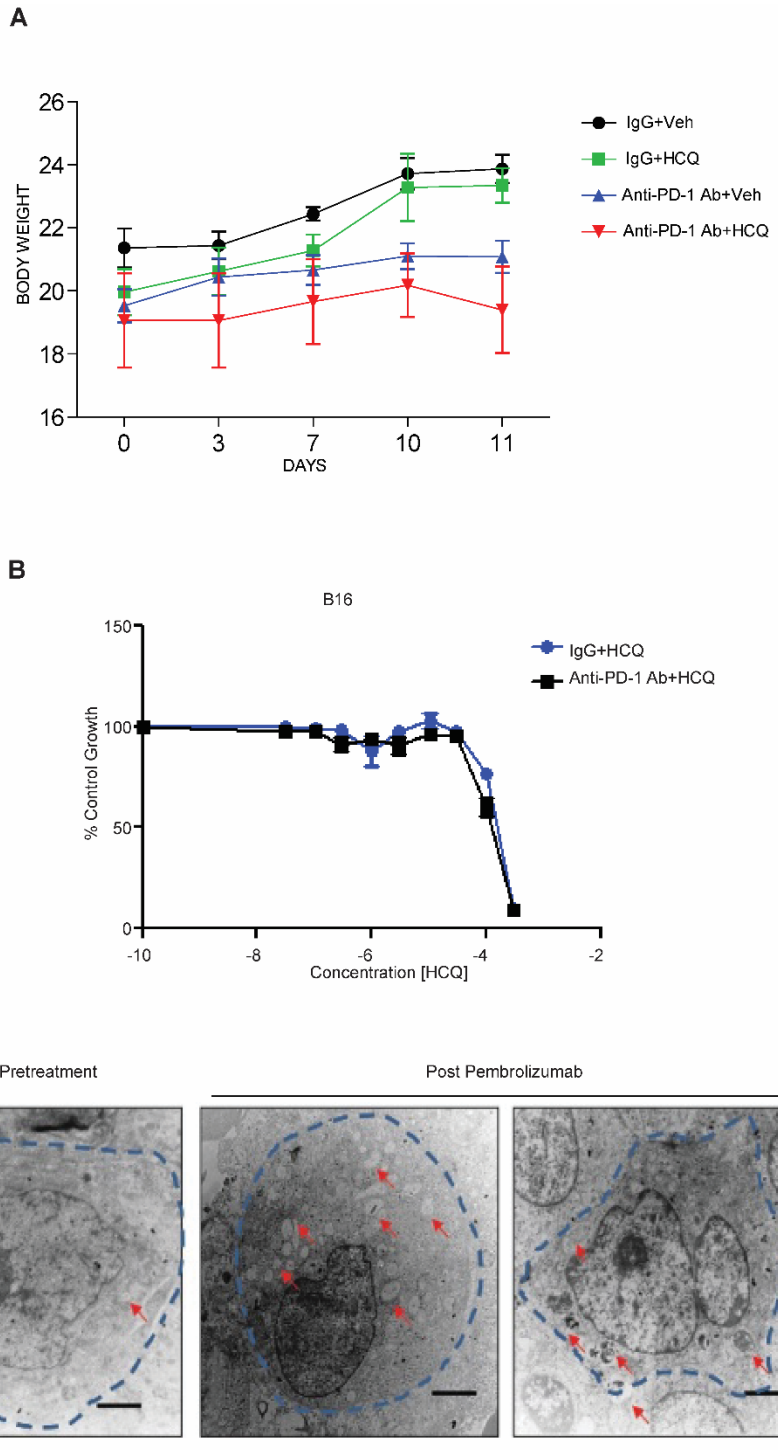
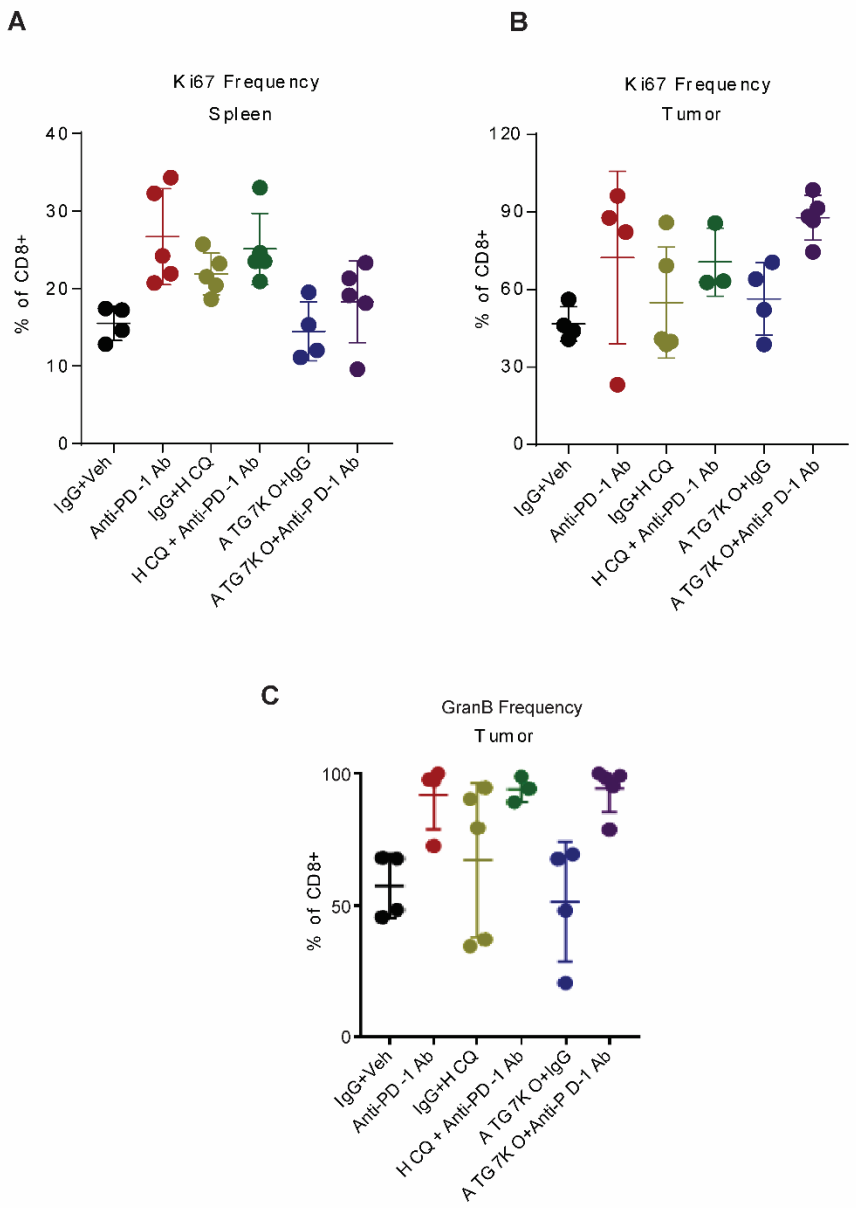
Supplementary Figures



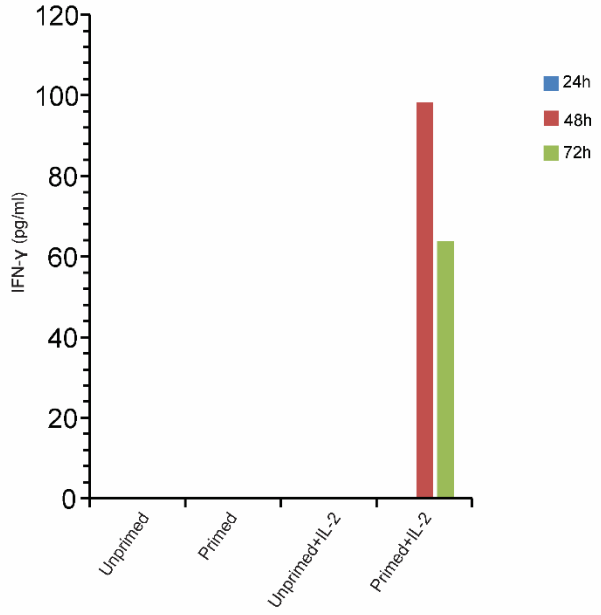

**Supplementary Fig. S1. B16 tumor model and Melanoma patient biopsies. (A)** Measurement of mice body weight during drug treatment. **(B)** Fraction survival of B16 tumor bearing mice during the treatment. **(C)** Electron microscopy of tumor biopsies before and on pembrolizumab treatment in a stage IV melanoma patient that progressed on pembrolizumab. *, p< 0.05, testing the hypothesis that the addition of HCQ to anti-PD-1 Ab is significantly different compared to anti-PD-1 Ab+Veh.

Supplementary Figures



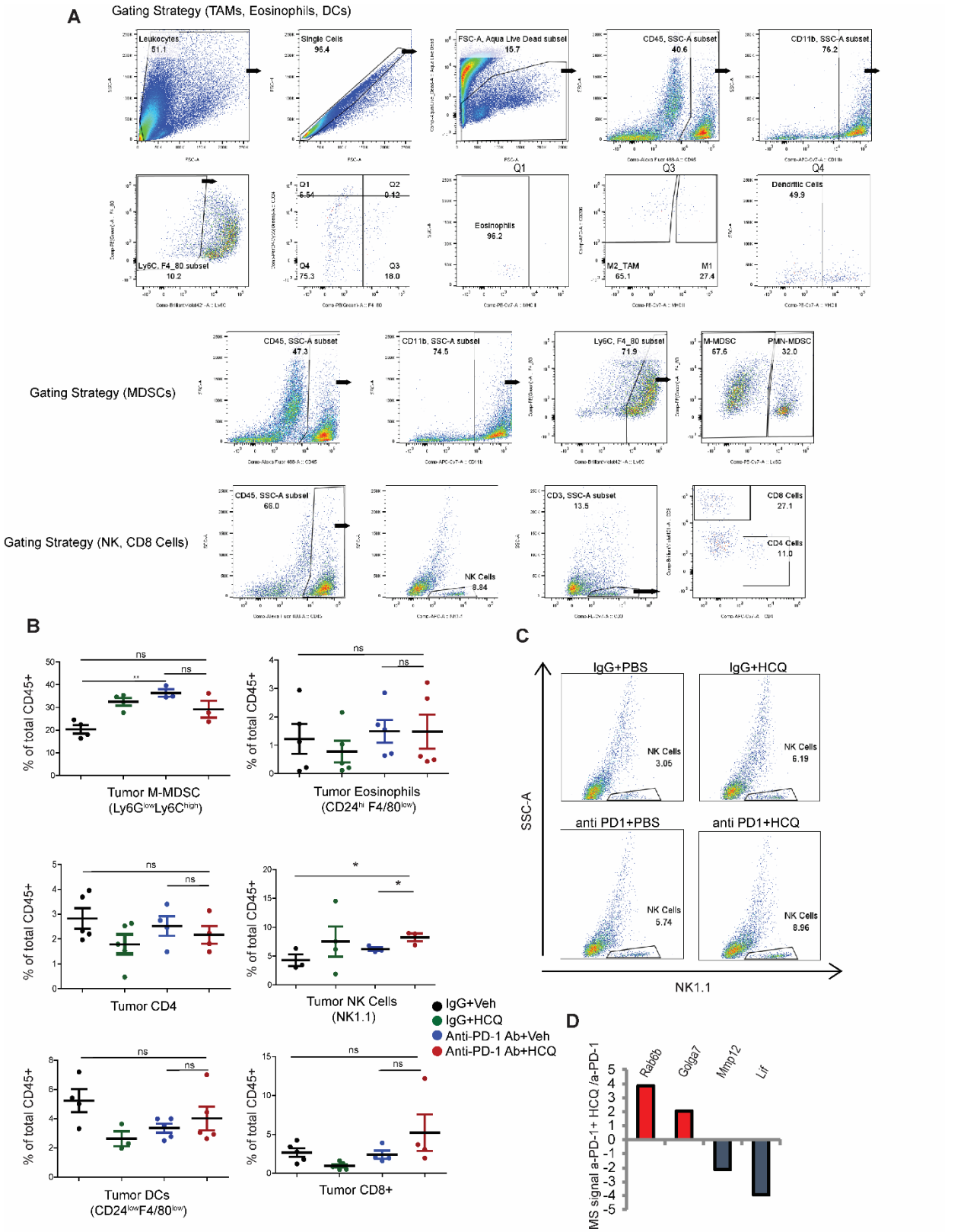

**Supplementary Fig. S2. Immunophenotyping of CD8+ T cells in the spleen and tumor of B16 *Atg7* WT and *Atg7* KO mice and LDH release in inhibitor treated or untreated primed splenocytes. (A)** Frequency of CD8+Ki67+ T cells in the spleen of tumor bearing mice of the indictaed treatment groups. **(B)** Representation of the frequency of CD8+Ki67+ T cells in the spleen of tumor bearing mice of the indictaed treatment groups. **(C)** Frequency of CD8+GranzymeB+ T cells in tumor. *, p< 0.05, testing the hypothesis that the addition of HCQ to anti-PD-1 Ab is significantly different compared to anti-PD-1 Ab+Veh.

Supplementary Figures



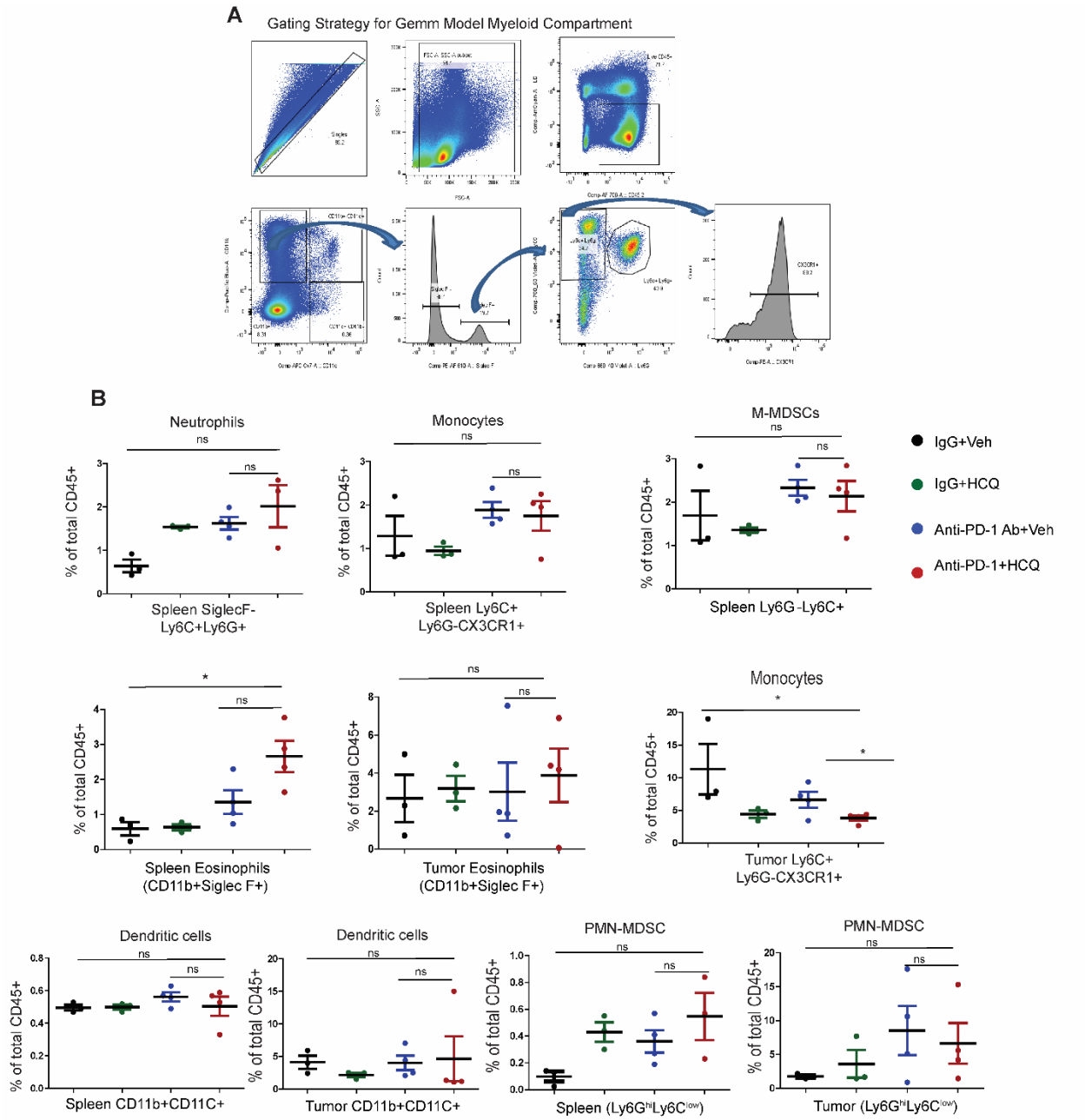

**Supplementary Fig. S3. Splenocyte priming**. IFN-γ ELISA to confirm irradiated B16 mediated splecnocytes priming in the presence or absence of interleukin-2 for 24, 48 and 72h

Supplementary Figures



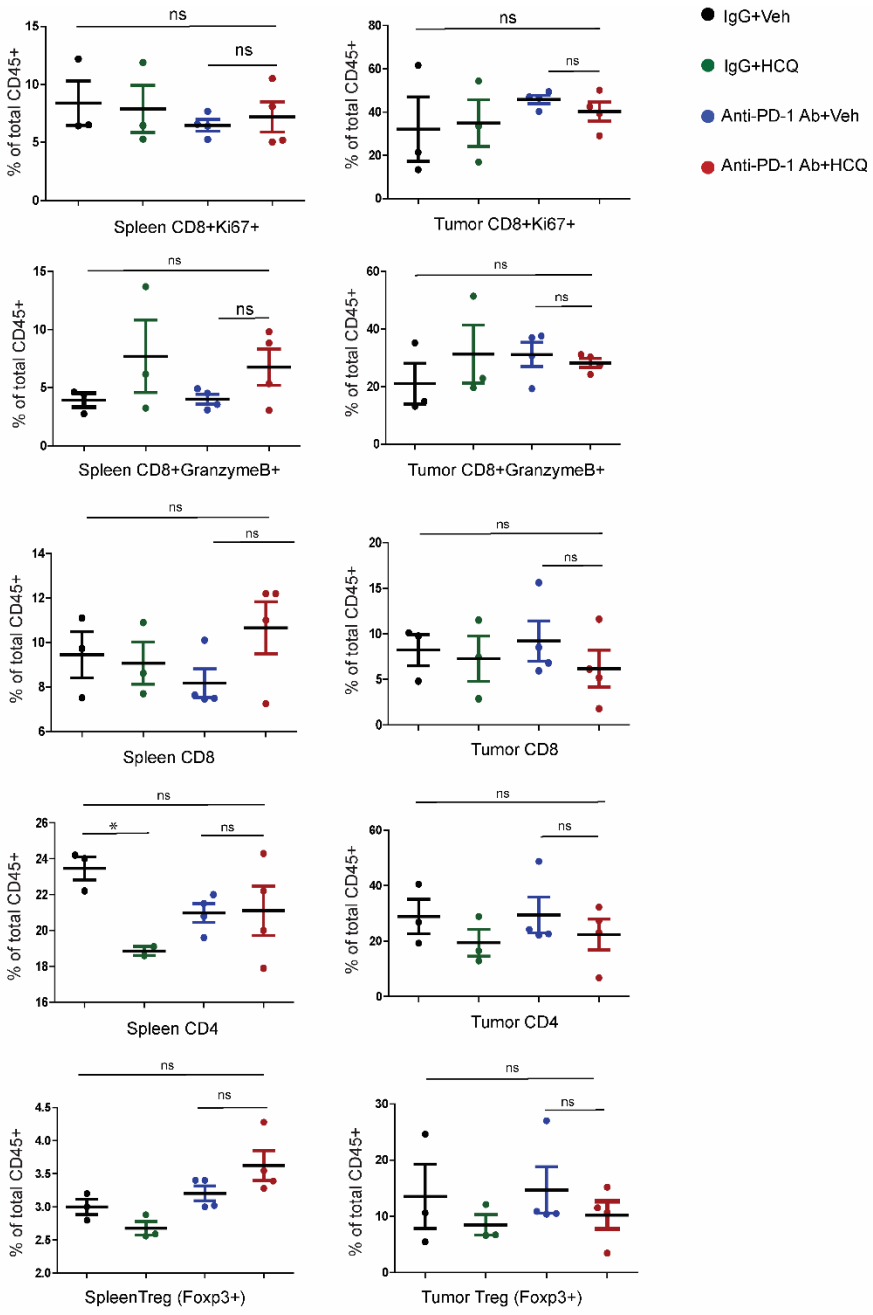

**Supplementary Fig. S4. Gating Strategy for Flowcytometry and immunophenotyping of B16 tumors and proteomics of whole B16 tumor.** **(A)** flowcytometry analysis and gating strategy for TAMs, Eosinophils, DCs, MDSCs, CD8, NK cells in B16 tumor. **(B)** Representation immunophenotyping plot for Tumor M-MDSCs, eosinophils, DCs, CD8, CD4 and NK cells. **(C)** Representation of Immunophenotyping of TILs in B16 Tumors. **(D)** Identification of macrophages proteins that are significantly increased or decreased in HCQ+anti-PD-1 Ab vs only anti-PD-1 Ab+Veh. *, p< 0.05, testing the hypothesis that the addition of HCQ to anti-PD-1 Ab is significantly different compared to anti-PD-1 Ab+Veh.

Supplementary Figures




**Supplementary Fig. S5. Gating strategy for Flowcytometry and Immunophenotying in Braf $^{CA}$, Pten$^{flox/flox}$, Tyr::CreER$^{T2}$ mice melanoma tumor.** **(A)** Gating strategy for immunophenotyping in *Braf $^{CA}$, Pten$^{flox/flox}$, Tyr::CreER$^{T2}$* mice melanoma. **(B)** Representation of Immunophenotyping of tumor infiltrating myeloid cells in the excised tumor as indicated. *, p< 0.05, testing the hypothesis that the addition of HCQ to anti-PD-1 Ab is significantly different compared to anti-PD-1 Ab+Veh.

Supplementary Figures




**Supplementary Fig. S6. Immunophenotyping in Braf $^{CA}$, Pten$^{flox/flox}$, Tyr::CreER$^{T2}$ mice melanoma.** Immunophenotyping of tumor infiltrating leukocytes in excised tumor of *Braf $^{CA}$, Pten$^{flox/flox}$, Tyr::CreER$^{T2}$* mice. *, p< 0.05, testing the hypothesis that the addition of HCQ to anti-PD-1 Ab is significantly different compared to anti-PD-1 Ab+Veh.

**Table 1**

| S. No. | Source | Reagent or Resource | Identifier |
|---|---|---|---|
| 1 | BD Biosciences | CD11b-APC-Cy7 | 557657 |
| 2 | BD Biosciences | Ly-6C-BV421 | 562727 |
| 3 | BD Biosciences | Ly-6G-PE-Cy7 | 560601 |
| 4 | BD Biosciences | CD45-FITC | 553080 |
| 5 | BD Biosciences | CD11c-APC | 550261 |
| 6 | BD Biosciences | NK1.1-APC | 550627 |
| 7 | BD Biosciences | Foxp3-PE | 560408 |
| 8 | BD Biosciences | CD3-PE-Cy7 | 552774 |
| 9 | BD Biosciences | CD24-PerCP-Cy5.5 | 562360 |
| 10 | BD Biosciences | CD16/CD32 purified | 553142 |
| 11 | BD Biosciences | Mouse Foxp3 Buffer Set | 560409 |
| 12 | BD Biosciences | CD3e-BV605 | 563004 |
| 13 | BD Biosciences | Ly6G-BV650 | 740554 |
| 14 | BD Biosciences | CTLA-4-PE-CF594 | 564332 |
| 15 | BioLegend | Anti-PD-1 Ab | 92130 |
| 16 | BioLegend | CD8-BV421 | 100753 |
| 17 | BioLegend | CD11b- BV421 | 101251 |
| 18 | BioLegend | MHC II-PE-Cy7 | 116419 |
| 19 | BioLegend | Ly6C-BV785 | 128041 |
| 20 | BioLegend | PDL1-APC | 124311 |

| | | | |
|---|---|---|---|
| 21 | BioLegend | CD45.2-AlexaFlour700 | 109821 |
| 22 | BioLegend | MHC II-FITC | 107605 |
| 23 | BioLegend | F4/80-PerCP/Cy5.5 | 123127 |
| 24 | BioLegend | CX3CR1-PE | 149005 |
| 25 | BioLegend | CD80-PE/Cy5 | 104711 |
| 26 | BioLegend | PD1-PE/Cy7 | 109109 |
| 27 | BioLegend | CD4-BV605 | 100451 |
| 28 | BioLegend | CD8-BV650 | 100741 |
| 29 | BioLegend | CD25- PE/Cy5 | 102010 |
| 30 | Ebioscience | CD4-APC-eFluor 780 | 47-0041-82 |
| 31 | Ebioscience | CD206-APC | 17-2061-80 |
| 32 | Ebioscience | F4/80-PE | 12-4801-82 |
| 33 | ThermoFisher Scientific | Aqua Live / Dead Fixable 405 | L34966 |
| 34 | ThermoFisher Scientific | CD11c-APCeFluor780 | 47-0032-82 |
| 35 | ThermoFisher Scientific | CD19 | 47-0193-82 |
| 36 | ThermoFisher Scientific | NK1.1-APCeFluor780 | 47-5941-82 |
| 37 | ThermoFisher Scientific | Ki67-FITC | 11-5698-82 |
| 38 | ThermoFisher Scientific | CD39-PerCP-eFluor710 | 46-0391-82 |
| 39 | ThermoFisher Scientific | GranzymeB-PE | 12-8898-82 |
| 40 | Cell Signaling Technology | b-Actin | 4970 |
| 41 | Cell Signaling Technology | ATG7 | 8558 |

| | | | |
|---|---|---|---|
| 42 | Cell Signaling Technology | Caspase 7 | 8438 |
| 43 | Cell Signaling Technology | Caspase 9 | 20750 |
| 44 | Cell Signaling Technology | cGAS | 31659 |
| 45 | Cell Signaling Technology | STING | 50494 |
| 46 | Cell Signaling Technology | p-TBK1 | 5483 |
| 47 | Cell Signaling Technology | Total TBK1 | 3504 |
| 48 | Cell Signaling Technology | ULK1 | 8054 |
| 49 | Cell Signaling Technology | PIK3C3 | 4263 |
| 50 | Cell Signaling Technology | ATG7 | 8558 |
| 51 | Thermofisher Scientific | PPT1 | PA5-86510 |
| 52 | Spectrum chemicals | HCQ | H1126 |
| 53 | Peprotech | IL-4 | 214-14 |
| 54 | Peprotech | IL-10 | 210-13 |

| | | | |
|---|---|---|---|
| 55 | Peprotech | IFN-$\gamma$ | 315-05 |
| 56 | Peprotech | M-CSF | 14-8983-80 |
| 57 | Sigma aldrich | LPS | L-5668 |
| 58 | Sigma aldrich | PPT1 siRNA pool | EMU085041 |
| 59 | Origene | PPT1 siRNA single duplex | SR409088 |
| 60 | Miltenyi Biotech | Tumor Digestion kit | 130-096-730 |
| 61 | Miltenyi Biotech | CD11b | 101251 |
| 62 | Santa Cruz Biotech. | ULK1 siRNA | sc-44849 |
| 63 | Santa Cruz Biotech. | PIK3C3 siRNA | sc-62803 |
| 64 | Santa Cruz Biotech. | ATG7 siRNA | sc-41448 |
| 65 | Santa Cruz Biotech. | PPT1 siRNA | sc-142398 |
| 66 | Jackson laboratory | C57BL6 | Stock# 000664 |
| 67 | Jackson laboratory | B6.Cg-*Braf*$^{tm1Mmcm}$ *Pten*$^{tm1Hwu}$ Tg(Tyr-cre/ERT2)13Bos/BosJ | Stock#013590 |