SUPPLEMENTAL METHODS

Cell culture

The human SCLC cell lines NCI-H82 ("H82"), NCI-H69 ("H69"), and K562 were purchased from the American Type Culture Collection (ATCC) in 2020 and periodically authenticated by the Specimen Processing/Research Cell Bank Shared Resource using Short Tandem Repeat (STR) Combined DNA Index System typing. Cells were maintained in either DMEM or RPMI-1640 Medium supplemented with 10% heat-inactivated fetal calf serum, 100 units/mL penicillin, 100 units/mL streptomycin, 2 mM L-glutamine, 10 mM HEPES, 4.5 g/L D-glucose, 1.5 g/L sodium bicarbonate, and 1 mM sodium pyruvate in an incubator at 37°C and 5% CO_2. Cells were passaged upon reaching 80% confluency. The H82 cells tend to form large aggregates in suspension, so the aggregates were dissociated by incubating the cells with Gibco™ TrypLE™ Express Enzyme (1×) with phenol red (ThermoFisher) for 5 minutes between each passage. The cells were also strained using cell strainers (MACS SmartStrainers, 30 µm and 70 µm, Miltenyi Biotec; Auburn, CA, USA) to ensure a homogenous cell suspension mixture prior to any experiments or xenografting. Anti(α)-CD133 monoclonal antibody was Protein A purified from spent Hybridoma-SFM media (#12045, Gibco; Grand Island, NY) used to grow hybridoma Clone HB #7 (Developmental Studies Hybridoma Bank; Iowa City, IA).

Production and culture of H82-luc cells

H82 cells were directly transfected with 2 µg of pcDNA3.1(+)/Luc2=tdT plasmid (Addgene #32904) using Nucleofector Kit L (Lonza VVCA-1005) and program A-020. Transfected cells were selected for 7 days using 1000 µg/mL G418 (Invitrogen) and subsequently FACS sorted for Tomato red fluorescent protein positive cells to >95% purity. The H82-*luc* cells were cultured and maintained as described above.

Animals

Six to eight-week-old female athymic nude mice (Jackson Laboratory #007850 or #002019) were allowed to acclimatize approximately 1 week prior to inoculation. Animals were housed in ventilated cages and given food and water *ad libitum*. NIRF imaging mice were placed on an alfalfa-free diet at the time of tumor cell inoculation to limit autofluorescence. All animal work

was approved of by the respective IACUCs of Memorial Sloan Kettering Cancer Center and Fred Hutchinson Cancer Research Center.

Mouse xenograft models

Mice were anesthetized by inhalation of 2% isoflurane (Baxter Healthcare; Deerfield, IL)/oxygen gas mixture. For subcutaneous tumors, the injection site was sanitized with an ethanol wipe and 3-5 × 10^6 H82 cells (150-200 μL) in media or Hanks Balanced salt solution — with or without 1:1 Matrigel (Corning Life Sciences; Corning, NY) — were injected subcutaneously in the flank. For orthotopic tumors, an incision was made under the left scapula and 2-5 × 10^6 H82 or H82-*luc* cells (40 μL) were injected into the parenchyma of the left lung. To ensure homogenous tumors, the cell suspension was mixed thoroughly prior to each inoculation. The H82 and H82-*luc* tumors reached an acceptable size for imaging and biodistribution studies (~50-100 mm^3) after 2-4 weeks.

MR and NIRF imaging

All imaging was performed with mice under anesthesia with a 2% isoflurane/oxygen gas mixture. MRI was performed on a 1.0T ICON system (Bruker BioSpin; San Jose, CA) running ParaVision 6.0.1. SinglePulse and Localizer scans were acquired followed by primary imaging using T1 FLASH sequence (15, 1 mm slices, scan time 3-5 minutes). Animals were respiratory gated using an ERT control/gating module (Small Animal Instruments; Stoney Brook, NY) and PC-SAM32. Image reconstruction was done with Osirix Lite (v11.03, Bernex, Switzerland).

NIRF was performed using αCD133 mAb (HB #7, Developmental Studies Hybridoma Bank, Iowa City, IA) conjugated to the near-infrared fluorophore CF770 (#92222, Biotium; Fremont, CA) according to the manufacturer's instructions. Mice bearing subcutaneous or orthotopic H82 flank tumors were injected retro-orbitally with αCD133-CF770 (50 μg) ~3-4 weeks after cell inoculation. NIRF was performed up to 4 days after αCD133-CF770 injection using an IVIS Spectrum (Em/Ex: 745/780, small bin, f-stop 4, Stage B) with Living Image v4.7.2 (Perkin Elmer). Lungs were excised after terminal *in vivo* imaging and re-imaged *ex vivo* with the aforementioned settings.

PET imaging of mice bearing subcutaneous xenografts

Images were obtained using a microPET Focus 120 small animal imaging system (Siemens Medical Solutions; Malvern, PA). Mice (n = 4 per group) underwent static scans between 24 and 144 h after the intravenous tail vein administration of either [^{89}Zr]Zr-DFO-αCD133 [3.7 -3.9 MBq (100-105 μCi), 10-10.5 μg, in 100 μL of PBS] or [^{89}Zr]Zr-DFO-hIgG$_1$ [3.3-3.5 MBq (90-95 μCi), 36-38 μg, in 100 μL of PBS] for a total scan time of 10-30 minutes. The counting rates in the reconstructed images were converted to activity concentrations (percentage injected dose per gram of tissue [%ID/g]) using a system calibration factor derived from the imaging of a mouse-sized water-equivalent phantom containing ^{89}Zr. Maximum intensity projection (MIP) images were generated from 3-dimensional ordered subset expectation maximization reconstruction (3D-OSEM). The resulting images were processed using ASIPro VM^{TM}. Region-of-interest analysis was performed using Amide Medical Imaging software. Ellipsoid regions-of-interest were drawn around the heart (for blood), liver, and tumor for each mouse using the images acquired at 24, 72, 120, and 144 h post-injection. Mean %ID/g values were used for both liver and blood; max values were used for the tumor.

PET imaging of mice bearing orthotopic xenografts

Images were obtained using a Inveon PET/CT small animal imaging system (Siemens Medical Solutions; Malvern, PA). Mice (n = 4) underwent static scans between 24 and 144 h after the intravenous tail vein administration of [^{89}Zr]Zr-DFO-αCD133 [3.7 -3.9 MBq (100-105 μCi), 5-5.5 μg, in 100 μL of PBS] for a total scan time of 10-30 minutes. The counting rates in the reconstructed images were converted to activity concentrations (percentage injected dose per gram of tissue [%ID/g]) using a system calibration factor derived from the imaging of a mouse-sized water-equivalent phantom containing ^{89}Zr. Maximum intensity projection (MIP) images were generated from 3-dimensional ordered subset expectation maximization reconstruction (3D-OSEM). The resulting images were processed using Amide Medical Imaging software.

Bioluminescence imaging

To monitor the growth of the orthotopically implanted H82-*luc* cells, bioluminescence images of the mice were collected using an IVIS Spectrum-CT instrument. To this end, 100 μL of 30 mg/mL firefly D-luciferin in PBS was injected into the mouse *i.p.*. Subsequently, the mice were

anesthetized with 2% isoflurane/O_2. At 15 minutes post-injection, the mice were imaged in the prone and lateral positions; all images were analyzed with Living Image software.

Instrumentation

All instruments were calibrated and maintained according to standard quality control practices and procedures. UV-Vis measurements were taken on a Shimadzu BioSpecNano Micro-volume UV-Vis Spectrophotometer (Shimadzu Scientific Instruments; Kyoto, Japan). Radioactivity measurements were taken using a CRC-15R Dose Calibrator (Capintec, Inc; Ramsey, NJ) and Automatic Wizard^2 gamma counter (PerkinElmer; Waltham, MA).

Synthesis of DFO-αCD133

αCD133 (1.0 mg) in Chelex 100-treated (Bio-Rad Laboratories; Hercules, CA) phosphate-buffered saline (Chelex PBS, pH 7.4) was diluted to a final concentration of 1.0 mg/mL. The pH of the solution was adjusted to 8.8-9.0 with 0.1 M Na_2CO_3, 35 equivalents of *p*-SCN-Bn-DFO (7.05 µL, 25 mg/mL in DMSO) were added in small aliquots, and the resulting solution was incubated on a thermomixer (37°C, 500 rpm, 1h). The immunoconjugate was purified using size exclusion chromatography (PD-10 column; GE Healthcare; Chicago, IL), eluted with 2 mL of Chelex PBS, and concentrated using 2 mL Amicon Ultra centrifugal filters with a 50 kDa molecular weight cut-off (MilliporeSigma). An isotype control immunoconjugate, DFO-hIgG$_1$, was prepared in an analogous manner using 1 mg of mAb and 20 equivalents of *p*-SCN-Bn-DFO (4.02 µL, 25 mg/mL in DMSO). See *Supplemental Figure 5* for a schematic of the bioconjugation reaction.

Degree of labeling determination

Matrix-assisted laser desorption/ionization (MALDI) mass spectrometry was used to determine the number of DFO moieties per antibody (Alberta Proteomics and Mass Spectrometry Facility, University of Alberta, Canada). The immunoconjugate was analyzed in triplicate using a Bruker Ultraflex MALDI-ToF/ToF (Bruker Daltonik GmbG, Bremen, Germany). To wit, 1 µL of each sample (1 mg/mL in water) was mixed with 1 µL of sinapic acid (10 mg/mL in 50% acetonitrile/water and 0.1% trifluoroacetic acid). 1 µL of the sample/matrix solution was than spotted onto a stainless-steel target plate and allowed to air dry. Ions were analyzed in positive

mode, and external calibration was performed using a standard protein mixture of bovine serum albumin. The difference between the mass of each DFO-bearing immunoconjugate and its unmodified parent antibody was calculated, and the degree of labeling was determined via division by the mass of *p*-SCN-Bn-DFO (752.9 Da).

Radiolabeling

DFO-αCD133 (0.1 mg) was diluted in Chelex PBS to a final concentration of 0.5 mg/mL. [^{89}Zr]Zr^{4+} [9.25 MBq – 37 MBq (250 μCi – 1000 μCi)] in 1.0 M oxalic acid was diluted with Chelex PBS and the solution pH was adjusted to 7.0-7.5 with 1.0 M Na_2CO_3 (final volume 100 μL). After CO_2 bubbling ceased, the ^{89}Zr solution was added to the antibody solution, mixed thoroughly, and reacted on a thermomixer (500 rpm, 37 °C, 15 min). The reaction progress was assayed using glass-fiber, silica-impregnated instant thin-layer chromatography (iTLC) paper (Pall Corp.; East Hills, NY), eluted with EDTA eluent (50 mM, pH 5.0), and analyzed on an AR-2000 radio-TLC plate reader using Winscan Radio-TLC software (Bioscan, Inc.; Washington, DC). Following completion of the reaction, any free [^{89}Zr]Zr^{4+} was removed from the radioimmunoconjugate solution using size exclusion chromatography. The radiochemical purity of the final radiolabeled construct was assayed using radio-iTLC with EDTA as the eluent (50 mM, pH 5.0). For the radiosynthesis of [^{89}Zr]Zr-DFO-hIgG$_1$, the same parameters were used. All radiolabeling studies were performed in triplicate.

Radioimmunoconjugate stability assays

The stability of the radioimmunoconjugate was investigated by incubating [^{89}Zr]Zr-DFO-αCD133 in human serum on a thermomixer at 500 rpm and 37 °C for 5 days. Every 24 h, the radiochemical purity of [^{89}Zr]Zr-DFO-αCD133 was determined in triplicate via radio-TLC with an eluent of 50 mM EDTA (pH 5.0).

Immunoreactivity assays

The immunoreactivity of [^{89}Zr]Zr-DFO-αCD133 was determined using a cell-saturation study. Briefly, 15×10^6 H82 or K562 cells were washed 3× with ice-cold media, centrifuged (600g, 2 min), and the supernatant discarded. Ice-cold media (200 μL) with 1 μL of [^{89}Zr]Zr-DFO-αCD133 (1 μg/mL in 1% BSA-PBS) was added to the cell pellet, mixed thoroughly, and allowed

to incubate for 1 h. After the incubation period, the cells were centrifuged, and the supernatant was reserved. The cells were washed 2× with ice-cold media and the supernatants were each reserved in a separate microcentrifuge tube. The samples were then measured on an ^{89}Zr-callibrated gamma counter, with the activities (counts/minute) background and decay corrected to the start of the run. The immunoreactivity was expressed as a percentage by comparing the activity remaining in the cells to the total activity (cells + supernatant + washes). For the blocking experiments, the assay was run identically, but 5 μg of unlabeled αCD133 were co-incubated with the cells along with the [^{89}Zr]Zr-DFO-αCD133.

Biodistribution studies

Following terminal PET imaging (144 h post-injection), the mice were euthanized via CO_2 asphyxiation followed by cervical dislocation. The 15 most relevant organs were collected, rinsed in water, dried, weighed, and quantified using an ^{89}Zr-calibrated Automatic Wizard^2 γ-counter (PerkinElmer). The counts/minute in each tissue was background and decay corrected to the start of the activity measurement. The %ID/g for each sample was calculated by normalization to the total injected activity.

Autoradiography

Following the final PET timepoint, the mice were sacrificed via CO_2 asphyxiation. The lungs were perfused through the right ventricle of the heart with 3 mL PBS using a 28 gauge needle, and the lungs were inflated with roughly 2 mL of a 50/50 formalin/OCT mixture inserted into the trachea with a 23 gauge needle. The inflated lungs were immediately submerged in formalin and allowed to incubate for 24 hours. After 24 hours, the lungs were washed with 20% sucrose overnight and the right and left lungs were separated. The left lungs and the inferior lobe of the right lungs were then embedded in a cryomold with OCT and immediately frozen. 10 μm slices of the tissue were cut using a cryostat microtome and collected onto slides. The slides were then placed into a cassette with a clean phosphor imager plate (FujiFilm Imaging Plate, BAS-MS) and the cassette was stored in the dark for 48 hours. Following this, the radioactivity on the phosphor imager plate was scanned using Typhoon FLA 7000 instrumentation.

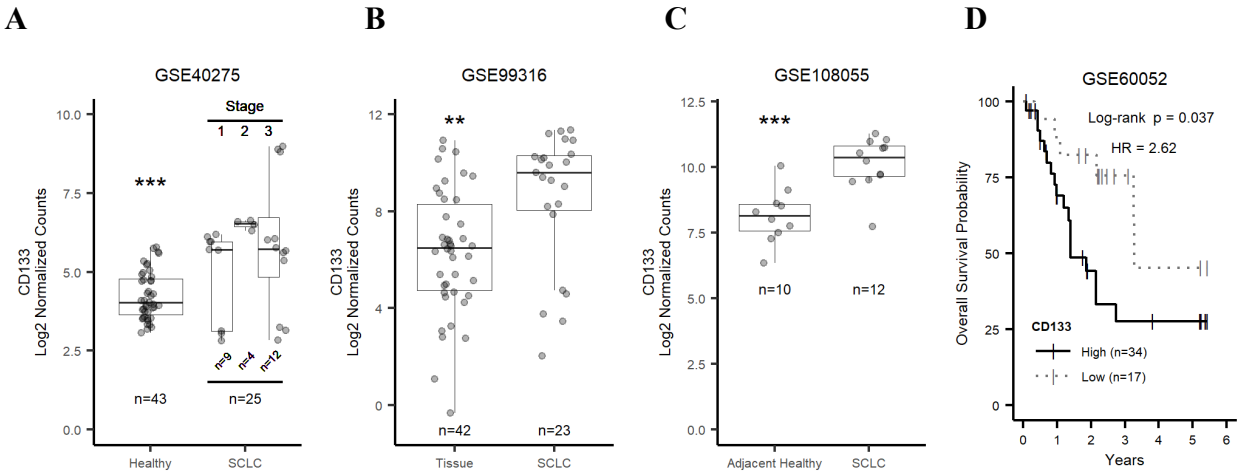
Statistics and graphing

Figures and statistics were prepared using RStudio (v1.4.1717). Where appropriate, t-tests or ANOVA with post-hoc analyses were performed using the rstatix (v0.70) and emmeans (v1.6.2.1) packages. Plots and tables were generated using the ggplot2 (v3.3.5), ComplexHeatmap (v2.8.0), ggpubr (v0.4.0), and gt (v0.3.0) packages.

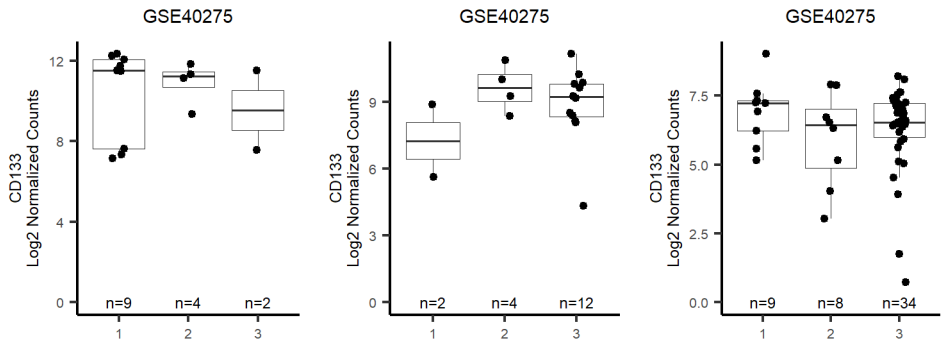
Data availability

RNA Sequencing (RNAseq) data from 289 series were procured from the Gene Expression Omnibus (GEO) by searching for "small cell lung cancer" or "SCLC". Further filtering by organism (Homo sapiens), assay type (Expression profiling by array), sample type (tissue from healthy, SCLC, or other lung cancer patients, but not cell lines only), and at least 10 SCLC cases resulted in 6 cohorts: GSE99316, GSE40275, GSE29066, GSE108055, GSE149507, and GSE60052 whose characteristics are outlined in Tables S1 and S2. Whole genome sequencing was used to assess expression data and somatic mutations from the Cancer Cell Line Encyclopedia (CCLE) using the DepMap Public 21Q3 dataset or SCLC patient samples as described by George *et al.* in their Supplementary Table 3 (reference #14 from the main text).

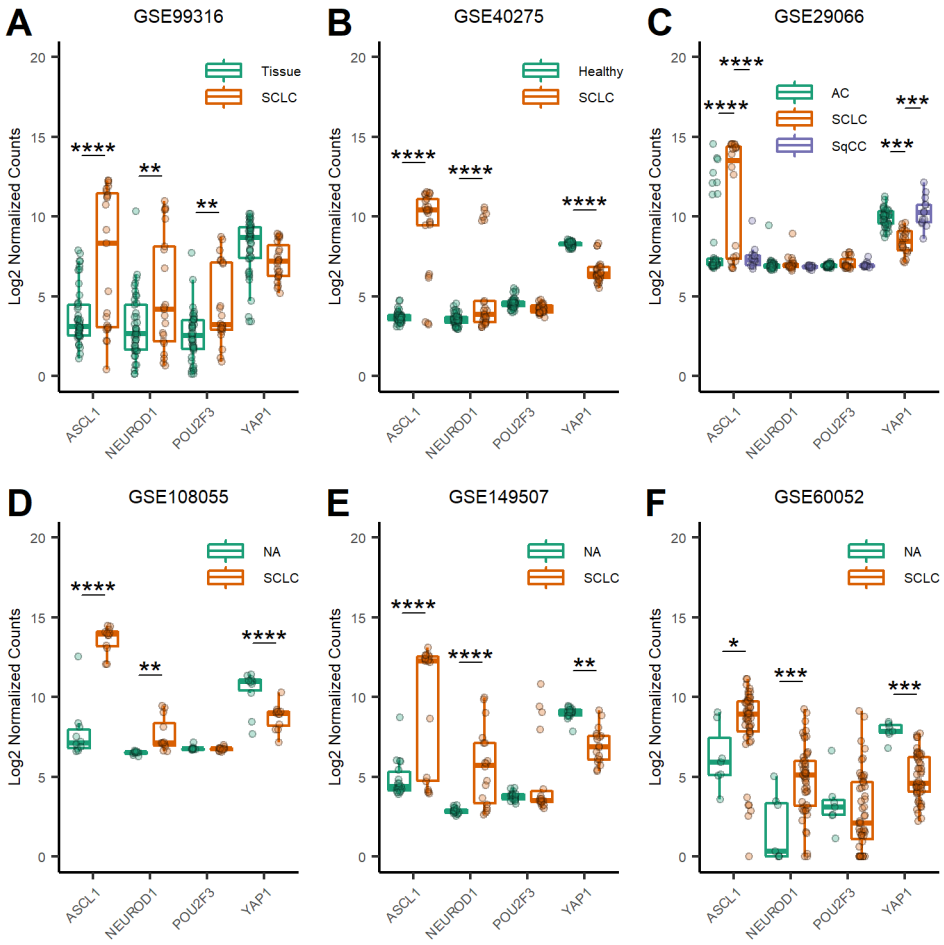
SUPPLEMENTAL FIGURES



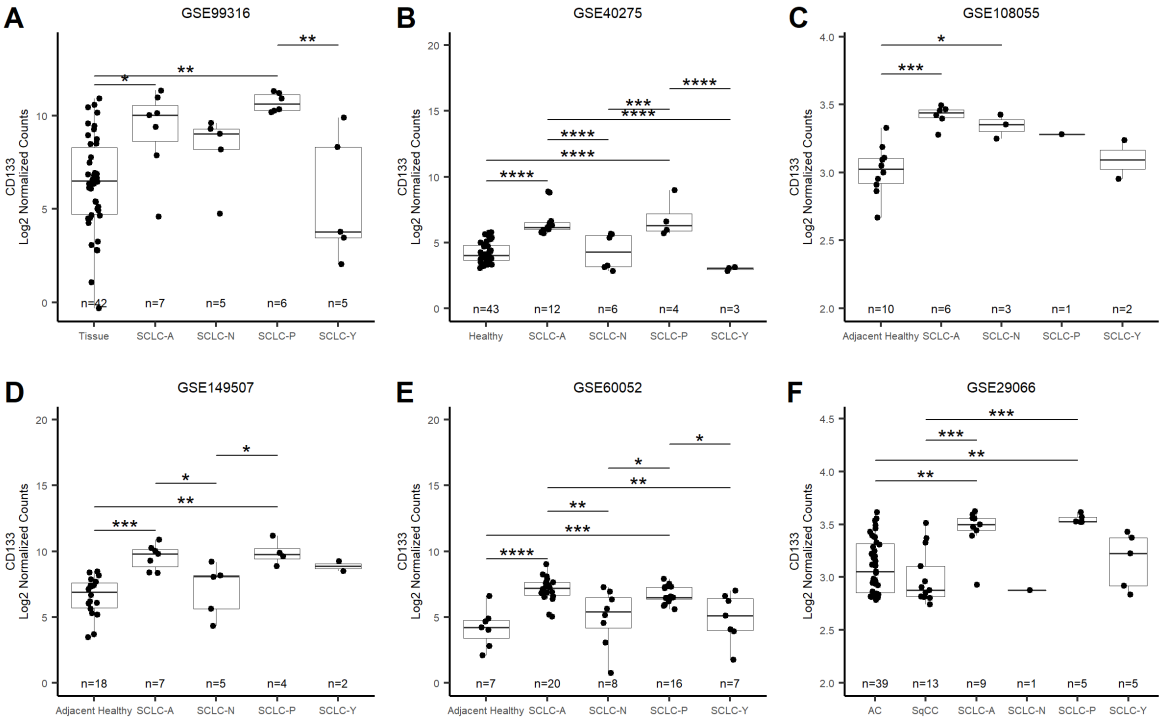
SUPPLEMENTAL FIGURE 1. CD133 mRNA expression in publicly available datasets from the Gene Expression Omnibus (GEO). A) A comparison of CD133 mRNA in healthy lung tissue vs SCLC tumor tissue by stage from commercially purchased RNA (GSE40275) (stats comparing healthy vs all SCLC). B) Levels of CD133 transcripts in commercially procured RNA from healthy tissues vs SCLC tumors from Japanese patients (GSE99316). C) CD133 mRNA levels in adjacent healthy SCLC tumor tissue from patients in the USA. D) Kaplan-Maier survival curve for mean-stratified (6.34 mean log2 expression cut-point) SCLC patients with low-vs-high CD133 mRNA expression (HR=hazard ratio) ** $p < 0.01$, *** $p < 0.001$ by t-test or one-way ANOVA with Tukey adjustment.



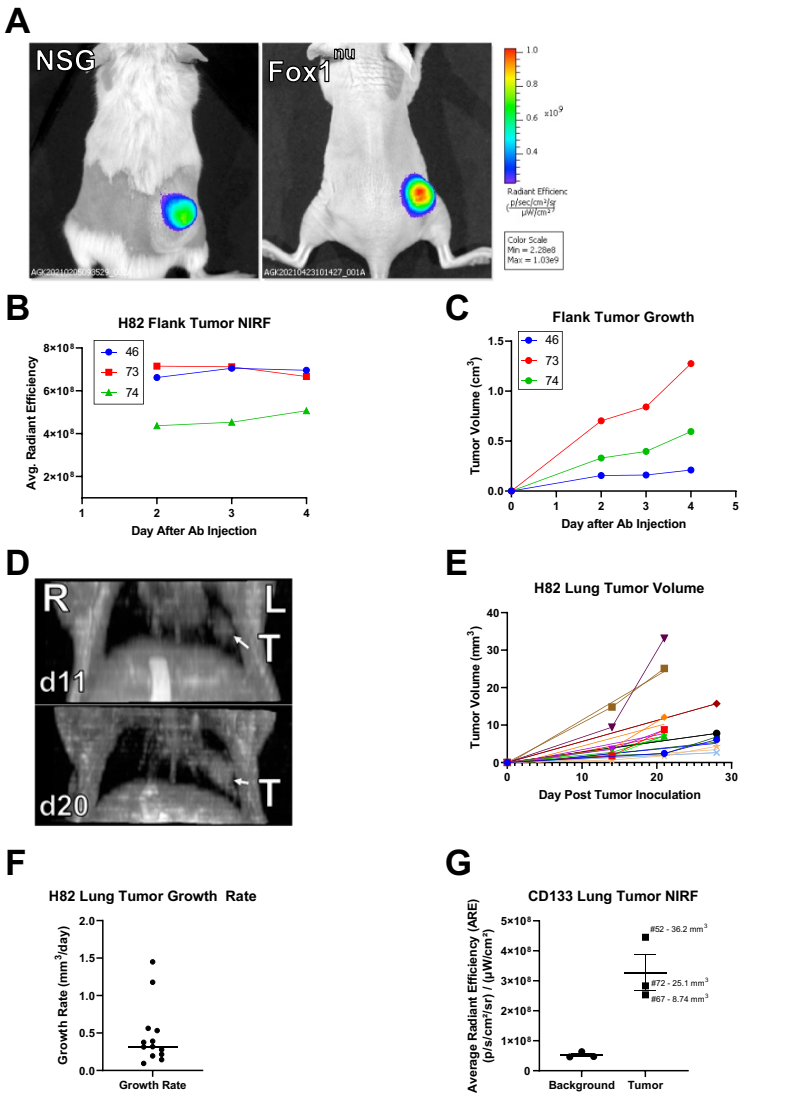
SUPPLEMENTAL FIGURE 2. CD133 expression by SCLC Stage. RNAseq expression of CD133 by stage in SCLC GEO data sets. No significant differences were detected by ANOVA.



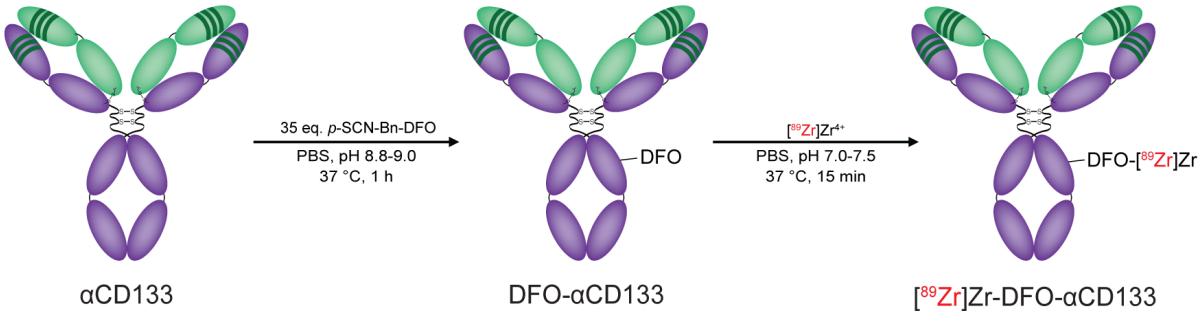
SUPPLEMENTAL FIGURE 3. Relative expression of each subtype marker in SCLC GEO data sets. AC = adenocarcinoma, SCLC = small cell lung cancer, SqCC = squamous cell carcinoma, NA = normal adjacent. Two-way ANOVA with Bonferroni multiplicity-adjusted post-hoc pairwise comparisons * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, **** $p < 0.0001$.



SUPPLEMENTAL FIGURE 4. CD133 expression by SCLC subtype. CD133 expression was compared between SCLC and A) normal tissue, B) healthy patients, C-E) adjacent normal tissue, and F) NSCLC as a function of SCLC subtype. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, **** $p < 0.0001$ by t-test or one-way ANOVA for overall effect (not by subtype)

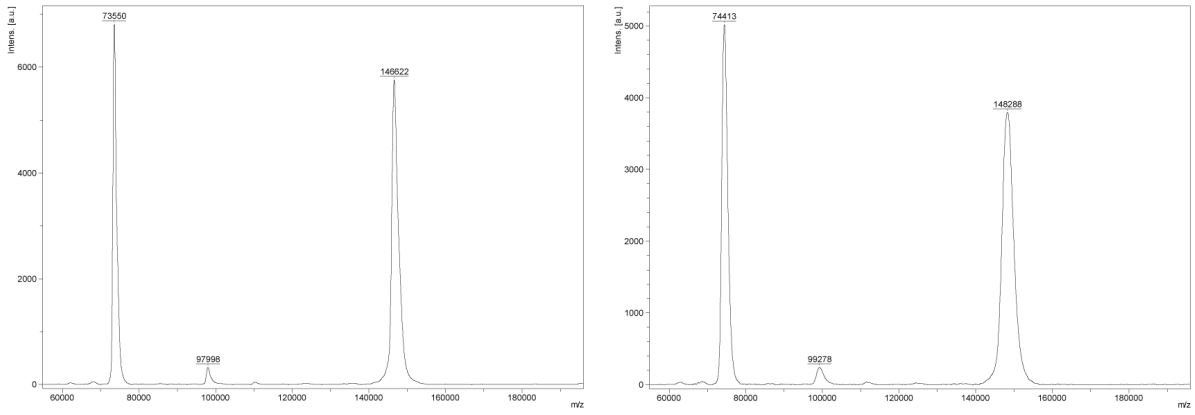


SUPPLEMENTAL FIGURE 5. αCD133-CF770 NIRF imaging of H82 xenografts. A) H82 SCLC cells can form tumors in two mouse strains with varying degrees of immunity and are detectable via NIRF imaging with αCD133-CF770. NOD scid gamma (NSG) mice lack mature B cells, T cells natural killer cells, and complement, and have defective dendritic cells and macrophages. Fox1^{nu} nude mice lack mature T cells and have partially defective B cells. B) CD133 NIRF signal from mice with flank H82 tumors did not vary over imaging days. C) Growth of H82 flank tumor during experiment. D) Coronal MRI of H82 tumor in the left lung (arrow) at 11 and 20 days after cell inoculation. E) H82 lung tumor volume and F) growth rate over duration of experiment. F) NIRF signal of H82 lung tumor compared to background (foot) at 4 days after antibody injection. Animal number and tumor volume are as labeled.



SUPPLEMENTAL FIGURE 6. Schematic of the bioconjugation and radiolabeling of αCD133.

A.

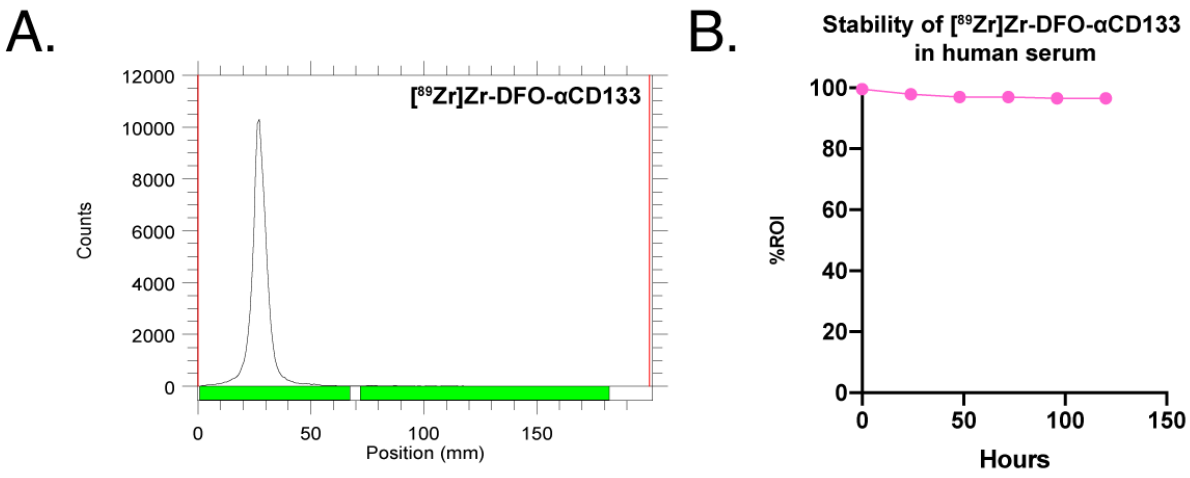


αCD133 DFO-αCD133

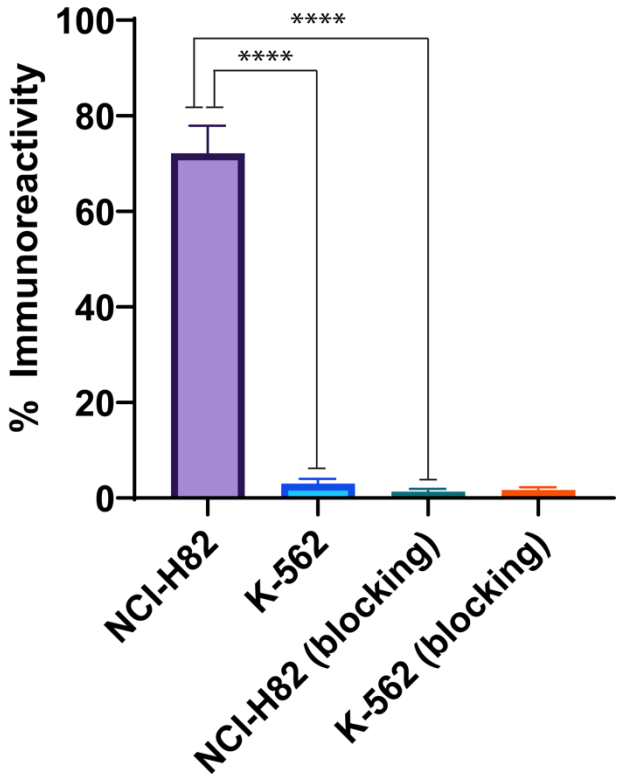
B.

Sample	Average Mass (Da) n = 3	DOL (DFO/mAb)
αCD133	146827.17± 282.82	-
DFO-αCD133	148514.17 ± 326.24	2.22 ± 0.41

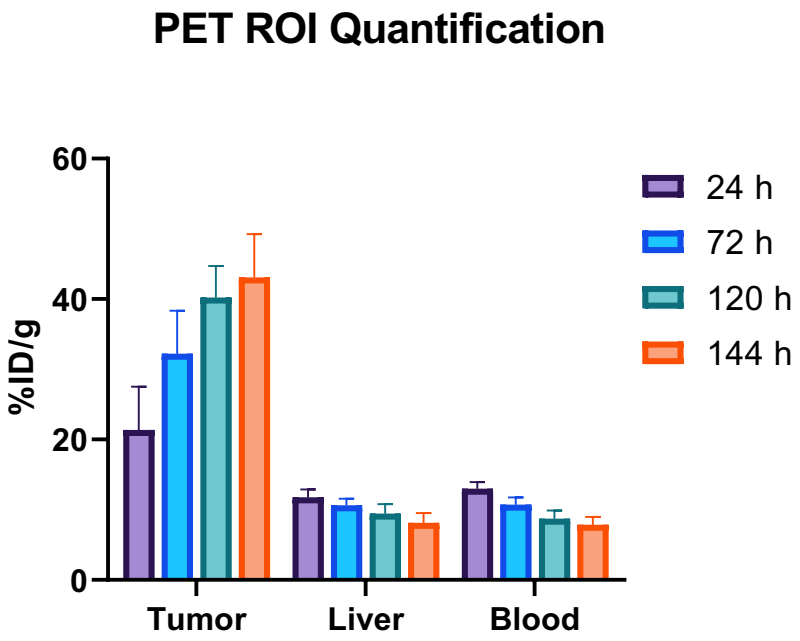
SUPPLEMENTAL FIGURE 7. A) Representative MALDI-ToF mass spectrograms used to determine the degree of labeling of DFO-αCD133; B) Data used to determine the degree of labeling of DFO-αCD133.



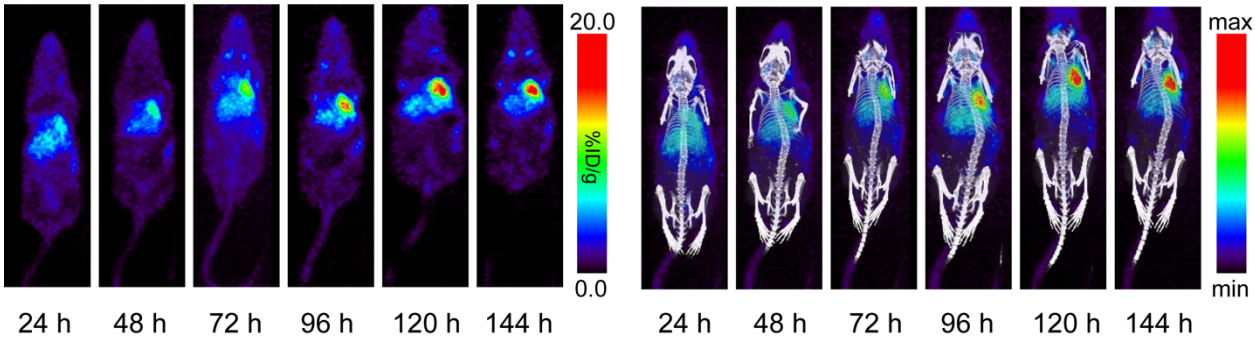
SUPPLEMENTAL FIGURE 8. The characterization of [^{89}Zr]Zr-DFO-αCD133. A) iTLC of purified [^{89}Zr]Zr-DFO-αCD133 indicating >99% radiochemical purity; B) stability assay of [^{89}Zr]Zr-DFO-αCD133 in human serum.



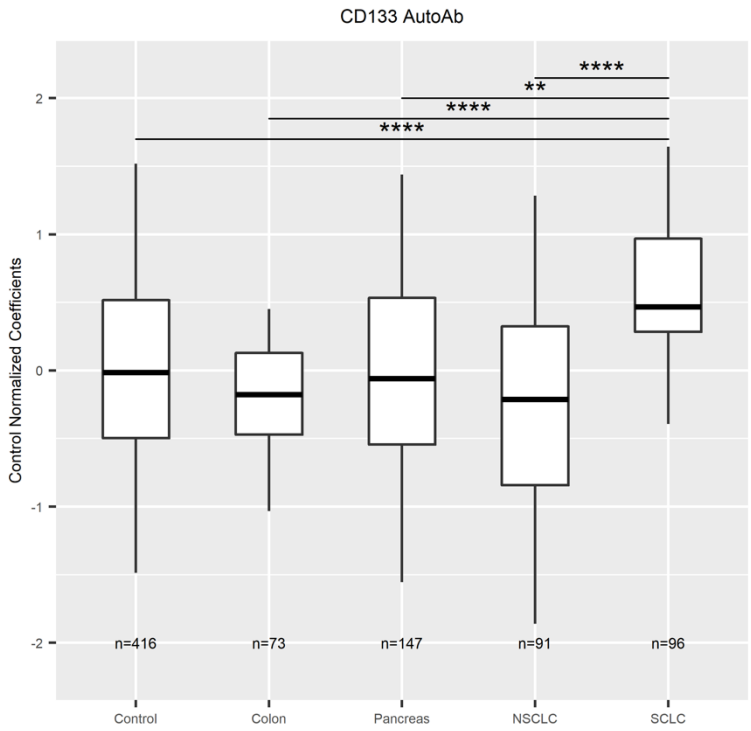
SUPPLEMENTAL FIGURE 9. Immunoreactivity assay for [^{89}Zr]Zr-DFO-αCD133 in which the radioimmunoconjugate (1 ng) was incubated with CD133-positive NCI-H82 cells and CD133-negative K562 cells (1.5×10^7). For the blocking experiments, 5 μg of unlabeled αCD133 was co-incubated with the cells along with [^{89}Zr]Zr-DFO-αCD133. **** = $p < 0.0001$ via an unpaired t-test; statistical significance was determined using GraphPad Prism 8.3.0 software.



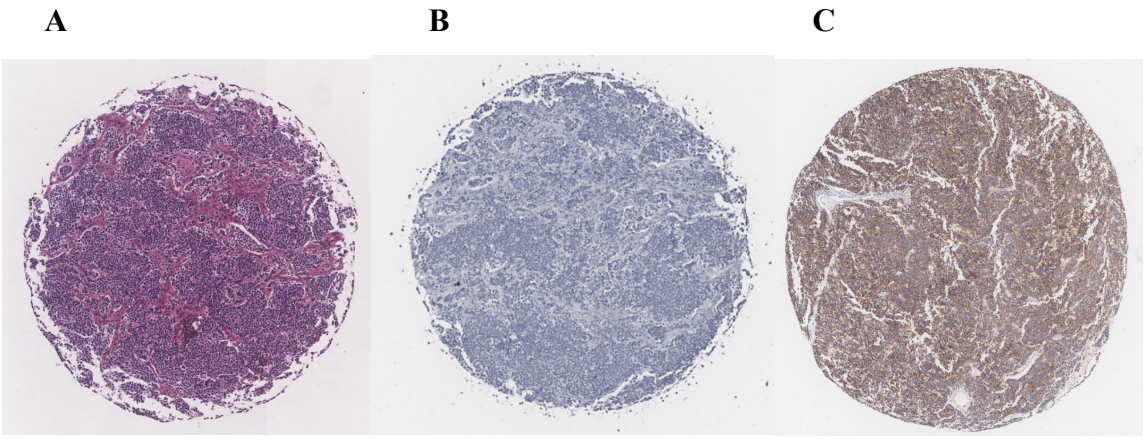
SUPPLEMENTAL FIGURE 10. Region-of-interest quantification of the activity concentrations in the tumor, liver, and blood obtained from PET images acquired 24, 72, 120, and 144 h after the intravenous administration of [^{89}Zr]Zr-DFO-αCD133 [3.7-3.9 MBq, 10-10.5 μg, in 100 μL of PBS] to athymic nude mice bearing subcutaneous H82 xenografts (n = 4 per cohort). Mean %ID/g values ± standard deviation were used for both the liver and blood; max %ID/g values ± standard deviation were used for the tumor.



SUPPLEMENTAL FIGURE 11. Representative coronal slice PET (left) and maximum intensity projection PET/CT (right) images acquired 24, 72, 120, and 144 h after the *i.v.* administration of [^{89}Zr]Zr-DFO-αCD133 (3.7-3.9 MBq, 5-5.5 μg) to athymic nude mice (n = 4) bearing orthotopic H82-*luc* xenografts.



SUPPLEMENTAL FIGURE 12. Levels of αCD133 autoantibodies from patient plasma across various cancer types quantified using antibody microarrays. Coefficients were mean-centered to controls within each experiment, controls were combined and compared to tumors. Boxes = interquartile range, whiskers = 1x interquartile range above boxes. Bar = mean. NSCLC = non-small cell lung cancer. ** $p < 0.01$, **** $p < 0.0001$ by t-test or one-way ANOVA with Tukey adjustment.



SUPPLEMENTAL FIGURE 13. Human IgG is not detected in SCLC tumors. A small cell lung cancer tumor microarray containing 45 SCLC cases in duplicate (90 cores total) were stained for A) H&E or B) human IgG (none of the 90 cores shows significant staining), or C) a CD133=positive SCLC core from the data in Figure 2.

SUPPLEMENTAL TABLES

SUPPLEMENTARY TABLE 1. GEO RNAseq Data Set Characteristics

			Tissue						
Accession	**Manufacturer**	**Array**	**Normal**	**SCLC**	**AC**	**SCC**	**Organs**	**Cells**	**Country**
GSE99316	Affymetrix	Human Genome U133 Plus 2.0 Array		23			43	3	Japan/Commercial
GSE40275	Affymetrix	Human Exon 1.0 ST Array	43	25					Commercial
GSE29066	Illumina	HumanHT-12 v3.0 Expression BeadChip		20	39	13			Sweden
GSE108055	Illumina	HumanWG-6 v2.0 Expression BeadChip	10[1]	12					USA
GSE149507	Affymetrix	Human Genome U133 Plus 2.0 Array	18[1]	18					China
GSE60052	Illumina	HiSeq 2000 (Homo Sapiens)	7[1]	51					China

[1] Adjacent healthy tissue, not necessarily paired

Normal, normal lung; SCLC, small cell lung cancer; AC, adenocarcinoma; SCC, squamous cell carcinoma

SUPPLEMENTARY TABLE 2. GEO RNAseq data patient characteristics

	GEO Data Set					
	GSE99316	GSE40275	GSE29066	GSE108055	GSE149507	GSE60052
Sex						
Male		48 (57.1%)	31 (43%)	6 (50%)	26 (27.2%)	45 (90%)
Female		36 (42.9%)	41 (57%)	6 (50%)	10 (27.8%)	5 (10%)
Age (years)						
Mean		66	66.4		57	57.8
Range		38 – 80	36 – 85		37 – 71	36 – 78.3
Smoker						
Ever			10 (39%)	11 (91.7%)	24 (66.7%)	35 (70%)
No			56 (77.8%)			15 (30%)
Never Smoker				1 (8.3%)	6 (16.7%)	
Unknown			6 (8.3%)		6 (16.7%)	
Stage						
I				3 (25%)		
IA		5 (12.2%)	18 (25%)			6 (12%)
IB		15 (36.6%)	27 (37.5%)			2 (4%)
II				3 (25%)		
IIA		4 (9.8%)	8 (11.1%)		4 (11.1%)	4 (8%)
IIB		3 (7.3%)	7 (9.7%)		8 (22.2%)	4 (8%)
III				4 (33.3%)		
IIIA		8 (19.5%)	6 (8.3%)		10 (27.8%)	28 (56%)
IIIB		6 (14.6%)			14 (38.9%)	5 (10%)
IV				2 (16.7%)		1 (2%)
Unknown			6 (8.3%)			
Neoadjuvant Therapy						
Treated					6 (16.7%)	8 (16%)
Naïve					24 (66.7%)	42 (84%)
Unknown					6 (16.7%)	

SUPPLEMENTARY TABLE 3. CHS and PLCO patient characteristics				
	CHS		PLCO	
	Control	<1 Year	Control	<1 Year
Time to Dx				
Days	—	195 (19 – 328)	—	344 (18 – 364)
Sex				
Male	14 (41.2%)	8 (36.4%)	50 (65.8%)	24 (60%)
Age (years)				
≤ 59			18 (23.7%)	14 (35%)
60-64			26 (34.2%)	8 (20%)
65-69	14 (41.2%)	10 (45.5%)	26 (34.2%)	14 (35%)
≥ 70	20 (58.8%)	12 (54.5%)	6 (7.9%)	4 (10%)
Smoker				
Current	12 (35.3%)	8 (36.4%)	48 (63.2%)	26 (65%)
Former	22 (64.7%)	14 (63.6%)	24 (31.6%)	12 (30%)
Never			4 (5.3%)	2 (5%)

PET ROI Quantification (%ID/g)				
Organ	**24 h**	**72 h**	**120 h**	**196 h**
Tumor	21.3 ± 6.2	32.2 ± 6.1	40.2 ± 4.5	43.1 ± 6.2
Liver	11.7 ± 1.2	10.6 ± 0.9	9.4 ± 1.4	8.1 ± 1.4
Blood	13.0 ± 0.9	10.7 ± 1.1	8.7 ± 1.2	7.8 ± 1.1

SUPPLEMENTAL TABLE 4. Region-of-interest quantification of the activity concentrations in the tumor, liver, and blood obtained from PET images acquired 24, 72, 120, and 144 h after the intravenous administration of [^{89}Zr]Zr-DFO-αCD133 [3.7-3.9 MBq, 10-10.5 μg, in 100 μL of PBS] to athymic nude mice bearing subcutaneous H82 xenografts (n = 4). Mean %ID/g values ± standard deviation were used for both the liver and blood; max %ID/g values ± standard deviation were used for the tumor.

%ID/g (percentage of injected dose per gram of organ)		
Organ	**[^{89}Zr]Zr-DFO-αCD133**	**[^{89}Zr]Zr-hIgG1**
Blood	10.1 ± 1.9	10.0 ± 2.2
Tumor	50.8 ± 7.7	5.8 ± 4.0
Heart	2.4 ± 1.0	2.3 ± 0.8
Lungs	3.7 ± 2.3	3.4 ± 2.7
Liver	4.8 ± 2.4	2.9 ± 0.7
Spleen	4.5 ± 2.1	3.4 ± 2.3
Pancreas	0.6 ± 0.1	0.6 ± 0.5
Stomach	0.5 ± 0.2	1.2 ± 0.3
Small intestine	0.8 ± 0.5	1.3 ± 0.8
Large intestine	0.5 ± 0.1	0.7 ± 0.2
Kidneys	2.1 ± 1.3	4.2 ± 1.2
Muscle	0.4 ± 0.1	0.4 ± 0.3
Bone	4.3 ± 1.0	2.7 ± 0.5
Skin	2.1 ± 0.6	1.4 ± 0.5
Tail	1.3 ± 0.2	2.2 ± 1.2

SUPPLEMENTARY TABLE 5. Biodistribution data collected 144 h after the intravenous administration of [^{89}Zr]Zr-DFO-αCD133 [3.7-3.9 MBq, 10-10.5 μg, in 100 μL of PBS] or [^{89}Zr]Zr-DFO-hIgG$_1$ [3.3-3.5 MBq, 36-38 μg, in 100 μL of PBS] to athymic nude mice bearing subcutaneous H82 xenografts (n = 4 per cohort). The data are presented as mean ± standard deviation.

REFERENCES

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