S1 Table. Cohort summary

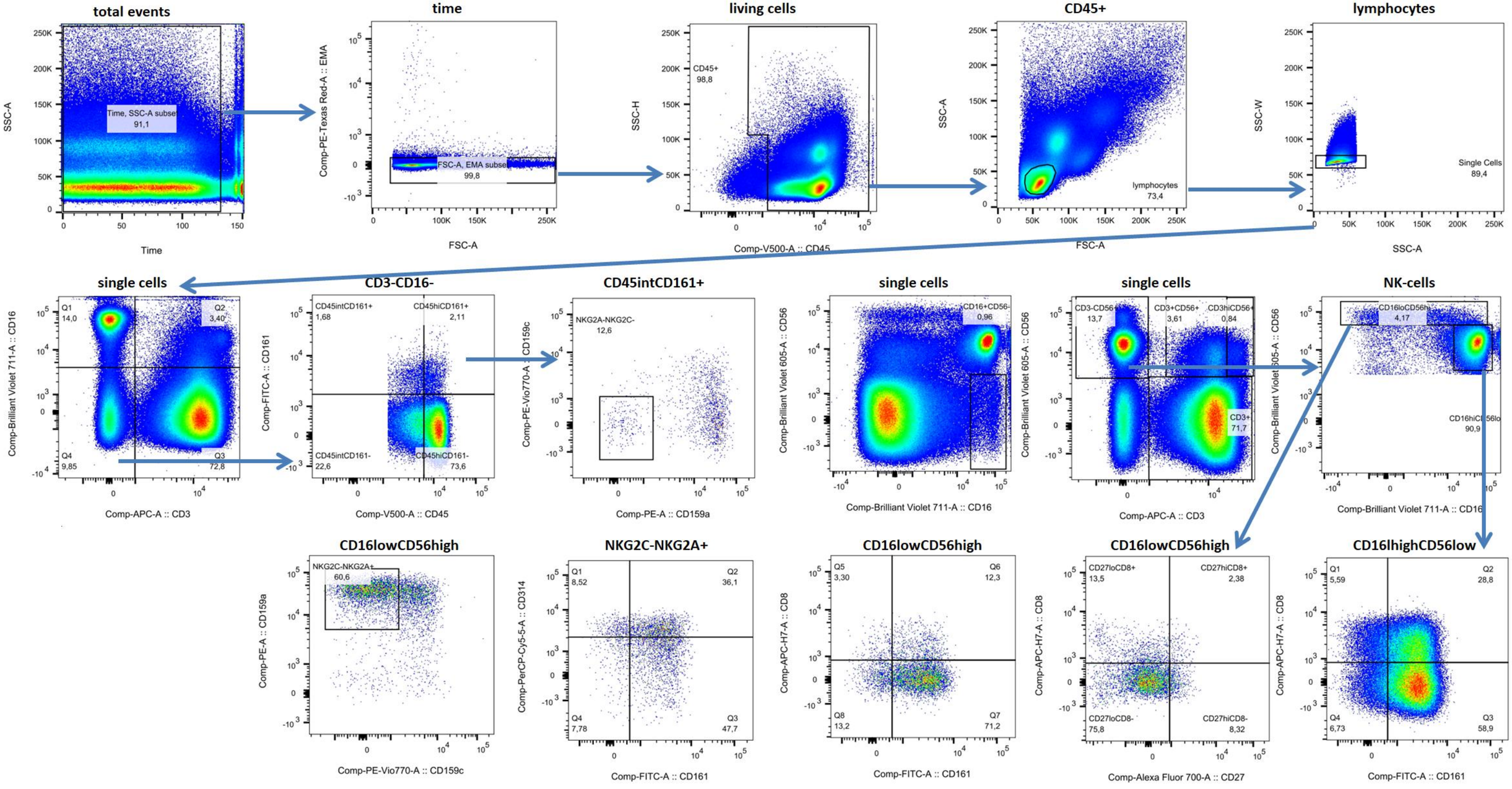
	PD patients	**controls**	**p value**
Individuals (n)	18	24	
gender (male in % (m/f))	83.3% (15/3)	62.5% (15/9)	0.139
age (in years, mean ± SD)	65.0 ± 8.5	66.4 ± 10.1	0.622
CMV status (positive in % (n ±))	55.6% (10/8)	56.5% (13/10)	0.951
PBMC storage length (in years, mean ± SD)	1.98 ± 0.67	1.89 ± 0.45	0.644
Disease duration (in years, mean ± SD)	1.89 ± 1.13	NA	
UPDRS III (mean ± SD)	23.6 ± 8.4	NA	

P values were calculated with Pearson Chi Square or t-test

m = number of males, f = number of females, CMV = *Cytomegalovirus*, UPDRS III = Unified Parkinson's disease rating scale part III

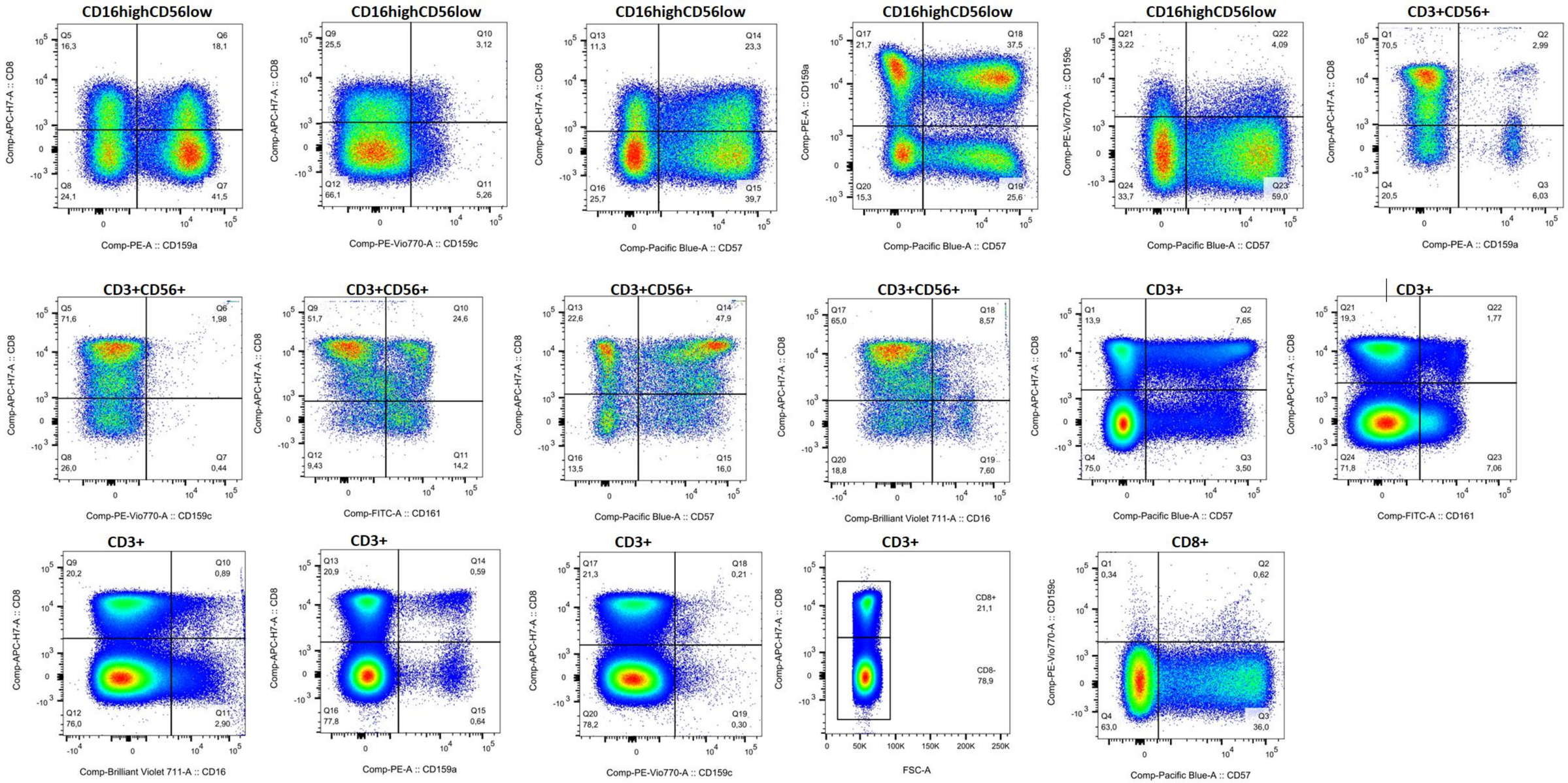
S2 Table. Monoclonal antibodies employed

Antigen	Fluorochrome	Clone	Company	Antibody Registry ID (REF: http://antibodyregistry.org/)	Panel
CD45	V500	HI30	BD Horizon	AB_1937332	1 + 2
CD3	APC	UCHT1	BioLegend	AB_314066	1
CD3	Alexa700	UCHT1	BD	AB_396952	2
CD4	PE-Cy7	SFCI12T4D11	BeckmanCoulter	AB_10641616	2
CD8	APC-H7	SK1	BD	AB_1645481	1
CD14	APC-H7	MφP9	BD	AB_1645464	2
CD19	PerCP-Cy5.5	SJ25C1	BD	AB_2868629	2
CD27	Alexa700	O323	BioLegend	AB_493757	1
CD56	BV605	NCAM16.2	BD Horizon	AB_2870612	1 + 2
CD57	Pacific Blue	HCD57	BioLegend	AB_2063197	1
CD159a/NKG2A	PE	20d5	Miltenyi	AB_2751579	1
CD159c/NKG2C	PE-Vio770	20d5	Miltenyi	AB_2655398	1
CD314/NKG2D	PerCP-Cy5.5	1D11	BD	AB_2562792	1
CD161	FITC	DX12	BD	AB_396347	1
CD16	BV711	3G8	BD	AB_2732050	1 + 2
CXCR2/CD182	APC	1C6/CXCR3	BD	AB_398481	2
CXCR3/CD183	BV421	G025H7	BioLegend	AB_2561448	2
CCR6/CD196	PE	11A9	BD Pharmingen	AB_397273	2
CCR5/CD195	FITC	HEK/1/85a	BioLegend	AB_2564071	2
TCRVd2	PerCP	B6	BioLegend	AB_1877263	2



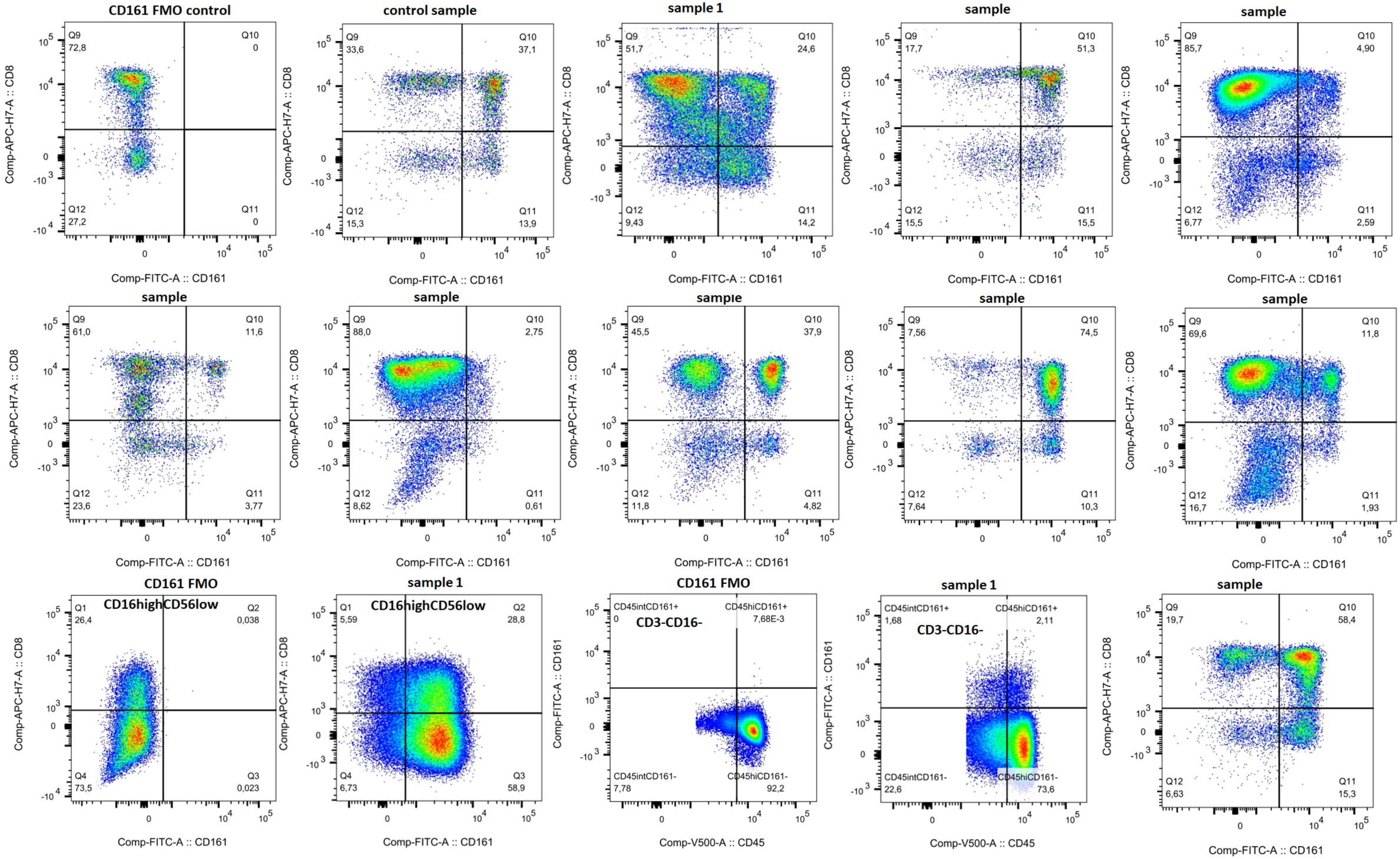
S1 Figure Gating strategy for the populations of panel 1 part1.

FlowJo plots are shown for PBMCs of one study participant after blocking with Gamunex, staining with Ethiodiummonoazide (EMA) and afterwards with antibodies listed in Table S2. After gating on living EMA- cells, CD45+ leukocytes were selected and lymphocytes based on their morphology. Based on CD3 and CD56 expression NK-cells (CD3-CD56+), T-cells (CD3+CD56-), NKT-cells (CD3+CD56+) and CD3hiCD56+ cells were discriminated. CD16 helped to differentiate between immature (CD16low) and mature (CD16 high) NK-cells. Dysfunctional NK-cells were defined as CD45-CD16high. CD57, CD159a (NKG2A) CD159c (NKG2C) and CD161 expression were analysed to characterise the phenotype of the various immune subsets. In addition a subset of innate lymphoid like cells was gated as CD45intCD161+CD159a-CD159c-. Above each plot the parental population is written.



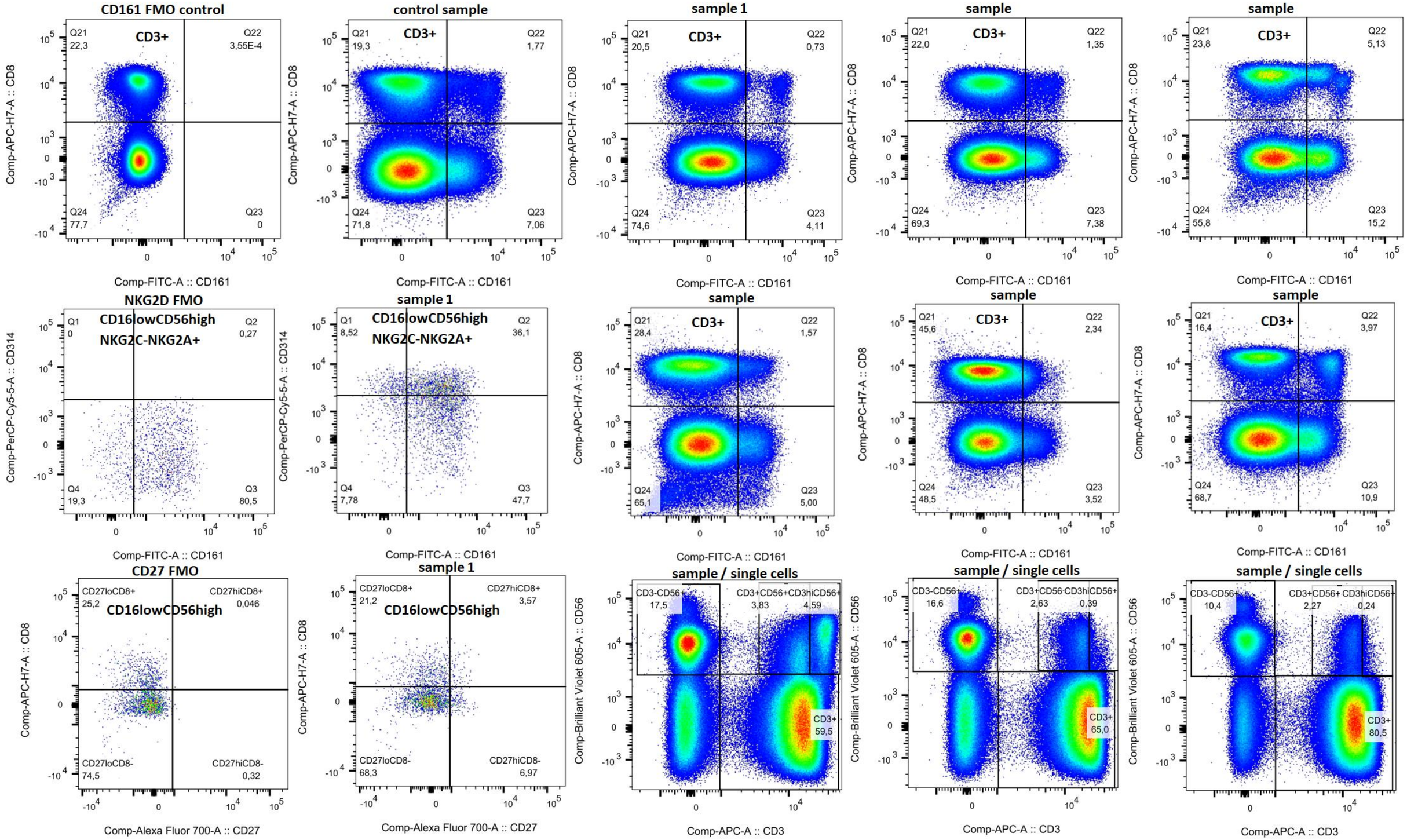
S2 Figure. Gating strategy for the populations of panel 1 part2.

FlowJo plots shown of a random study participant are presented with the population presented stated on top. Some gates were difficult to set and therefore FMO controls have been analysed along as presented in S3 and S4. Above each plot the parental population is stated.



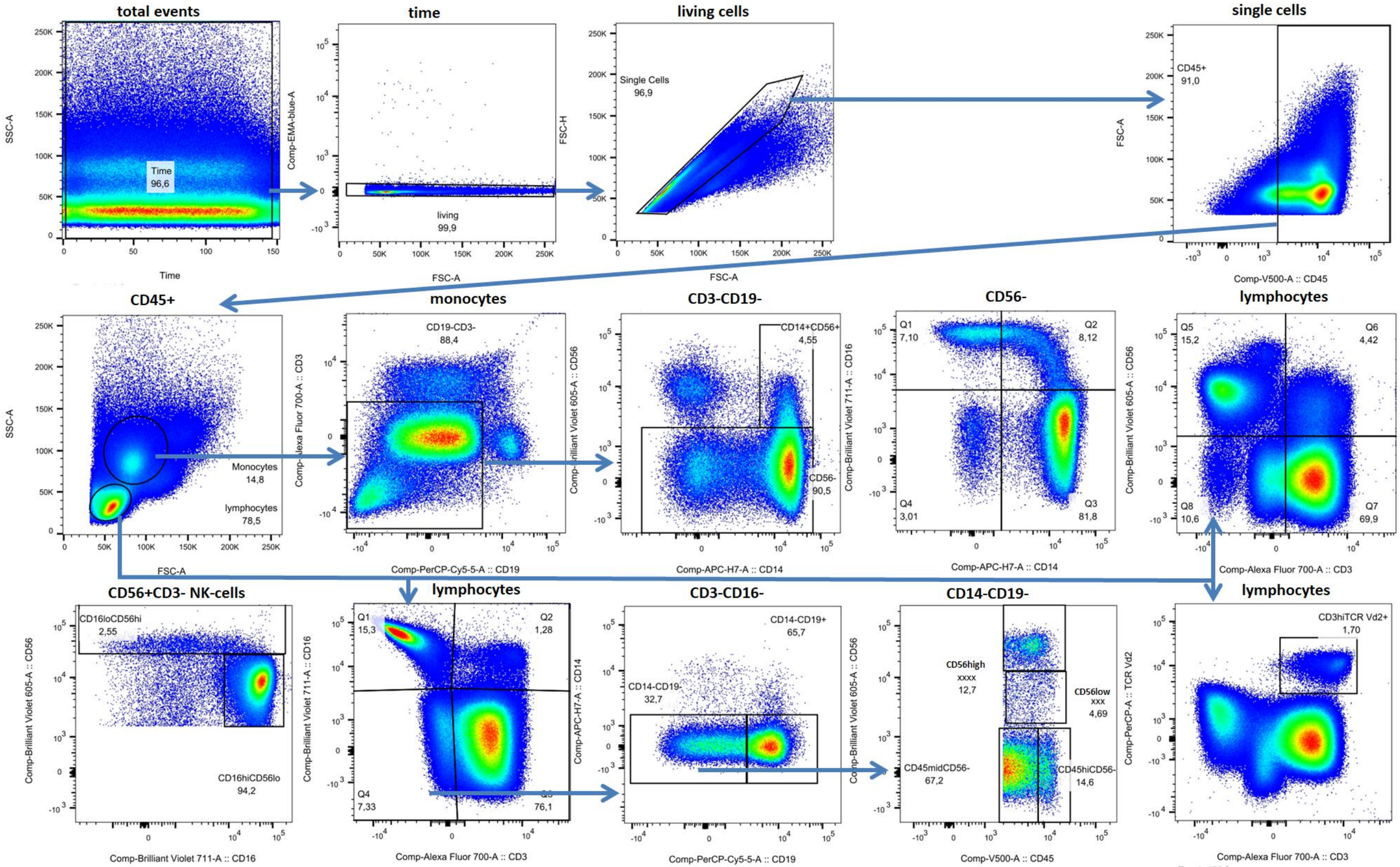
S3 Figure. Gating strategy for the populations of panel 1 controls

FMO controls and control sample were PBMCs of a local blood bank donor. Sample 1 is the random donor shown in the full gating strategy figures. The other samples are donors selected to represent the different marker expression patterns observed through the whole cohort. The populations displayed are CD3+CD56+ cells unless otherwise stated. This Figure shows the variety of CD161 populations and the great difference between individual samples.



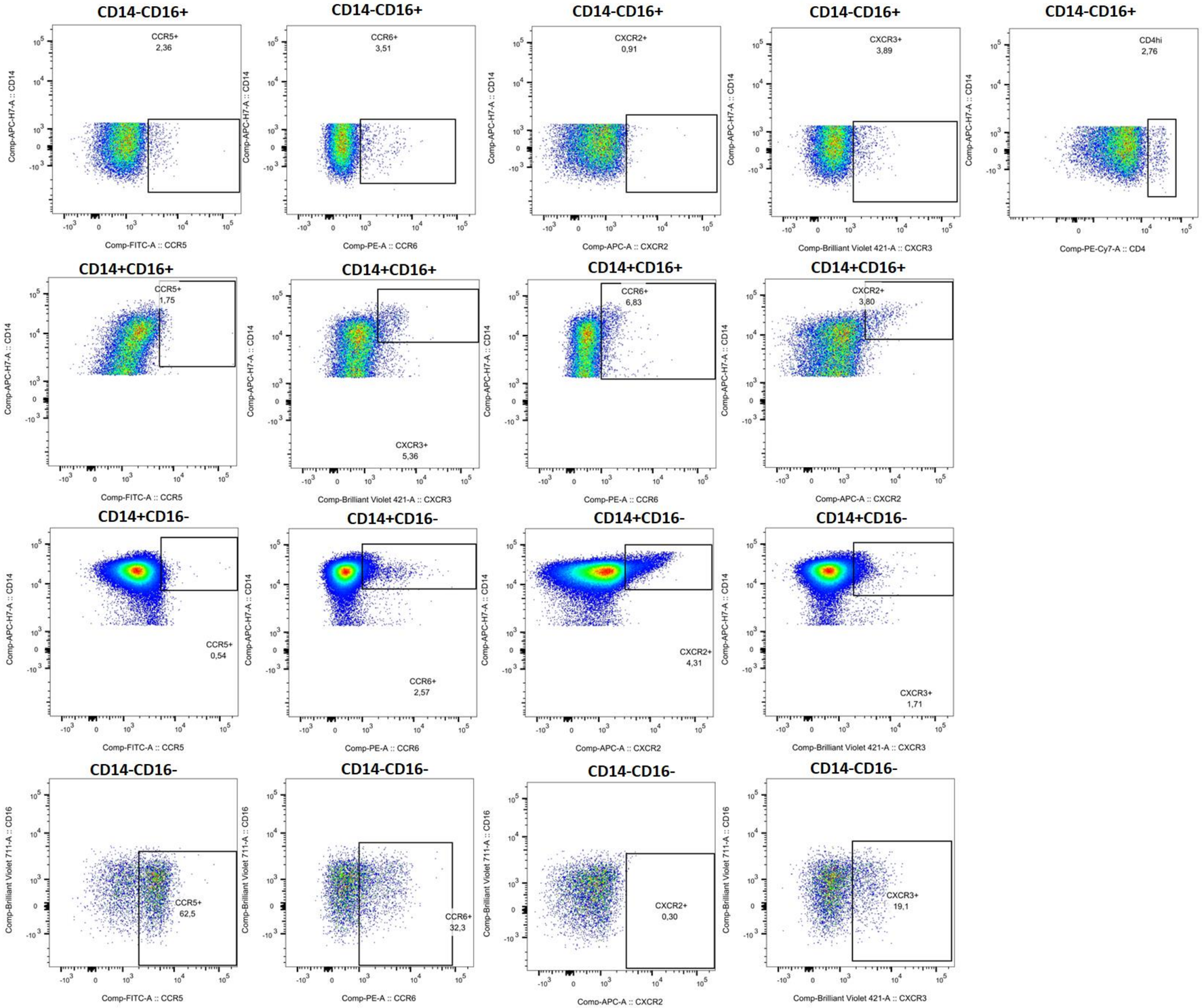
S4 Figure. Gating strategy for the populations of panel 1 controls

FMO controls and control sample were PBMCs of a local blood bank donor. Sample 1 is the random donor shown in the full gating strategy figures. The other samples are donors selected to confirm that sometimes a CD161low population of CD8+ T-cells is visible as described in PMID: 24019201, PMID: 26220166 and in context of multiple sclerosis PMID: 21216829 and PMID:23864273. Bottom right plots were selected to provide a better overview of the CD3lowCD56low and CD3highCD56low populations to show how the gates have been set.

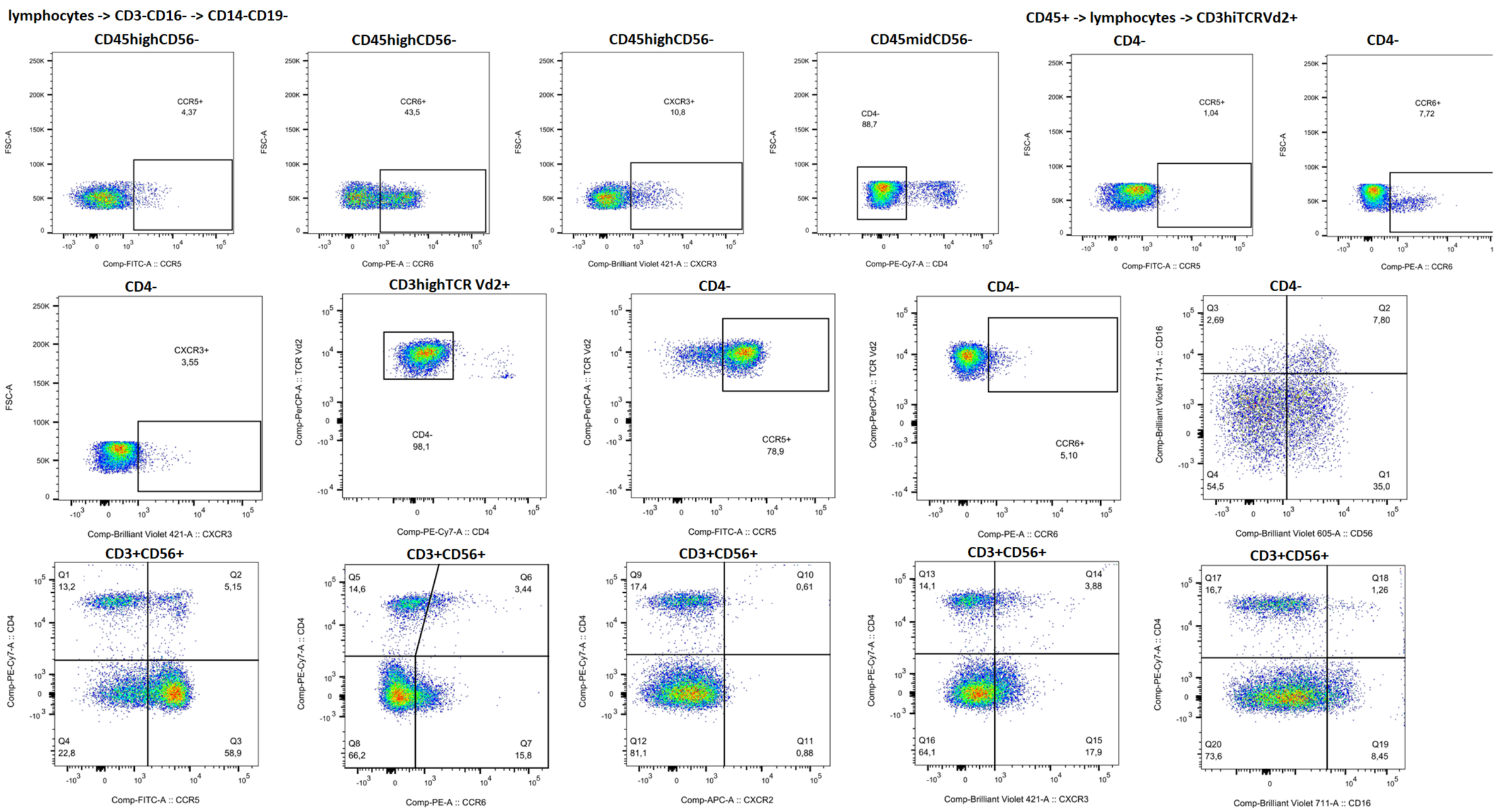


S5 Figure. Gating strategy for the populations of panel 2 part 1.

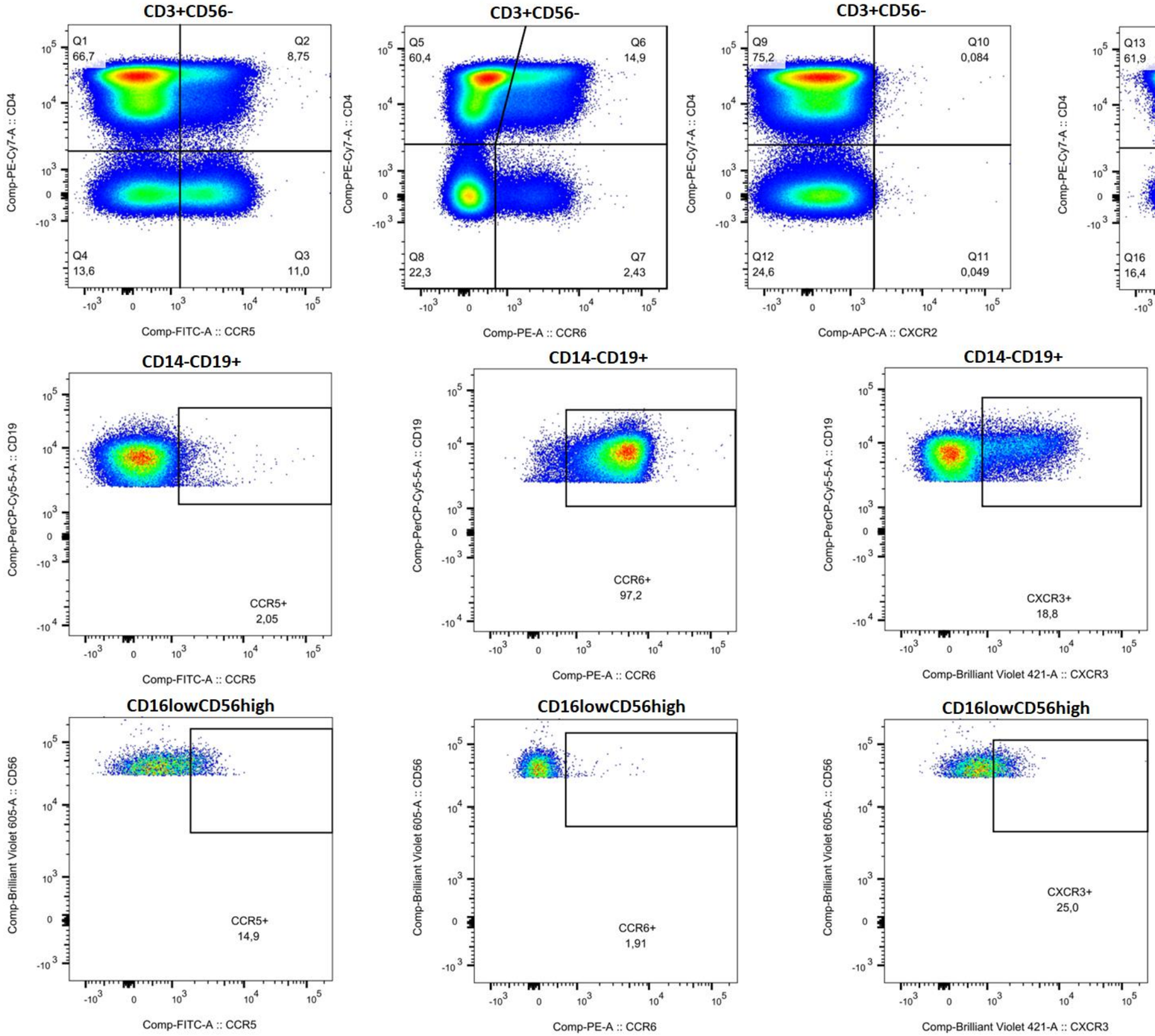
Following the same strategy as in S1 Fig. PBMCs were analysed in parallel with a second set of antibodies to further investigate expression of chemokine receptors CCR5, CCR6 and CXCR3. In CD19+ B-cells, CD4+ and CD4- T-cells, immature CD16lowCD156high NK-cells, CD16highCD56low NK-cells and classical CD16-CD14+ monocytes, intermediate CD16+CD14+ monocytes and non-classical CD16+CD14low monocytes. To exclude CD56+CD16+ NK-cells from monocytes avoid that they are caught as false positive non classical CD16+CD14low monocytes, CD56- cells have been selected for this monocyte analysis. As publications such as PMID: 24286519 showed the existence of CD56+ monocytes, CD14+CD56+ cells have been analysed in parallel. CD45 plotted against CD56 on CD3-CD16-CD14-CD19- cells allowed to identify potential innate lymphoid cell subsets.



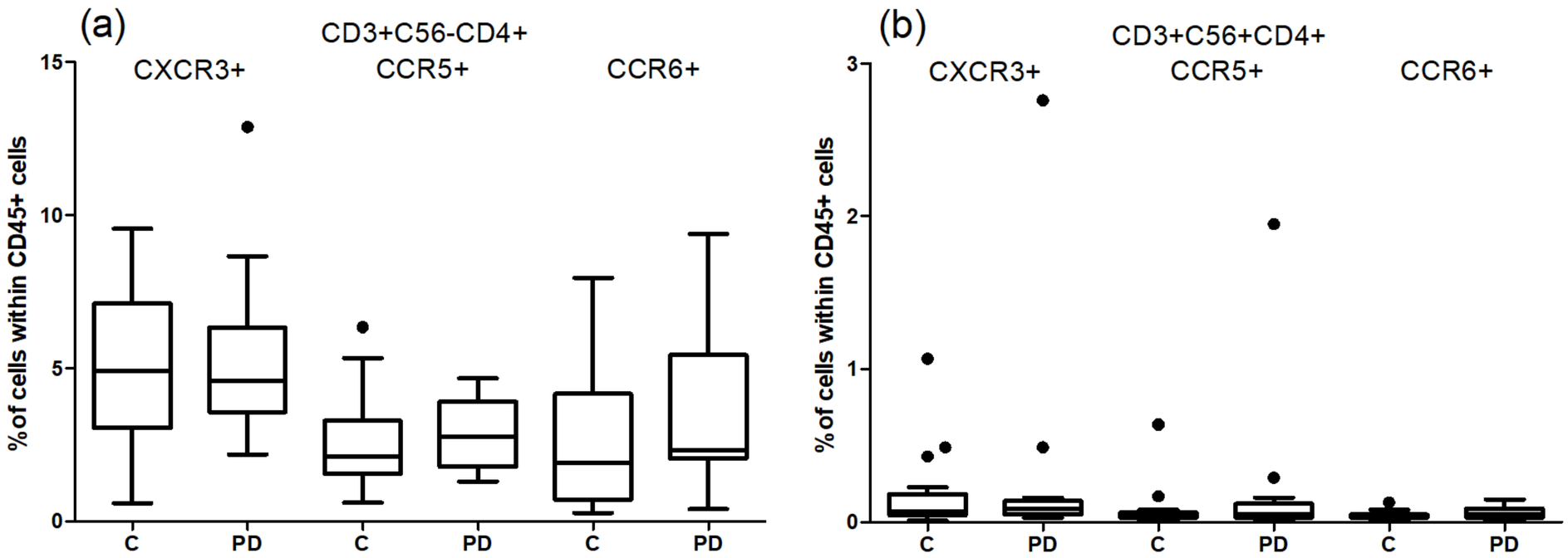
S6 Figure. Gating strategy for the populations of panel 2 part 2. The populations are based on preselection CD45+ monocytes which are CD3-CD19-CD56- (S5 Fig.). After plotting CD14 against CD16 4 populations were gated and these taken as parental populations for the plots here. Eeach plot has written on top the parental population.



S7 Figure. Gating strategy for the populations of panel 2 part 3. First a type of potentially innate lymphoid like cells defined as lymphocytes -> CD3-CD16- -> CD14-CD19- has been gated (S5 Fig.) Then on the population of CD45highCD56- and CD45midCD56- cells chemokine receptor expression is analysed (parent population is written above each plot). Next plots are on the population of CD3highTCR Vd2+CD4- cells. The last row is on CD45+ lymphocytes which are CD3+CD56+ (NKT-cells).



S8 Figure. Gating strategy for the populations of panel 2 part 4. First row represents the expression of chemokine receptors on T-cells (lymphocytes -> CD3+CD56-). Second rowis based on the population of B-cells (CD45+ -> lymphocytes -> CD3- CD16- -> CD14-CD19+). The third row displays the immature NK-cells (CD45+ -> lymphocytes -> CD56+CD3- -> CD16lowCD56high).



S9 Figure. Frequencies of chemokine receptor expressing CD4+ T-cells (a) and CD4+ NKT-cells (b) among CD45+ cells displayed as Tukey plots Mann-Whitney-U-Tests comparing PD patients (PD) and controls (C) did not reveal any significant differences.