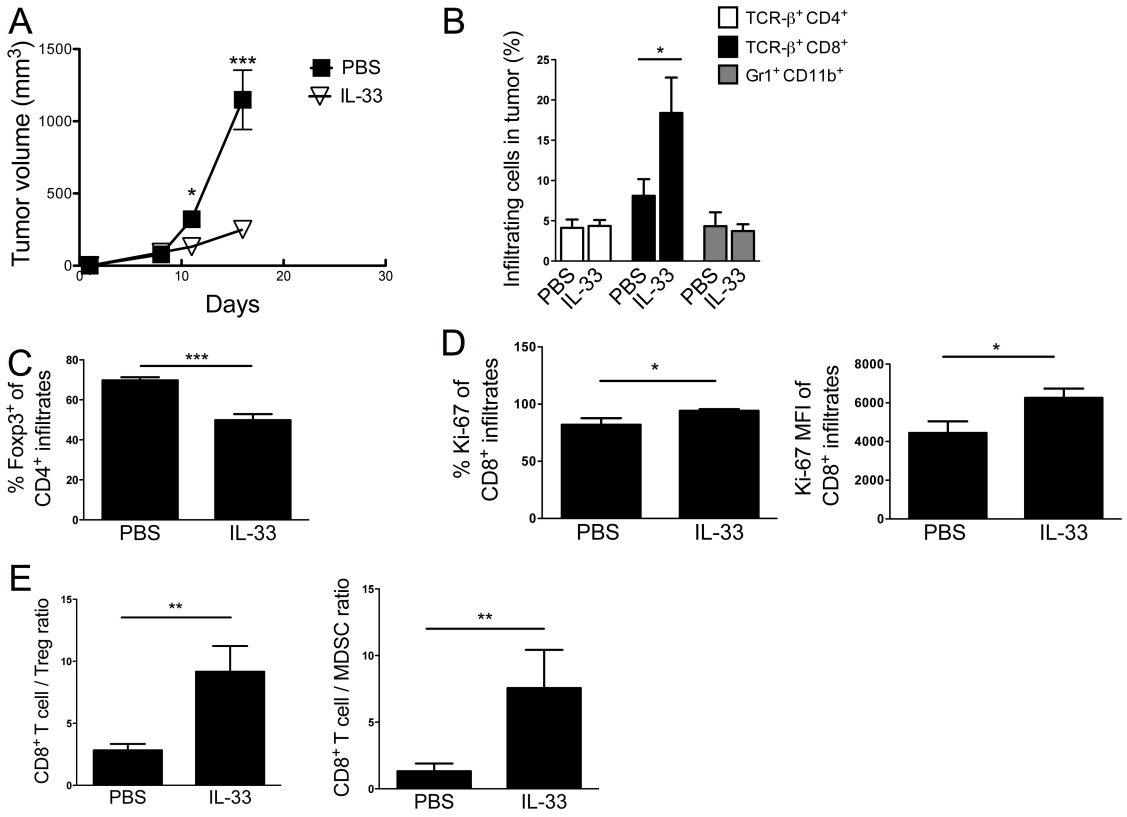
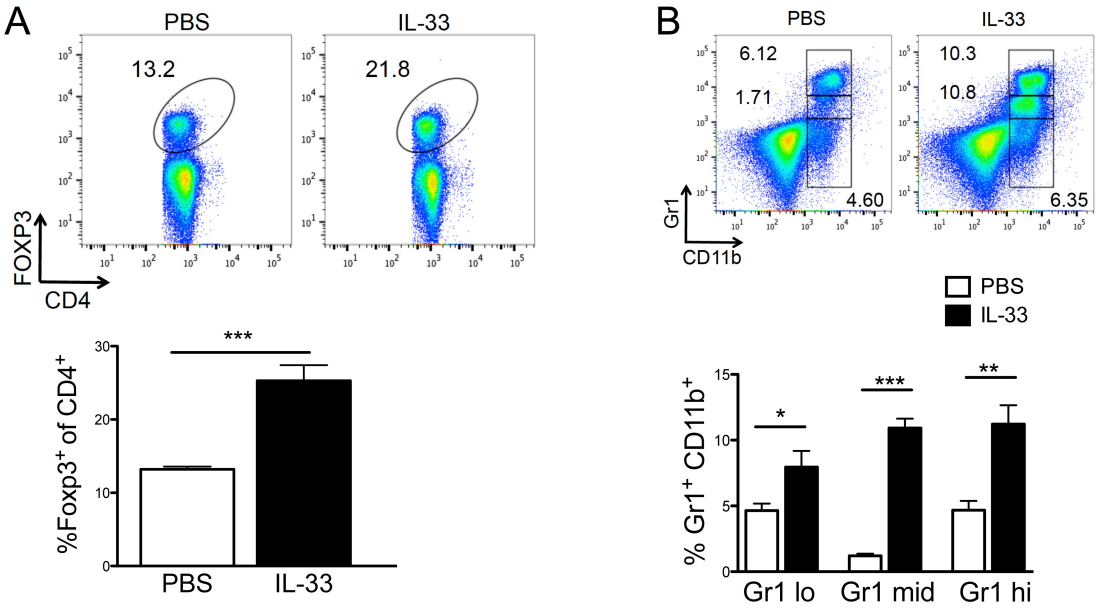
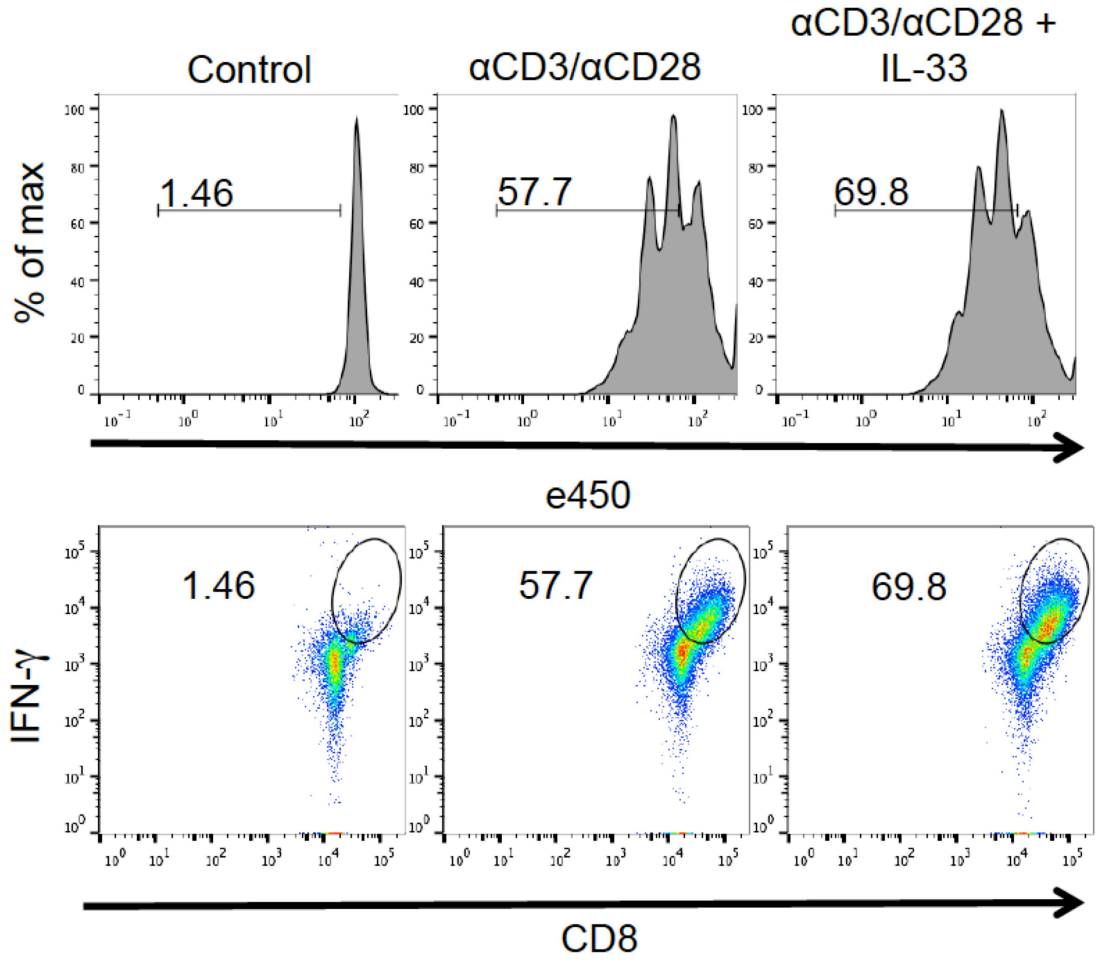


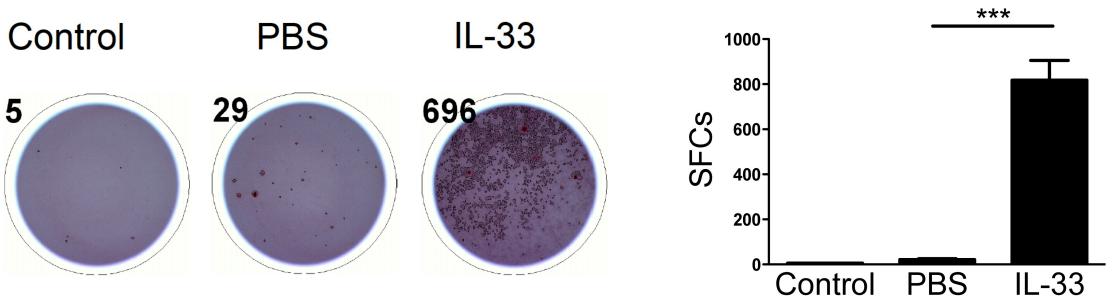
Supplemental Figure 1. Administration of rIL-33 alone is sufficient to inhibit tumor growth in B16-SIY tumor bearing mice. (A) C57BL/6 WT mice were challenged s.c. with 10^6 B16-SIY tumor cells. On day 8 each group received either PBS or 1 μg IL-33 daily. **(B)** Percent tumor-infiltrating $CD4^+TCRVb^+$, $CD8^+TCRVb^+$, $Gr1^+$ $CD11b^+$ and **(C)** $CD4^+Foxp3^+$ cells from B16-SIY-bearing mice. **(D)** rIL-33-treated mice had increased percentage and MFI of proliferation (Ki-67) of tumor-infiltrating $CD8^+$ T cells compared to PBS group. **(E)** IL-33 shifted the ratio of $CD8^+$ T cell to suppressive cells in favor of increased proportion of $CD8^+$ T cells, as determined by flow cytometry percentages. Cells were collected for flow cytometry 8-10 days after PBS or rIL-33 treatment. Data show mean ± SEM (n= 10). *; $p<0.05$, **; $p<0.01$, ***; $p<0.001$.



Supplemental Figure 2. rIL-33 treatment increases suppressive cell populations in the spleen of tumor bearing mice. (**A**) Representative dot plots of Foxp3 expression in splenic $CD4^+$ cells collected 8-10 days post rIL-33 or PBS treatment. Percent $Foxp3^+$ cells is indicated within plots and summarized (n=10). (**B**) Representative flow cytometric analysis of splenic $Gr1^+CD11b^+$ cells collected 8-10 days post rIL-33 or PBS treatment. Percent $Gr1^+CD11b^+$ cells is indicated within plots and summarized (n=10). Data show mean ± SEM. *; $p<0.05$, **; $p<0.01$, ***; $p<0.001$.



Supplemental Figure 3. IL-33 has a direct action on CD8$^+$ T cells. Naïve CD8$^+$ T cells labeled with proliferation dye eFluro450 were stimulated with anti-CD3 and anti-CD28 in the absence or presence of 10 ng/ml rIL-33. After 48 hours T cell proliferation was measured by e450 dilution, and IFN-γ production was measured after restimulation with PMA and ionomycin by flow cytometry.



Supplemental Figure 4. IL-33 activates DCs from tumor bearing mice to restore their T cell priming ability. DCs from IL-33-treated B16-OVA-bearing mice have rescued cross presentation and priming ability compared to those from PBS-treated mice, quantified with an IFN-γ-based ELISPOT assay. Splenic $CD11c^+$ cells from B16-OVA-bearing mice were cultured with naïve OT-1 $CD8^+$ T cells without addition of exogenous antigen at a 1:1 ratio for 48 hours. Representative ELISPOT panel shown on left (n=3). ***; $p<0.001$.