Supplementary Figure Legends

Supplementary Figure S1. Serum chemistry and cytokine levels in control animals. A, serum chemistry in macaque A12022 receiving on day 0 an infusion of autologous T cells modified to express the tCD19- or the tCD34-marker genes at a dose of 5x10^8 T cells/kg for each marker. B, muscle-derived creatine-phosphokinase (CPK) level in macaque A12012 that received intramuscular ketamine sedation alone, but no T cells. The grey shaded area demarks the rhesus macaque specific normal range for each parameter. C, plasma IFN-γ and IL-6 levels in macaque A12022 before and after infusion of 5x10^8/kg tCD19^+ and tCD34^+ T cells.

Supplementary Figure S2. Gating strategy for ROR1-expressing B cells in the bone marrow (BM). A, staining is shown for a BM aspirate obtained from macaque A11047 before the ROR1 CAR-T cell transfer. Aliquots of the cells were stained with mAbs specific for CD3, CD14, CD16, CD19, CD45, and ROR1 and an eFluor 506 Live/dead fixable dye. Gating involved an initial dump channel (CD3, CD14, CD16, Live/dead eFluor 506) and gating on the CD19^+ population. B, ROR1-expression on the CD19^+CD45^intermediate B-cell subset. Staining with the isotype control is shown in the top panel. Numerical inset values represent the percentage of CD19^+CD45^intermediate B cells staining negative or positive for ROR1, respectively.

Supplementary Figure S3. Gating strategy for ROR1-expressing B cells in the lymph node (LN). A, staining is shown for LN-derived lymphocytes obtained from macaque A11047 before the T-cell transfer. Aliquots of the cells were stained with mAbs specific for CD3, CD19, and ROR1 and an eFluor 506 Live/dead fixable dye was used to exclude dead cells. Gating involved
an initial dump channel (CD3, Live/dead eFluor 506) followed by gating on the CD19+ population. Gates to identify the ROR1-expressing cells in the CD19+ B-cell subset were subsequently established based on staining with the isotype control. B, samples of LN were obtained from macaque A11047, A13011, and A13002 before the T-cell infusion. Aliquots were examined by flow cytometry as described in (A). Numerical inset values represent the percentage of CD19+ cells staining positive for ROR1.

Supplementary Figure S4. Adoptive transfer, persistence, and migration of autologous control tCD19+ and tCD34+ gene-marked T cells. A, aliquots of the infused tCD19+ or tCD34+ T cells from macaque A12022 were stained with mAbs specific for CD3, CD4, CD8, CD19 or CD34, or isotype controls, and examined by flow cytometry after gating on CD3+ T cells. B, the frequency of transferred T cells (%) was determined by flow cytometry after staining PBMC obtained from macaque A12022 before (pre) and on day 1 after the co-infusion of 5x10^8/kg autologous tCD19+ and tCD34+ T cells with mAbs specific for CD3, CD4, CD8, and CD19 or CD34. Numerical inset values represent the percentage of CD3+ T cells staining positive for CD19 or CD34, respectively. Samples are gated on CD3+ T cells. C, PBMC, BM and LN samples were obtained from macaque A12022 on day 3 after the T-cell infusion and examined by flow cytometry as described above. The bar graph shows the frequency of tCD19+ and tCD34+ T cells within the CD3+ T-cell subset. D, absolute numbers of persisting gene-marked CD3+ T cells in the peripheral blood up to 1 month post-infusion. The arrow indicates the day of the T-cell infusion.

Supplementary Figure S5. R12-ROR1 CAR-T cells recognize ROR1+ T-APC in vitro. A, PBMC obtained from macaque A13011 and A13002 were stimulated with anti-CD3/CD28
mAbs, transduced by retroviral gene transfer to express truncated ROR1 (tROR1), and selected by immunomagnetic selection for tROR1-expression. $^{51}$Cr-labeled tROR1$^+$ T-APC were then examined in a chromium release assay for specific recognition by CD8$^+$ ROR1 CAR-T cells in vitro. K562/ROR1 cells, unmodified K562 cells and/or unmodified T cells were included as controls.