

Supplementary Information

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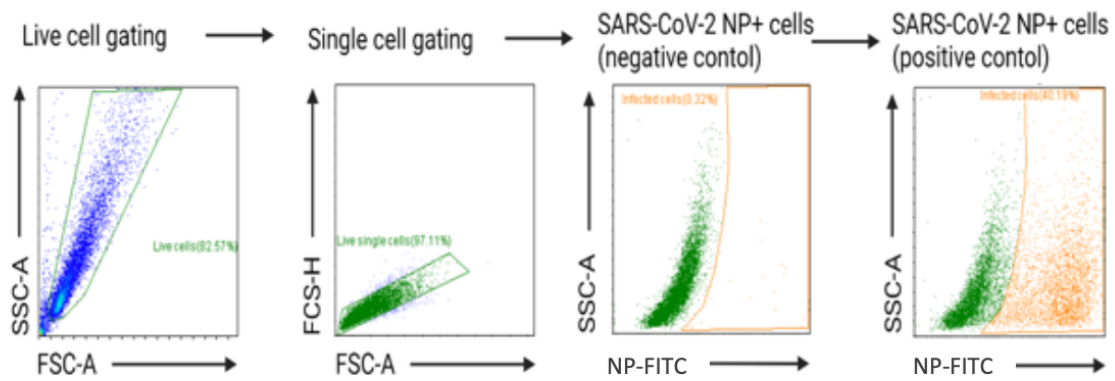
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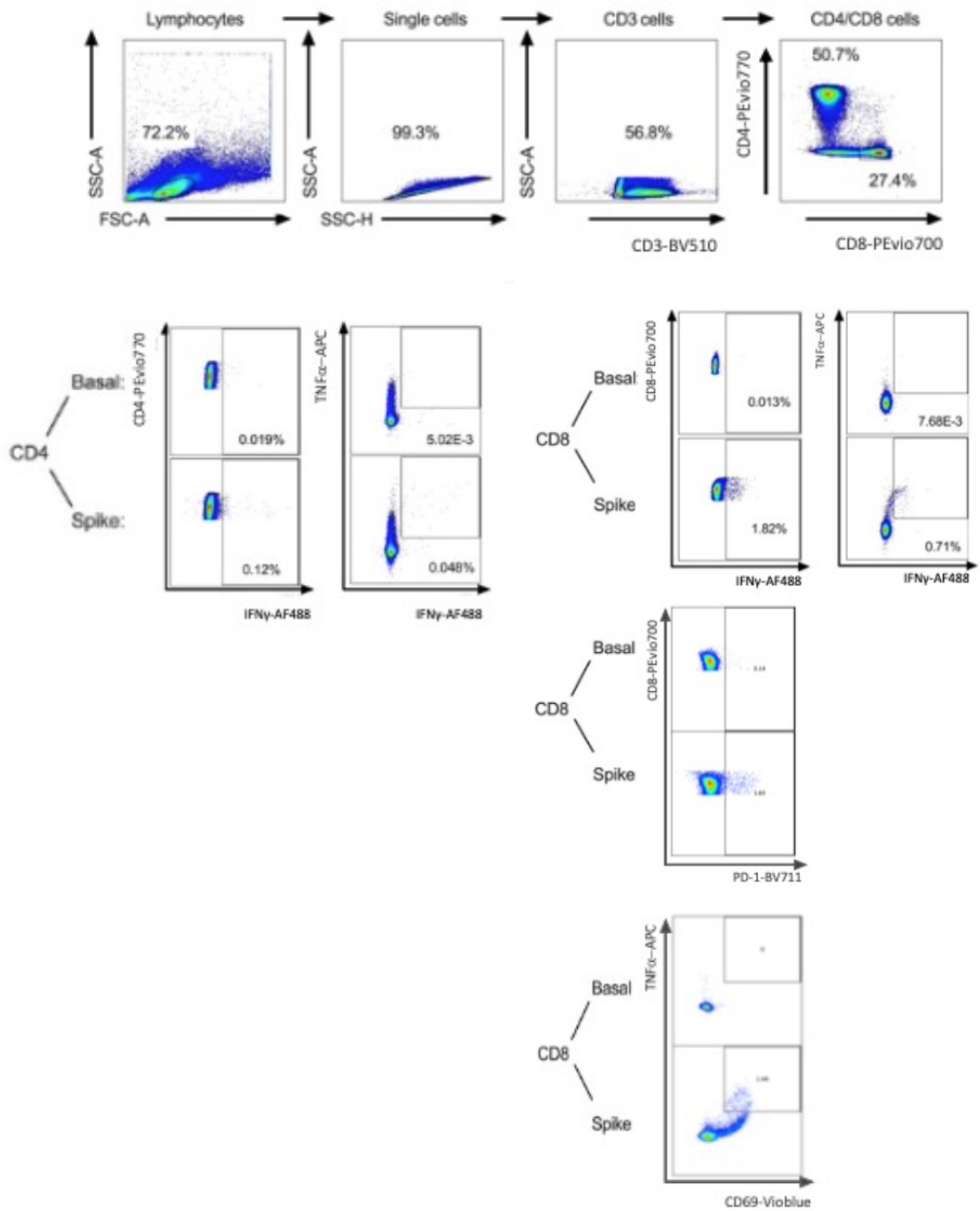
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Supplementary Figure 1 – Flow Cytometry Gating Strategy for Neutralisation Assay



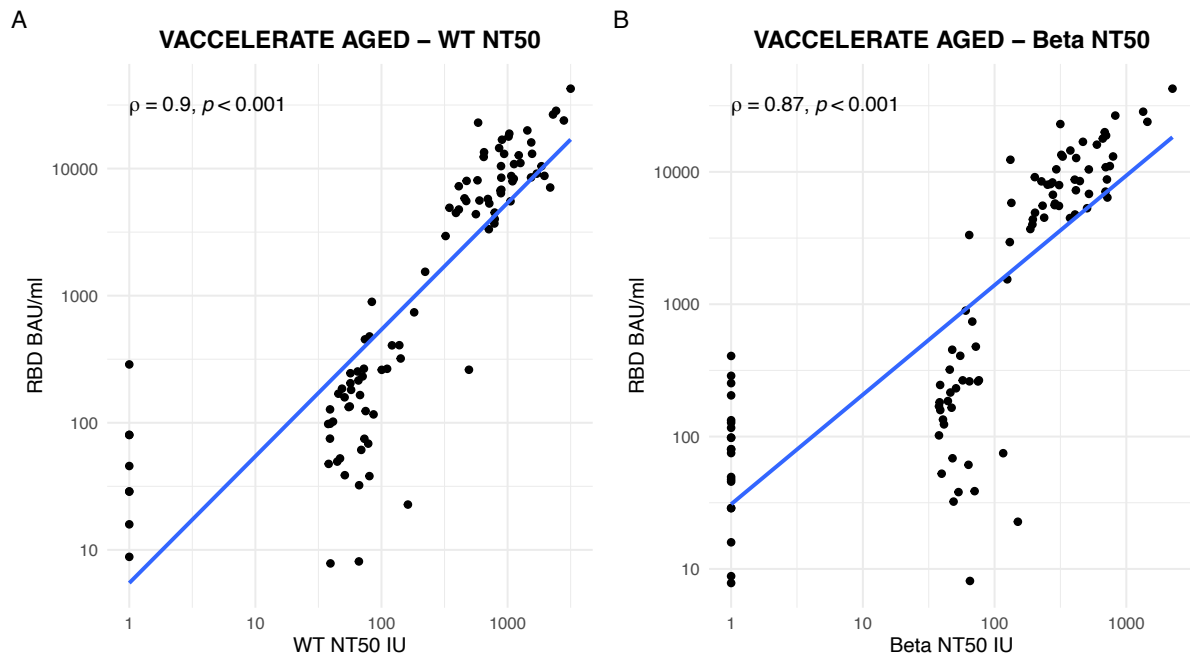
Cells were gated against Forward (FSC) and Side-Scatter (SSC) to exclude debris from intact cells, then single cells were gated based on linearity between Area (A) and Height (H). Infected cells (NP+) were gated against the negative controls (Infection Medium alone). Analysis was performed using CytExpert software (version 2.4.0.28, Beckman Coulter).

Supplementary Figure 2 – Gating Strategy for SARS-CoV-2 specific T cell response



Representative flow cytometry gating strategy for detection of IFN γ + and TNF α + responses in CD4+ and CD8+ T cells, and PD-1+ and CD69+ TNF α + CD8+ T cells. Basal represents the unstimulated control.

Supplementary Figure 3 – Correlation between RBD and NT50 in the VACCELERATE EU-COVAT-1 AGED Part A Cohort



Legend: Two tailed Spearman correlation between A) RBD and WT-B.1.177.18 (exact p value <2.2e-16) NT50 B) RBD and Beta NT50 (exact p value <2.2e-16)

Supplemental Table 1 – Two tailed Spearman correlation of all antigens with WT-B neutralising capacity in all samples and >30 days from symptom onset only

	All samples		>30 days from symptom onset	
	rho	P value	rho	P value
RBD	0.81	<2.2e-16	0.85	<2.2e-16
S1	0.80	<2.2e-16	0.84	<2.2e-16
S2	0.72	<2.2e-16	0.76	<2.2e-16
N	0.74	<2.2e-16	0.72	<2.2e-16

Supplemental Table 2 – Sensitivity and specificity of each antigen in predicting a WT-B NT50 of <1000 IU in all samples and in >30 days from symptom onset

	All samples		>30 days from symptom onset	
	Sensitivity (95% CI)	Specificity (95% CI)	Sensitivity (95% CI)	Specificity (95% CI)
RBD	83% (76-89%)	73% (56-87%)	82% (74-88%)	80% (56-94%)
S1	87% (80-91%)	59% (41-75%)	87% (79-92%)	58% (33-80%)
S2	72% (65-79%)	65% (46-80%)	72% (63-79%)	74% (49-91%)
N	68% (61-76%)	85% (69-95%)	67% (58-75%)	100% (82-100%)

Supplemental Table 3 – Two tailed Spearman correlation between WT-B NT50 and spike specific T cell responses

Spike specific response	Spearman rho	P value
CD4+ IFN γ +	0.21	0.24
CD4+ TNF α + IFN γ +	-0.02	0.92
CD4+ PD-1+	0.03	0.86
CD8+ IFN γ +	0.09	0.61
CD8+ TNF α + IFN γ +	0.08	0.66
CD8+ CD69+ TNF α +	0.27	0.13

Supplemental Table 4 – Spike specific responses in those with an RBD IgG above or below 456 BAU/ml

Spike specific response	>456 BAU/ml	<456 BAU/ml	P value
CD4+ IFNγ+	0.065 (0.02-0.1)	0.06 (0.00009-0.07)	0.68
CD4+ TNFα+ IFNγ+	0.02 (0.002-0.03)	0.01 (0.005-0.03)	0.78
CD4+ PD-1+	0.26 (0.14-0.35)	0.21 (0.09-0.36)	0.68
CD8+ IFNγ+	0.31 (0.23-0.99)	0.23 (0.0-0.34)	0.13
CD8+ TNFα+ IFNγ+	0.15 (0.12-0.86)	0.12 (0.06-0.17)	0.12
CD8+ CD69+ TNFα+	0.09 (0.04-0.31)	0.03 (0.01-0.099)	0.06

Columns show median and interquartile range of the percentage of spike specific cells for each set of T cell markers. Groups are compared with Kruskal-Wallis rank sum test.