Supplemental figure legends

Supplemental figure 1. Radiation induced upregulation of CD73 and PD-L1 on pancreatic cancer cells.

Expression of CD73 (**A,** KCKO and **B,** KP2) and PD-L1(**C,** KCKO and **D,** KP2) on surface of KCKO and KP2 cells 1, 2 and 3 days after irradiation with single dose of 15 Gy was analyzed by flow cytometry. In each subfigure (A, B, C or D), left panel shows histogram of one representative flow cytometry data set and right panel shows mean fluorescence intensity (MFI) from three replicates, presented as mean ± SEM. Data was analyzed by one-way ANOVA with Dunnett posttest. *, $P < 0.05$, **, $P < 0.01$, ***, $P < 0.001$, compared with untreated (day 0).

Supplemental figure 2. **SBRT increases expression of CD73 and PD-L1 in orthotopic PDAC model.**

Mice bearing KCKO-Luc orthotopic pancreatic tumors were treated with SBRT as in Figure 1. On day 11 (1 day after SBRT), CD73(**A**) and PD-L1(2) expression was analyzed by flow cytometry gating on tumor cells. **A**. CD73 expression on tumor cells. Left, representative flow cytometry plots. Right, MFI of CD73 on tumor cells, expressed as mean ± SEM from 5 mice/group and analyze by Student *t* test. *, $P < 0.05$. **B**. PD-L1 expression on tumor cells. Left, representative flow cytometry plots. Right, MFI of PD-L1 on tumor cells, expressed as mean ± SEM from 5 mice/group and analyzed by Student *t* test. *, $P < 0.05$.

Supplemental figure 3. Triple therapy with SBRT, anti-CD73 and anti-PD-L1 enhances activation of CD8 and CD4 cells in spleen from the orthotopic model of murine pancreatic cancer.

Mice bearing KCKO-Luc orthotopic pancreatic cancer were treated as in Figure 1 and sacrificed on day 14. Immune cells in spleen were determined by flow cytometry. Results are expressed as mean ± SEM from five mice / group and analyzed by ANOVA with Dunnett posttest. Significance is indicated by *, $p<0.05$.

Supplemental figure 4. Gating strategy for flow cytometry analysis.

Mice bearing KCKO-Luc orthotopic pancreatic cancer were treated as in Figure 1 and sacrificed on day 14. Tumor-infiltrating immune cells were determined by flow cytometry. **A**. T cells gating strategy. **B**. Myeloid cells gating strategy. **C**. DCs gating strategy.

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Supplemental figure 5. The Luminex analysis of cytokines and chemokines in pancreatic cancer.

Mice bearing KCKO-Luc orthotopic pancreatic tumors were treated as in Figure 1. Mice were sacrificed on day 14 post tumor cell injection; tumor cytokines and chemokines were determined by multiplex Luminex assay. Results are expressed as mean ± SEM from five mice per group and analyzed by one-way ANOVA with Dunnett post-test. Significances are indicated by *, $p < 0.05$, and **, $p<0.01$, ***, $p<0.001$, compared with untreated group.

Supplemental figure 6. Chemotherapy (Gemcitabine/nab-paclitaxel) following combination treatment of anti-CD73 and anti-PD-L1 delayed tumor growth in orthotopic PDAC mouse model.

KCKO-Luc orthotopic pancreatic cancer model was established as in Figure 1 and treated with gemcitabine (100mg/kg, i.p.) and nab-paclitaxel (100mg/kg, i.v.) on day 5 and 9 post tumor implantation. 10 mg/kg of anti-CD73, anti-PD-L1 or isotype control IgG were administered twice a week starting on day 13 post tumor implantation. **A.** Tumor growth curve was determined by IVIS imaging twice a week. Data shown are mean of IVIS value ± SEM from 10 mice/group. **B**. Kaplan-Meier survival curve. *, $P < 0.05$, **, $P<0.01$, compared with untreated group by one-way ANOVA with multiple comparison (adjusted by Bonferroni method) for growth or by log-rank (Mantel-Cox) test with multiple comparison (adjusted by Bonferroni method) for survival curve. IVIS, in vivo imaging system.

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