

1 **Supplementary Figure 1 Circulating immune profiles of OCR-treated MS patients.**

2 (a) The number of circulating naïve B-cells, transitional B-cells, plasmablast, plasma cells,
3 memory B-cells, double negative (DN) like B-cells, and activated B-cells per μl of blood at
4 baseline (day 0). Statistical significance was determined using a Wilcoxon signed-rank test with
5 Bonferroni-Holm multiple comparison correction. The *p-values* are depicted as * <0.05 , ** <0.01 ,
6 *** <0.001 , and **** <0.0001 . (b) Volcano plot showing the abundance of circulating B-cell
7 population fold change of anti-RBD IgG⁺ vs. anti-RBD IgG⁻ MS patients (x-axis) and their
8 Wilcoxon signed-rank test *p-values* (y-axis) at day 0.

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10 **Supplementary Figure 2 FIt-SNE two-dimensional (2D) map for CD4⁺ T-cell subsets based**
11 **on the CD4 panel.** Subclustered FIt-SNE projection of total CD3⁺ T-cells (a), CD4⁺ T helper (Th)
12 cells (b), and CD4⁺ T follicular helper (Tfh) (c). FIt-SNE projection and cluster identification
13 from FlowSOM analysis are indicated on the left and surface expression intensity of the
14 indicated markers is projected on the FIt-SNE map in the middle. Relative expression of T-cell
15 activation markers CD38 and HLA-DR is shown on the right.

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17 **Supplementary Figure 3 FIt-SNE two-dimensional (2D) map for CD8⁺ and CD4⁺ T-cell**
18 **subsets based on the immune panel.** Subclustered FIt-SNE projection of CD8⁺ T-cell subsets
19 (a) and CD4⁺ T-cell subsets (b). FIt-SNE projection and cluster identification from FlowSOM
20 analysis (left), surface expression intensity of the indicated markers projected on the FIt-SNE
21 map (middle-left). Relative expression of T-cell activation markers CD38 and HLA-DR (middle-
22 right). CD27 and CD45RA expression superimposing the FIt-SNE T-cell subset clusters
23 confirmed with conventional 2D analysis (right).

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