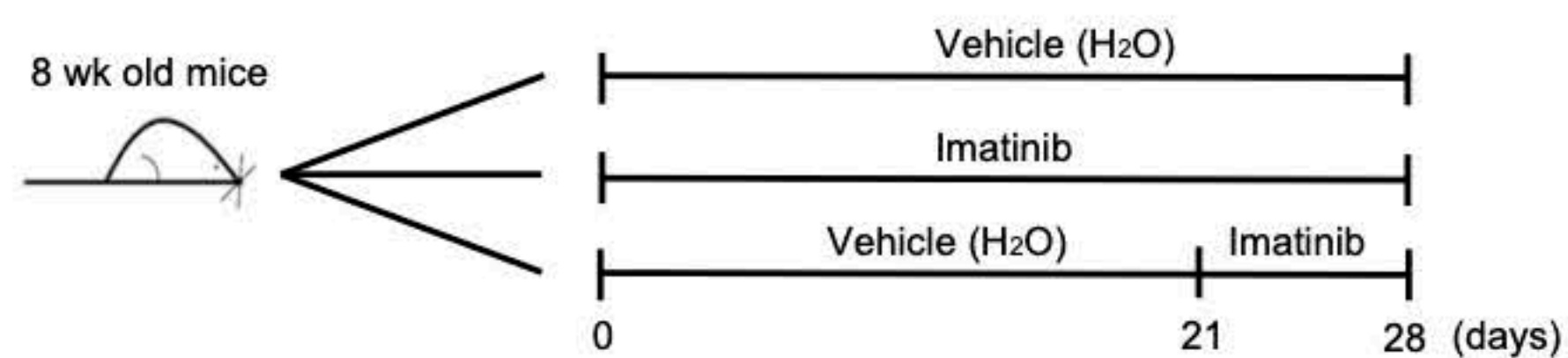
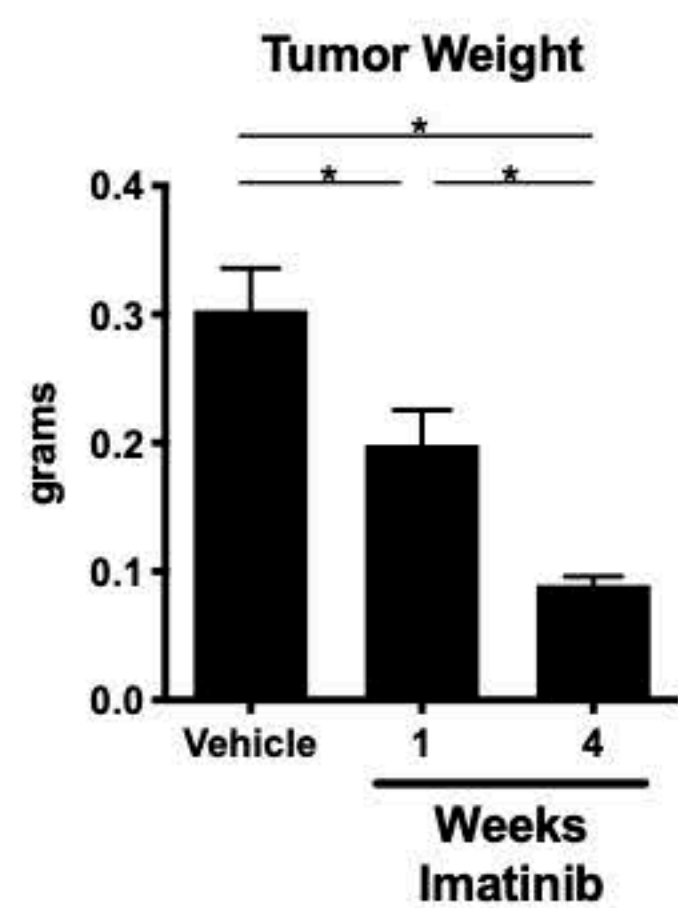
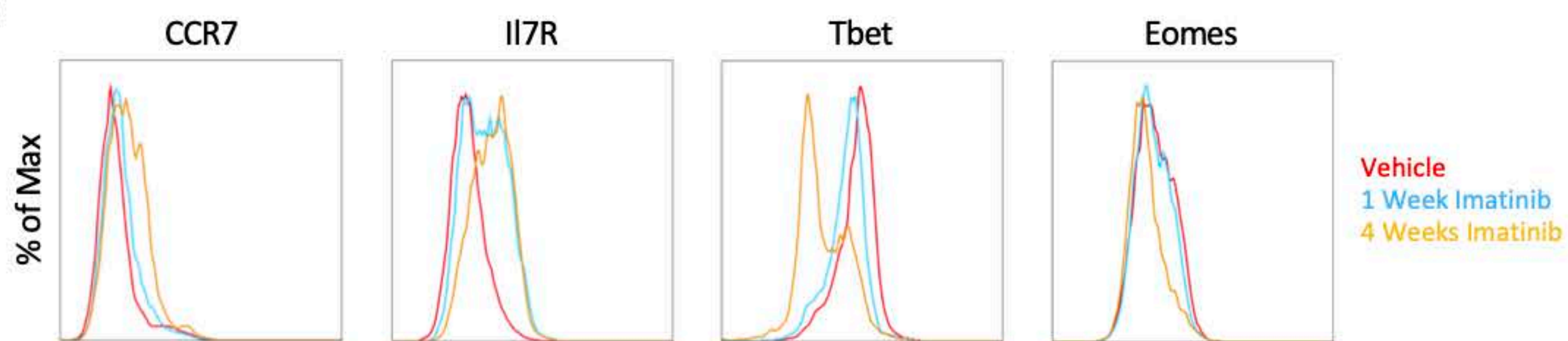
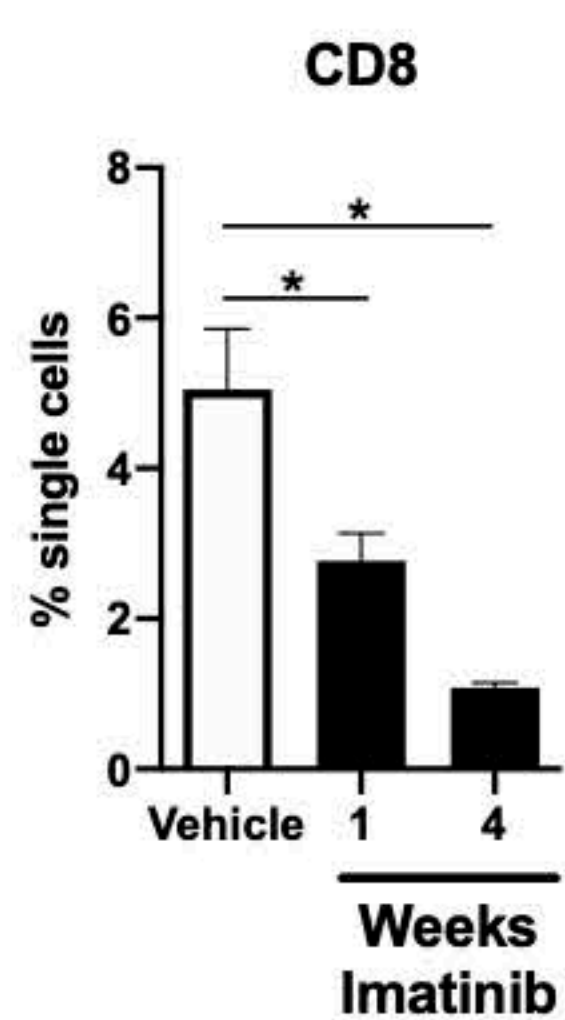
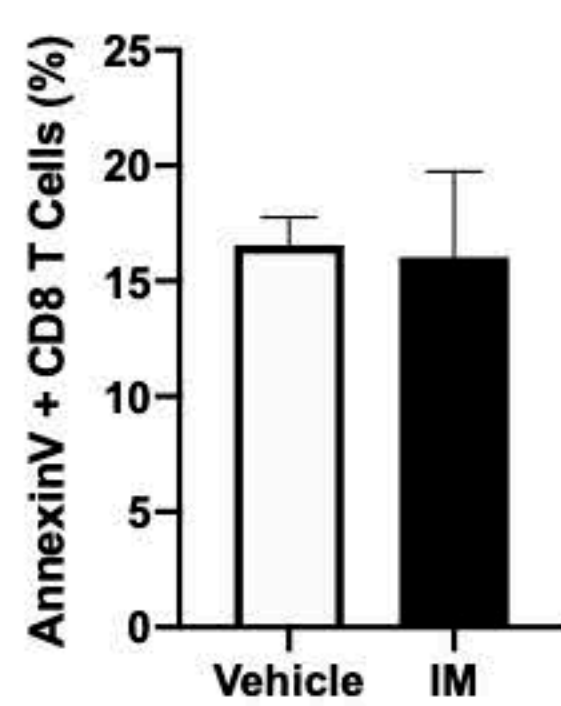
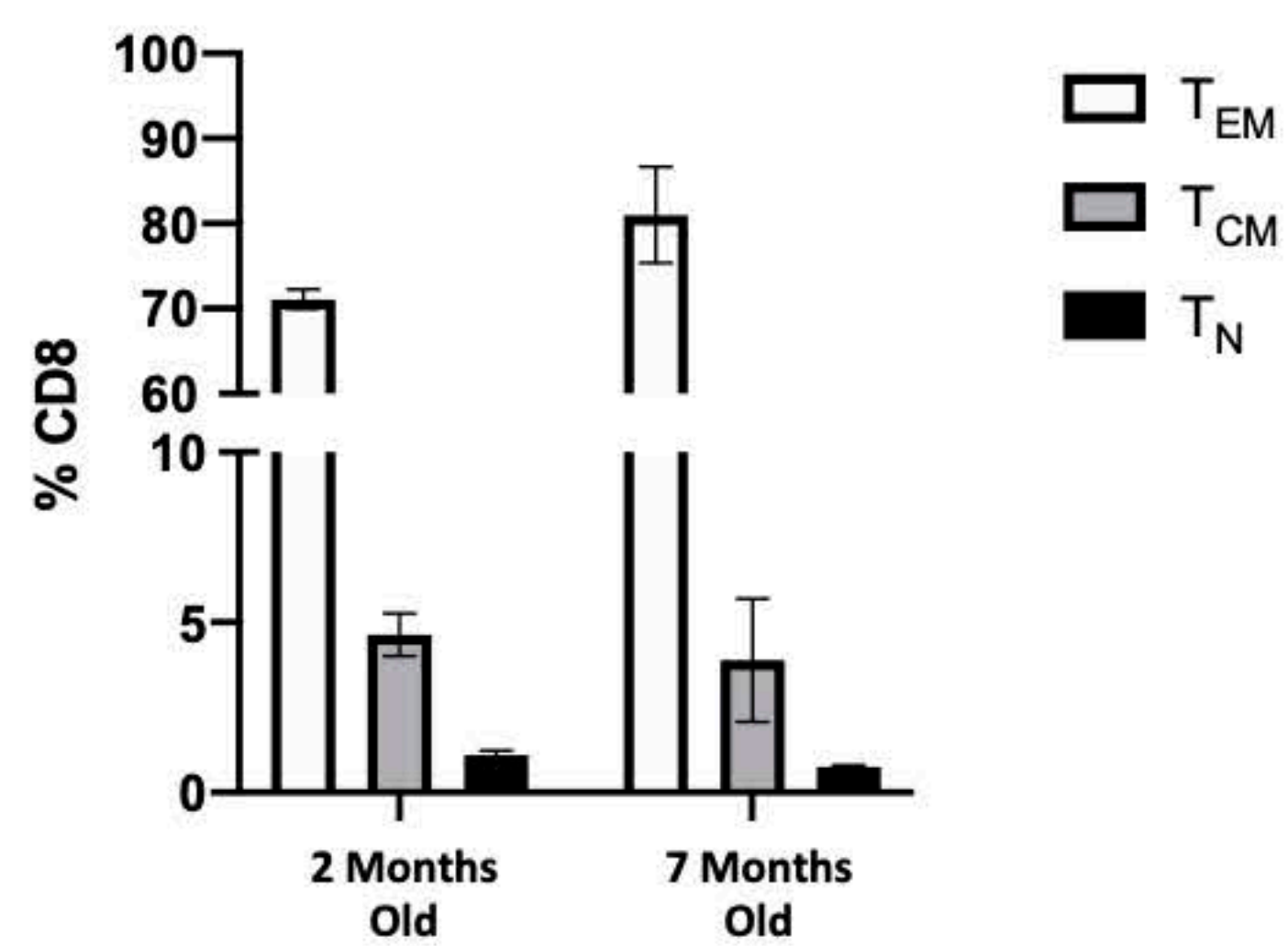


Figure S1. (A) Heatmap depicting normalized expression of select chemokines and cytokines from sorted CD8⁺ T cells in node or tumor from *Kit^{V558Δ/+}* mice following bulk RNAseq (4 mice/group). **(B)** Flow cytometry gating scheme and markers used to quantify and characterize CD8⁺ T cells. Flow cytometry plots depicted on logarithmic scales and gates were determined using appropriate isotypes. **(C)** Representative histograms of data presented in Figure 1G. **(D)** Representative dot plot of data presented in Figure 1H.

A**B****C****D****E****F****G**

Vehicle

Imatinib

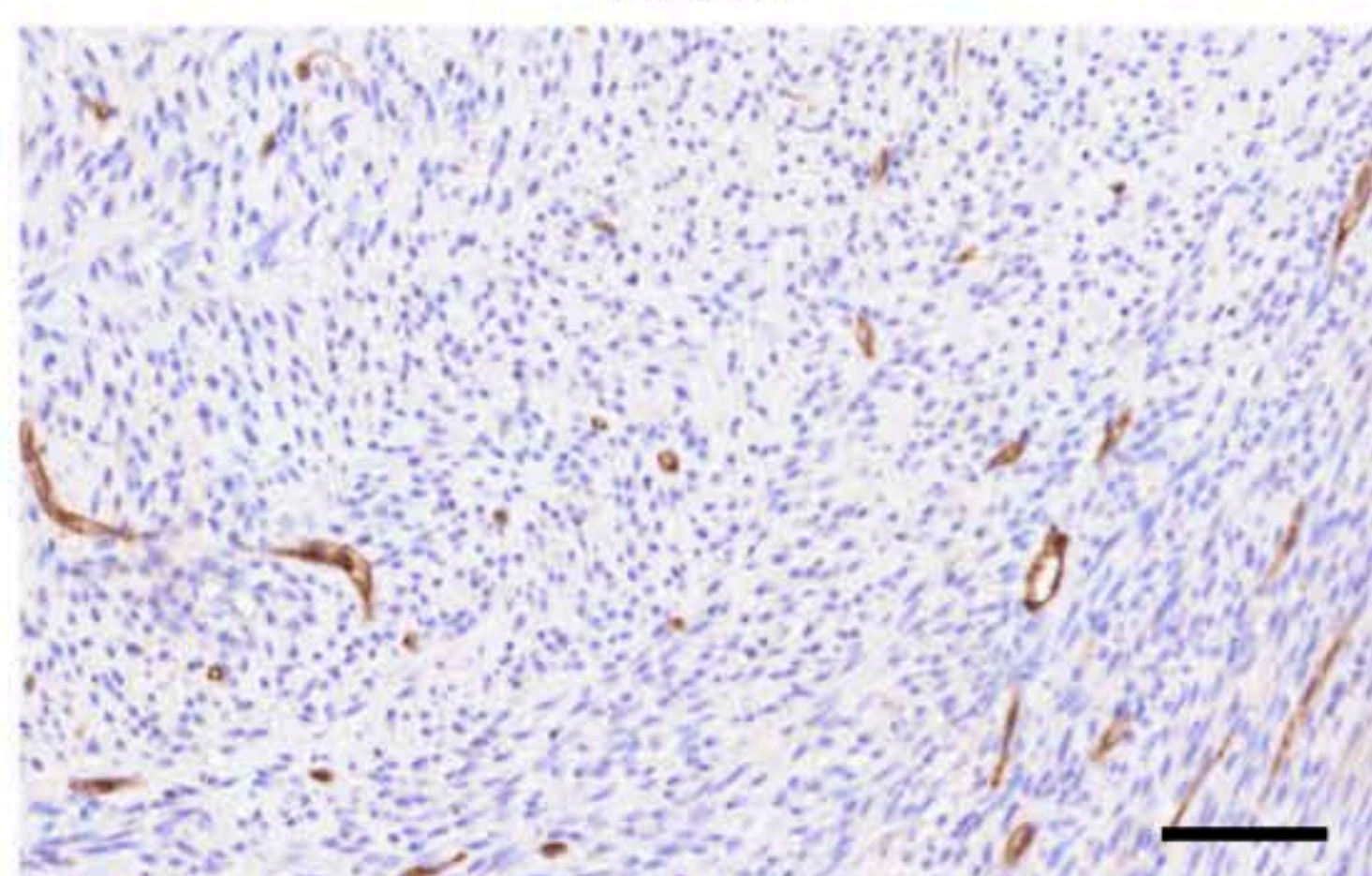
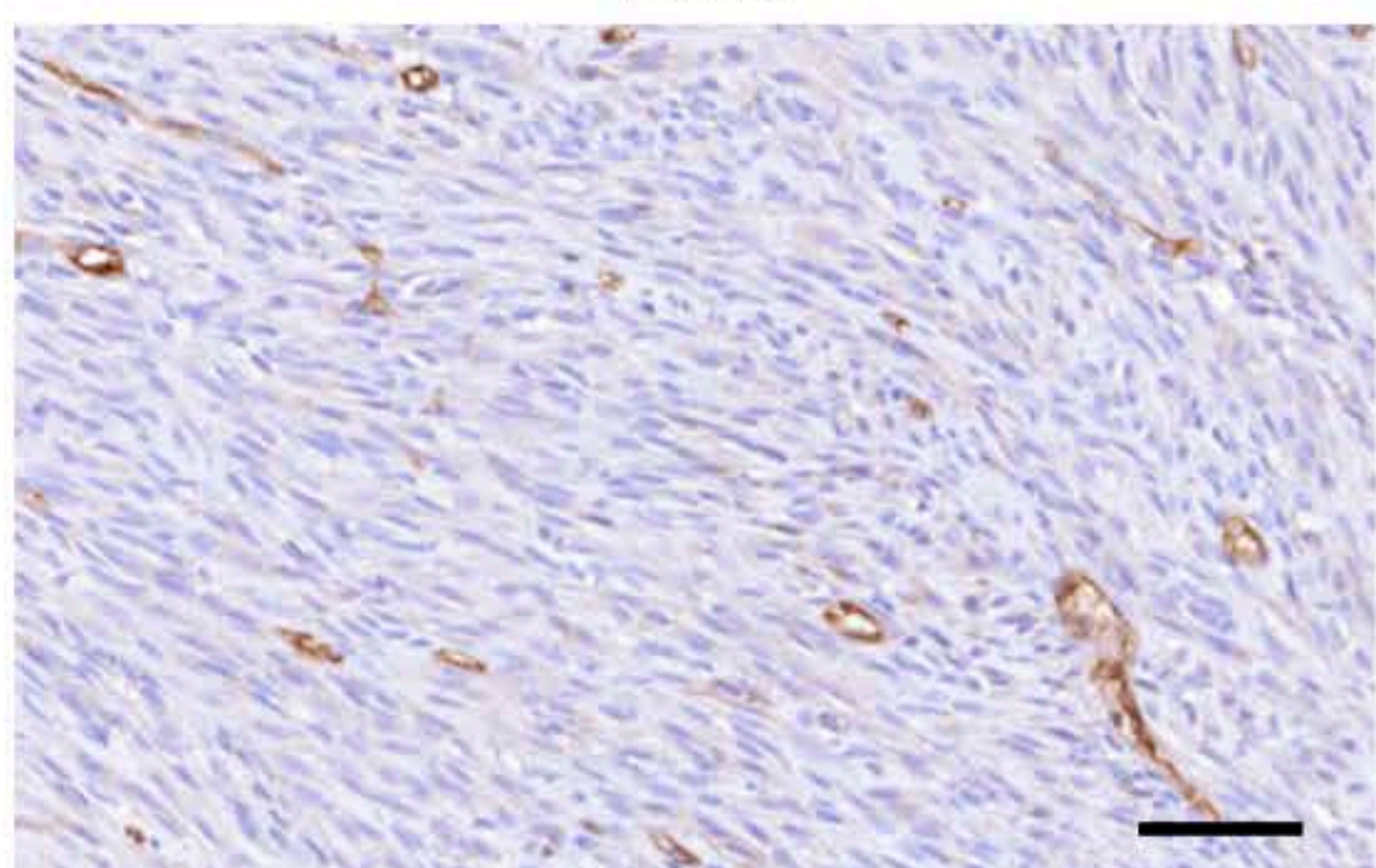


Figure S2. (A) Depiction of the treatment of *Kit*^{V558Δ/+} mice with vehicle or imatinib for 1 or 4 weeks. **(B)** *Kit*^{V558Δ/+} mice were treated with vehicle or imatinib for 1 and 4 weeks and assessed for tumor weight (4 mice/group). **(C)** Representative histograms of the data presented in Figure 3I. **(D)** *Kit*^{V558Δ/+} mice were treated with vehicle or imatinib for 1 and 4 weeks and assessed for frequency of intratumoral CD8⁺ T cells (4 mice/group). **(E)** *Kit*^{V558Δ/+} mice were treated with vehicle or imatinib for 1 week and assessed for frequency of intratumoral PropidiumIodine⁻ CD45⁺CD3⁺CD4⁻CD8⁺AnnexinV⁺ T cells (5 mice/group). **(F)** Tumors of *Kit*^{V558Δ/+} mice aged 2 months and 7 months were assessed for frequency of CD8⁺ T cell subsets. **(G)** *Kit*^{V558Δ/+} mice were treated with vehicle or imatinib for 4 weeks and tumors were assessed by IHC for CD31 staining. Bar measures 100μm. Data represent mean ± SEM; *, p < 0.05.

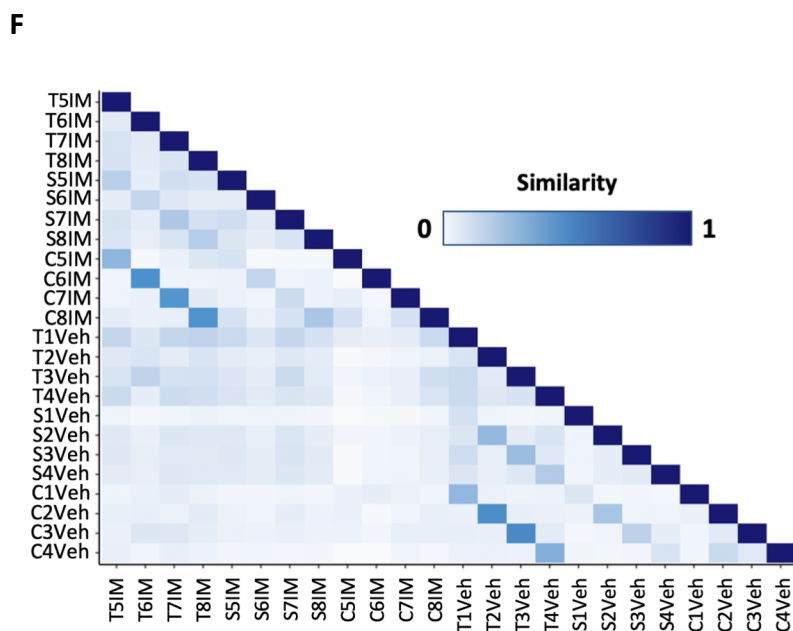
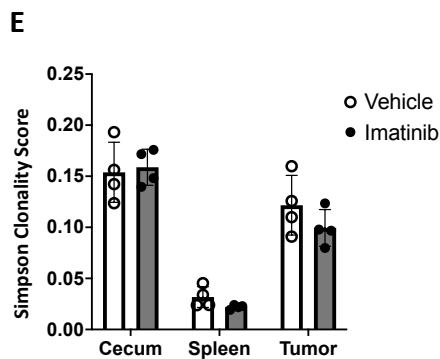
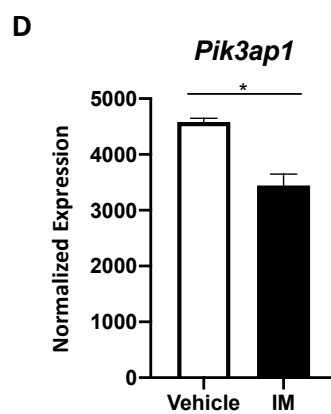
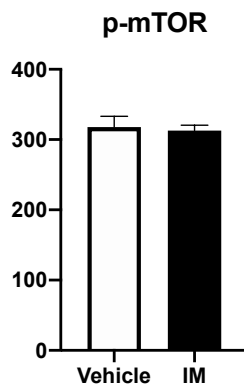
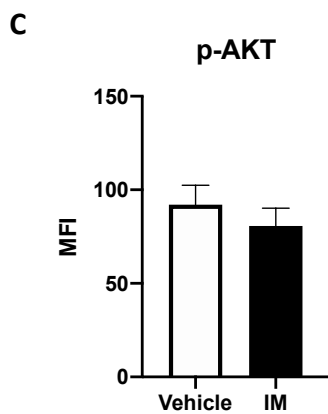
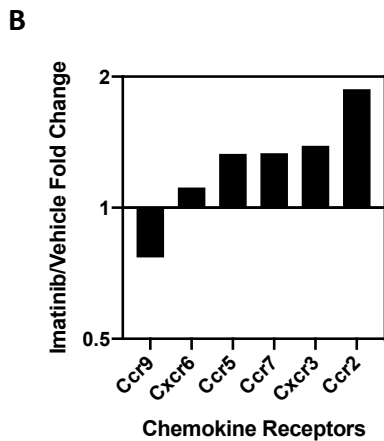
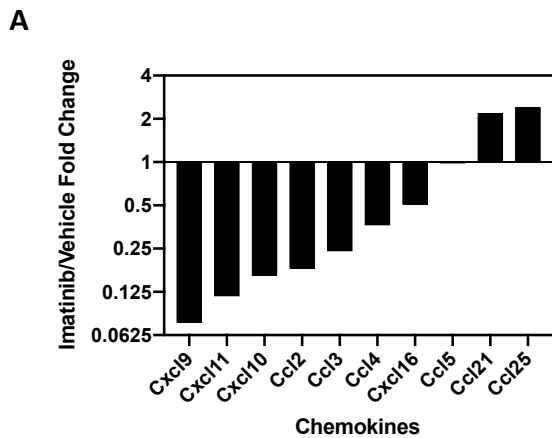


Figure S3. Bulk RNAseq was performed in tumors of *Kit^{V558Δ/+}* mice treated with vehicle or imatinib for 3 weeks. Graph shows expression of various chemokines (3mice/group). **(B)** Bulk RNAseq was performed on sorted CD8⁺ T cells from tumors of *Kit^{V558Δ/+}* mice treated with vehicle or imatinib for 1 week. Graph shows expression of various chemokine receptors (4mice/group). **(C)** CD8⁺ T cells from spleens of C57BL/6J mice were bead sorted and cultured with CD3/CD28 microbeads with or without 50nm imatinib and p-AKT and p-mTOR MFI was determined by flow cytometry (3 biological replicates/group). **(D)** Normalized expression of *pik3ap1* in sorted CD8⁺ T cells in tumors from *Kit^{V558Δ/+}* mice following bulk RNAseq (4 mice/group). **(E)** Simpson clonality score and **(F)** similarity of TCR sequences in (C) cecum, (S) spleen, and (T) tumor from *Kit^{V558Δ/+}* mice treated with (Veh) vehicle or (IM) imatinib for 1 week. Data represent mean ± SEM; *, p < 0.05.

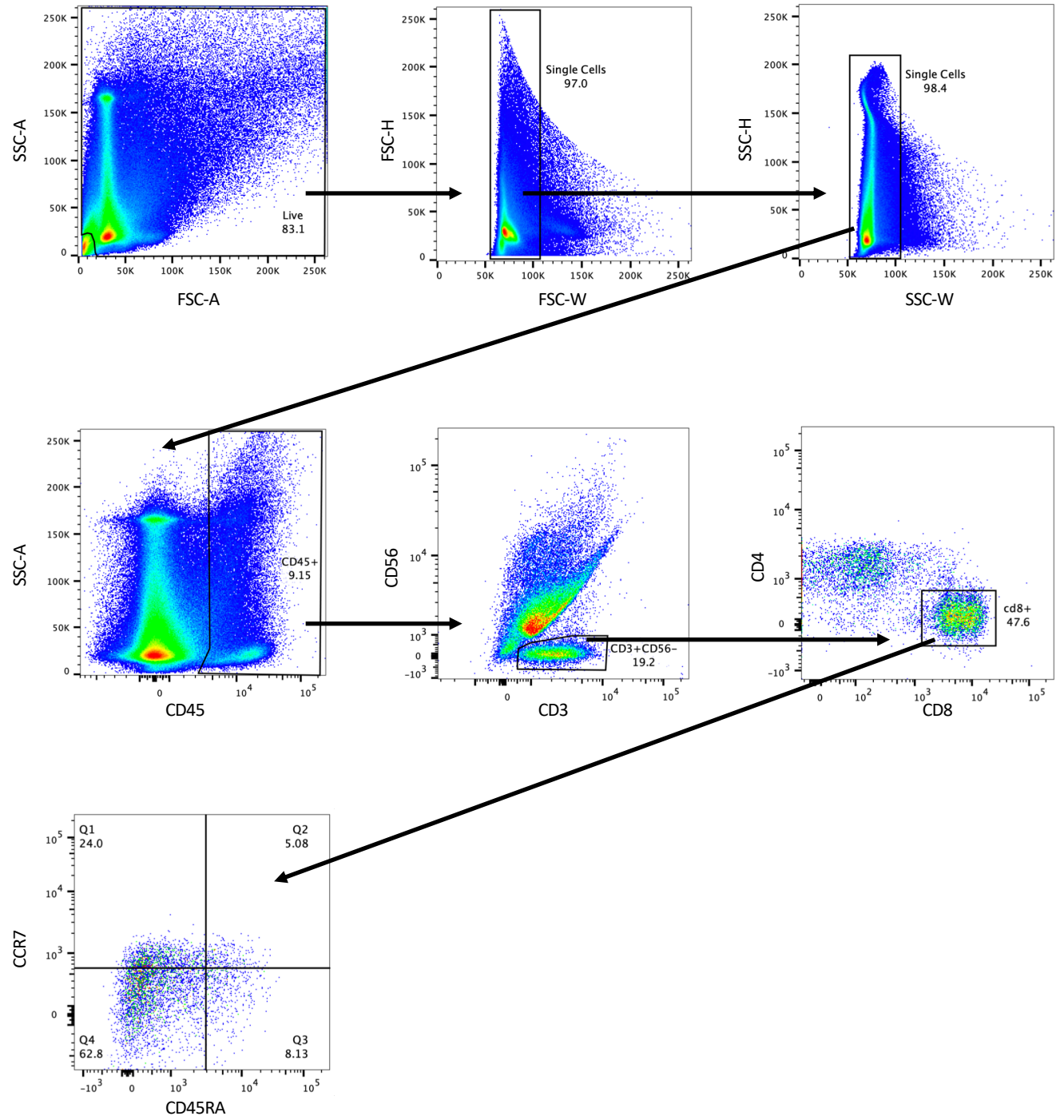


Figure S4. Flow cytometry gating scheme and markers used to quantify and characterize human CD8⁺ T cells. Flow cytometry plots depicted on logarithmic scales and gates were determined using appropriate isotypes.

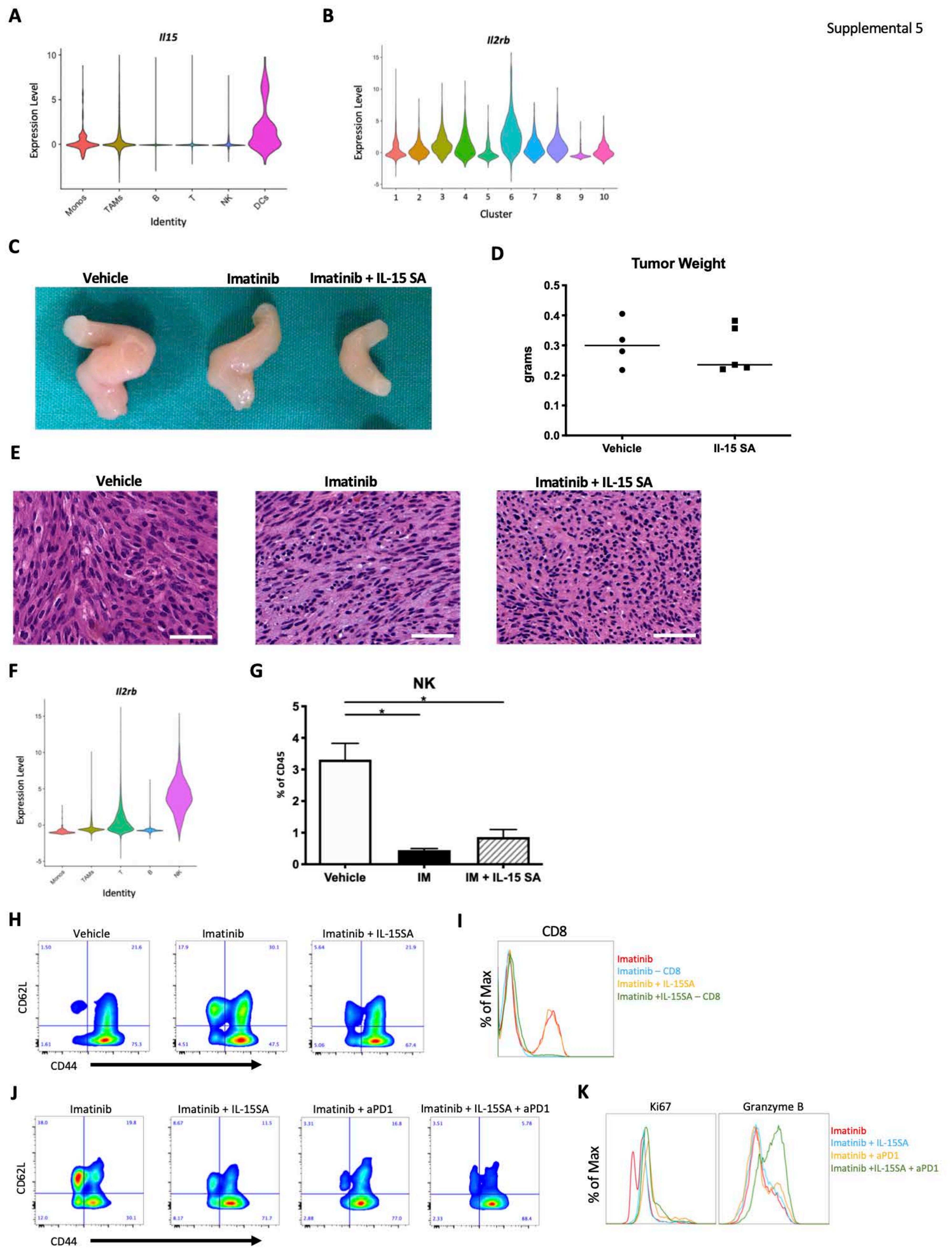


Figure S5. (A) Violin plot of *Il15* expression in (Monos) monocytes, (TAMs) tumor-associated macrophages, (T) T cells, (B) B cells, (NK) natural killer cells, and (DCs) Batf3 dendritic cells and **(B)** *Il2rb* expression in CD8⁺ T cell clusters from scRNAseq of tumors from 3 untreated *Kit^{V558Δ/+}* mice. **(C)** Representative image of tumors from *Kit^{V558Δ/+}* mice treated with vehicle, imatinib, or imatinib and IL-15SA for 1 week (5-6 mice/group, repeated twice). **(D)** Tumor weights from *Kit^{V558Δ/+}* mice treated with vehicle or IL-15SA for 1 week (4-5 mice/group, repeated twice). **(E)** Representative tumor histology (20x) from *Kit^{V558Δ/+}* mice treated with vehicle, imatinib, or imatinib and IL-15SA for 1 week, where bar measures 50 μm (5-6 mice/group, repeated twice). **(F)** Violin plot of *Il2rb* expression in (Monos) monocytes, (TAMs) tumor-associated macrophages, (T) T cells, (B) B cells, and (NK) natural killer cells from scRNAseq of tumors from 3 untreated *Kit^{V558Δ/+}* mice. **(G)** Frequency of NK cells of CD45⁺ cells from *Kit^{V558Δ/+}* mice treated with vehicle, imatinib, or imatinib and IL-15SA for 1 week (5-6 mice/group, repeated twice). **(H)** Representative dot plots of data presented in Figure 6C. **(I)** Representative histogram of the data presented in Figure 6E. **(J)** Representative histograms of the data presented in Figure 6H. Data represent mean ± SEM; *, p < 0.05.