Supplemental Figure 1. Gene expression signatures for PRF1, CCR5, GZMA, CXCL9-11, IDO1, IFN-g, STAT1, HLA-DRA (10-gene set) were computed into a IFN-g score as shown by Ayers et al. The hashed line marks the mean score of non-responders.

Supplemental Figure 2. Combination therapy causes treatment-related changes in cell type scores.

Supplementary Figure 3. Gating strategy for flow cytometry. Proliferating Temra= Live, CD3+, CD8+, CD45RA+, CCR7-,Ki-67+ cells. Proliferating PD-1+ cells = Live, CD3+, PD-1+ CTLA-4+, Ki-67+ cells.

Supplementary Tables 1. Fluorescence-conjugated antibody used for flow cytometry.

Supplementary Table 2. Objective response rate broken down by site and lesion. All measurements are by unidimensional measurements (RECIST).

Supplementary Table 3. All treatment related adverse events seen in at least 10% of all patients and all Grade 3 or higher adverse events. Higher grade (≥3) adverse events were uncommon.