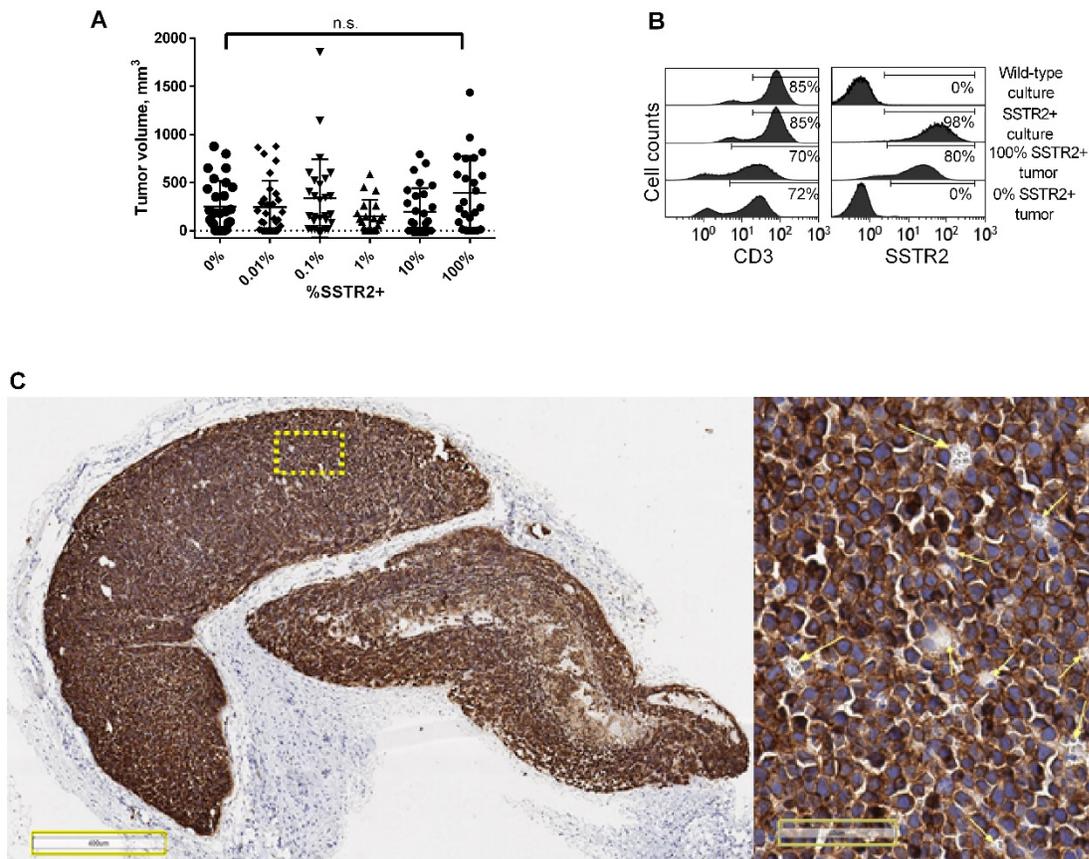


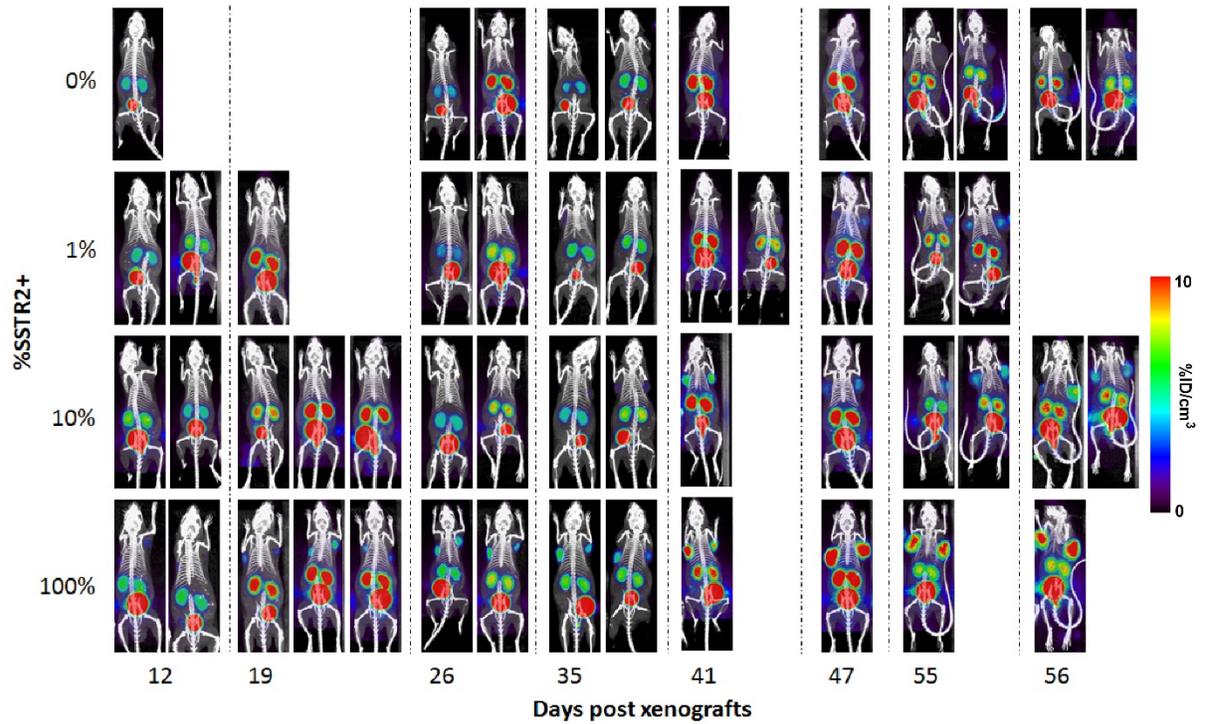
Supplemental Data for:

Longitudinal PET imaging demonstrates biphasic CAR-T cell responses in survivors.

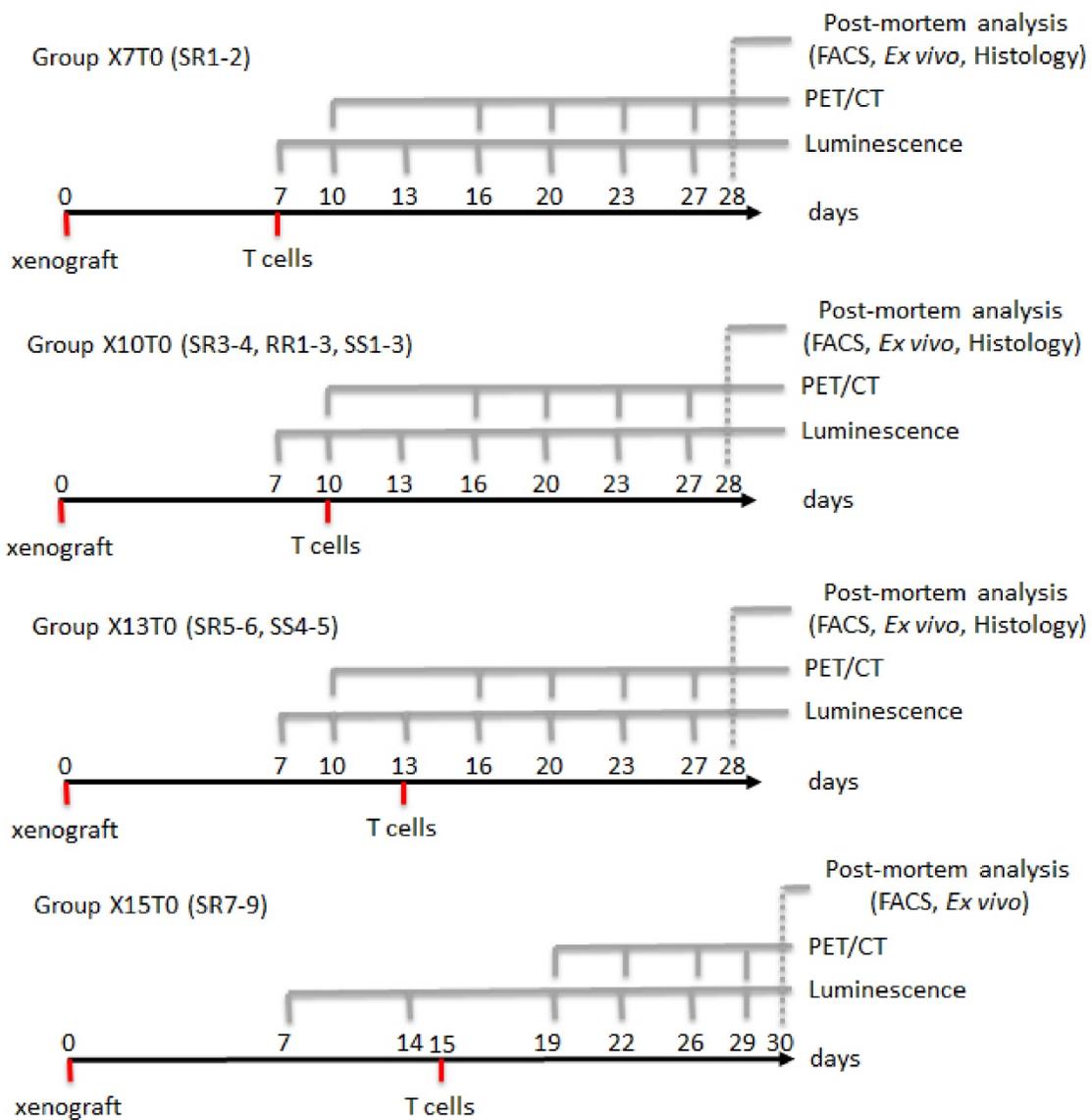


Supplementary Figure 1. Growth *in vivo* of mosaic Jurkat tumors. (A) Comparison of tumor volume across multiple xenografted Jurkat tumors containing a range of SSTR2+ ratios. No significance (n.s.) by one-way ANOVA was found among SSTR2+ groups. (B) CD3- and SSTR2-specific antibody binding to SSTR2+ and wild-type Jurkat T cells in culture and to the same cells harvested from tumors is shown in histograms. Percentages of CD3 and SSTR2 positive cells are indicated. (C) Paraffin embedded, hematoxylin stained section of Jurkat tumor

was stained with anti-human CD3 antibody to visualize distribution of Jurkat T cells and stroma cells. Shown on the right is a high magnification view of the dotted yellow box in left image. Stroma containing blood vessels are identified by yellow arrows. Scale bar = 400 μm on left image and 60 μm on right.



Supplementary Figure 2. PET/CT images of DOTATOC distribution by Jurkat mosaic tumors. PET/CT images from NSG mice xenografted with Jurkat T cells containing varying ratios of SSTR2 transduced cells. Mice were injected intravenously with DOTATOC and imaged on average once per week beginning on day 12 post xenograft and continuing until day 56.

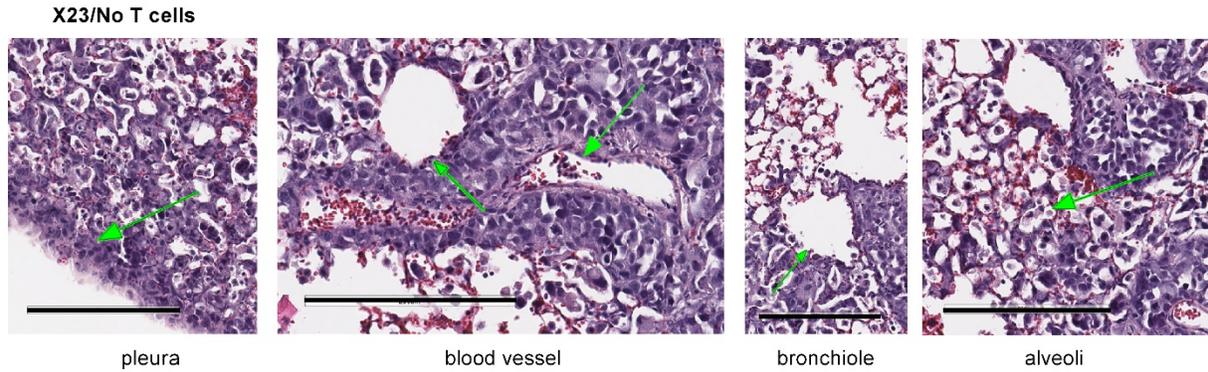


Supplementary Figure 3. Schematic of the longitudinal CAR T cell imaging experiment.

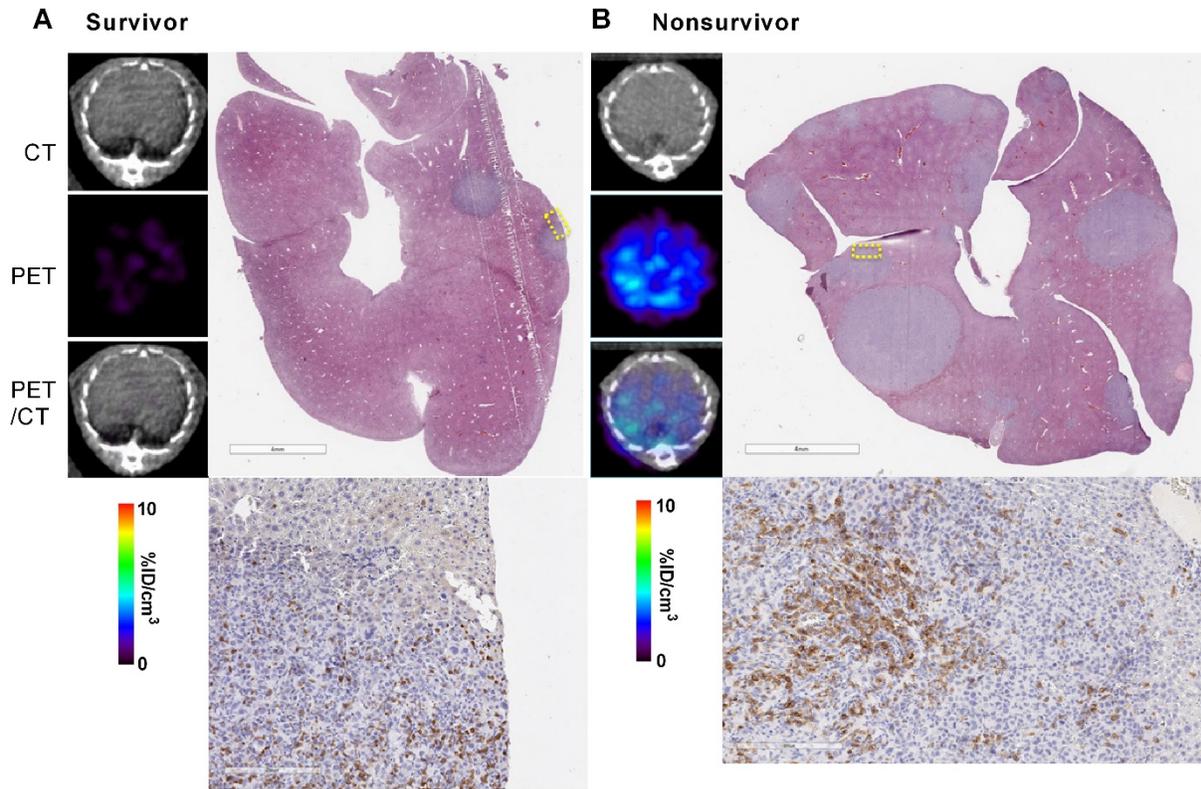
Mice are divided into four groups according to the day of T cell treatment post tumor xenograft.

SR = SSTR2-R6.5-CAR T cells; SS = SSTR2, non-CAR T cells; and RR = non-SSTR2, R6.5-

CAR T cells. Days of xenograft, T cell injection, imaging and post-mortem analysis are indicated.



Supplementary Figure 4. Histology of lungs visualizing tumor growth. Paraffin embedded H&E stained lung sections of a mouse that did not receive T cell treatment (X23/No T cells; Figure 6D) are shown with higher magnification to identify (green arrows) tumor growth in pleural, blood vessels, bronchioles, and alveolar spaces. Tumor cells are identified by diffuse hematoxylin staining, large nuclei with dark nucleoli. Scale bar = 200 μ m.



Supplementary Figure 5. DOTATOC uptake and histology of the liver. Transverse CT-only, PET-only and PET/CT images of the liver (1 mm thick slice, maximum intensity projection) of survivor (**A**) vs. nonsurvivor (**B**). Paraffin embedded H&E stained section of the liver from the same mouse, and CD3 stained sections shown at higher magnification underneath (selected area is marked with a dotted box). Scale bar = 4 mm (a&b, top) and 200 μm (a&b, bottom).