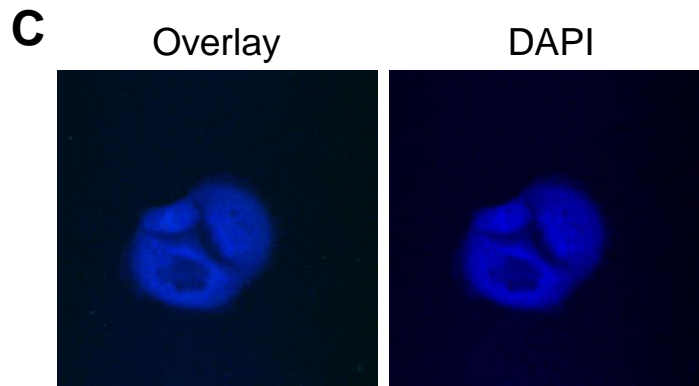
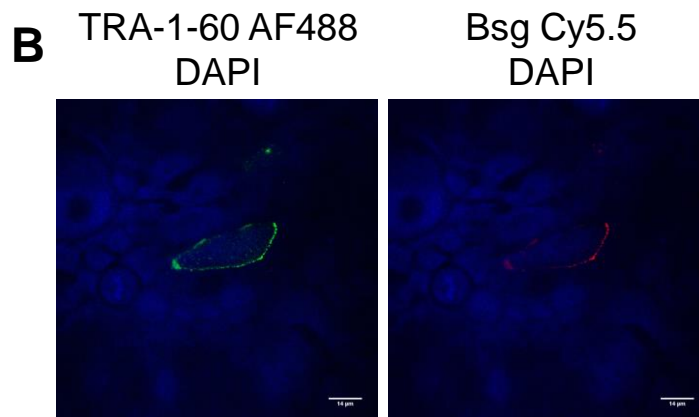
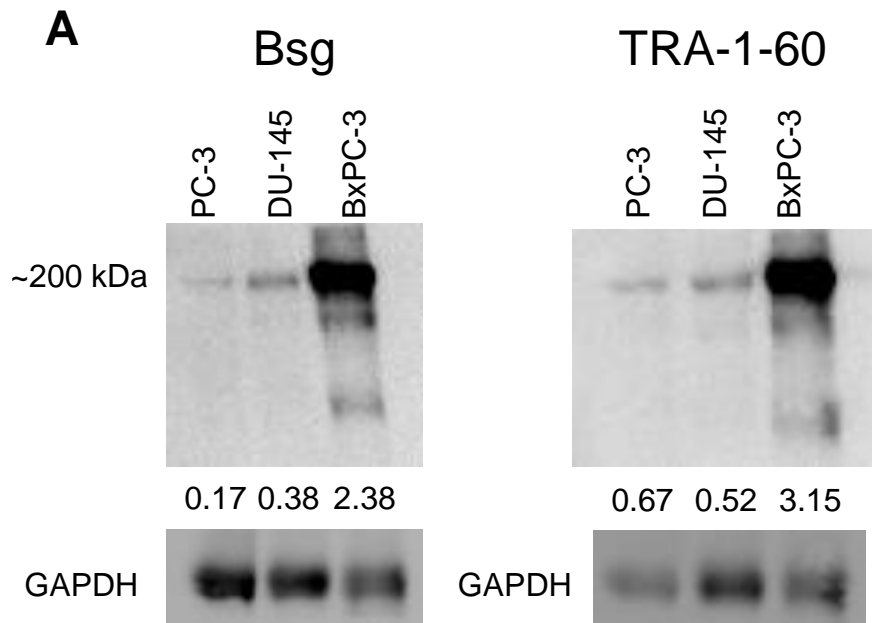
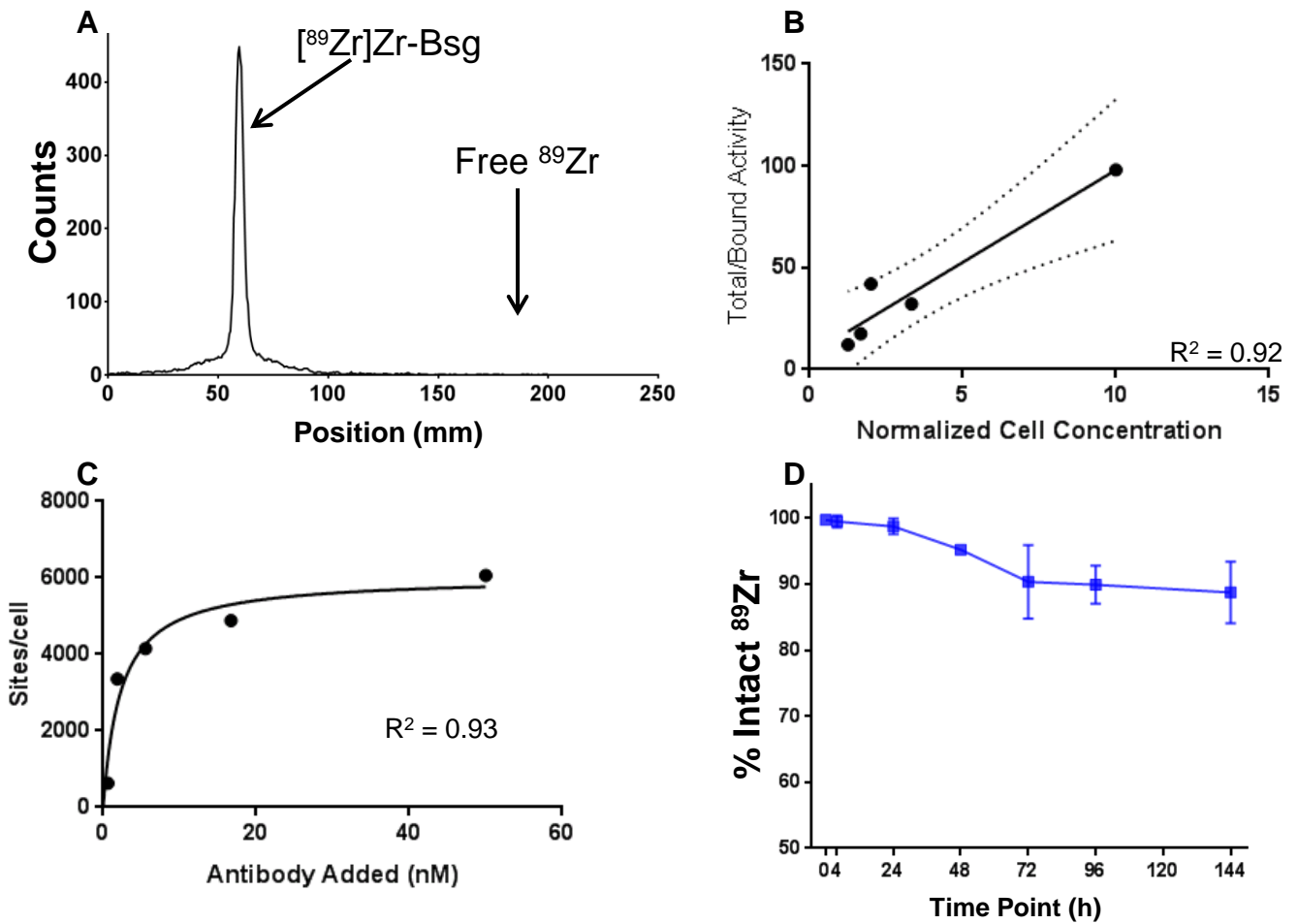


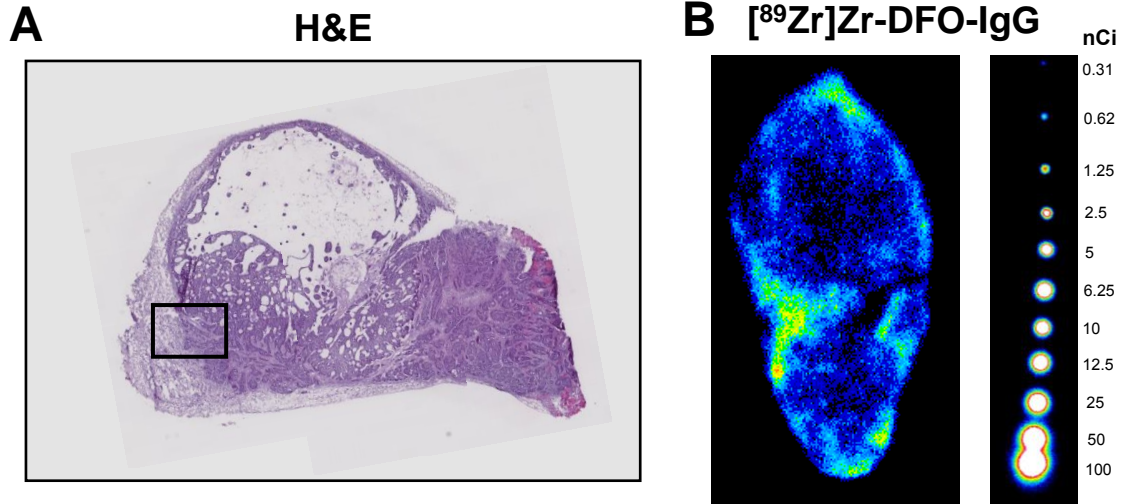
## **Supplemental Information:**



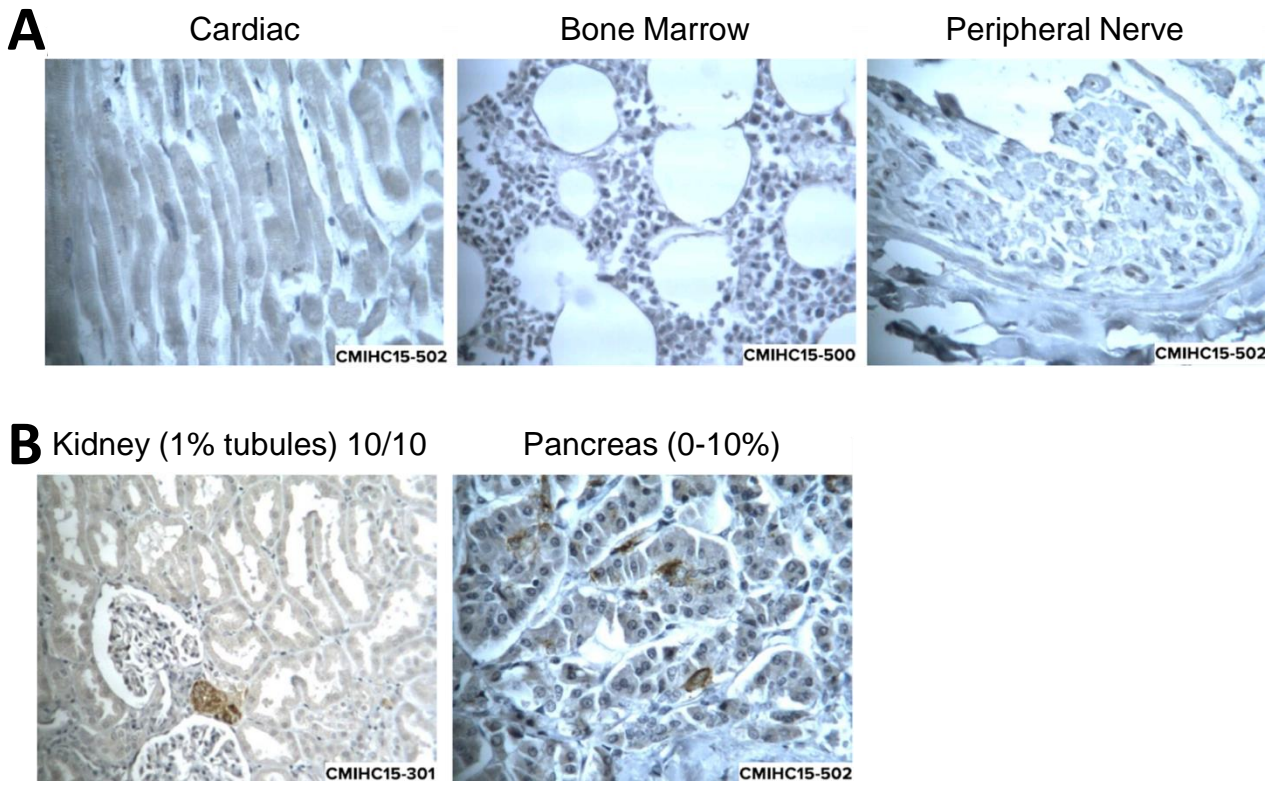
**Figure S1. A.** TRA-1-60 expression in *ex vivo* PC-3, DU-145 and BxPC-3 tumor lysates was detected with Bsg (left panel) and a commercially available antibody against TRA-1-60 (right panel). Densitometry analysis measured the ratio of protein to GAPDH loading control. **B.** Positive cell confocal imaging using anti-TRA-1-60-AF488 (Left) and Bsg-Cy5.5 (Right) with DAPI overlay and **C.** negative confocal images overlay (anti-TRA-1-60-AF488 and Bsg-Cy5.5 with DAPI) and DAPI images.



**Figure S2.**  $[^{89}\text{Zr}]\text{Zr-DFO-Bsg}$  tracer characterization as examined through **A.** iTLC, **B.** immunoreactivity, **C.** binding affinity and **D.** *in vitro* stability in saline 4-144 h incubation at 37 °C.



**Figure S3. A.** H&E stain of BxPC-3 tumor injected with [ $^{89}\text{Zr}$ ]Zr-DFO-Bsg. Black box represents the area measured for autoradiography. **B.** *Ex vivo* autoradiography of a tumor slice from BxPC-3 tumor bearing mice injected with [ $^{89}\text{Zr}$ ]Zr-DFO-IgG sacrificed at 120 h p.i. Autoradiographs were calibrated against respective  $^{89}\text{Zr}$  standards (right).



**Figure S4. A.** Negative control normal tissues IHC stained with Bsg included cardiac (left), bone marrow (middle) and peripheral nerve (right). **B.** The kidney (left) and pancreas (right) exhibited minimal staining in comparison to positive samples.

**Table S1.** Internalization of [<sup>89</sup>Zr]Zr-DFO-Bsg in NCCIT

Time Point (h)	% Membrane Bound	% Internalized	p-value
6	0.6 ± 0.2	0.7 ± 0.1	< 0.01
24	0.5 ± 0.1	2.3 ± 0.3	< 0.01
48	0.5 ± 0.3	3.5 ± 0.8	< 0.01
72	0.5 ± 0.3	2.6 ± 0.4	< 0.01

**Table S2.** %ID/g [<sup>89</sup>Zr]Zr-DFO-Bsg and [<sup>89</sup>Zr]Zr-DFO-IgG in BxPC-3 imaged mice.

Time P.I. (h)	Bsg				IgG	p-values
	Tumor	Heart	Liver	Muscle	Tumor	Tumor
4	4.1 ± 0.4	19.2 ± 3.6	18.9 ± 3.3	1.4 ± 0.3		
24	12.2 ± 2.0	13.4 ± 2.8	13.4 ± 5.1	1.6 ± 0.1	3.6 ± 0.1	p < 0.0001
48	15.4 ± 2.0	11.7 ± 2.5	13.1 ± 6.5	1.5 ± 0.1	4.3 ± 0.7	p < 0.0001
72	15.4 ± 2.4	10.8 ± 2.8	13.3 ± 7.0	1.4 ± 0.3		
120	17.0 ± 2.4	9.5 ± 3.2	14.0 ± 9.1	1.3 ± 0.1	4.1 ± 0.6	p < 0.0001

**Table S3.** %ID/g [<sup>89</sup>Zr]Zr-DFO-Bsg and [<sup>89</sup>Zr]Zr-DFO-IgG in PC-3 imaged mice.

Time P.I. (h)	Bsg				IgG	p-values
	Tumor	Heart	Liver	Muscle	Tumor	Tumor
4	5.8 ± 0.9	17.6 ± 6.2	17.1 ± 5.9	1.6 ± 0.5		
24	7.0 ± 1.1	12.0 ± 3.2	11.4 ± 3.5	1.9 ± 0.5	5.2 ± 1.6	p = 0.29
48	6.9 ± 1.1	10.2 ± 2.0	9.8 ± 2.5	1.5 ± 0.3	4.9 ± 1.2	p = 0.58
72	7.4 ± 1.0	8.8 ± 1.3	8.8 ± 2.0	1.4 ± 0.4		
120	6.5 ± 1.3	7.9 ± 1.1	7.9 ± 1.1	1.0 ± 0.1	5.7 ± 1.2	p = 0.26



**Table S4.** %ID/g from the biodistribution of [<sup>89</sup>Zr]Zr-DFO-Bsg injected BxPC-3-bearing mice.

	24 h	48 h	72 h	72 h-block	120 h
Blood	29.8 ± 4.5	27.0 ± 2.6	18.4 ± 4.1	19.4 ± 5.1	19.8 ± 2.6
Tumor	12.6 ± 2.7	19.3 ± 2.4	13.5 ± 3.5	10.9 ± 6.6	15.5 ± 8.1
Heart	5.0 ± 2.3	5.5 ± 2.4	4.3 ± 2.1	5.5 ± 1.4	4.4 ± 0.6
Lungs	6.1 ± 3.6	2.4 ± 0.5	4.6 ± 3.5	2.2 ± 0.4	2.6 ± 1.6
Liver	8.1 ± 4.0	4.2 ± 0.2	5.1 ± 1.8	4.4 ± 0.8	6.5 ± 4.3
Kidney	6.7 ± 3.7	4.2 ± 2.6	6.4 ± 1.2	6.8 ± 2.7	4.9 ± 2.0
Stomach	1.2 ± 0.7	0.7 ± 0.7	1.0 ± 0.5	1.1 ± 0.7	0.9 ± 0.7
Sm. Intestines	1.8 ± 0.4	1.6 ± 0.5	1.7 ± 0.7	1.8 ± 1.0	1.2 ± 0.7
Lg. Intestines	1.5 ± 0.7	1.5 ± 0.5	1.1 ± 0.4	1.0 ± 0.6	0.6 ± 0.2
Spleen	5.0 ± 3.0	2.6 ± 1.5	2.2 ± 0.6	3.3 ± 1.9	6.9 ± 2.0
Pancreas	1.9 ± 1.5	0.9 ± 0.4	0.9 ± 0.2	0.8 ± 0.09	1.9 ± 1.5
Brain	0.8 ± 0.6	0.6 ± 0.4	0.3 ± 0.2	0.3 ± 0.1	0.6 ± 0.2
Bone	3.5 ± 2.8	2.8 ± 1.2	3.3 ± 0.6	1.6 ± 1.0	3.3 ± 1.4
Muscle	1.3 ± 0.7	0.6 ± 0.03	0.6 ± 0.07	0.5 ± 0.1	0.6 ± 0.2

**Table S5.** %ID comparison of [<sup>89</sup>Zr]Zr-DFO-Bsg in BxPC-3 tumors at all time points. The competitive inhibition with non-radiolabeled Bsg (~500 µg) at 72 h p.i. shows decreased tumor accumulation (p = 0.011).

	24 h	48 h	72 h	72 h-block	120 h
Tumor	4.5 ± 2.1	8.2 ± 5.0	8.4 ± 3.0	1.3 ± 0.7	4.9 ± 1.5