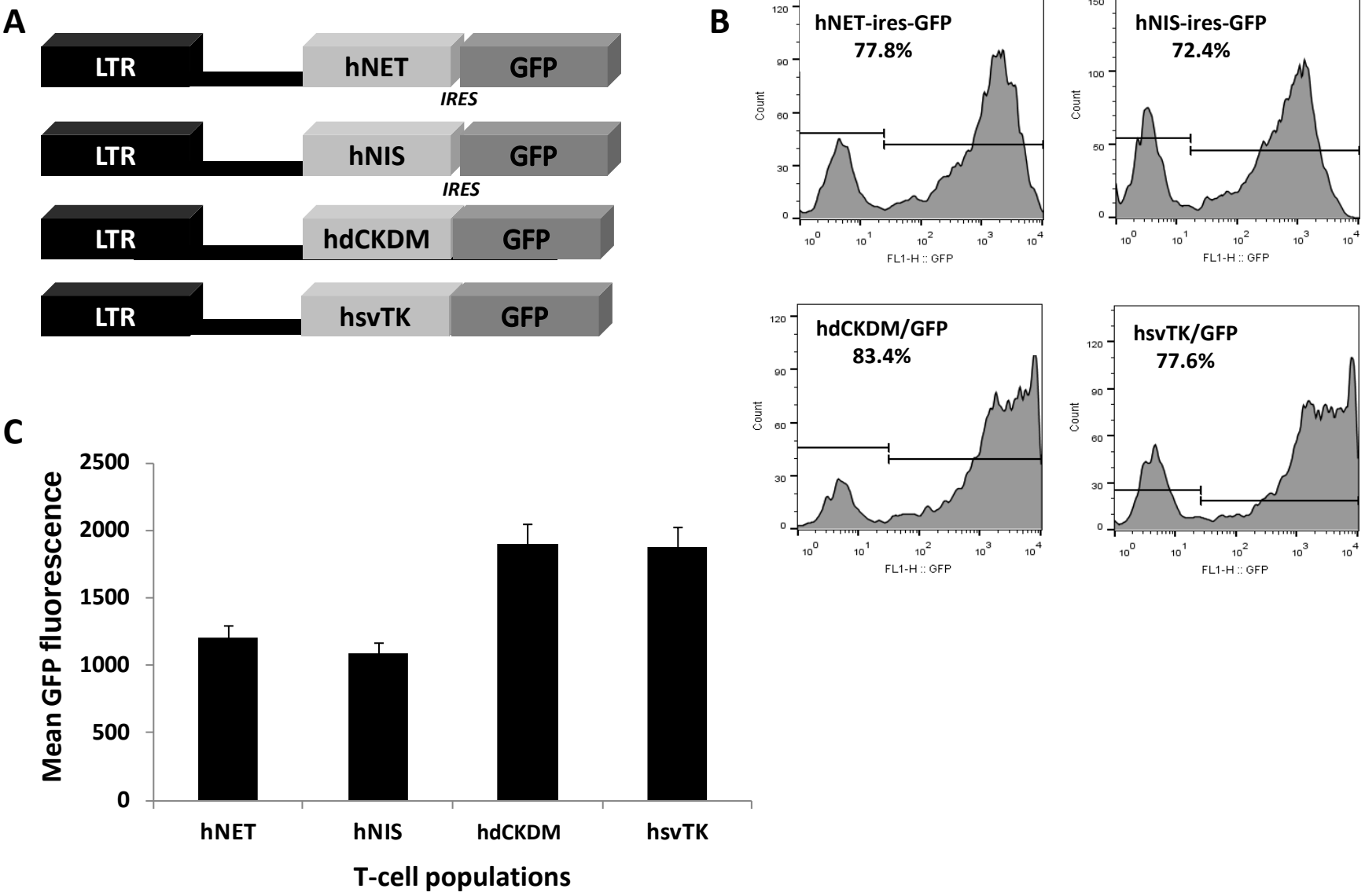
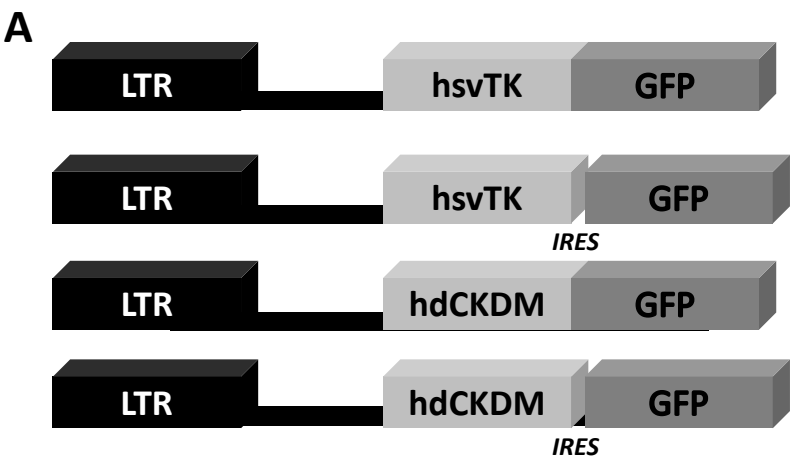
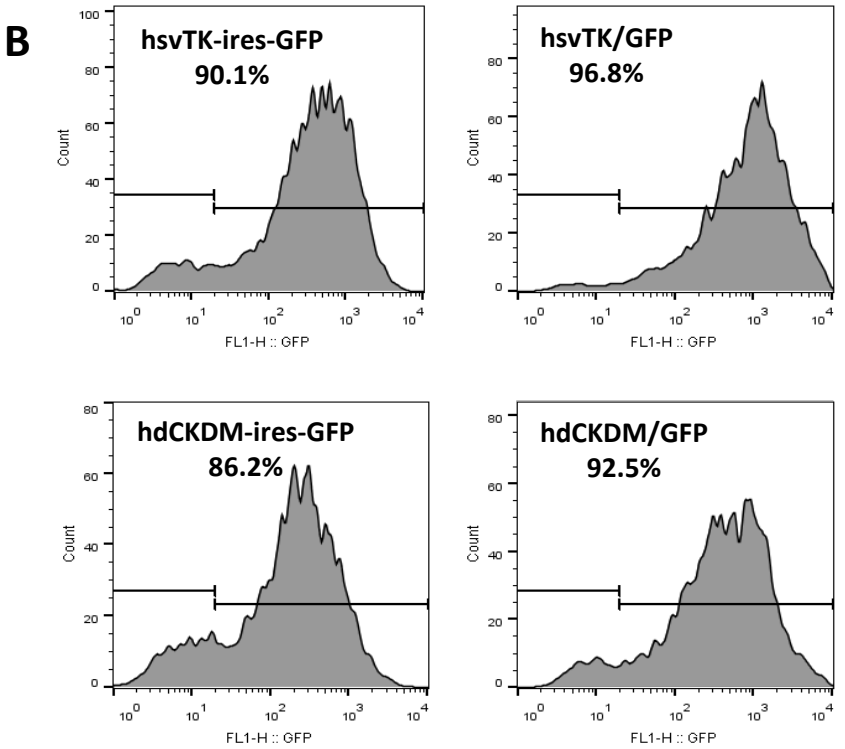
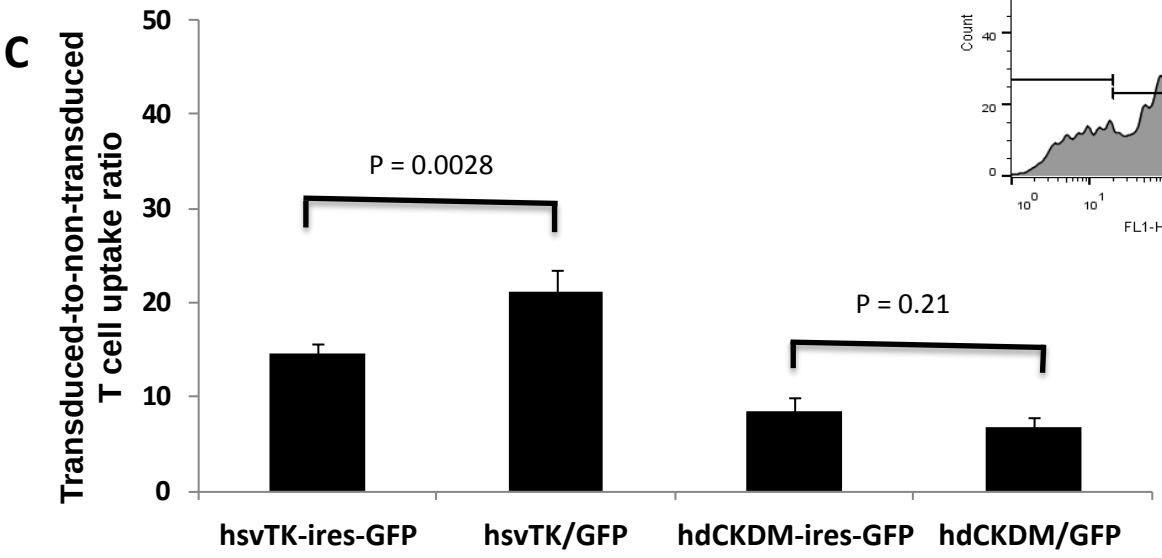


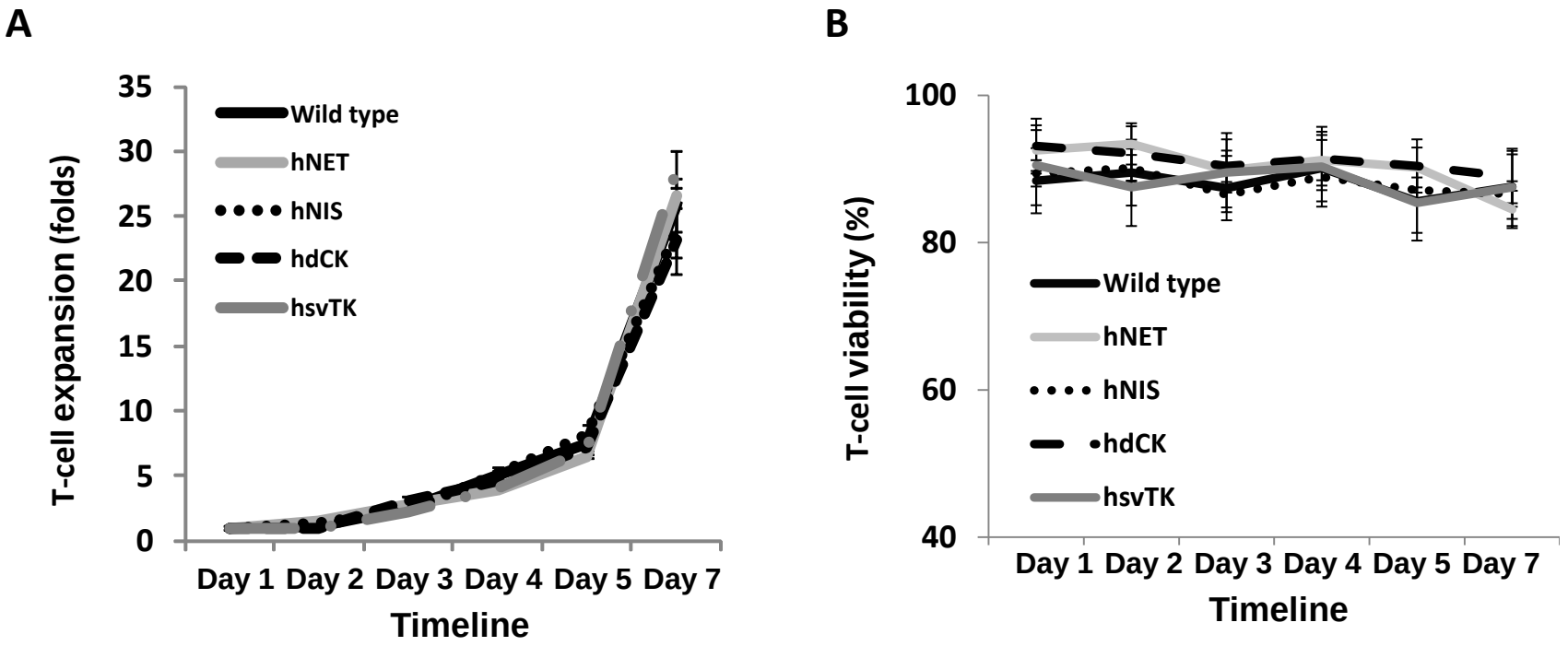
Supplemental Figure 1. Structures of four retroviral vectors bearing IRES-linked dual reporter genes (hNET-ires-GFP and hNIS-ires-GFP), and fusion dual reporter genes (hdCKDM/GFP and hsvTK/GFP) (**A**). FACS analysis of GFP reporter gene expression (**B**). Mean GFP fluorescence - arbitrary units (**C**).



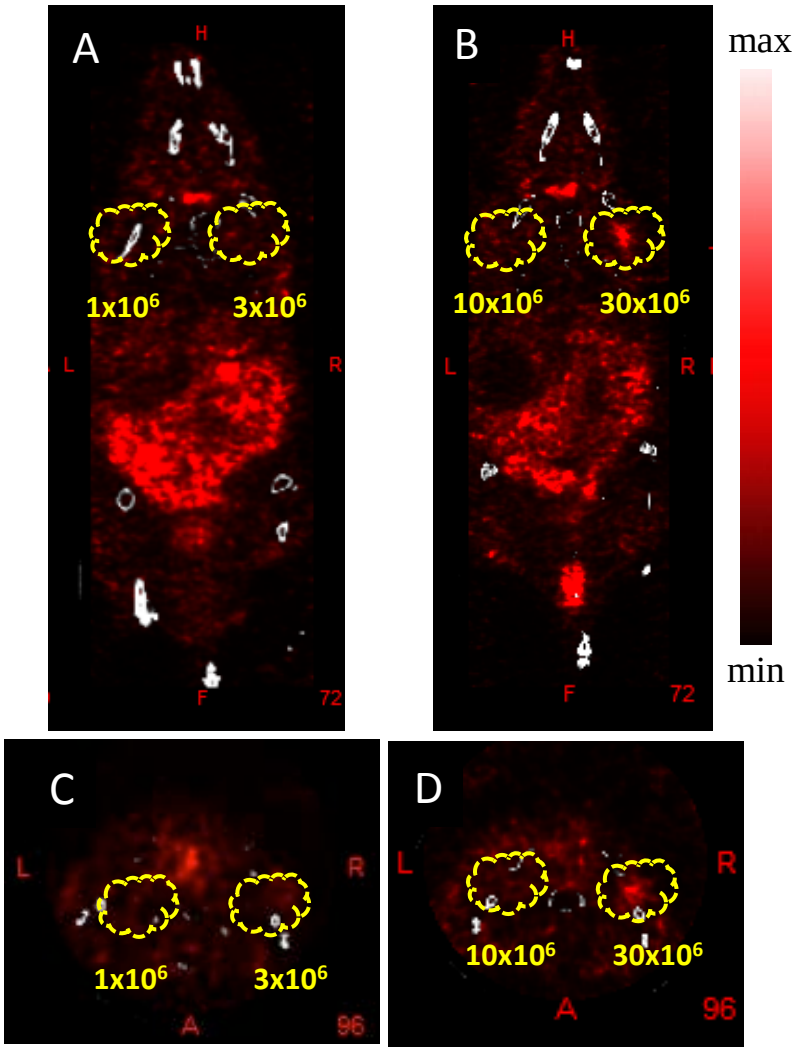




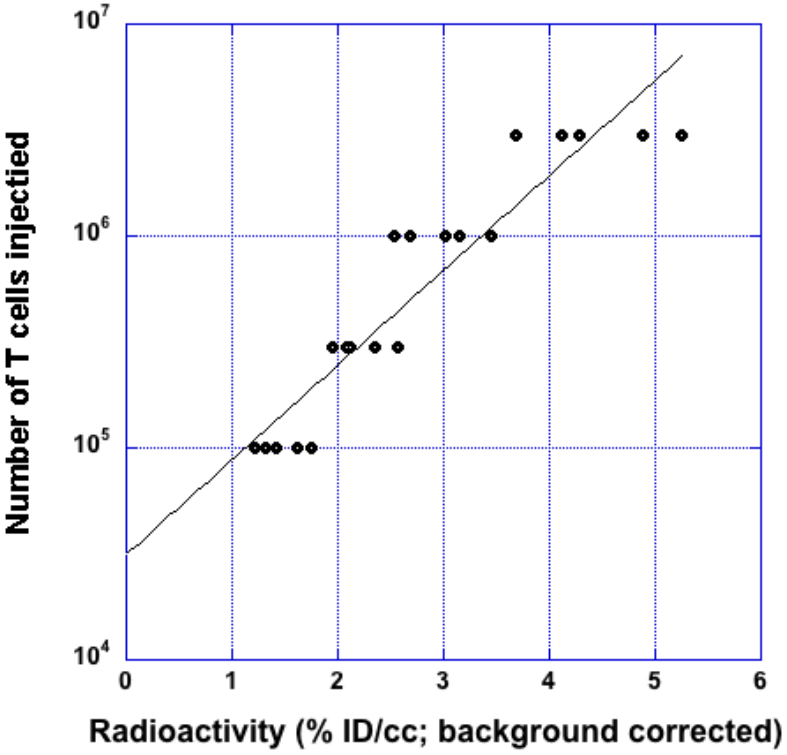
Supplemental Figure 2. Structures of retroviral vectors bearing hsvTK, hdCKDM and GFP dual reporter genes involving both fusion and IRES-linked constructs (**A**). FACS analysis of reporter gene expression (GFP); % transduced cells (**B**). A comparison of fusion and IRES-linked dual reporter systems, based on the accumulation of [^{3}H]-FEAU (expressed as a transduced-to-nontransduced T cell uptake ratio) (**C**). T cells ($8x10^6$) were incubated in 8 ml of [^{3}H]-FEAU (0.5 uCi/ml) containing media for 2 hours at 37^{o}C (n=8 per cell line). This comparison showed no statistically significant difference between the hdCKDM-GFP and hdCKDM-ires-GFP reporter-transduced T cells, and only a small difference (1.4-fold) between the hsvTK-GFP and hsvTK-ires-GFP reporter-transduced T cells.



Supplemental Figure 3. Comparative assessment of T-cell expansion (**A**) and viability (**B**) following stimulation.



Supplemental Figure 4. SPECT-CT imaging of human T cells transduced with the hNET-ires-GFP reporter. Different numbers of T cells were injected subcutaneously, followed by systemic administration of [I^{123}]MIBG. The number and site of injected T cells is shown in yellow; the [I^{123}]MIBG SPECT-CT image obtained at 4 hours post-injection is shown in red.



Supplemental Figure 5. Plot of T cell number vs background-corrected radioactivity (% ID/cc) measured at the T cell injection site. Human T cells transduced with the hNET-ires-GFP reporter were imaged 4 hours after i.v. injection of [^{18}F]-MFBG. Different numbers of T cells were injected subcutaneously, followed by systemic administration of [I^{123}]MIBG. The equation describing the relationship is: T cell number at the injection site = 31,515 x $e^{[1.03 \times (\text{measured \% injected radioactivity/g} - \text{background})]}$; (R=0.80).