**Supplementary Figure Legends**

**Supplementary Figure S1: Neoantigen load tends to increase with increasing chronic liver disease severity and fibrosis stage.** Predicted neoantigen load was calculated in 20 human liver cirrhosis samples. There is a trend towards greater neoantigen load with more severe fibrosis stage, though this is not statistically significant, due to low sample number. One-way ANOVA was performed and found no significance.

**Supplementary Figure S2: Animals injected with one dose of 25 mg/kg DEN at 2 weeks and weekly 4% $CCl_4$ starting at 6 weeks do not have any microscopic tumors prior to initiation of anti-PD-1 or IgG control antibody therapy.** Representative 4X image of H&E stained liver at 10 weeks of age. Livers show centrilobular necrosis and immune infiltrate due to weekly $CCl_4$ injections, but no nodules of tumor cells. This shows that our intervention began in a preventive time frame.

**Supplementary Figure S3: Whole section imaging of liver sections for quantification of immune cells reveals CD4+ T cell and CD8+ T cell tissue infiltration is associated with tumor prevention. (A)** Whole liver section from an untreated animal sacrificed at 10 weeks immunostained for CD3 (red), CD4 (white), and CD8 (green) imaged using an AxioScan slide scanner microscope system. **(B)** Inset of **(A)**. **(C)** Whole liver section from an IgG control treated animal sacrificed at 23 weeks immunostained for CD3 (red), CD4 (white), and CD8 (green) imaged using an AxioScan slide scanner microscope system. **(D)** Inset of **(C)**.

**Supplementary Figure S4: Image analysis pipeline for quantifying CD3+ cells, CD3+ CD4+ T cells, and CD3+ CD8+ T cells in whole liver sections.** In brief, regions of interest are detected in the CD3 channel of each whole liver section image. Then intensities are measured both within the ROI (Ci), and in a small 2 μm band around each ROI (bg). The ratio of Ci / bg is calculated, and cells with a ratio > 1.7 are counted as positives. Then, intensities in the CD4 channel and CD8 channel are measured in each of the CD3+ ROIs. CD3+ CD4+ T cells and CD3+ CD8+ T cells are quantified using the same Ci / bg calculation in those channels. Finally, the surface area of each section is measured, and CD3+ cells / $mm^2$, CD3+ CD4+ T cells / $mm^2$, and CD3+ CD8+ T cells / $mm^2$ are calculated.

**Supplementary Figure S5: Tumor burden after preventive immunotherapy correlates with adaptive immune infiltration into liver parenchyma.** Images of livers from **(A)** two IgG control-treated animals and **(B)** two anti-PD-1 treated animals that were randomly selected and sacrificed at 21 weeks of age. **(C)** There was no difference in surface tumor number in these animals. There were also no differences in **(D)** CD3+ cells, **(E)** CD3+ CD4+ T cells, or **(F)** CD3+ CD8+ T cells in the liver parenchyma of these animals. Two tailed student's t tests were performed for the data shown in S3C-F. All data are presented as mean ± SEM.