

Supplementary Figure Legends

Supplementary Figure 1.

To test whether the higher dose of oncogenic plasmids speed up tumorigenesis, we injected 30 μg of each plasmid IP into the mice. Tumor growth rates were similar between the 10 μg (**Fig. 2A-B**) and 30 μg group. **(A)** Representative IVIS imaging of the mice. **(B)** Quantification of bioluminescence intensity in the abdomen area.

Supplementary Figure 2.

(A-C) T cell populations of either tumor-bearing mice receiving triple oncogenes or naïve B6 mice. PBMCs were obtained from triple oncogenic IP/EP mice on day 30 after plasmid EP ($n=3$). Naïve mice ($n=3$) serve as controls. PBMCs were gated on the CD3⁺ T cells, and analyzed for percentages of CD4⁺ and CD8⁺ T cells. **(A)** Representative pseudocolor dot plot of the CD4⁺ and CD8⁺ T cells in PBMCs. **(B-C)** Bar graph summary of **(B)** CD4⁺ or **(C)** CD8⁺ T cells in PBMCs. **(D)** CD3 staining in tumors and tumor-draining lymph nodes (tdLNs). Formalin-fixed, paraffin-embedded tumor sections were stained with CD3 antibodies. Nuclei were stained with sytox green. Tissue sections were imaged on a 20 \times objective lens. *Left*: tumors. *Right*: tdLNs. **(E)** Characterization of lymphocyte exhaustion profiles in spleen. Quantification of lymphocyte exhaustion profiles in **(F)** tumors, **(G)** ascites, and **(H)** spleens. **(I)** Representative flow cytometry images of Tregs in tumors, ascites, and spleens. Quantification of IL-10 **(J)**, or IL-35 **(K)** expression levels in ascites. IL-10 and IL-35 expression levels in either the ascites or peritoneal washing fluid were analyzed by ELISA ($n=3$). IL-10 and IL-35 standard proteins served as positive controls for the ELISA assays. All of the experimental groups in **(J)** and **(K)** were non-detectable. **(L)** IFN γ -induced PD-L1 upregulation in PACS-1 cells. PACS-1 cells were stimulated with 1 $\mu\text{g}/\text{mL}$ IFN γ for 24 hrs. Untreated cells are indicated by light blue and IFN γ -treated cells are indicated by dark blue.

Supplementary Figure 3.

Tumor tissues were harvested from NSG mice with either human or mouse p53 mutant, AKT, c-Myc, and SB on day 29 after plasmid EP. **(A-C)** NSG mice with mouse p53 mutant. **(D-E)** NSG mice with human p53 mutant.