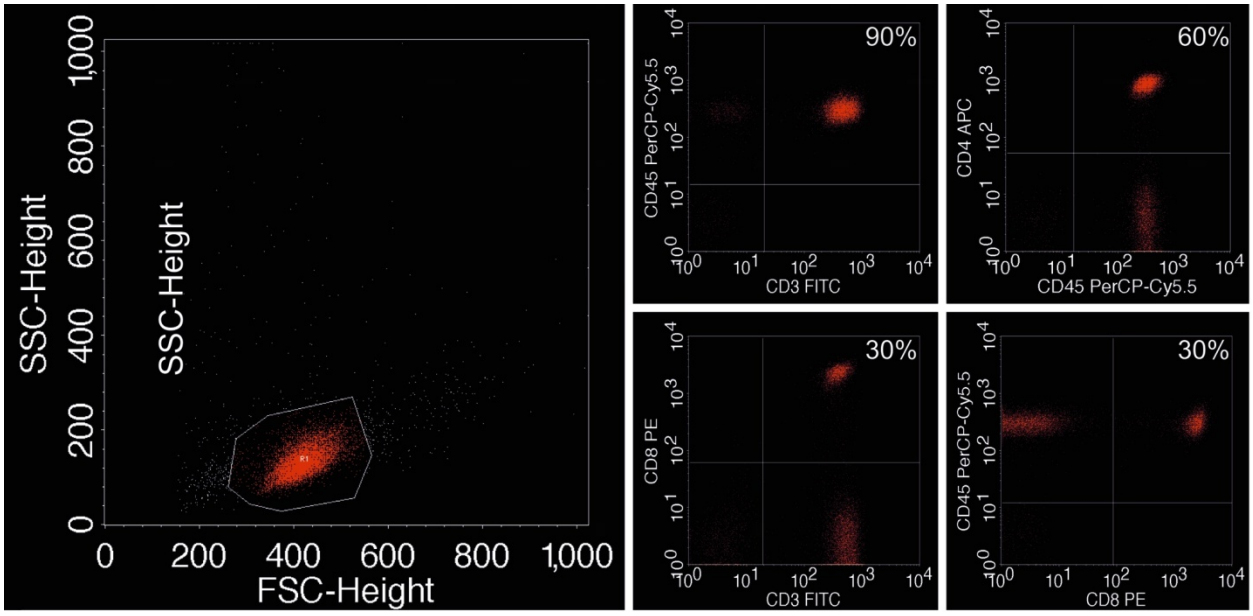
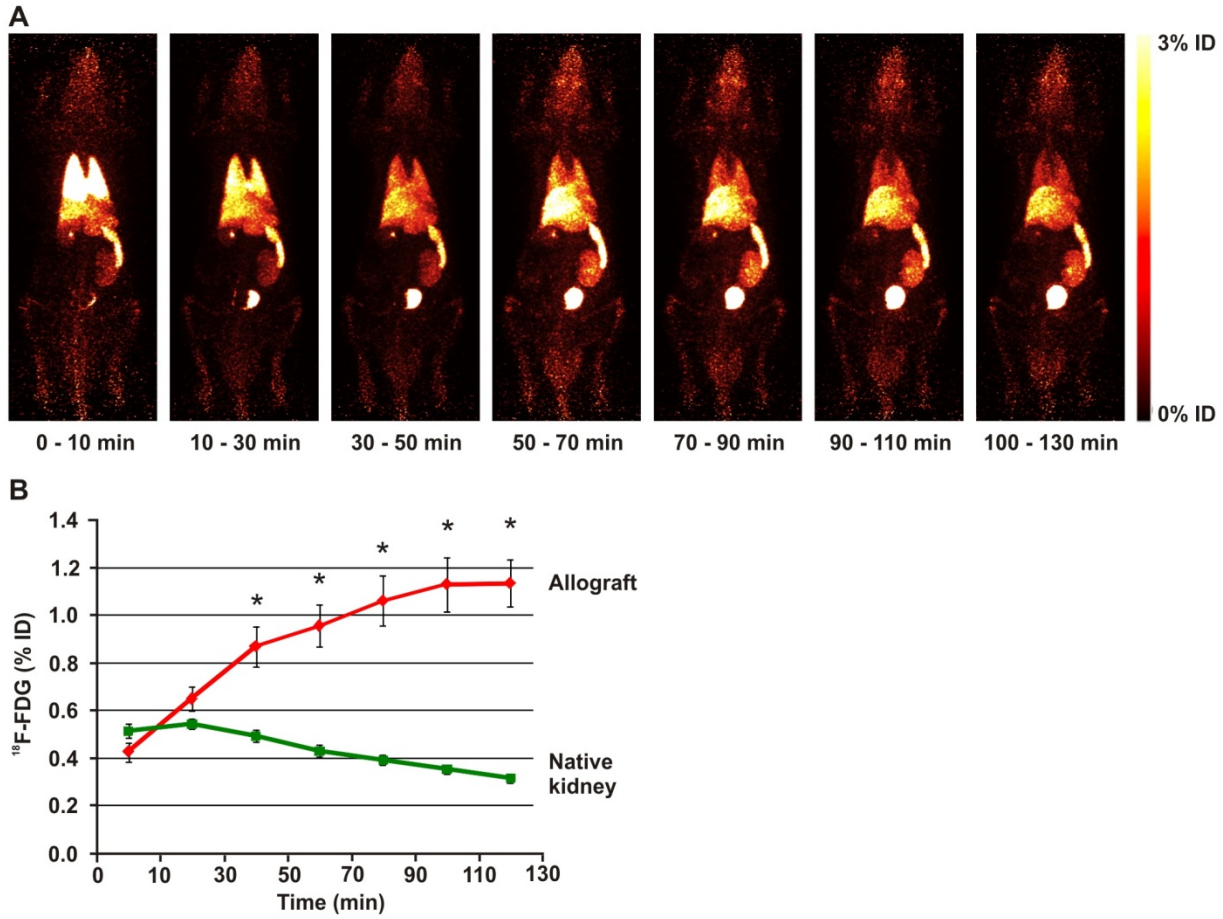


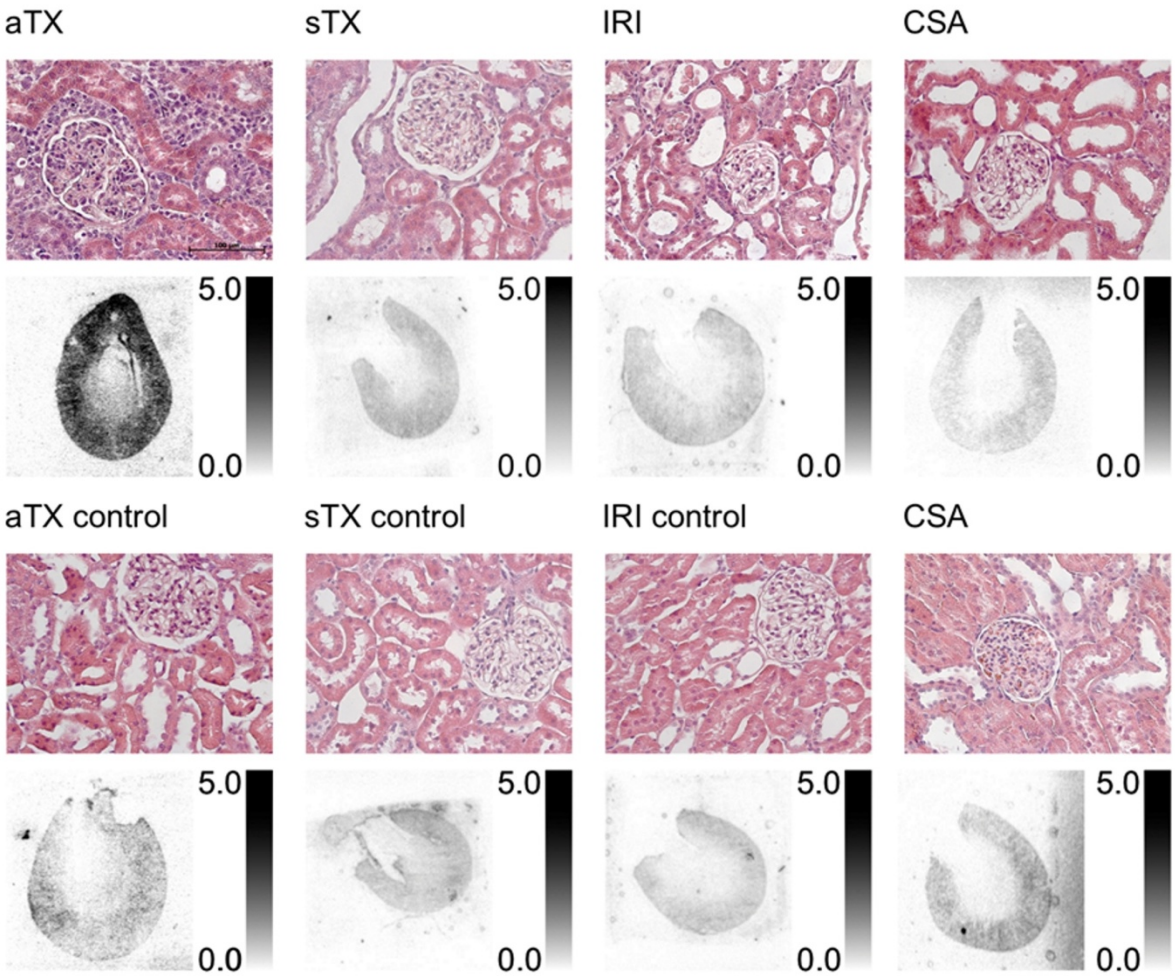
Supplemental FIGURE 1

Analysis of flow cytometry confirmed a T-lymphocyte purity > 90% (n = 3). Approximately 60% of the isolated cells belong to the subpopulation of $CD4^+$ T-helper cells, whereas about 30% are part of the group of $CD8^+$ cytotoxic T-effector cells. ($CD4^+/CD8^+$ ratio: 1.9). Shown is a routine T-lymphocyte staining with antibodies against CD3, CD4, CD8 and CD45 using different fluorophores (PE, FITC, PerCP-Cy5.5). In the left panel FSC (forward scatter) represents cell volume, whereas SSC (sideward scatter) correlates with the inner complexity of the particle.



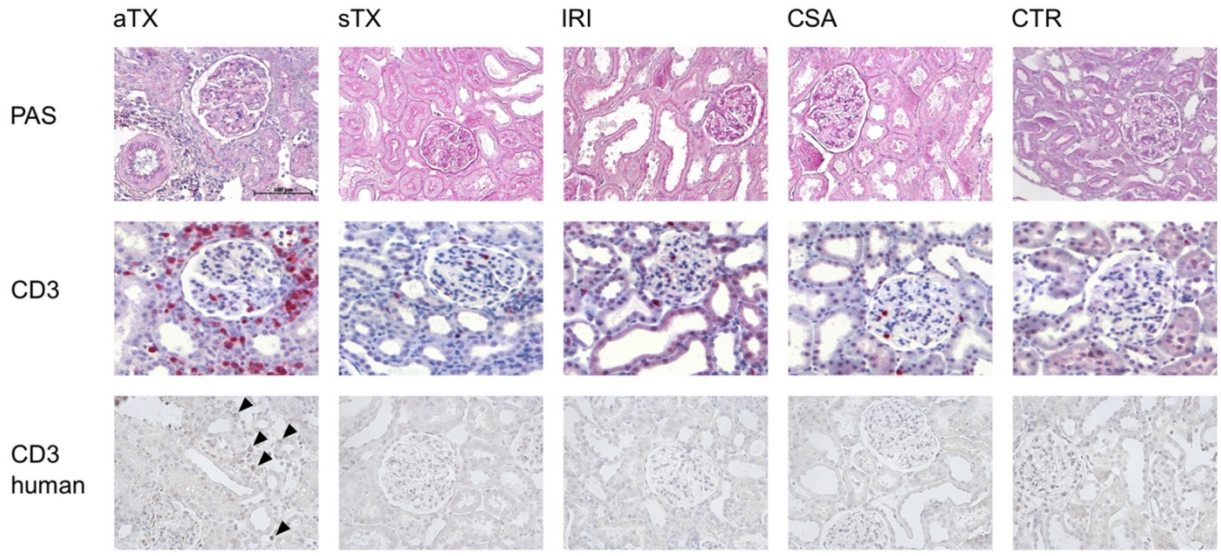
Supplemental FIGURE 2

A) Representative PET images (day 4 after surgery) of dynamic whole body acquisitions over 130 min of an aTX rat after tail vein injection of $30x10^6$ ^{18}F-FDG labeled T-cells (maximum intensity projection (MIP)). B) Renal activity timelines after injection of radiolabeled cells. In comparison to the native kidney, the renal allograft undergoing rejection (day 4 after surgery) starts to accumulate radiolabeled cells, reaching significance as early as 30-50 min after injection of radiolabeled T-cells and achieving a maximum after 120 min (n = 3). * $P < 0.05$ vs. native control kidney.



Supplemental FIGURE 3

Representative autoradiographs and histological photomicrographs 120 min after injection of 30 x 10^6 radiolabeled T-cells at POD4. Mainly the renal cortex but also the medulla of allogeneic grafts showed a distinct accumulation of ^{18}F-FDG labeled cells, whereas more or less no activity was found in native controls kidneys, sTX grafts, kidneys with ATN and CSA toxicity, respectively. Congruent with autoradiographic results, histological examination (hematoxylin-eosin stainings) showed typical signs of acute rejection (glomerulitis, tubulitisendothelialitis and graft infiltration) in renal allografts but not in any other control. Autoradiographies: cpm/mm^2/MBq



Supplemental FIGURE 4

Periodic-acid-Schiff staining showed typical histological signs of AR, namely glomerulitis, tubulitis and endothelialitis in aTX kidneys, which are absent in all controls (native contralateral control kidney, sTX, ATN and CSA). Congruently, a significantly elevated infiltration with CD3 positive T-cells was found only in renal allografts. Finally, in allogeneic transplants human T-cells could be detected by immunohistochemistry. CD3 signals were absent in controls.