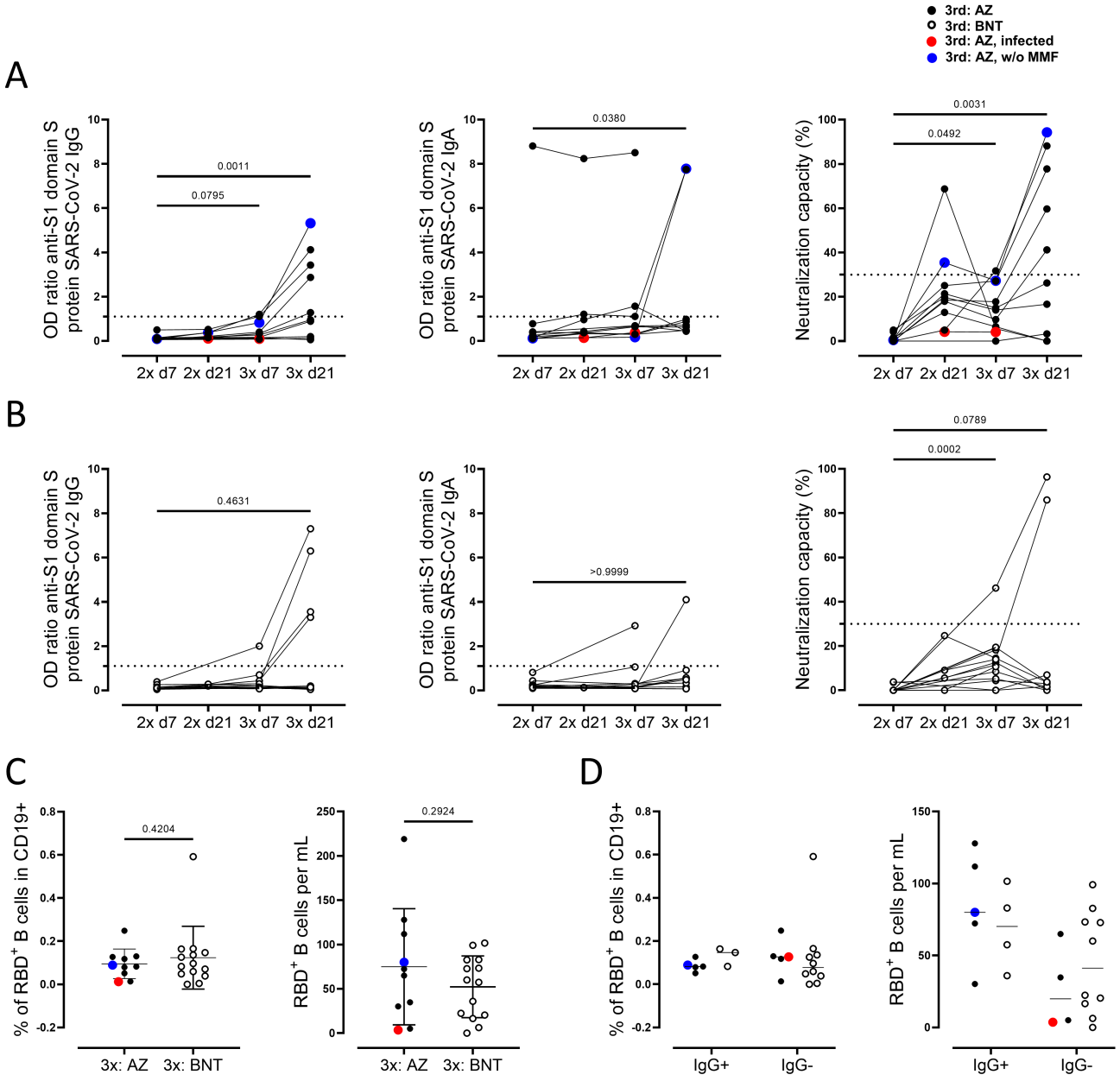
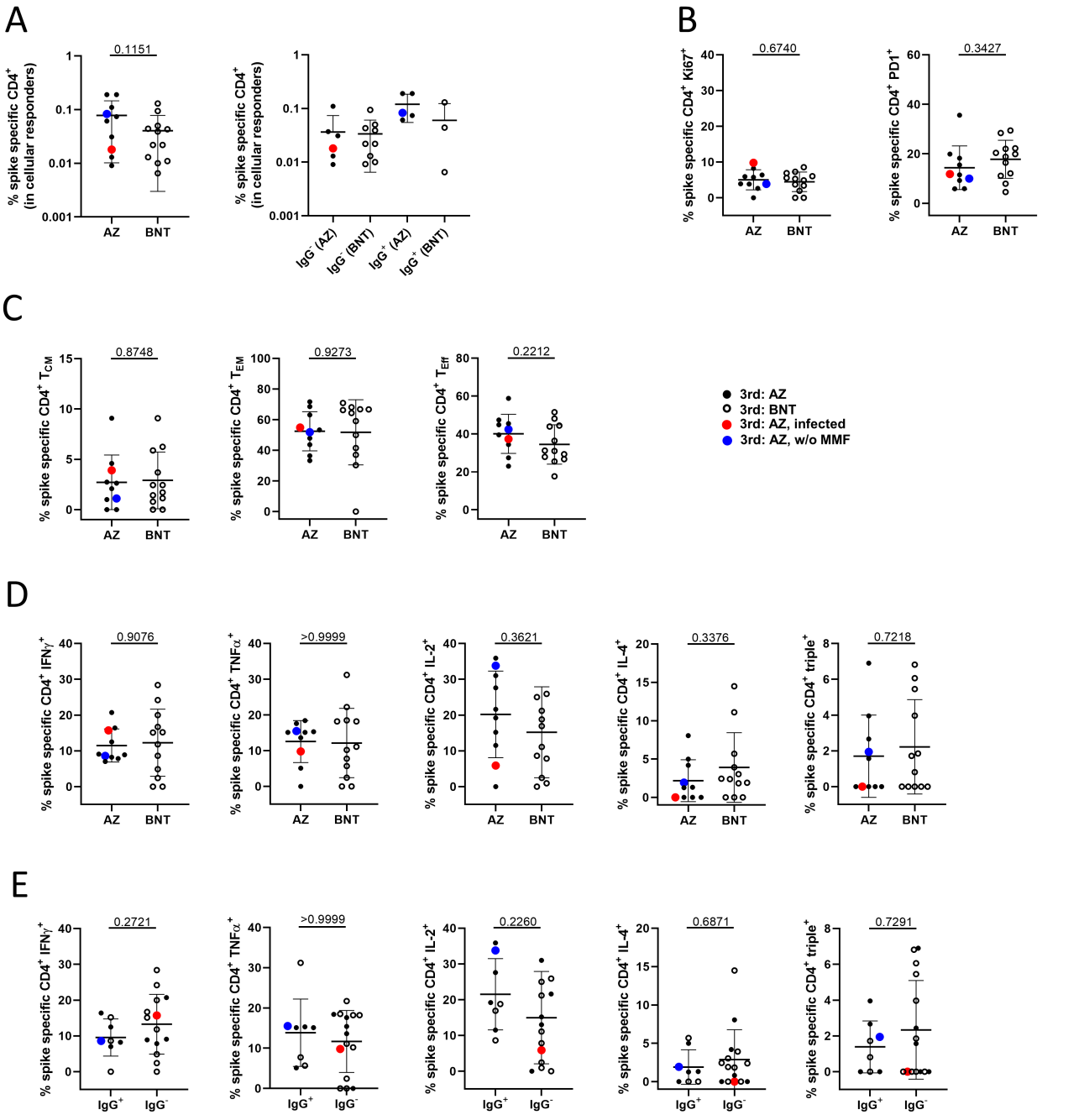
Supplemental Table of Contents:

Supplemental Figure 1, Schrezenmeier, Rincon-Arevalo *et al*



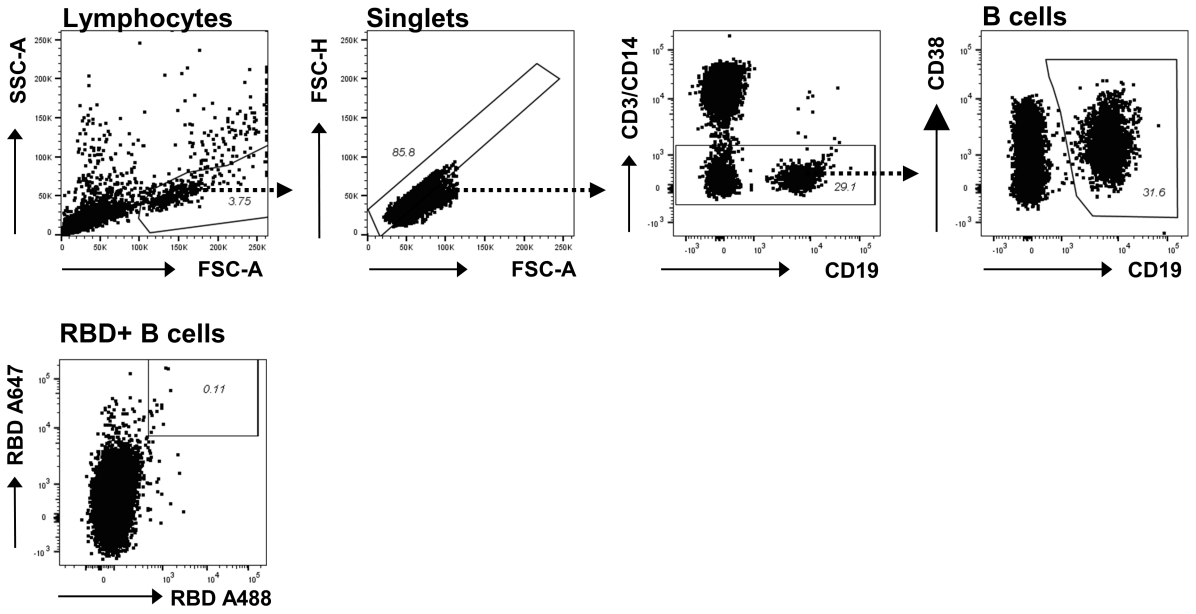
Humoral immune responses and specific B cell immunity after third vaccination in KTR according to vaccine type. Humoral vaccine-specific immune responses were assessed by ELISA for anti-spike protein S1 IgG (left), spike protein S1 IgA (center) and virus neutralization by a blocking ELISA (right) at the indicated timepoints in KTR after administration of a third dose of either ChAdOx1 (A, n=11, black filled dots) or BNT162b2 (B, n=14, back empty dots). Thresholds defining a positive response are indicated by dotted lines. Relative frequencies (left) and absolute counts (right) of RBD-specific CD19+ B cells in all patients (D) as well as in responders IgG+ and non-responders IgG- 7±2 days after third vaccination with ChAdOx1 or BNT162b2. (A-C) Kruskal-Wallis with Dunn´s post-test. (D) Two way ANOVA test with Šídák post-test. The infected individual is depicted in red. (D, E) Mann-Whitney test.

Supplemental Figure 2, Schrezenmeier, Rincon-Arevalo *et al*



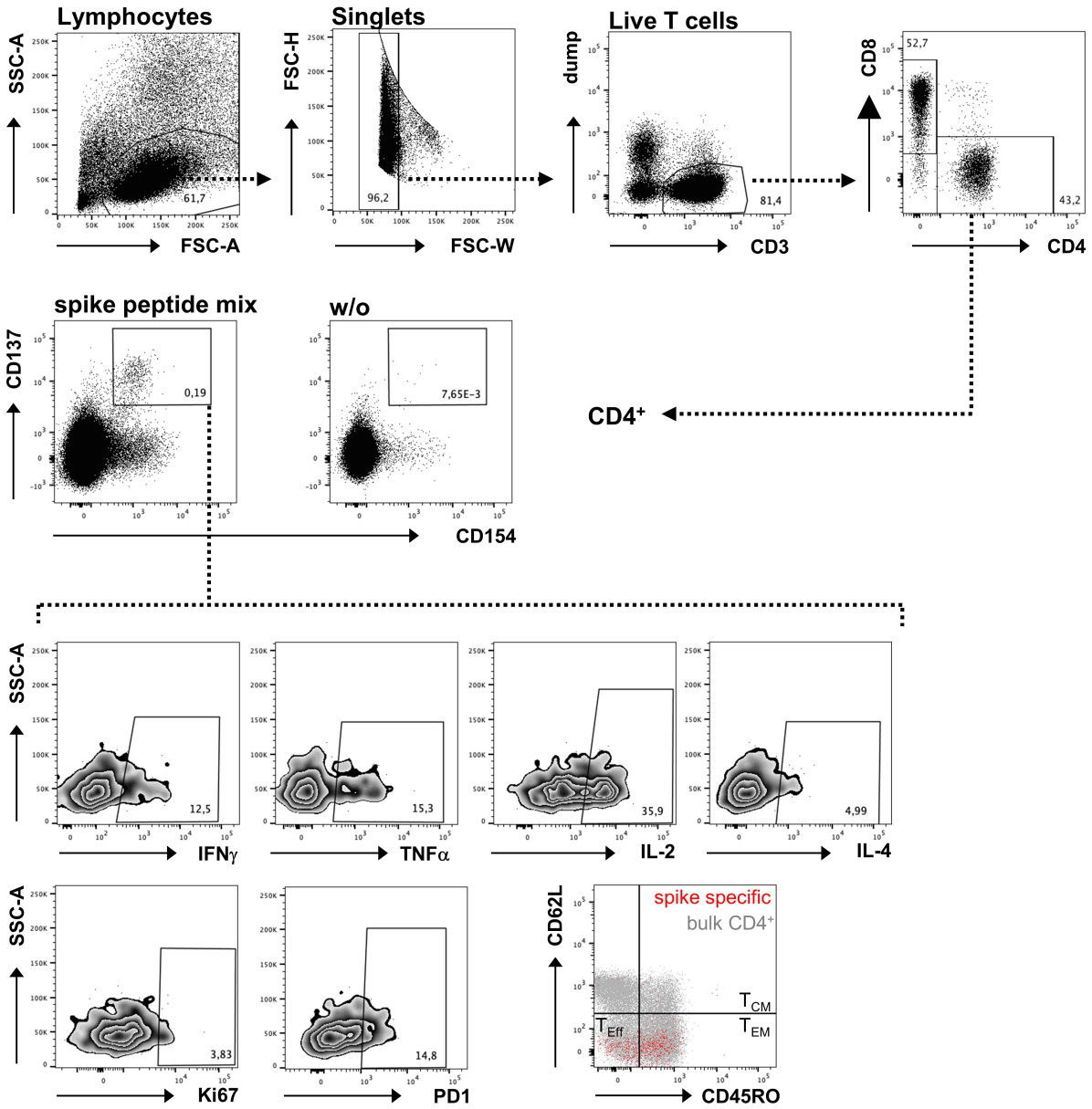
SARS-CoV-2 vaccine specific T helper cell responses in KTx patients stratified according to heterologous/homologous third vaccination or specific IgG serostatus (humoral responder/non-responder). PBMC of KTX patients were stimulated or not with spike peptide mix. Specific $CD4^+$ T cells were identified and quantified 7±2 days after the third vaccination (AZ or BNT, as indicated) by FACS according to CD137 and CD154 co-expression. Depicted are (A) frequencies of specific $CD4^+$ T cells (left, unpaired t test) and frequencies within humoral responders (anti-S1 IgG+) and non-responders (anti-S1 IgG-) (right, not tested for significance due to low patient numbers/group). (B) Frequencies of antigen-specific $CD4^+$ T cells expressing Ki67 (left, unpaired Mann-Whitney) or PD1 (right, unpaired t test). (C) Memory/effector subset differentiation of spike-reactive $CD4^+$ T cells (T_{CM}: left, unpaired t test; T_{EM}: middle, unpaired t test; T_{eff}: right, unpaired t test). (D) Expression of IFNγ, TNFα (both unpaired Mann-Whitney), IL-2 (unpaired t test) and IL-4 (unpaired Mann-Whitney) in antigen-specific T cells including analysis of $IFN\gamma^+TNF\alpha^+IL\text{-}2^+$ "triple$^+$" polyfunctional (unpaired Mann-Whitney) cells. (E) Cytokine profile in patients stratified according to humoral response or not. Expression of IFNγ (unpaired t test) TNFα (unpaired Mann-Whitney), IL-2 (unpaired t test) and IL-4 (unpaired Mann-Whitney) in antigen-specific T cells including analysis of $IFN\gamma^+TNF\alpha^+IL\text{-}2^+$ "triple$^+$" polyfunctional (unpaired Mann-Whitney) cells. Where applicable, graphs show means ± SD.

Supplemental Figure 3, Schrezenmeier, Rincon-Arevalo *et al*



Detection of SARS-CoV-2 vaccine specific B cells. B cells in PBMCs were detect by flow cytometry. Antigen-specific B cells were identified by double staining with recombinant purified RBD (DAGC149, Creative Diagnostics, New York, USA) conjugated to AF647 or AF488, respectively.

Supplemental Figure 4, Schrezenmeier, Rincon-Arevalo *et al*



Detection of SARS-CoV-2 vaccine specific T helper cells. PBMC were stimulated or not with SARS-CoV-2 spike overlapping peptide mix for 16 h. Antigen-specific live single $CD14^{-}CD19^{-}CD3^{+}$ ("dump" negative) specific $CD4^{+}$ Th cells were detected by FACS according to co-expression of CD137 and CD154. Specific cells were subsequently analyzed for expression of IFNγ, TNFα, IL-2 and/or IL-4, characterized for expression of the activation-related markers Ki67 and PD1, or for their memory phenotype based on CD45RO and CD62L expression (T_{CM}: central memory-, T_{EM}: effector memory, T_{eff}: effector-T cells). Gates for cytokines or activation-induced molecules were set according to the respective unstimulated or unstained controls, respectively.