**Supplemental Figure legends**

**Figure S1.** HER2 is expressed in skin and uveal melanoma. A) Expression of *ERBB2* mRNA (encoding HER2) in skin melanoma, uveal melanoma, sarcoma and breast cancer. The graph was at <http://cbioportal.org>, a homepage for visualization of TCGA data. B) Expression of HER2 in skin melanoma xenografts from patients from Copenhagen University Hospital, Denmark (M11-46) and Sahlgrenska University Hospital, Sweden (M121218-M150119). C) Expression of HER2 in xenografts of uveal melanoma cell lines MEL202 and 92-1 and patient-derived xenograft UM121213B.

**Figure S2.** (A-B) Flow cytometry analysis of HER2 in indicated skin melanoma (A) and uveal melanoma (B) cells transfected with HER2 Cas9/gRNA complexes.

**Figure S3.** Melanoma cells from both ACT responders and non-responders can be killed by HER2 CAR-T cells in hIL2-NOG mice. Two tumor cell lines responsive (MM24 and MM33) and three cell lines resistant (MM11-NR, MM29 and MM46) to autologous TILs were transplanted into NOG or hIL2-NOG mice. When tumor growth was measured by IVIS imaging, seven million TILs or HER2 CAR-T cells were injected. Tumor growth was measured by caliper. All untreated and CAR-T treated PDX models are shown combined in Figure 3.

**Figure S4.** Characterization of a uveal melanoma PDX model. Immunohistochemical analysis of the UM121213B patient’s biopsy and PDX model using antibodies against Melan-A/MART-1, PMEL/GP100 (HMB-45) and S100 proteins.

**Figure S5.** Immunoprofiling of the CAR-T cells *in vitro* and *in vivo*. A) Immunohistochemical analysis of the indicated patients´ PDX models using an antibody directed against the T-cell marker CD3. A tumor from a mouse that did not receive CAR-T cells serves as control. B-C) Blood from two hIL2-NOG mice carrying UM121213B uveal melanoma and injected with CAR-T cells were analyzed by flow cytometry using the antibodies to detect T and NK cells (A) or to sub-typing T cells (C). The cultured CAR-T cells used for injection were also immunophenotyped before injection into mice.