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Supplemental information

Maintenance of broad neutralizing antibodies and memory B cells 1 year post-infection is predicted by SARS-CoV-2-specific CD4+ T cell responses

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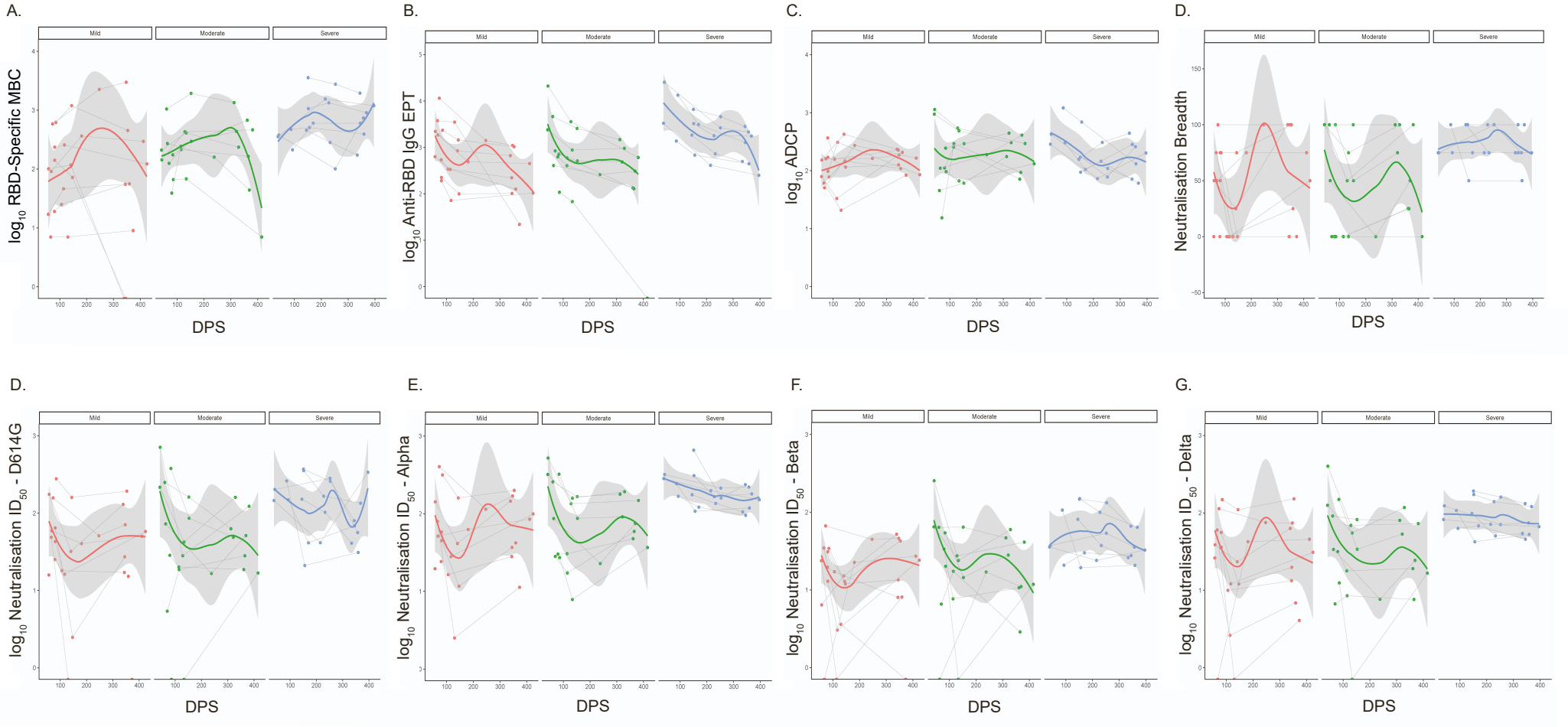
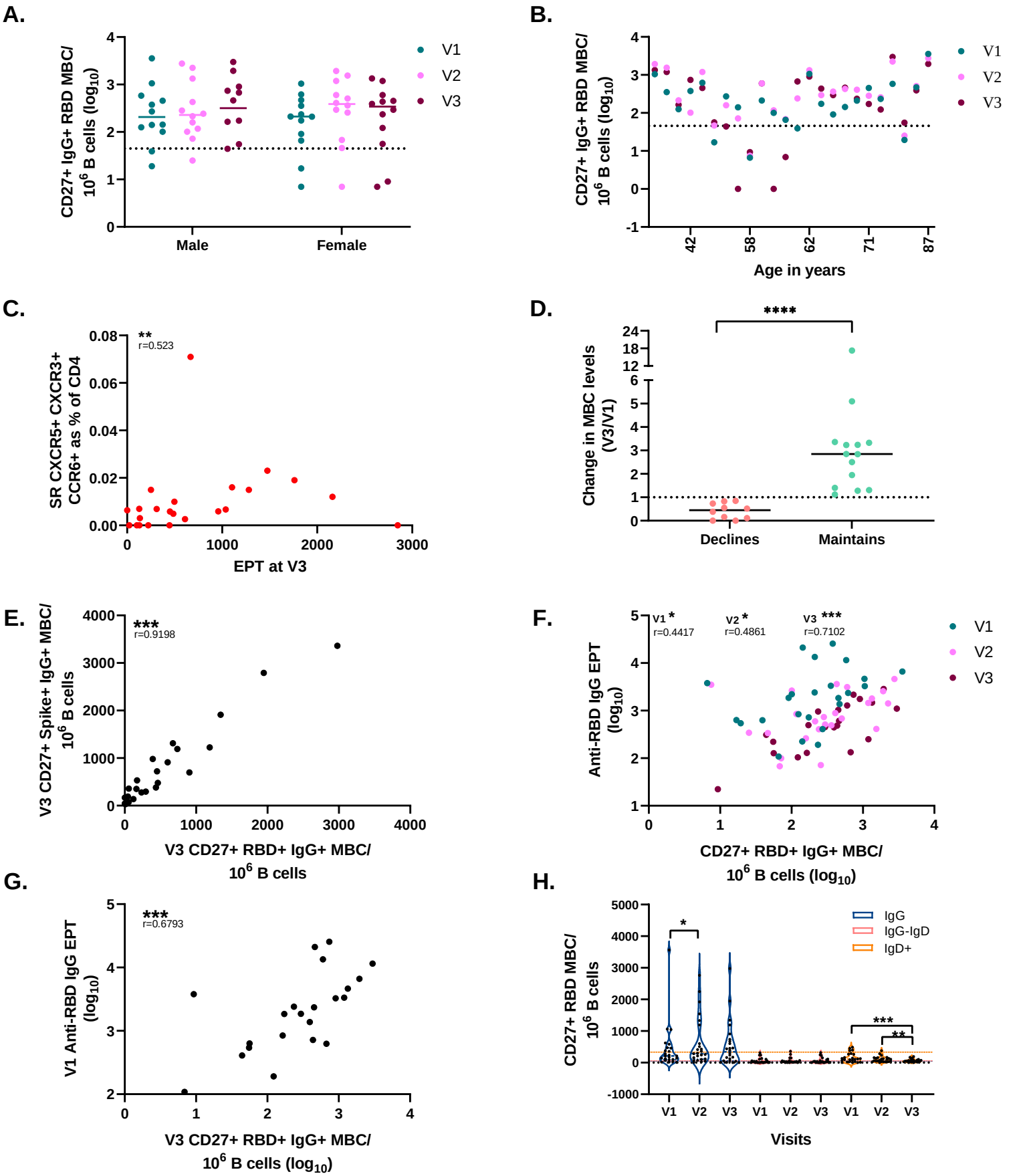


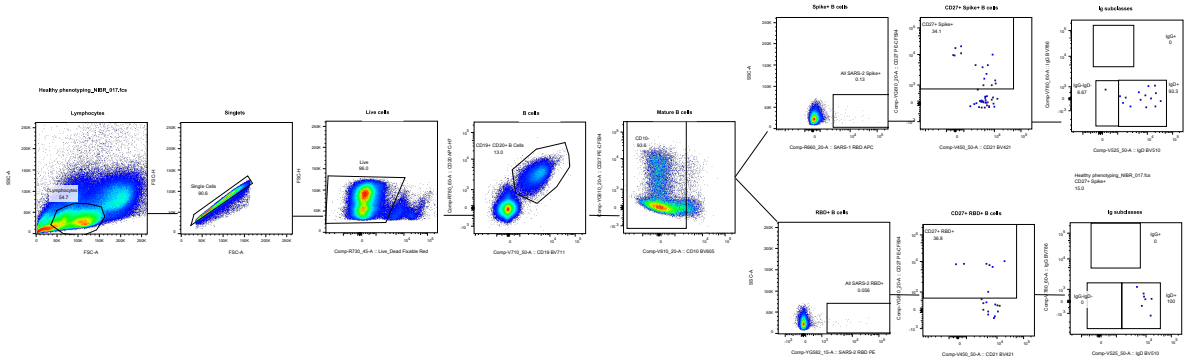
Supplementary Fig 1: Effect of disease severity on the longitudinal trends of immunological parameters (Loess plots): (A) class switched RBD- specific MBCs, (B) anti-RBD IgG antibody titre, (C) ADCP activity, (D) neutralisation breadth across the 4 variants of concern, (E) neutralisation ID50 for D614G variant, (F) neutralisation ID50 for Alpha variant, (G) neutralisation ID50 for Beta variant and (H) neutralisation ID50 for Delta variant.
Related to Fig 1A, B, C, G and Fig 2A, B.



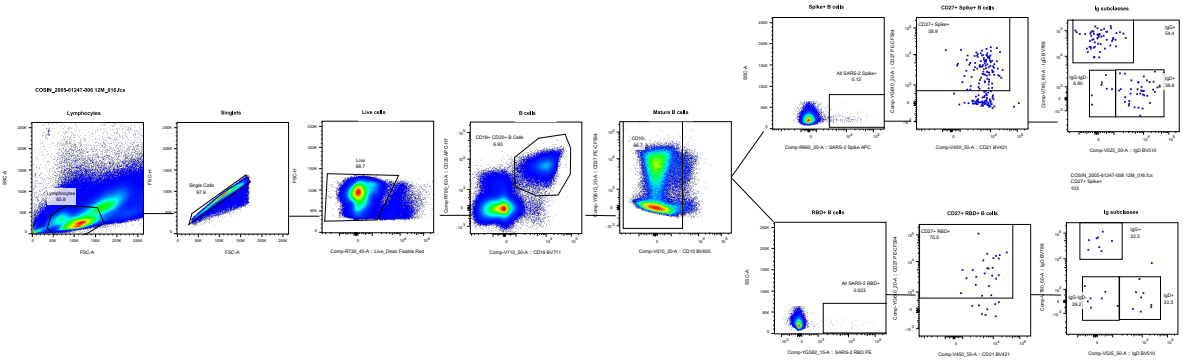
Supplementary Fig 2: Associations of various immunological parameters: Longitudinal levels of the class switched RBD-specific classical MBC levels across visits stratified by (A) gender and (B) age. (C) Correlation between CXCR5+ CXCR3+ CCR6+ CD4+ cells at visit 1 and anti-RBD EPT at visit 3 (D) Fold change in the magnitude of class-switched RBD-specific classical MBC used to stratify the maintained vs declined group. Dotted line indicates the cut-off (2 X coefficient of variation of the assay). Correlation between (E) class switched RBD- specific MBCs and spike-specific MBCs at visit 3, (F) anti-RBD IgG EPT and class switched RBD- specific classical MBC at each visit and (G) anti-RBD IgG antibody EPT at visit 1 and class switched RBD- specific classical MBC levels at visit 3 (H) Comparison of all Ig subclasses of RBD-specific classical MBC across visits. (*** - p between 0.0001 - 0.001; ** - p between 0.001 - 0.01; * - p between 0.01 - 0.05). Related to Fig 1A, Fig 2A, and Fig 3E, F

A.

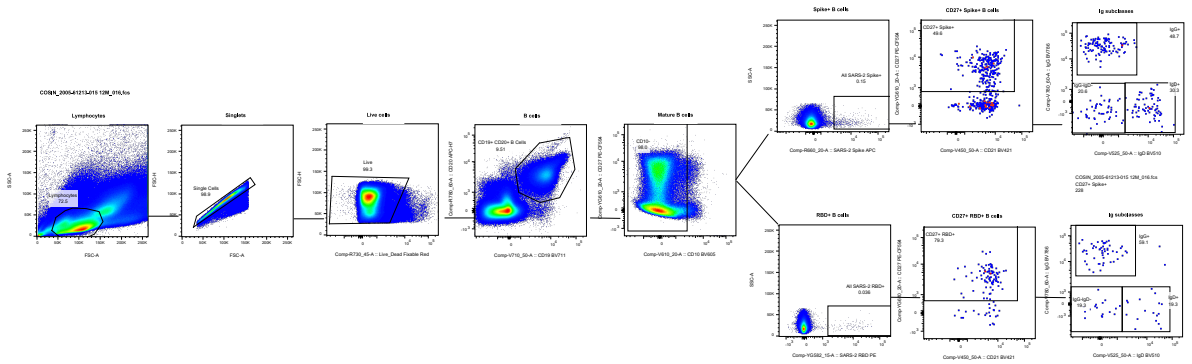
Healthy



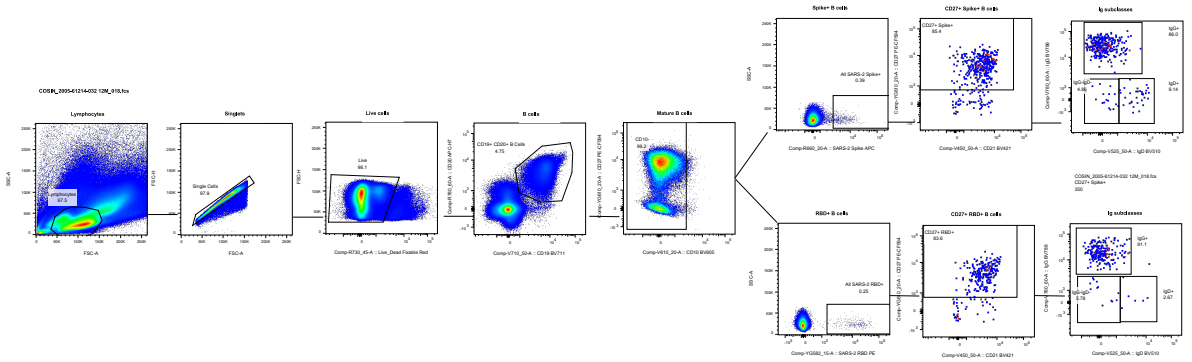
Mild



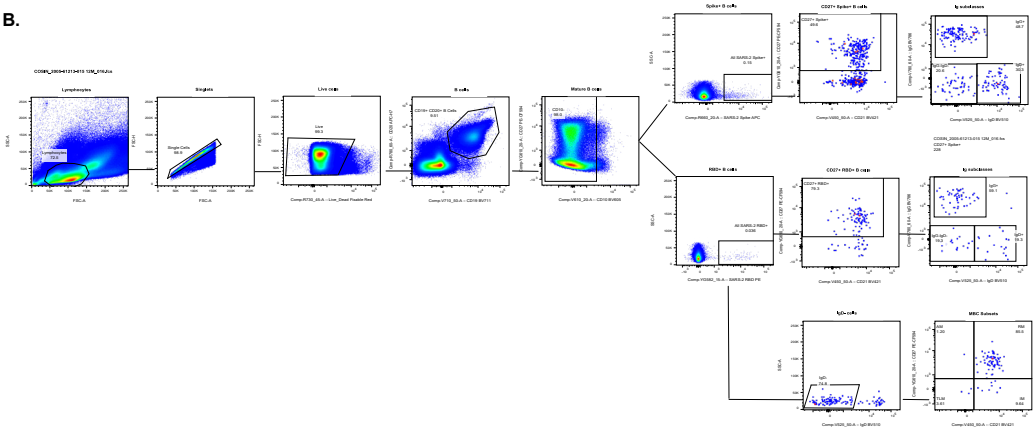
Moderate



Severe



B.

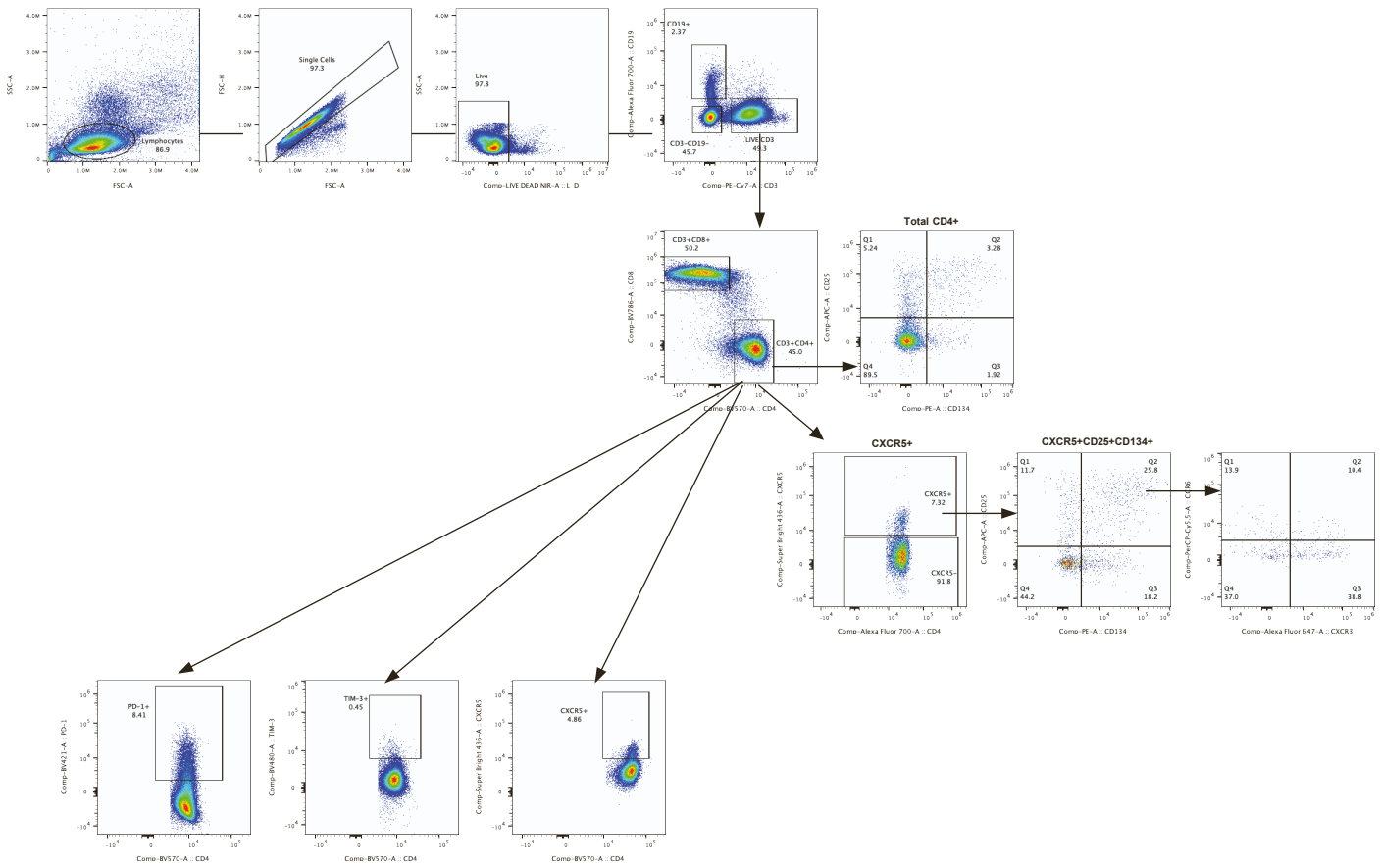


CD27+ IgG+ Spike+ analysis

CD27+ IgG+ RBD+ analysis

RBD+ IgD- MBC subset analysis

C.



Supplementary Fig 3: Flow Cytometry plots: (A) Representation of the RBD-specific MBCs observed in one healthy control, mild, moderate and severe participant. Gating strategy used for (B) MBC identification and the various subsets. (C) T cell identification and the various subsets at visit 1. Related to Fig 2 and Fig 3.

Supplementary table 1: Cell surface markers used to define subsets. Related to Fig 2 and Fig 3

Label	Markers	Subset
RM	CD19+CD20+CD10-CD27+CD21+	B cell - Resting Memory (RM)
AM	CD19+CD20+CD10-CD27+CD21-	B cell - Activated Memory (AM)
IM	CD19+CD20+CD10-CD27-CD21+	B cell - Intermediate Memory (IM)
TLM	CD19+CD20+CD10-CD27-CD21-	B cell - Tissue-Like / Atypical Memory (TLM)
CXCR5 cTFH	CD3+CD4+CXCR5+	T cell - cTfh
CXCR5+ TIM-3+ PD-1+	CD3+CD4+CXCR5+PD-1+Tim-3+	T cell - Exhausted cTfh
Bulk CD4 OX40	CD3+CD4+CD25+CD134+	T cell - Total antigen specific CD4+
SN/SR/NP CXCR5+	CD3+CD4+CXCR5+ CD25+CD134+	Antigen specific cTfh
SN/SR/NP CXCR5+ CXCR3+ CCR6-	CD3+CD4+ CXCR5+ CD25+CD134+CXCR3+CCR6-	Antigen specific cTfh Th1 cells
SN/SR/NP CXCR5+ CXCR3+ CCR6+	CD3+CD4+ CXCR5+ CD25+CD134+CXCR3+CCR6+	Antigen specific cTfh Th1/Th17 cells
SN/SR/NP CXCR5+ CXCR3- CCR6+	CD3+CD4+ CXCR5+ CD25+CD134+CXCR3-CCR6+	T cell - Antigen specific cTfh Th17 cells
SN/SR/NP CXCR5+ CXCR3- CCR6-	CD3+CD4+ CXCR5+ CD25+CD134+CXCR3-CCR6-	T cell - Antigen specific cTfh Th2 cells