Supplementary Figure Legends

Supplementary Figure 1. Ovarian cancer containing tumor specific reactive T cells. (A) Ovarian cancer TALs from donor 1555 were co-cultured with the HLA-matched tumor cell line OVCAR5, the HLA-matched melanoma line 624mel, anti-CD3 and anti-CD28-coated microbeads or with CM alone. Co-cultures were established in the presence of anti-HLA-ABC antibody, an isotype control or nothing. IFN-γ production was assessed by ELISA in co-culture supernatant after overnight culture. (B) CD137 expression by CD8+ T cells in TAL1555 following overnight co-culture with HLA-matched OVCAR5 ovarian or 624 melanoma cancer cells with or without anti-HLA-ABC antibodies by flow cytometric analysis.

Supplementary Figure 2. CD137-enriched ovarian cancer TILs slow tumor growth in vivo. Ovarian cancer line TAL (1555) were expanded to large numbers in IL-2 and co-cultured overnight with OVCAR5 cancer cells in 50ng/mL each of IL-7 and IL-15. (A) TILs from co-cultures were stained with CD137 and CD3-specific antibodies and viable TILs analyzed for phenotype by flow cytometry. (B) Surface expression of CD137 by tumor-exposed CD137^pos and CD137^neg TILs subsets following CD137 antibody-based cell separation. (C) 10^6 unmanipulated, CD137^pos or CD137^neg TIL fractions were grown separately for 10 days in 50 IU/mL IL-2, then co-inoculated into NSG mice s.c. with an equal number of luciferase-transfected OVCAR5 ovarian cancer cells. Tumor volume (mm^3) was monitored longitudinally. (D) Macroscopic sizing of tumors resected 51 days post-inoculation.