**Supplementary** **Figure legends**

**Figure 1.** Gene transfer efficiency. Shown are 6 representative determinations of NFAT.IL12 transduction efficiency. NFAT.IL2 engineered TIL cultures were stimulated by PMA/ionomycin and then subject to surface staining for CD3 and intracellular staining for IL-12 with resultant scatter plots shown. The patient numbers and response were as labeled with the percent IL-12+ cells shown. UT, untransduced.

**Figure 2.** Phenotype of NFAT.IL12 gene modified TIL compared to matched untransduced TIL.Shown are the percentage of cells with a phenotype consistent with effector memory (CD62L-CD45RA-),central memory (CD62L+CD45RA-), Naive (CD62+, CD45RA+) and EMRA (CD62L-CD45RA+).UT, untransduced.

**Figure 3.** Association of cytokine production and LFT. Shown on left are serum

cytokine levels for IL12 and IFNg over two week period. Shown on right are LFT for aspartate aminotransferase, alkaline phosphatase, and alanine aminotransferase over a two week period. Values shown were obtained from patient 24.

**Figure 4**. IL6 and IL10 levels . Shown are data from five patients with elevated IL12 and IFNg levels that were subject to cytokine multiplex analysis. Only cytokine IL6 and IL10 were shown to be consistently elevated post-infusion.

**Figure 5.** Treg reconstitution. Shown are the percentages of circulating T cells with a phenotype consistent with a Treg cell (CD4+/CD25+/FoxP3+). Data from parallel TIL trial using TIL administration but without exogenous IL2 support (TIL No IL2) and TIL engineered with the NFAT.IL2 vector (TIL IL12).