Supplemental Figure 1. NKG2D-L expression in FA-A cells compared to HD cells. (**A**) Upper panels represent raw NKG2D-L MFI values corresponding to untreated and MMC-treated HD and FA-A fibroblasts shown in Figures 1A and 1B. The lower panels represent equivalent data corresponding to HD and FA-A T cells shown in Figures 2A and 2B. The figures show MFI values in the absence (-MoAb) and the presence of anti-NKG2D-L MoAbs (+MoAb) and after MMC treatment. (**B**) Representative immunofluorescent images of two experiments showing the differential expression of NKG2D-Ls in uncorrected compared to gene corrected FA-A fibroblasts and FA T cells in comparison with HD, either exposed or not to MMC. Scale bars: 100μm.

Supplemental Figure 2. Increased DNA damage induced by MMC in FA-A fibroblasts. Quantification of the proportion of γ-H2AX positive cells (with more than 10 nuclear foci) corresponding to untreated and MMC-treated (33nM) FA-A fibroblasts, either uncorrected (FA-A) or gene corrected (FA-A+*FANCA*). Representative images corresponding to experiments shown in panel A. Scale bars: 50 μm. Mean values ± SEM are shown. Unpaired t-test was used to compare values obtained in untreated and MMC-treated cells.

Supplemental Figure 3. Analysis of individual NKG2D-L levels in fibroblasts from healthy donors and FA-A patients. Healthy donor fibroblasts and uncorrected or genetically corrected FA-A fibroblasts were treated with 33 nM MMC as in Figure 1 to enhance NKG2D-Ls. (**A**) Analysis of the expression levels of NKG2D-Ls after cell staining with the combined anti-NKG2D-L MoAbs used in Figure 1. (**B**) Analyses conducted with individual anti-NKD2D-L MoAbs. Each point represents individual data from *FANCA*-competent (HD; n=2 or *FANCA*-transduced FA-A cells; n=2) or *FANCA*-deficient fibroblasts (untransduced; n=2 or *FANCG*-transduced FA-A cells; n=2). Data in the figure shows the mean ratios ± SEM corresponding to each group; two-tailed unpaired t-test was used to compare mean values between the groups.

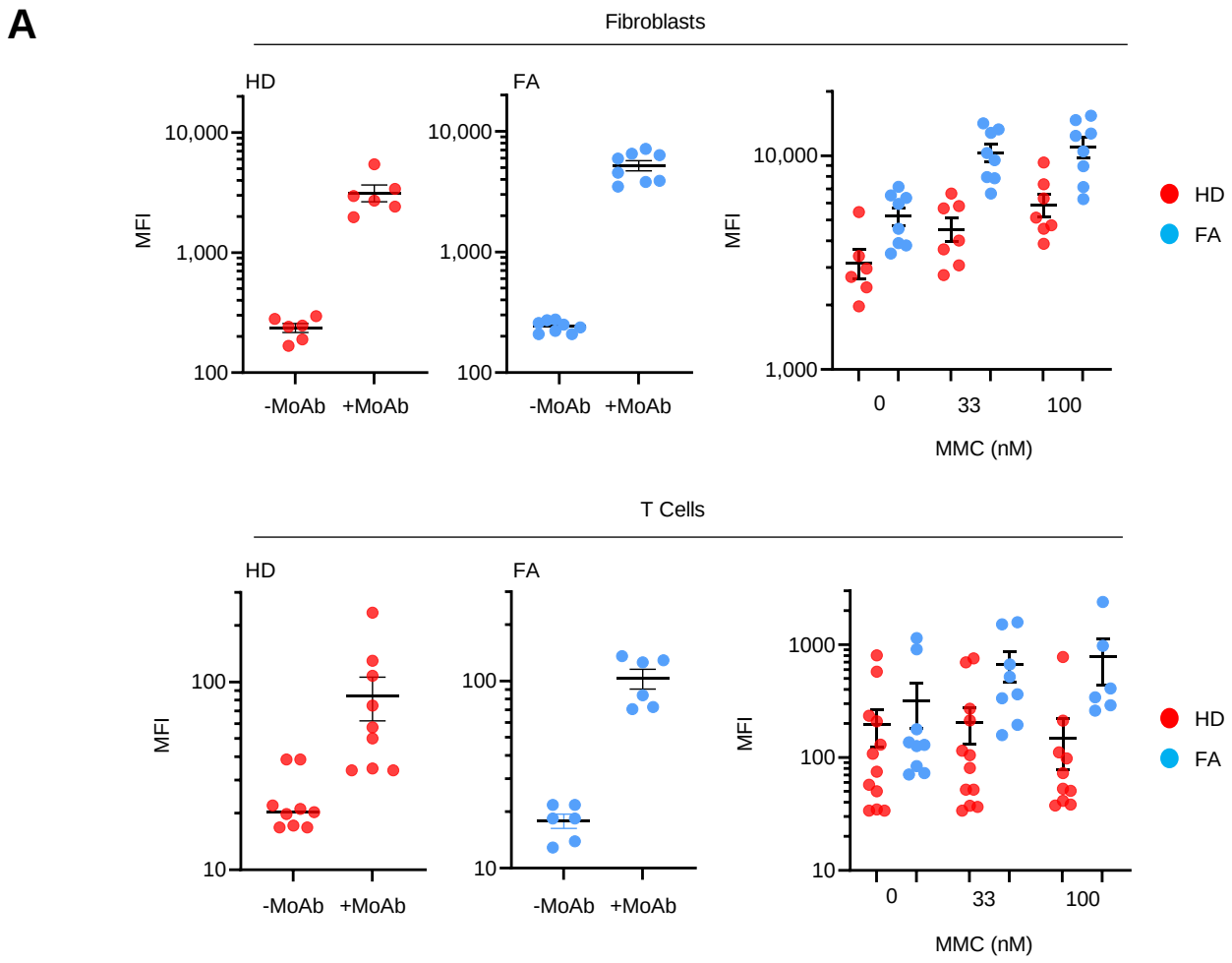
Supplemental Figure 4. Gating strategy and comparative analysis of NKG2D-L levels in bone marrow $CD34^+$ and $CD34^-$ cells from FA-A patients. (**A**) Gating strategy used to analyze NKG2D-L levels in BM $CD34^+$ and $CD34^-$ cells from FA patients. (**B**) Analysis of the proportion of NKG2D-L positive cells in $CD34^-$ cells compared to $CD34^+$ cells from FA patients (n=25). Mean values ± SEM are indicated for each group, and significance was calculated by the unpaired t-test.

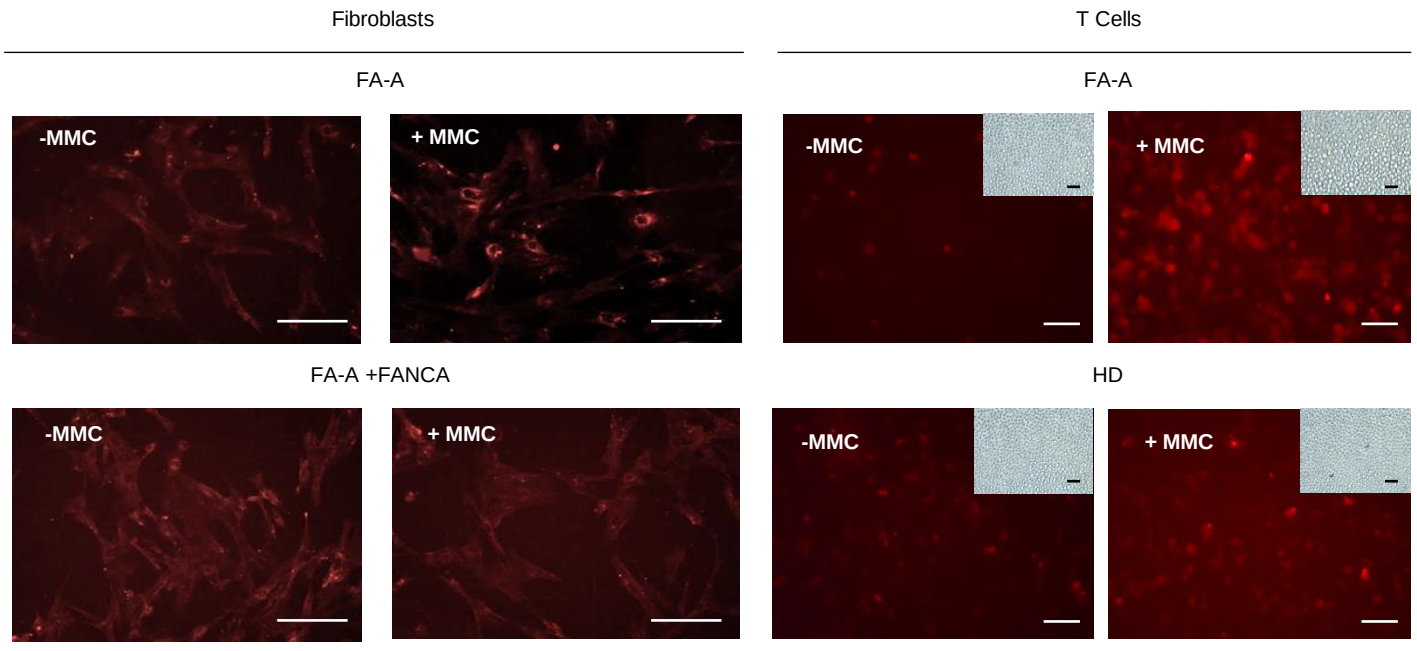
Supplemental Figure 5. Analysis of the activity of the CHEK-1 inhibitor SB-2118078 in FA-A fibroblasts. (**A**) Inhibition of the MMC-induced accumulation of FA fibroblasts in the G2/M phase of the cell cycle by SB-2118078. Upper histograms show representative cell cycle histograms from fibroblasts corresponding to a HD and a FA patient. Lower panels show independent analyses from a HD and three FA fibroblasts. Significance between DMSO and SB-2118078 in FA samples was calculated by the paired t-test. (**B**) Western-blot shows reduced phosphorylation of CHEK-1 in FA fibroblasts treated with the SB-2118078 inhibitor. Lanes corresponding to patient FA-707 were run on the same gel but were noncontiguous. Vinculin was run in a different gel.

Supplemental Figure 6. Analysis of annexin V levels in NKG2D-L$^+$ bone marrow CD34$^+$ cells from FA patients. The figure shows the gating strategy and analyses of annexin V in NKG2D-L$^+$ CD34$^+$ cells from four FA patients.

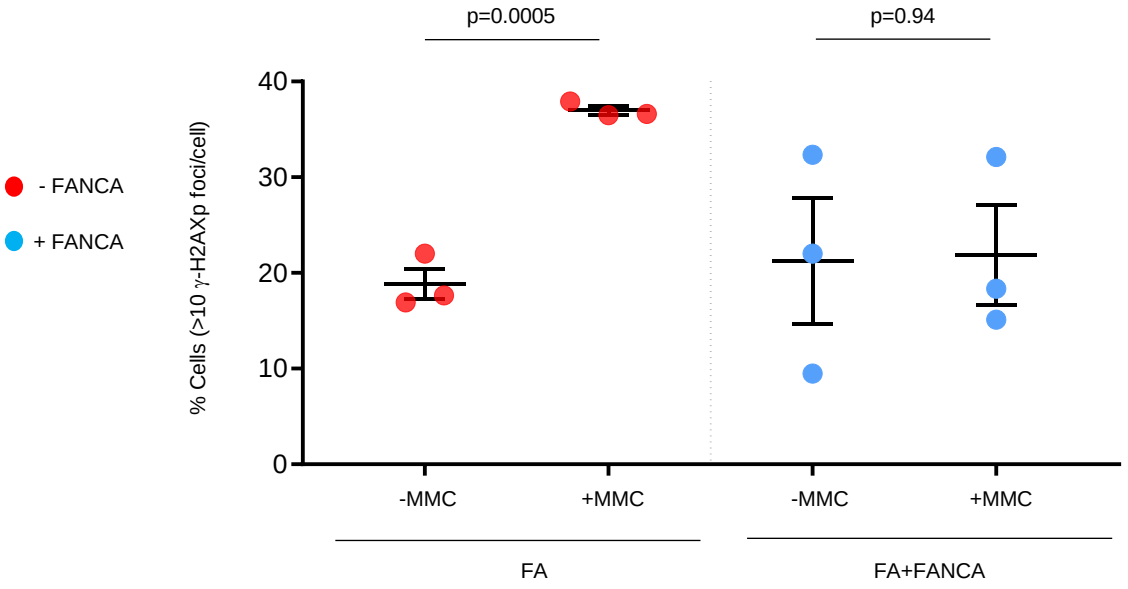
Supplemental Figure 7. Analysis of colony numbers generated by BM and purified CD34$^+$ and NK cells from healthy donors and FA patients following pre-treatments with anti-NKG2D MoAb or isotype control. The figure represents the total number of colonies (CFUs) corresponding to 1 million mononuclear BM cells (white dots) or purified CD34$^+$ and NK cells (red dots) from BM of HDs or FA patients. The number of plated mononuclear and CD34$^+$ purified cells was adjusted to score 10 to 100 colonies per plate. Samples were pre-incubated with an isotype or the anti-NKG2D MoAb as illustrated in Figure 6. The results correspond to CFU ratios shown in Figure 6. Differences between CFUs corresponding to the isotype and anti-NKG2D groups were determined by the paired t-test.

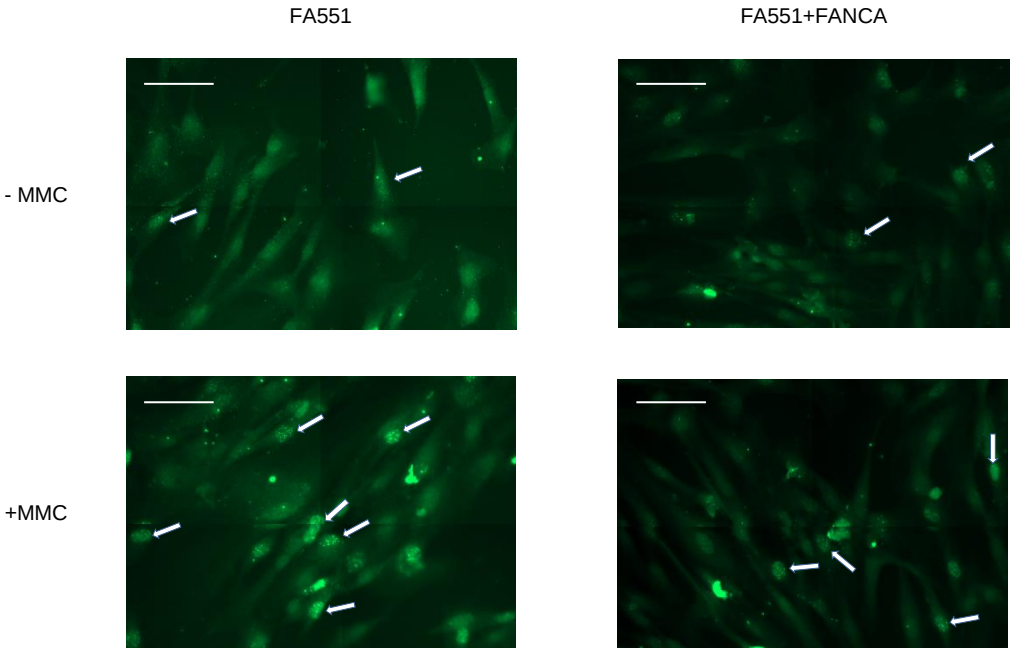
Supplemental Figure 1



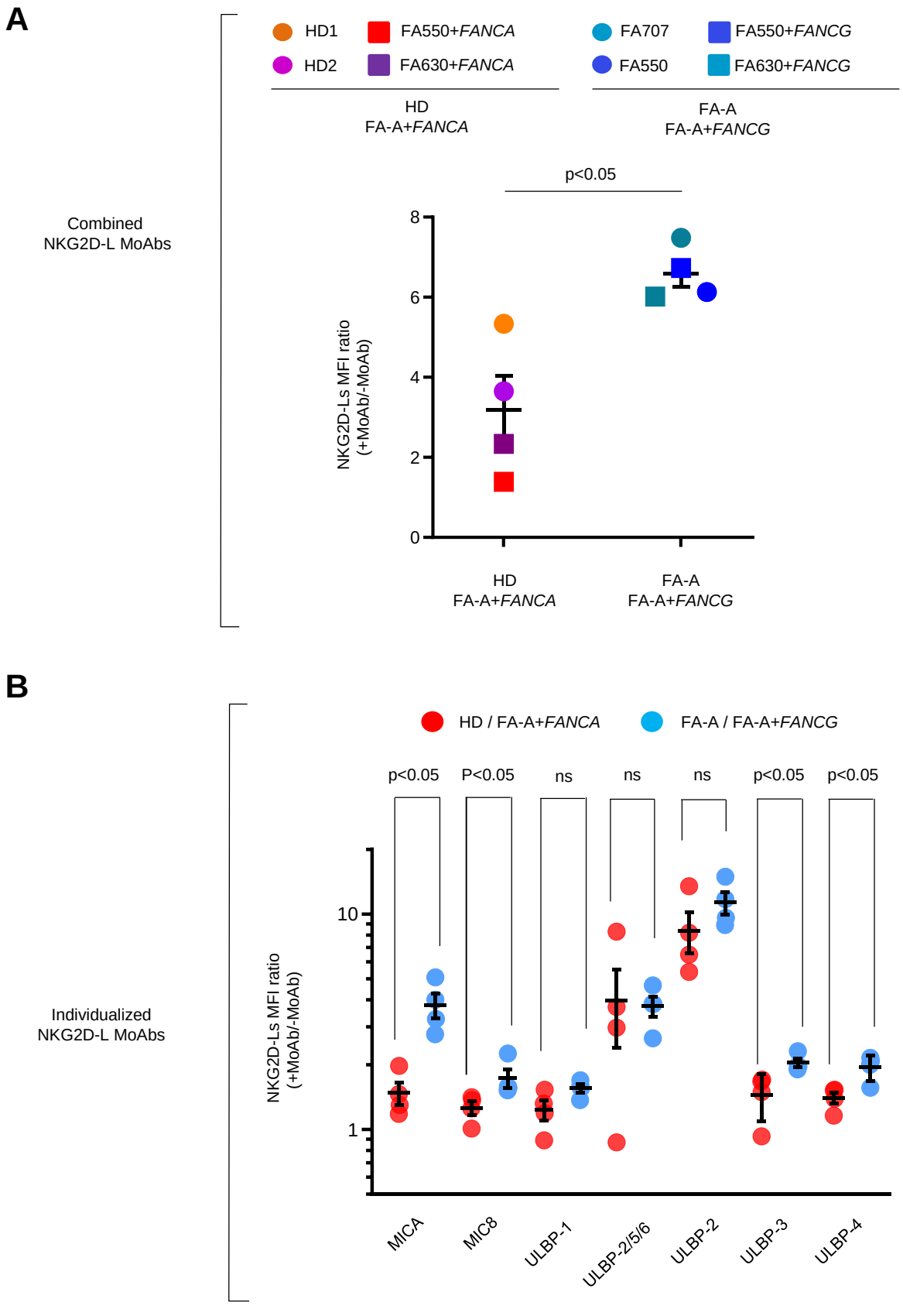


Supplemental Fig. 2

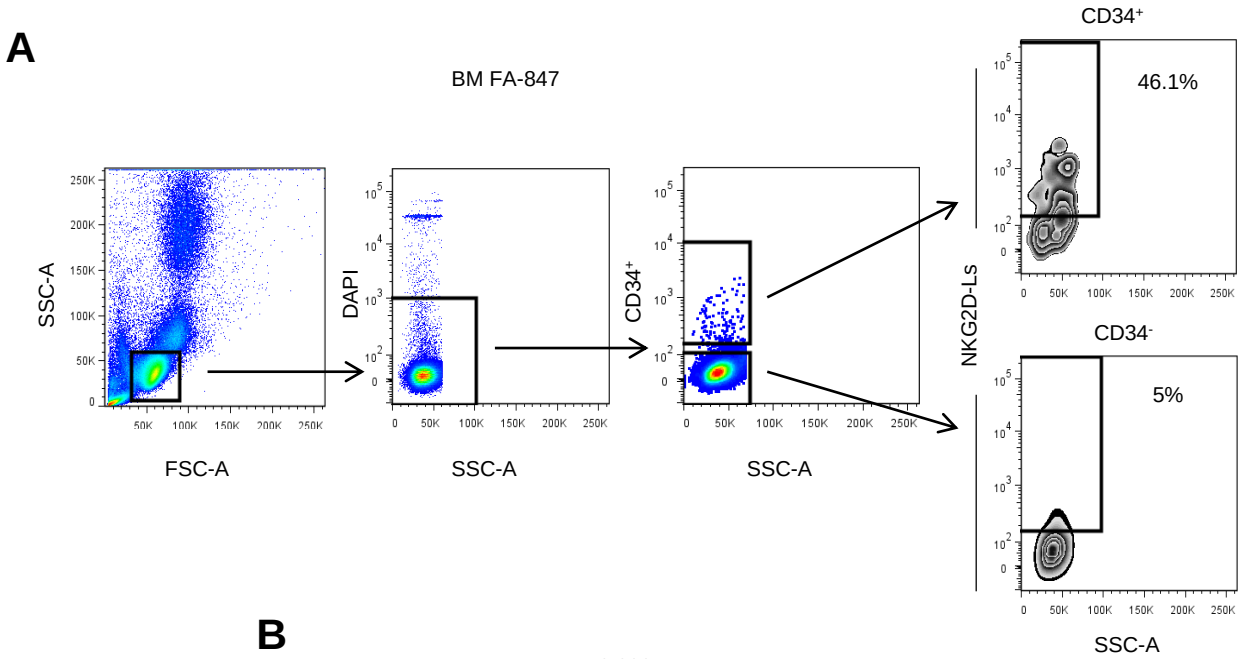


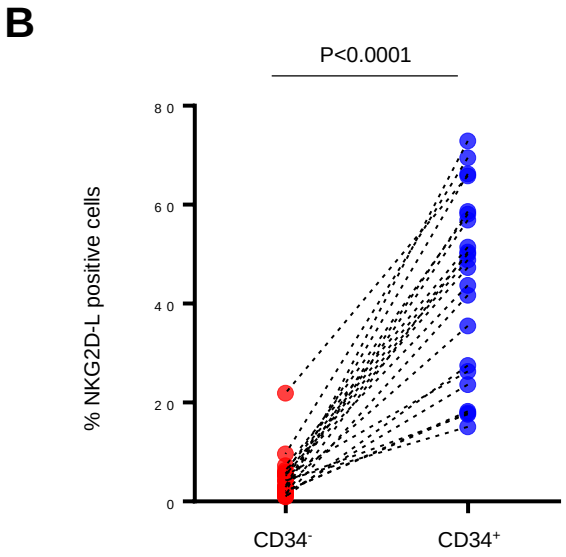


Supplemental Figure 3

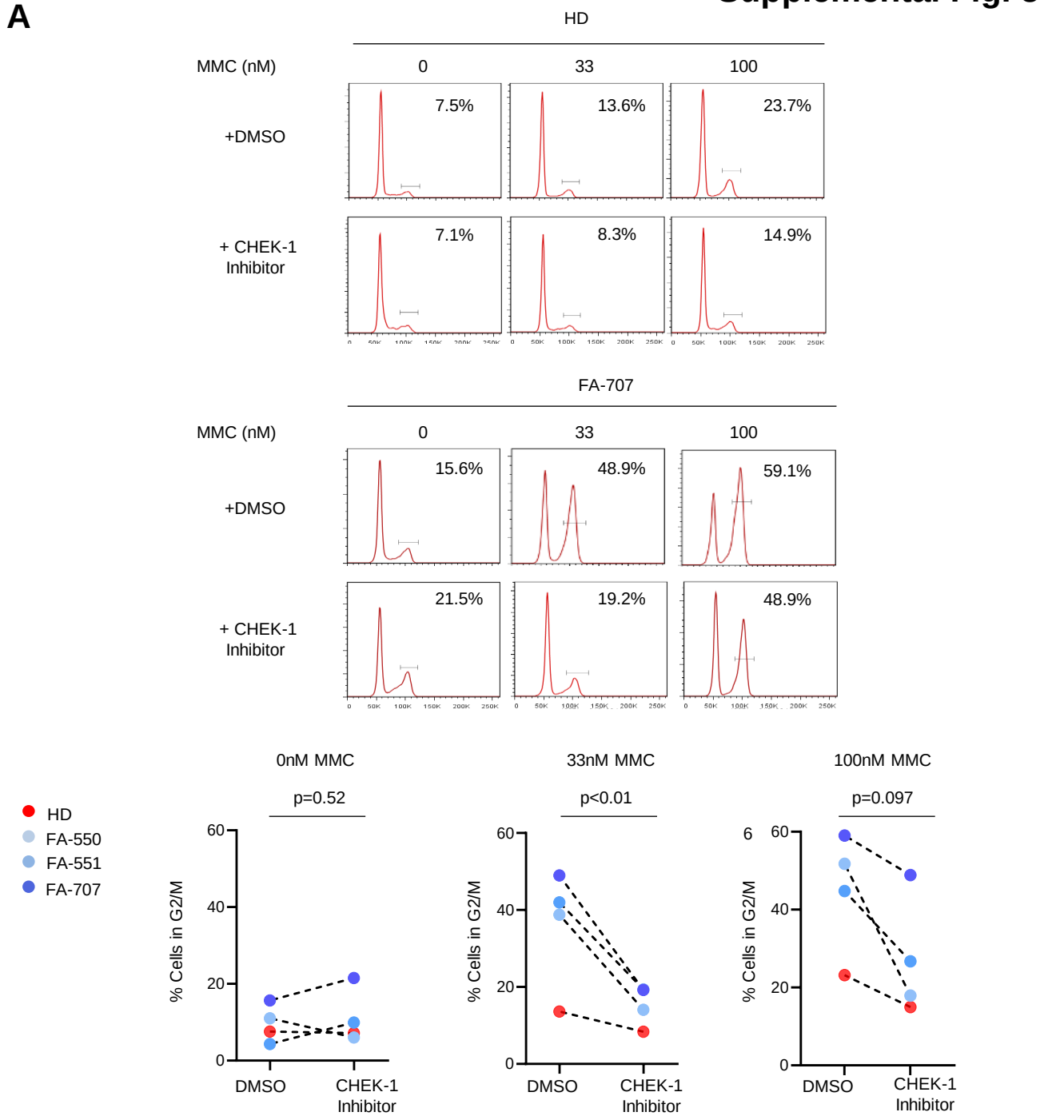


Supplemental Figure 4

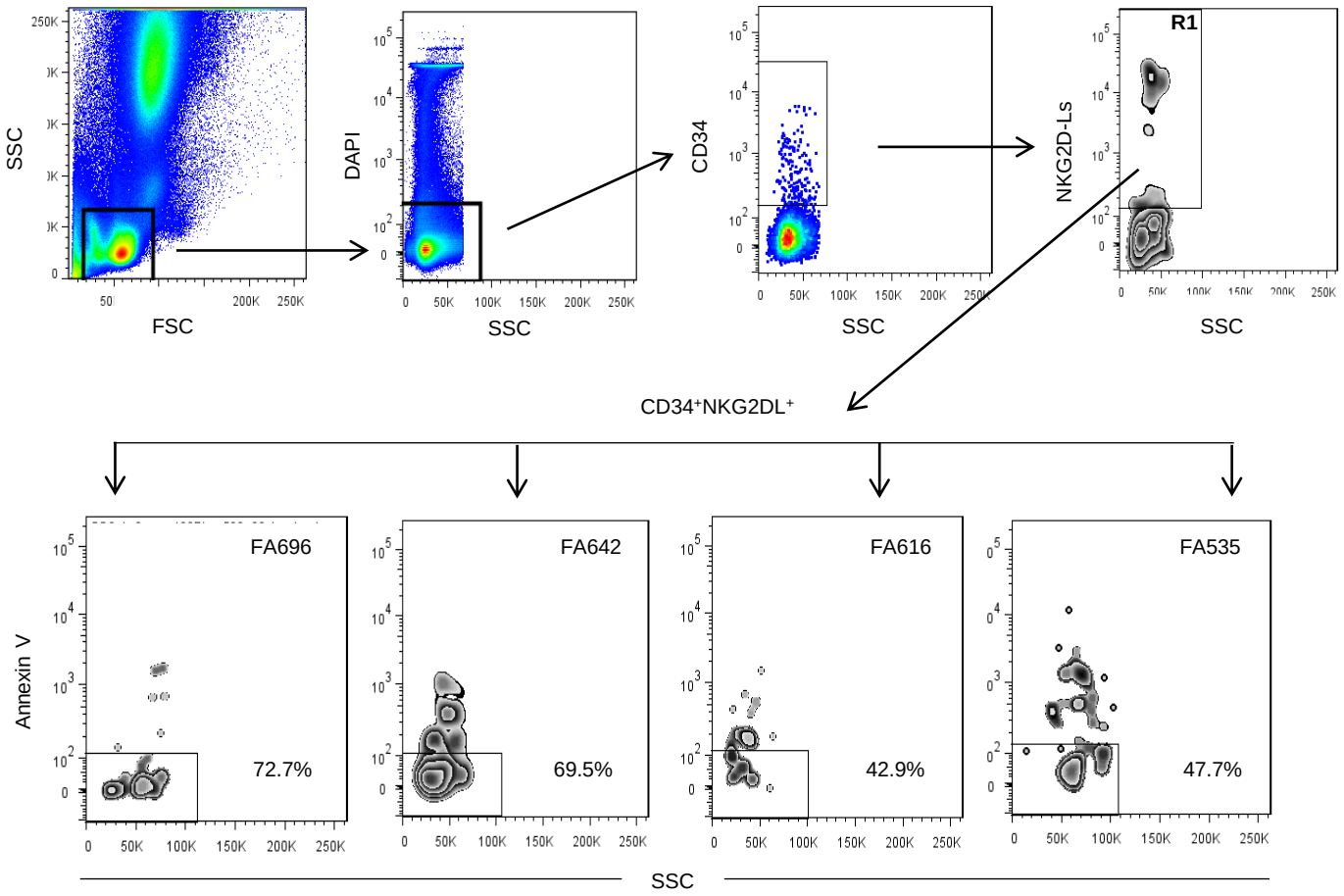




Supplemental Fig. 5



Supplemental Figure 6



Supplemental Figure 7