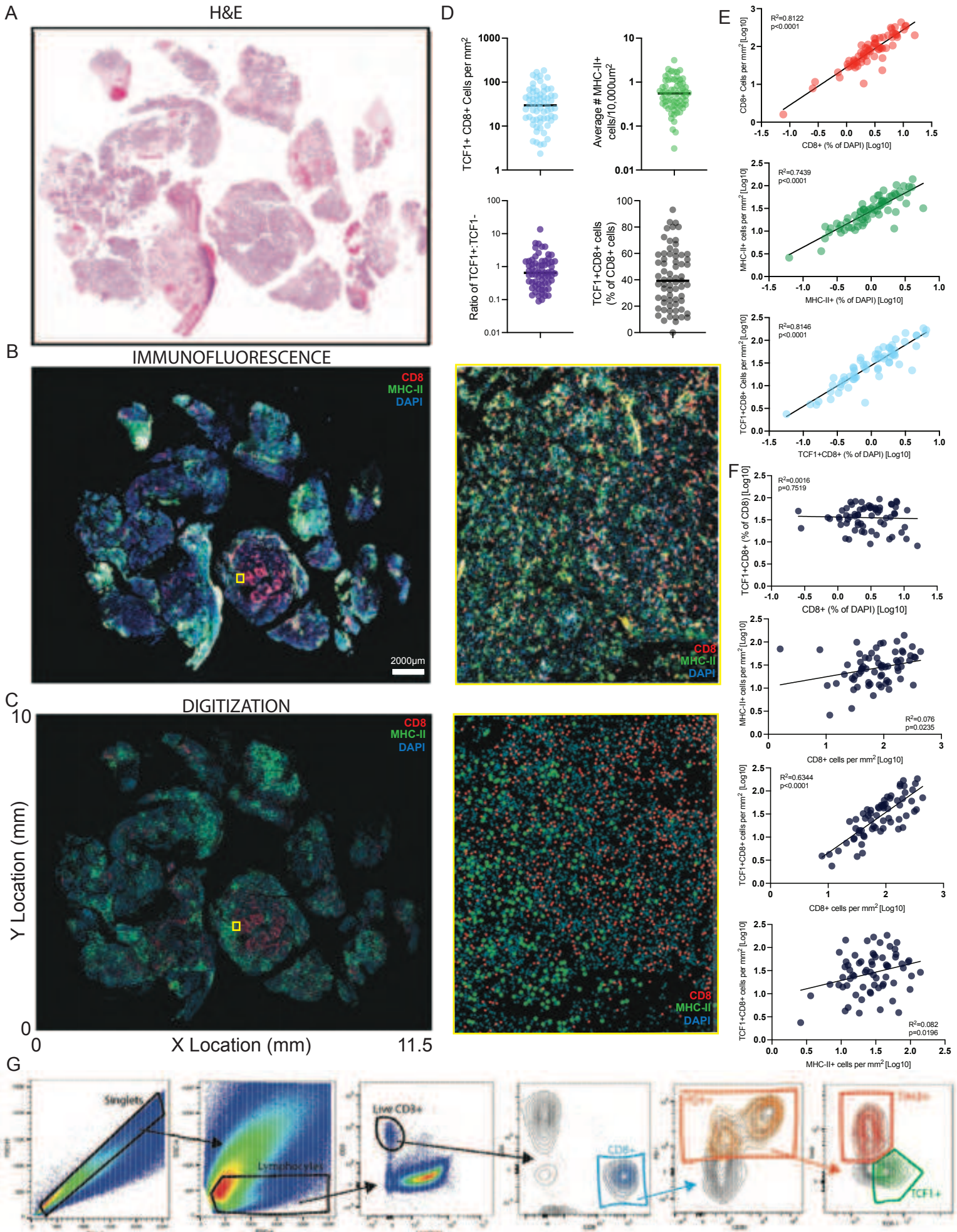
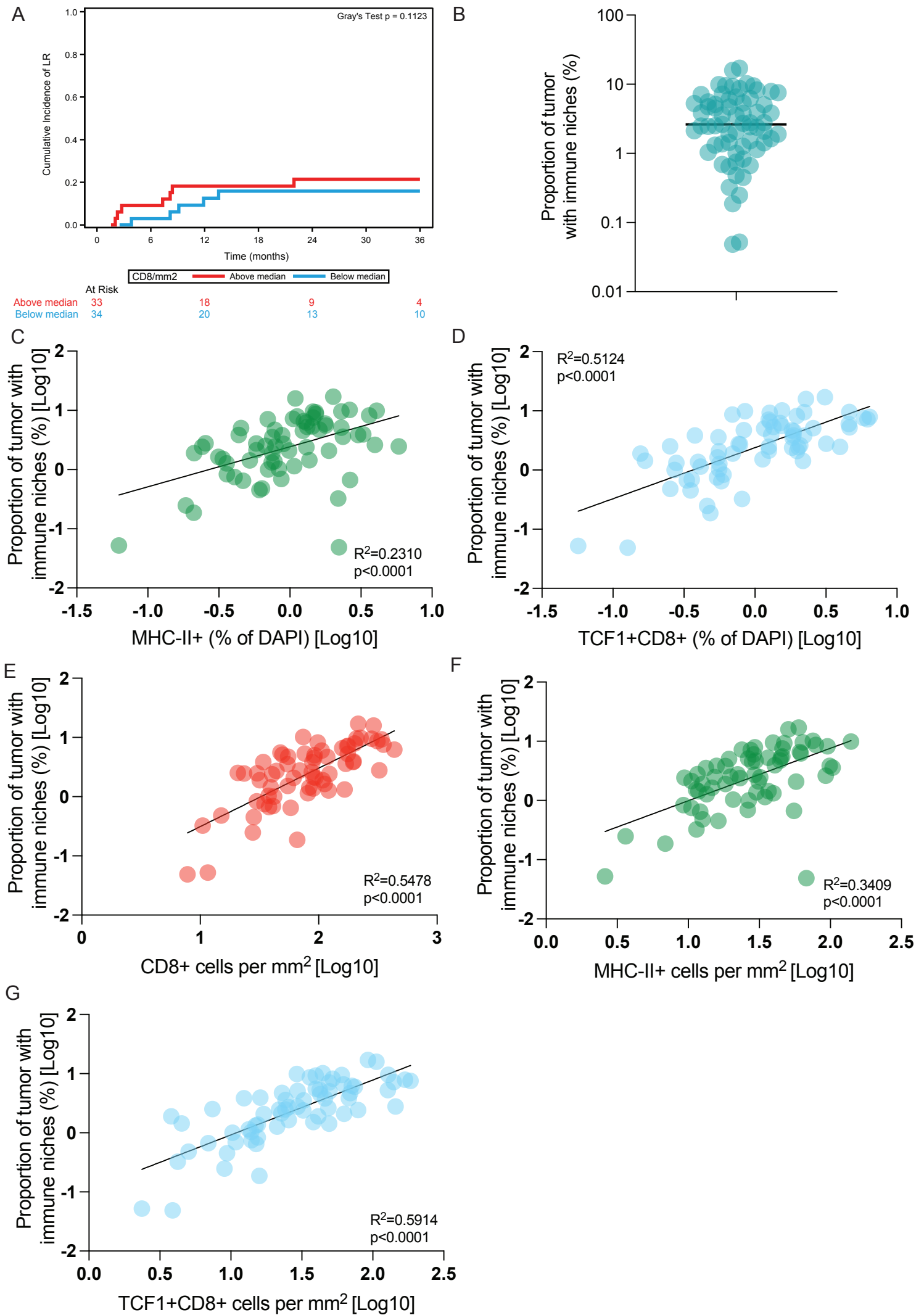


Supplemental Figure 1

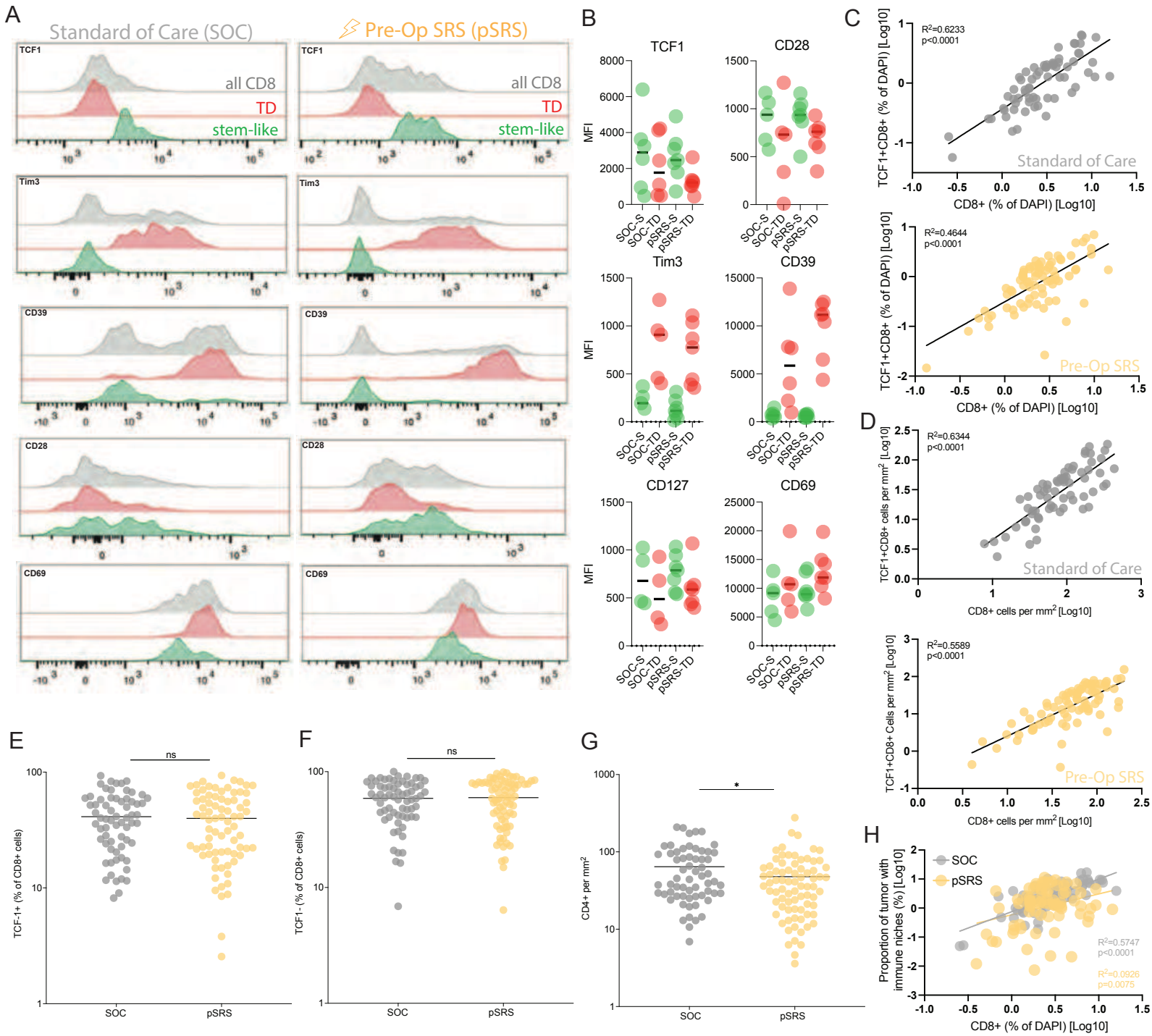


Supplemental Figure 1. **A)** Whole slide H&E image of BrM. **B)** Representative three-color immunofluorescence staining with region of interest shown in yellow box with region of interest on the right. **C)** Digitization of the slide with region of interest shown with region of interest on the right. **D)** Quantification of number of CD8⁺ TCF1⁺ cells per mm², average number of MHC-II⁺ cells per 10,000um², ratio of TCF1⁺ to TCF1⁻ cells, and percentage of TCF1⁺ of CD8⁺ cells. **E)** Validation of quantification methods, demonstrating correlation between a given cell count per mm² and respective proportion of total cells. **F)** Correlation between percent CD8⁺ of total cells and percent TCF1⁺ of CD8⁺ T cells, correlation between CD8⁺ cells per mm² and MHC-II⁺ cells per mm², correlation between CD8 cells per mm² and TCF1⁺ CD8⁺ cells per mm², correlation between MHC-II⁺ cells per mm² and TCF1⁺ CD8⁺ cells per mm². **G)** Flow cytometry gating strategy.

Supplemental Figure 2

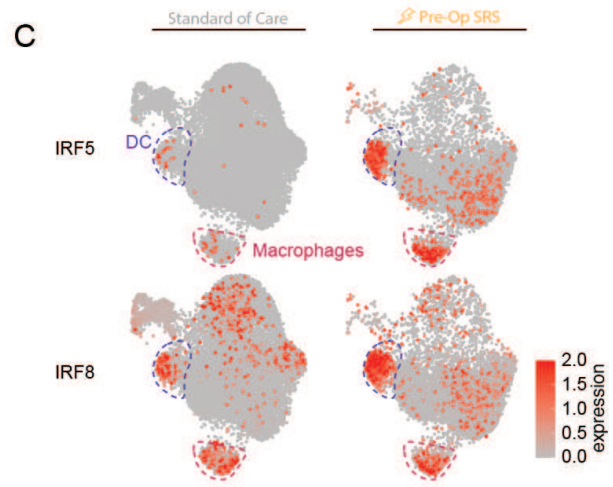
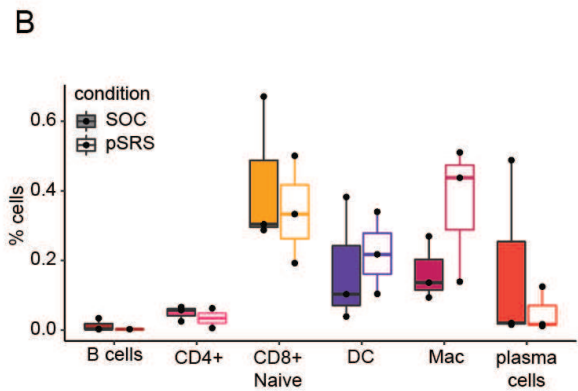
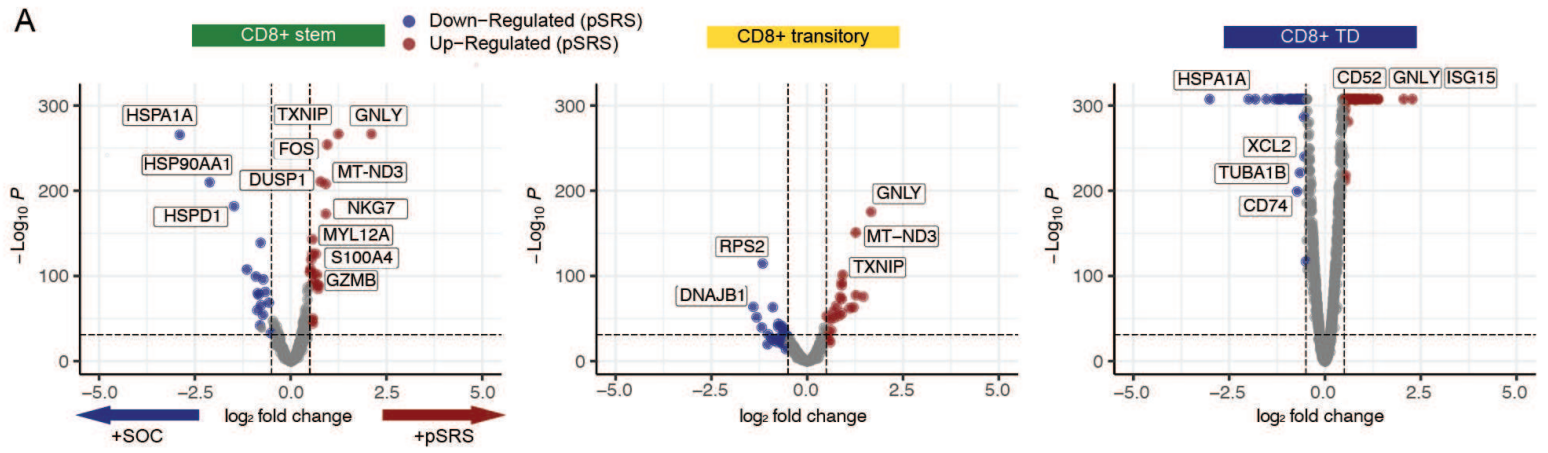


Supplemental Figure 2. A) No difference in local control between high vs low CD8⁺ T cell per mm². **B)** Quantification of the proportion of tumors occupied by immune niches (local 100um x 100um cellular neighborhoods where TCF1⁺ CD8⁺ T cells and MHC-II⁺ cells co-localize). **C)** Correlation between MHC-II⁺ cell frequency and proportion of tumors with immune niches. **D)** Correlation between TCF1⁺ CD8⁺ cell frequency and proportion of tumors with immune niches. **E)** Correlation between CD8⁺ cells per mm² and proportion of tumors with immune niches. **F)** Correlation between MHC-II⁺ cells per mm² and proportion of tumors with immune niches. **G)** Correlation between TCF1⁺ CD8⁺ cells per mm² and proportion of tumors with immune niches.

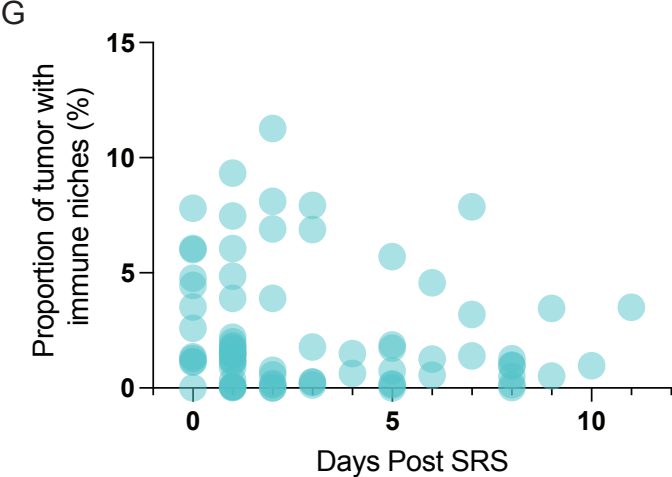
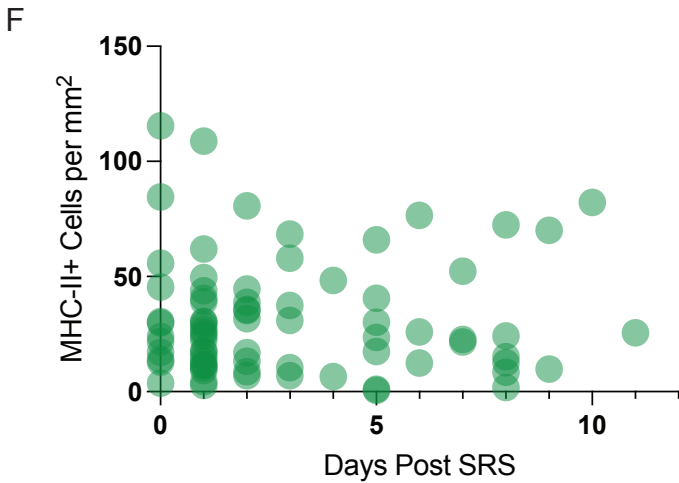
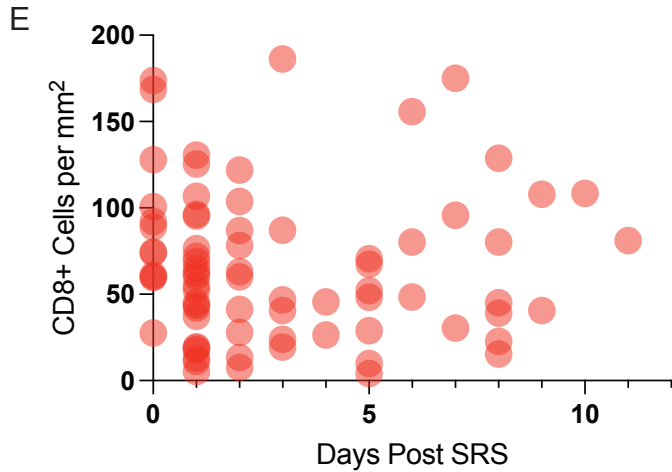
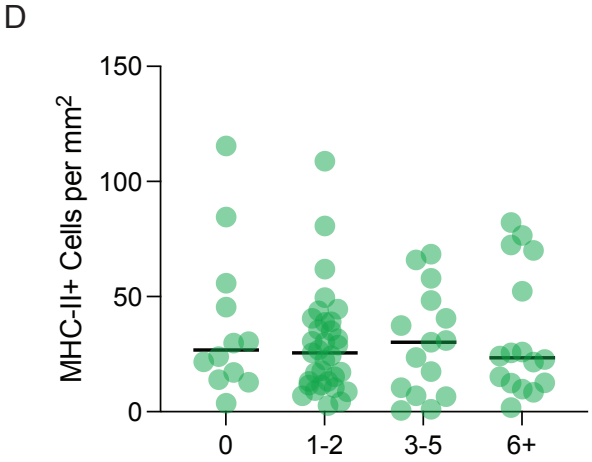
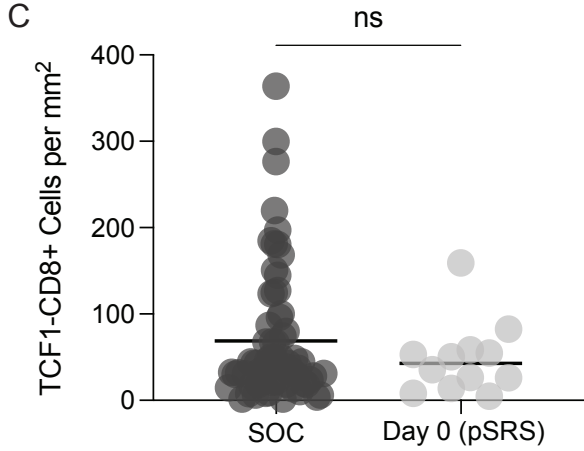
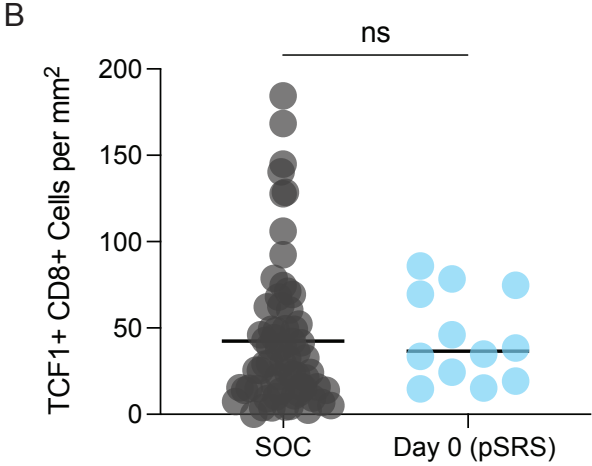
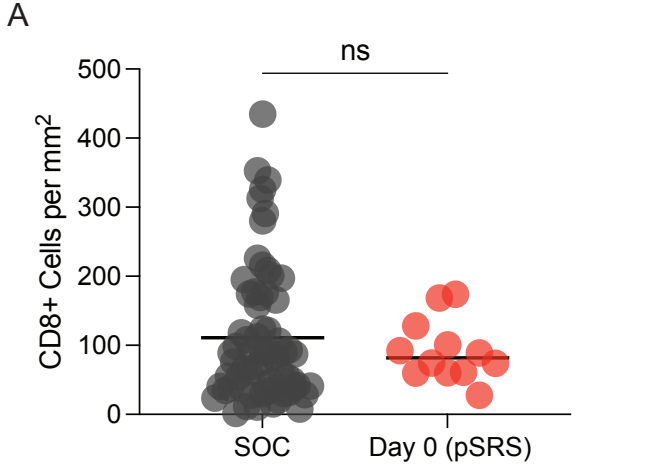


Supplemental Figure 3. **A)** Representative expression of stem-like and terminally differentiated effector-like cell markers in T cells from SOC and pSRS BrM by flow cytometry. **B)** Quantification of marker from (A). **C)** Correlation between frequency of CD8⁺ cells and TCF1⁺ CD8⁺ cells in SOC and pSRS BrM. **D)** Correlation between numbers of CD8⁺ cells per mm² and TCF1⁺ CD8⁺ cells per mm² in SOC and pSRS BrM. **E)** Concordance between frequency of TCF1⁺ of CD8⁺ cells in SOC and pSRS BrM, p= 0.9367. **F)** Concordance between frequency of TCF1⁻ of CD8⁺ cells in SOC and pSRS BrM, p= 0.8329. **G)** A significant decrease seen in CD4⁺ cells per mm² in pSRS compared to SOC BrM, p= 0.0395. In E-G, *:p<0.05, as calculated by unpaired t test. **H)** Correlation between frequency of CD8⁺ and proportion of tumor with immune niches in SOC and pSRS.

Supplemental Figure 4



Supplemental Figure 4. A) Pairwise comparison of specific CD8⁺ T cell clusters between SOC and pSRS. Volcano plots show average fold-change by all cells in the cluster by $-\log_{10}$ p-value. The number of differentially expressed genes (≥ 0.25 Log₂ fold-change in each pairwise comparison) are indicated in each plot. **B)** Frequencies of various infiltrating immune cells compared between SOC and pSRS. **C)** Feature plots showing increased expression of IRF5 and IRF8 in DCs and macrophages in pSRS.



Supplemental Figure 5. **A)** SOC vs day 0 pSRS for CD8 per mm². **B)** SOC vs day 0 pSRS for TCF1⁺ per mm². **C)** SOC vs day 0 pSRS for TCF1⁻ per mm². A-C calculated by unpaired t test. **D)** MHC-II⁺ cells per mm² show no change from day 0 to day 6+ after pSRS. **E)** Distribution of CD8⁺ cells per mm² from 0-11 days after pSRS. **F)** Distribution of MHC-II⁺ cells per mm² from 0-11 days after pSRS. **G)** Distribution of proportion of tumor with immune niches from 0-11 days post-SRS.