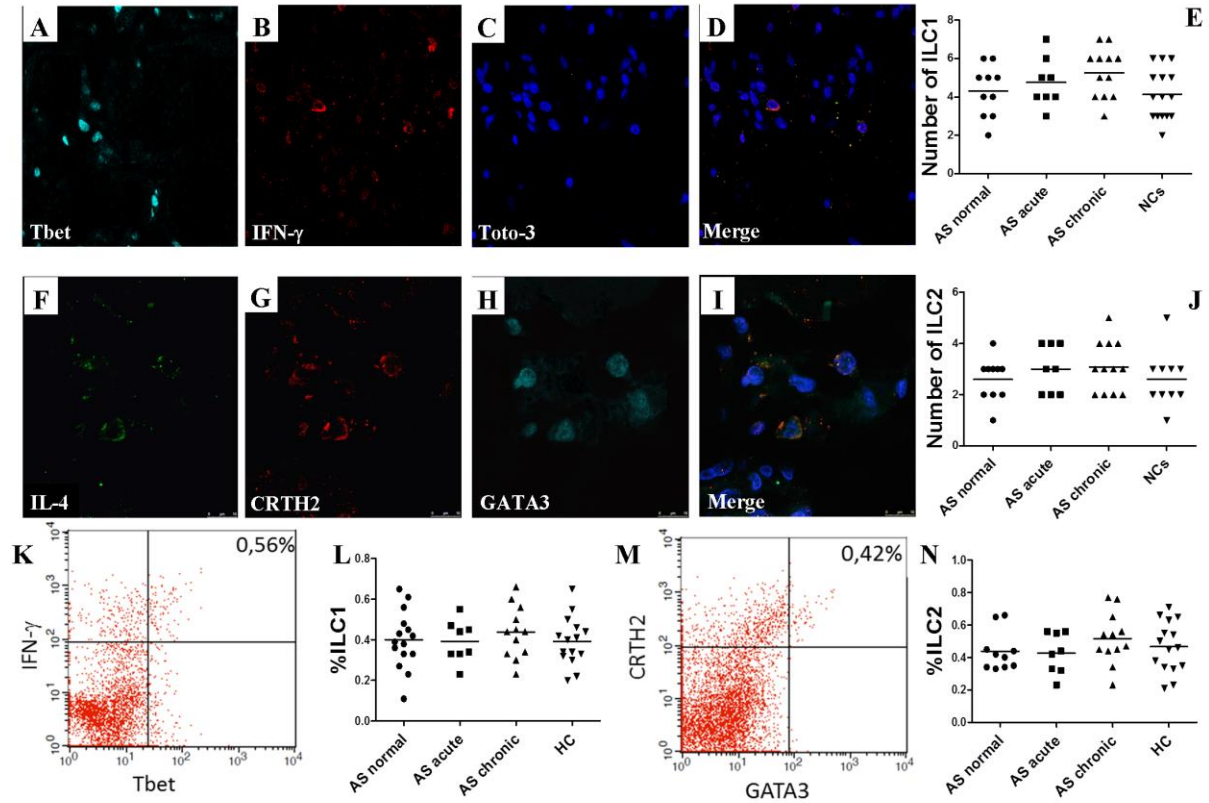
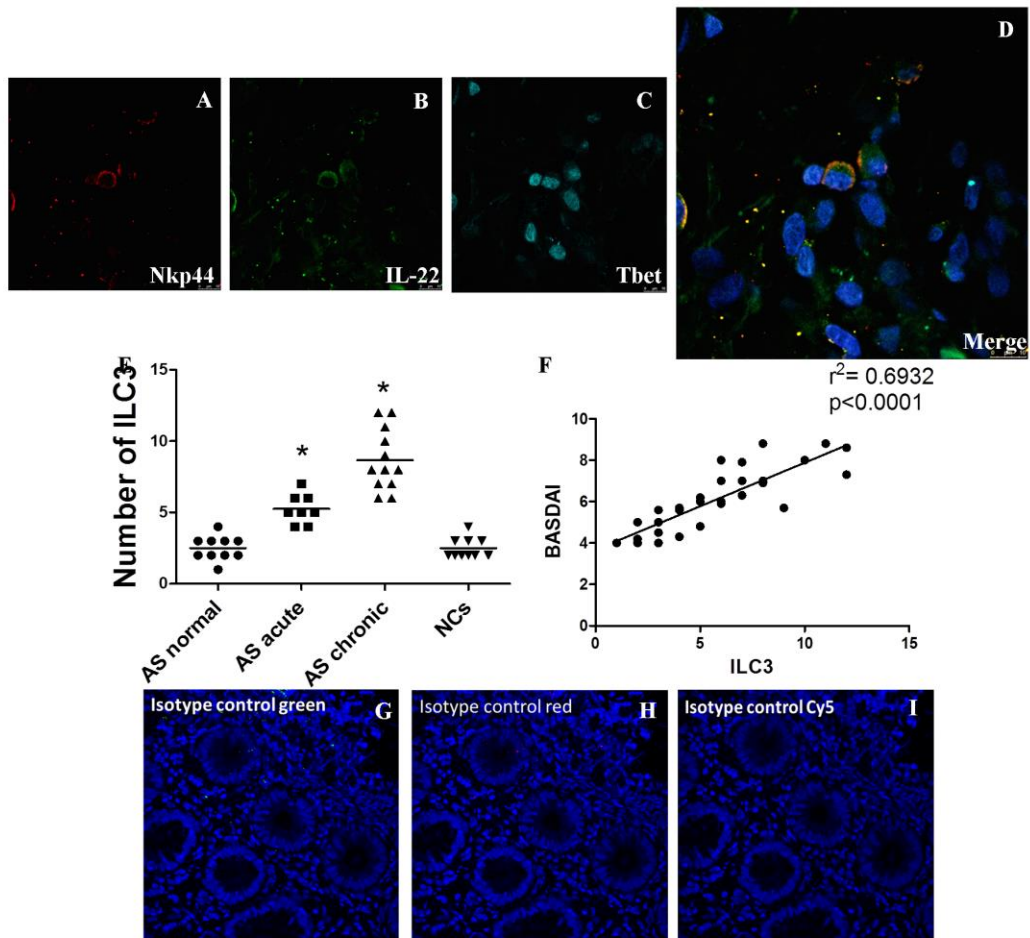


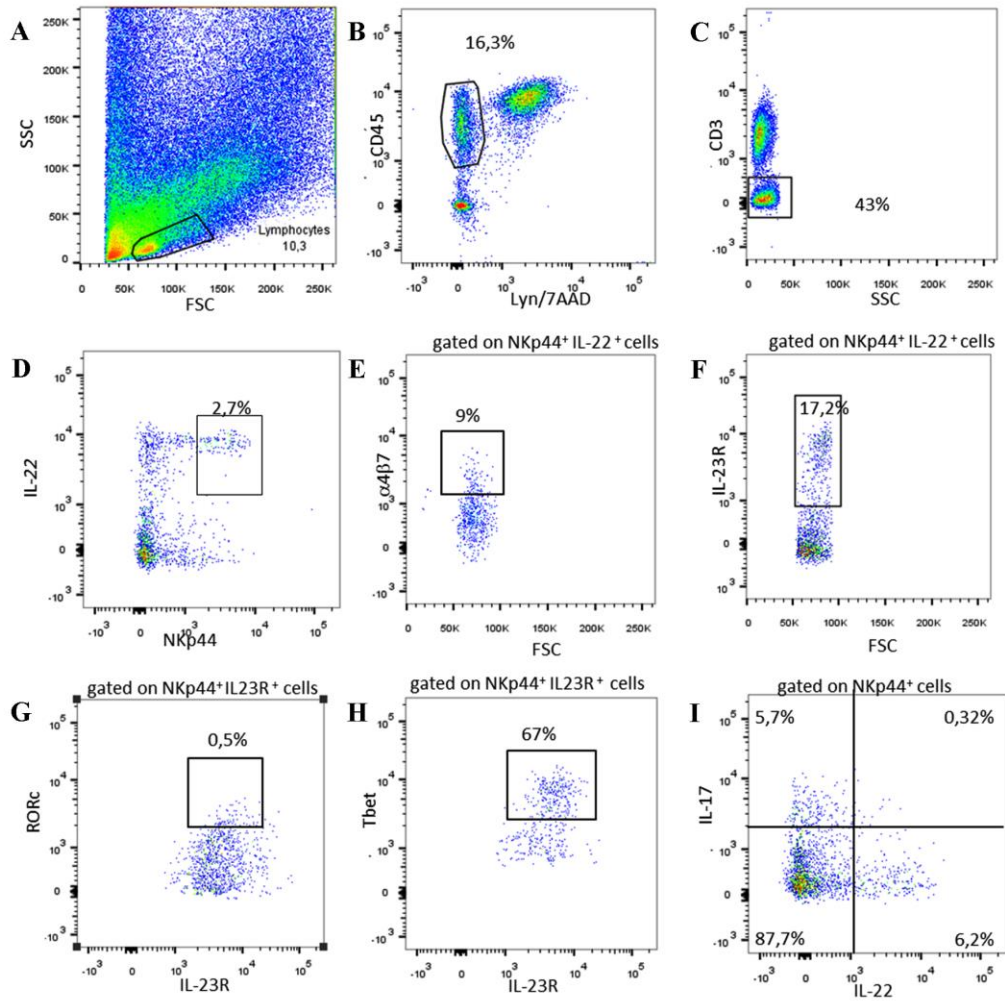
Supplementary Figures:



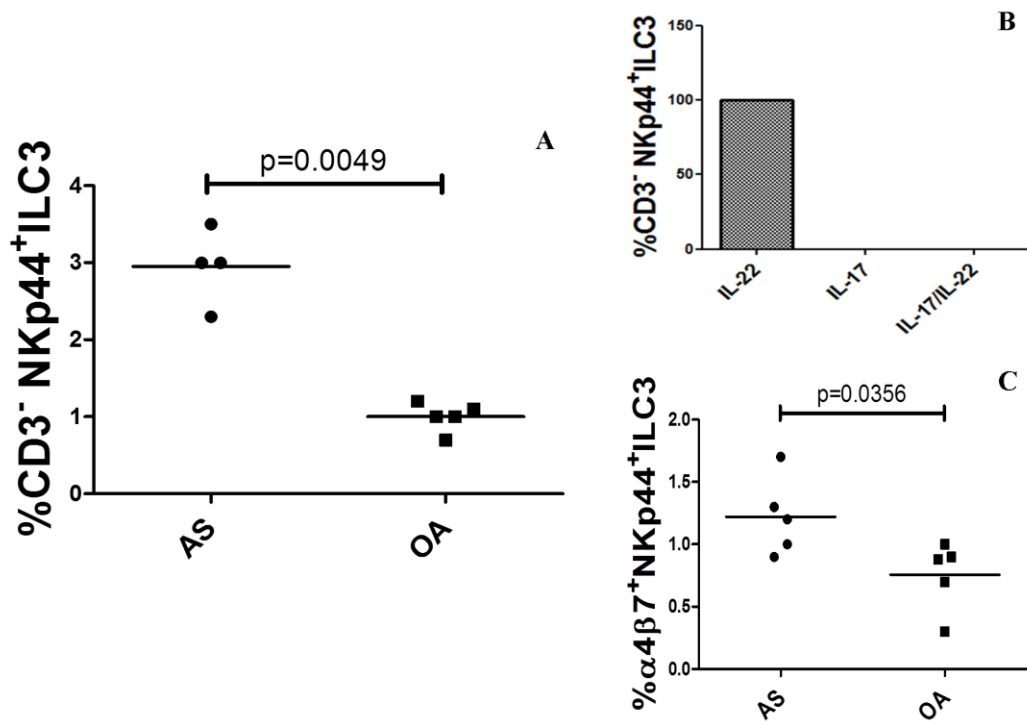
Supplemental Figure 1. Innate lymphoid 1 and 2 cells in the gut of AS patients. **A-D**: Representative images of confocal analysis of Tbet and IFN- γ co-localization in gut tissues of AS patients. **A**: single staining for Tbet; **B**: single staining for IFN- γ ; **C**: nuclei counterstained with toto-3 (blue). **D**: merged double staining of Tbet and IFN- γ (Arrow indicates positive cells). **E**: quantification of ILC1 in the gut of AS patients and controls. **F-I**: Representative images of confocal analysis of IL-4, CRTH2 and GATA3 co-localization in gut tissues of AS patients. **F**: single staining for IL-4; **G**: single staining for GATA-3; **H**: single staining for CRTH2. Nuclei were counterstained with toto-3 (blue). **I**: merged triple staining of IL-4, GATA-3 and CRTH2. **J**: quantification of ILC2 in the gut of AS patients and controls. **K-L**: ILC1 characterized by flow cytometry: cells were gated on Lyn^+CD56^+ IFN- γ^+ Tbet $^+$ regions. **K**: representative dot plot showing ILC1 in the gut of a patient with AS and **L**, percentage of ILC1 in the LPMC obtained from gut of 5 AS patients and 5 healthy controls. **M-N**: ILC2 were characterized by flow cytometry. Cells were gated on Lyn^+CRTH2^+ GATA3 $^+$ regions. **M**: representative dot plot showing ILC2 in the gut of a patient with AS and **N**, percentage of ILC2 in the LPMC obtained from gut of 5 AS patients and 5 healthy controls. **A-D**, **F-I**: original magnification x 400. **E**, **J**, **L**, **N**: data are expressed as individual data points (Mean).



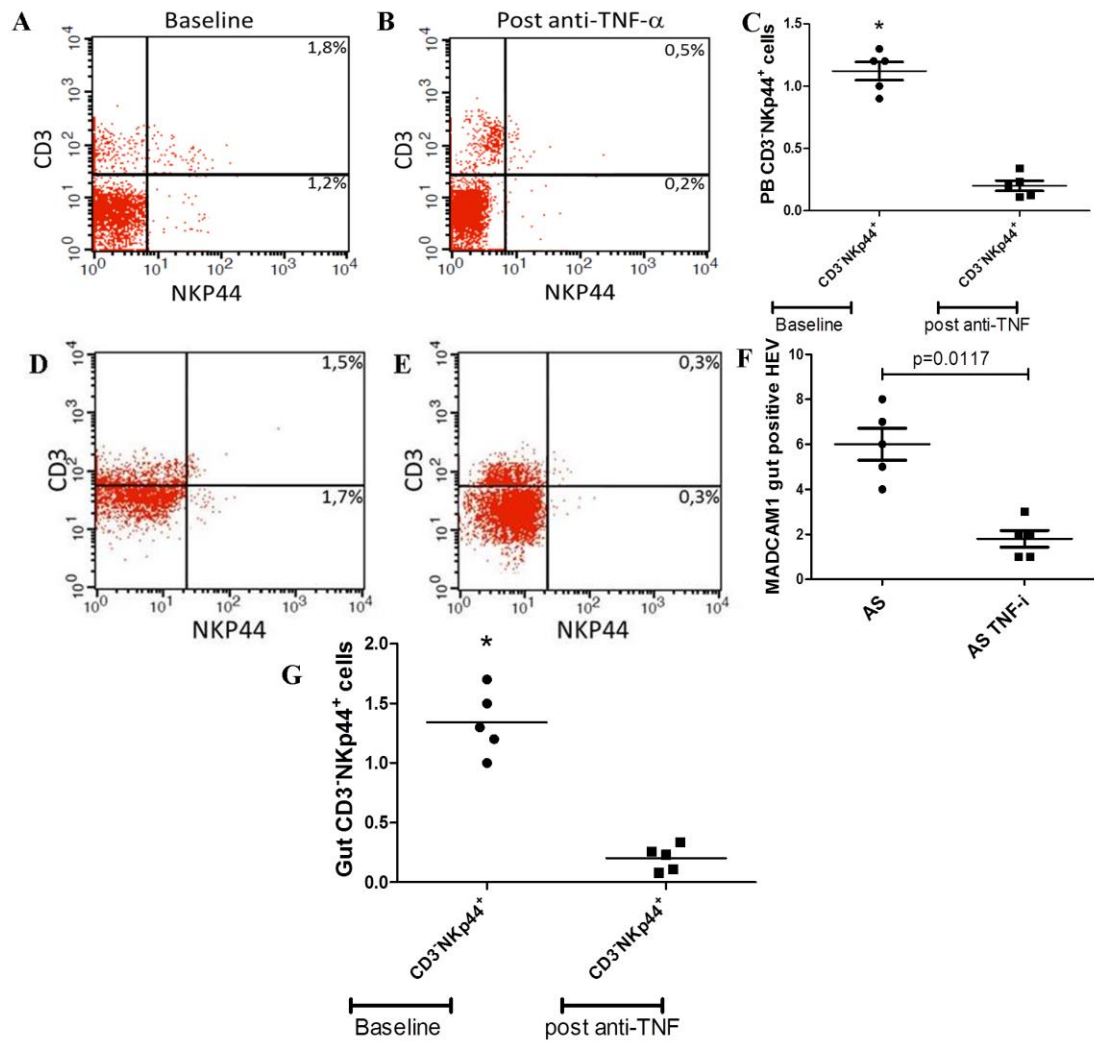
Supplemental Figure 2. **A-D:** Representative images of confocal analysis of NKp44, Tbet and IL-22 co-localization in gut tissues of AS patients. **E:** quantification of ILC3 in the gut of AS patients and controls. **F:** correlation between the number of ILC3 and disease activity as assessed by Bath Ankylosing Spondylitis Activity Index (BASDAI). **G-I:** isotype controls for confocal staining. **A-D:** original magnification x 630. **G-I:** original magnification x400. Data are expressed as individual data points (Mean). * $p < 0.05$



Supplemental Figure 3. Innate lymphoid cells type 3 in the gut of normal controls. A-I: representative dot plots showing the gating strategy for ILC3 in the gut of controls.



Supplemental Figure 4. Innate lymphoid cells type 3 in the synovial fluid (SF) of AS patients. A: percentage of CD3⁻ILC3 in the synovial fluids of Ankylosing Spondylitis (AS) and osteoarthritis (OA) patients. **B:** cytokine production by SF CD3⁻ILC3 in AS patients. **C:** α4β7 expression on CD3⁻ILC3 isolated from the SF of AS and OA patients. Data are expressed as individual data points (Mean)



Supplemental Figure 5. Effect of TNF-inhibitors (TNFi) on circulating and gut ILC-3. A-B and D-E: representative dot plots showing the percentage of circulating (A-B) and intestinal (D-E) ILC3 before TNF-i in 5 AS patients. C, F: percentage of circulating (C) and intestinal (F) ILC3 before and after TNF-i. G numbers of gut MADCAM1⁺ HEV in AS patients before and after TNFi. Data are shown as individual data points (Mean). p<0.05