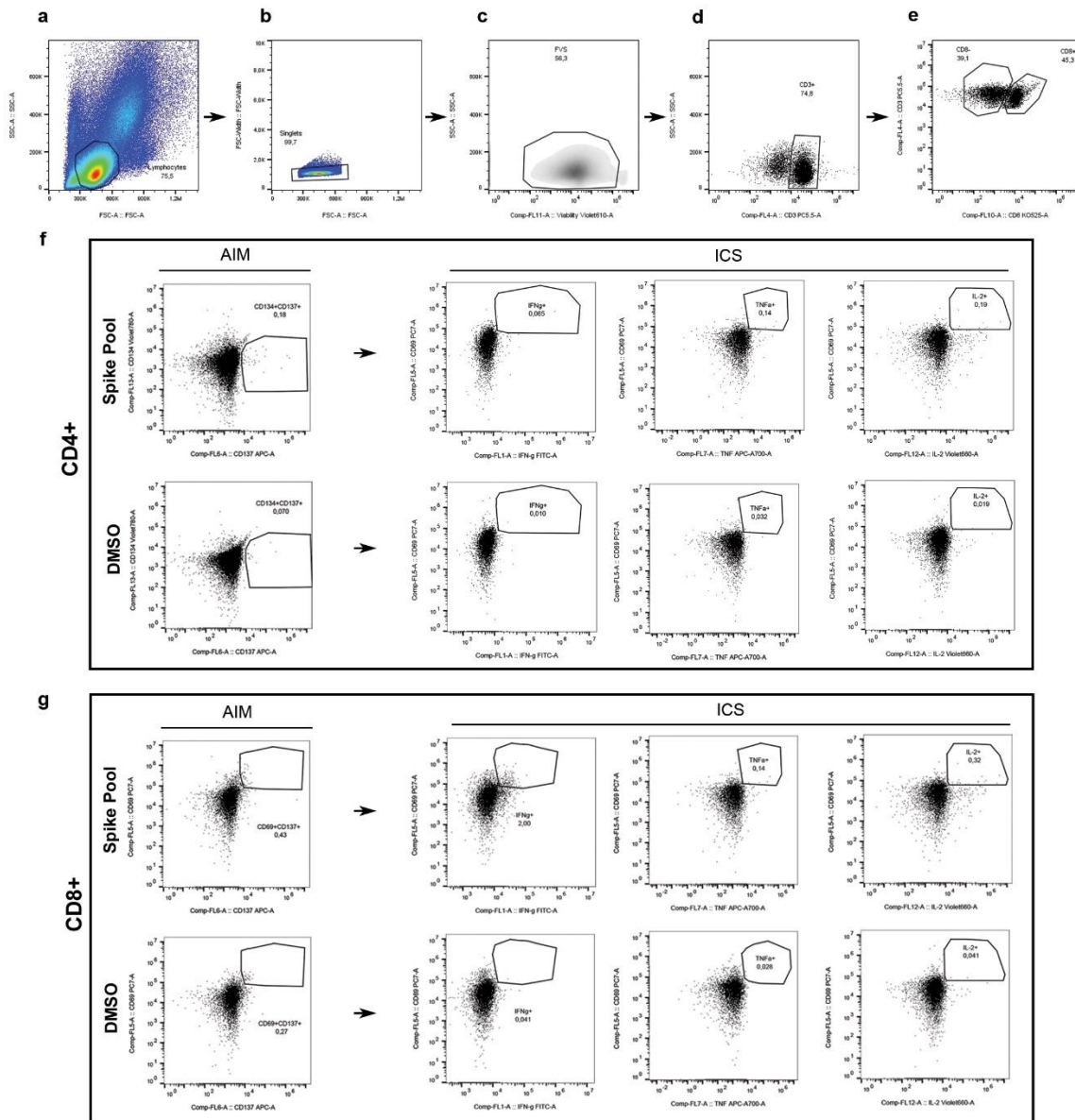
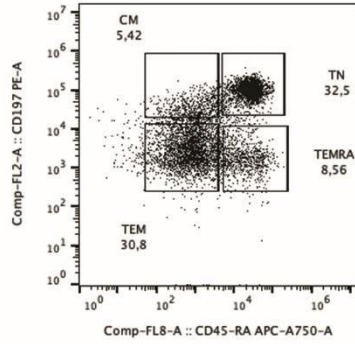


## Supplementary Information



**Figure S1. Gating strategy of SARS-CoV-2 spike-specific T lymphocytes.** As a first step, lymphocytes were selected in a forward scatter (FSC-A)/side scatter (SSC-A) dot-plot (**a**). Then, aggregates were excluded (FSC-A/FSC-W dot-plot, **b**) and live cells were identified (FVS- events, **c**). Next, CD3+ T-cells were gated in a CD3/SSC-A dot-plot (**d**). Among T cells, CD8- (further identified as CD4+ cells) and CD8+ subsets were gated (**e**). TCR-dependent activation induced markers (AIM) and intracellular cytokine staining assays (ICS) were evaluated for both CD4+ and CD8+ T cells (**f**, **g**, respectively), using the corresponding dimethyl sulfoxide (DMSO) control to assess and subtract the background.



**Figure S2. Phenotypic analysis of CD8+ T cells.** Within the CD8+ T cell population (selected as shown in Figure S1 (A-E), T effector memory (TEM, CD197-/CD45RA-), T effector memory RA (TEMRA, CD197-/CD45RA+), T naïve (TN, CD197+/CD45RA+), and central memory compartments (CM, CD197+/CD45RA-) were gated.

Supplementary Table S1			
Cohort	n	Age (years)	Age (median)
CTRL	19	44.94 $\pm$ 11.43	44
NI	16	58.5 $\pm$ 12.85	62.5
ChAdOx1	22	46.76 $\pm$ 11.25	45
Ad26.COV2.S	7	46.28 $\pm$ 10.72	51
BNT162b2	52	48.15 $\pm$ 15.74	47.5
mRNA-1273	9	50.00 $\pm$ 12.67	53
Gender	%	Age (years)	Age (median)
Male	50.4	50.11 $\pm$ 14.71	50
Female	49.6	47.51 $\pm$ 13.15	45

**Table S1. Demographic characteristics of the study participants.** Displayed data represent mean  $\pm$  standard deviation and the median age of subjects enrolled in the study from each vaccine platform.

Supplementary Table S2					
SURFACE					
<i>Antigen</i>	<i>Clone</i>	<i>Fluorochrome</i>	<i>Amount per test</i>	<i>Manufacturer</i>	<i>Cat. No</i>
CD197	2-L1-A	PE	5 µl	BD Biosciences	566742
CD3	SK7	PerCP-Cy5.5	20 µl	BD Biosciences	332771
CD69	FN50	PE-Cy7	5 µl	BD Biosciences	561928
CD45RA	HI100	APC-H7	5 µl	BD Biosciences	560674
CD8	SK1	V500-C	5 µl	BD Biosciences	647457
FVS 575V	NA	NA	1 µl	BD Biosciences	565694
INTRACELLULAR					
<i>Antigen</i>	<i>Clone</i>	<i>Fluorochrome</i>	<i>Amount per test</i>	<i>Manufacturer</i>	<i>Cat. No</i>
CD134	L106	BV768	5 µl	BD Biosciences	744746
CD137	4B4-1	APC	20 µl	BD Biosciences	550890
IFN-γ	B27	FITC	20 µl	BD Biosciences	552887
TNF-α	MAb11	Alexa Fluor™700	5 µl	BD Biosciences	557996
IL-2	5344.111	BV711	5 µl	BD Biosciences	563946

**Table S2. Flow cytometry reagents.** In the list are shown the antibodies utilized in the study for surface and intracellular staining. NA = not applicable.