Supplementary figure legends

Figure S1. Effect of anti-PD-L1 treatment on LLC volume in mice.

(**A-C**) WT, NSG, and Rag1$^{-/-}$ mice were inoculated with LLC tumor cells. The mice were treated from day 3 every 3 days with anti-PD-L1 or isotype control (rIgG1). Tumor volume was monitored. n = 5-7. Wilcoxon test was used for two-way comparisons.

Figure S2. Expression and effect of tumor PD-L1 on tumor growth.

(**A-B**) WT, PD-L1$^{-/-}$, and PD-1$^{-/-}$ mice were inoculated with MC38 (**A**), and ID8 (**B**) tumor cells. Tumor volume was monitored. n = 5-7. T-test was used for two-way comparisons (*P < 0.05). (**C-E**) CRISPR PD-L1 homozygous PD-L1 knockout (PD-L1$^{-/-}$) tumor cell clones were made for MC38 (**C**), ID8 (**D**), and B16-F10 (**E**). PD-L1$^{-/-}$ and control tumor cells were stimulated for 48 hours with or without IFNγ (10ng/ml). PD-L1 expression was analyzed by FACS. One of 4 experiments is shown. (**F-I**) PD-L1$^{-/-}$ MC38 (**F, G**), PD-L1$^{-/-}$ B16-F10 (**H, I**) and wild type control tumor cells were inoculated into NSG and Rag1$^{-/-}$ mice. Tumor load was monitored. n=5 mice per group. (**J**) PD-L1$^{-/-}$ MC38 cells were inoculated into wild type mice. Single cells were prepared from tumor tissues on day 15. PD-L1 expression was analyzed by FACS on CD45^{+} immune cells and CD45^{-} tumor cells. One of 5 is shown. (**K-L**) PD-L1 overexpressed (PD-L1-OV) or scrambled MC38 cells were analyzed for PD-L1 expression by FACS (**K**). PD-L1$^{-/-}$ mice were inoculated with PD-L1-OV MC38 cells (**L**, n = 8) and treated with anti-PD-L1 or isotype control (rIgG1). Tumor volume was monitored. Wilcoxon test was used for two-way comparisons. (*P < 0.05).

Figure S3. Effect of anti-PD-L1 on T cell effector cytokine expression.

(**A-G**) T cell effector cytokines were analyzed with intracellular staining in MC38 tumor draining lymph nodes (TDLN) (**A, B**), MC38 tumor tissues (**C-E**), and ID8 tumor ascites (**F, G**) in PD-L1$^{-/-}$ and PD-1$^{-/-}$ mice. Data are expressed as the mean ± SEM (n = 3-5 per group). Representative original flow cytometry data are shown (**E**). (**H, I**) T cell infiltration was analyzed with immunofluorescence staining for CD3 in tumors from PD-L1$^{+/+}$ and PD-L1$^{-/-}$ mice. Data are expressed as the mean ± SEM (**I**, n = 10 per group). Representative staining images are shown (**H**). T-test was used for two-way comparisons (*P < 0.05). (**J, K**) T cell effector cytokines were analyzed with intracellular staining in MC38 tumor in WT and PD-L1$^{-/-}$ mice, n = 5. T-test was used for two-way comparisons (*P < 0.05).

Figure S4. APC subsets in tumor tissues and tumor PD-L1 expression *in vivo.*

(**A-C**) PD-L1 expression in tumor infiltrating immune cells. **(A)** PD-L1 expression on $CD45^+$ immune cells in MC38 tumor tissues. (**B**) FACS gating on different immune cell subsets in MC38 tumor tissues. Representative flow cytometry data showed gates on $CD45^+CD90^-$ cells, DCs, macrophages, and MDSCs. (**C**) The percentages of PD-L1 expression in each immune cell subset in MC38 and ID8 ascites. One of five replicates is shown. (**D**) PD-L1 expression on tumor cells *in vivo*. Tumor cells were isolated from wild type and PD-$L1^{-/-}$ mice. PD-L1 expression was detected by Western blots in tumor cells. Experiments were performed in triplicates; representative replicate is shown. (**E**) $CD45.1^+$ peritoneal APCs were injected into ID8 tumor bearing $CD45.2^+$ mice. 48 hours after APC injection, $CD45.1^+$ APCs were examined in ID8 tumor tissues and ascites by flow cytometry. n = 5. (**F**) MC38 tumor bearing PD-$L1^{-/-}$ mice were adoptively transferred with (black) or without (red) WT DCs. Mice were treated with anti-PD-L1 or isotype IgG1. Tumor volume was monitored. Wilcoxon test was used for two-way comparisons (n = 7, $*P < 0.05$).

Figure S5. PD-$L1^+$ APCs and tumor cells in patients with melanoma and ovarian cancer.

(**A-B**) Percentages of patients with PD-$L1^+$ tumor cells or PD-$L1^+$ non-tumor cells were shown in melanoma (**A**) and ovarian cancer (**B**) tissues.