**Supplementary Figure 1.** The expression of PD-1 by non-transferred T cells at the tumor and spleen of mice receiving ACT treatment. Mice with or without 7-day established B16 tumor were transferred with cultured T cells from pmel-1 TCR/Thy1.1 transgenic mice. Six days after T-cell transfer, single cell suspensions were obtained from spleens and tumors and stimulated with gp100-peptide pulsed DC in the presence of Golgi stop for 4 hours. Lymphocytes with or without stimulation were evaluated by flow cytometry for PD-1 versus IFN-γ after gating on CD8+ and Thy1.1+. Number indicates the percentage of cells showing in each quadrant. The flow data was obtained from pooled lymphocytes samples from 5 mice from each groups. Two independent studies showed similar results.

**Supplementary Figure 2.** Change in frequency of Treg and MDSCs within tumors from mice receiving ACT in response to PD-1 blockade. Mice challenged with 5X10^5 B16 cells were infused with pmel-1 T cells on day 7, then treated with either anti-PD-1 antibody or control antibody on days 7, 9 and 11 and sacrificed on day 13. Single-cell suspensions were prepared from tumor tissues, stained with antibodies and analyzed by flow cytometry (N=3 per group).

**Supplementary Figure 3.** Representative contour plots of F4/80 and Ly6C expression in CXCL10-production CD11b+ cells within tumor tissue from mice treated with ACT and anti-PD-1.
**Supplementary Figure 4.** (A) Percentage of CXCL10-production cells in CD11b\(^+\) cells within spleen tissue from mice treated with ACT and anti-PD-1, as well as from mice treated with ACT with control antibody (N=3 per group). (B) Percentage of transferred pmel-1 T cells within tumor and spleen in response to PD-1 blockade on day 14 after T-cell-transfer. B16-bearing mice were treated with anti-PD-1 and ACT. One day 14 after ACT, single cell suspension was made from tumor and spleen and stained with anti-CD8, anti-Thy1.1 (N=3-4 per group).