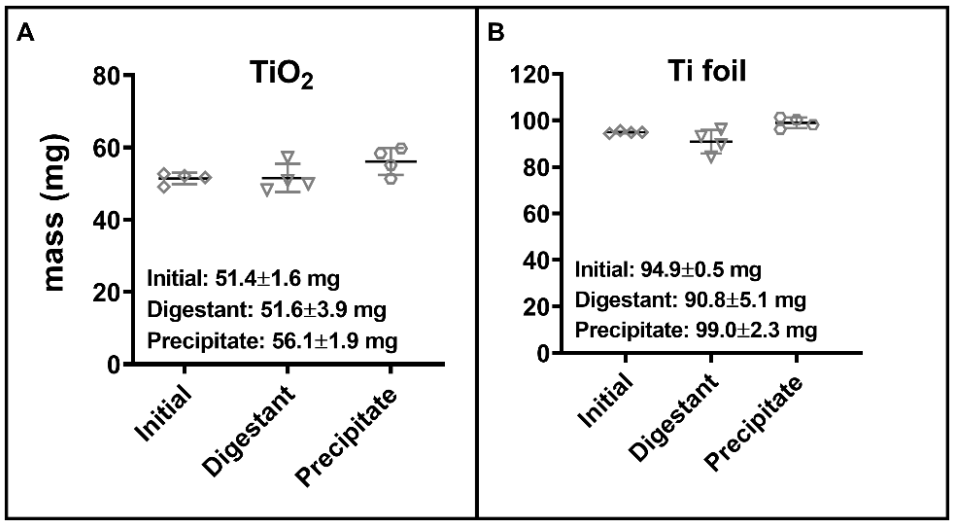
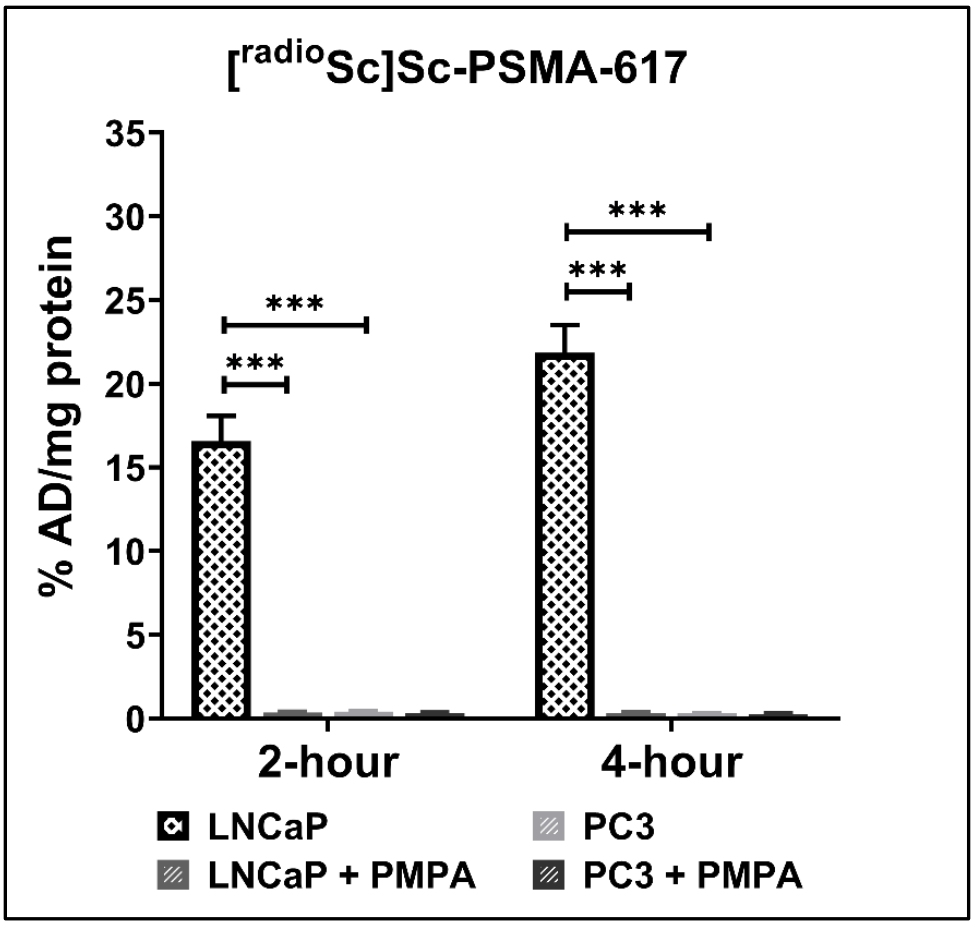


Supplemental Figure 1. Pressed Non-radioactive TiO_2 disc targets (A) and Ti foils (B) were prepared in quadruplicate (n=4±1σ). The samples were weighed, dissolved, and Ti ions in the digestant were precipitated using methods detailed in this work. The percent of TiO_2 dissolved and Ti recovered via precipitation were (100±8)% and (108±11)%, respectively. Similarly, the percent of Ti foil dissolved and Ti recovered via precipitation were (96±5)% and (108±7)%, respectively.



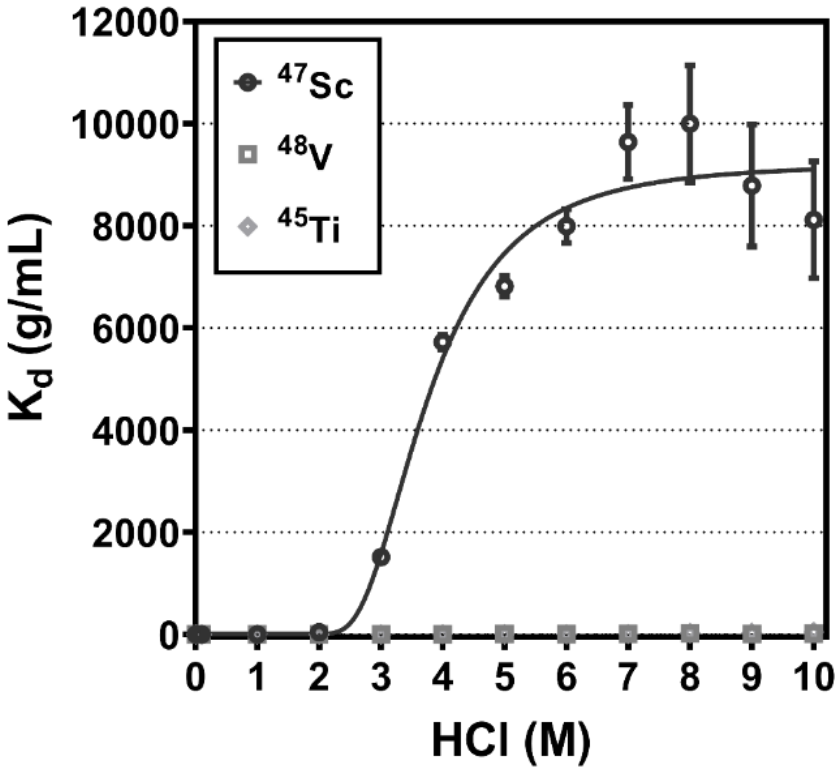
Supplemental Figure 2. LNCaP (PSMA+) and PC3 (PSMA-) cells were seeded in 24-well plates in 0.5mL/well of RPMI+ (RPMI-1640 containing 10% FBS) and incubated for 48h at 37°C in 5% CO_2 at a concentration of $1x10^5$ cells/well and $0.5x10^5$ cells/well, respectively. The supernatant was removed and the cells were washed once with warm PBS before addition of 0.5mL of RPMI+ containing 2.0nM of each radioligand (10MBq/nmol) or 0.5mL of RPMI+ containing a mixture of 2.0nM of each radioligand and 100µM of 2-PMPA. The sample size for each blocking and non-blocking cell line was six. The cells were incubated for 2 and 4h at 37°C in a 5% CO_2 atmosphere, washed twice with 0.5mL of ice-cold PBS, and lysed with 200uL 0.2N. The lysate was transferred into a 1.5mL centrifuge tube. Each tube was measured in a gamma counter. The results were

expressed as percentage of the ratio of cell-associated activity to activity added to each well and graphs were prepared using GraphPad Prism software (v.7.0).

Supplemental Figure 3. The predicted yield of Sc radioisotopes based on the irradiation of a 100% enriched 1mm thick TiO_2 target at 1, 4 and 24h. The yields were based on an entry and exit proton energy of 24 and 15.5MeV at 20μA and published cross section data (*6,17,22,23*). The nuclear reactions modeled were $^{46}Ti(p,\alpha)^{43}Sc$, $^{47}Ti(p,\alpha)^{44g}Sc$, $^{47}Ti(p,\alpha)^{44m}Sc$, $^{50}Ti(p,\alpha)^{47}Sc$ and $^{48}Ti(p,2p)^{47}Sc$.

Time	^{43}Sc(GBq)	^{44g}Sc(GBq)	^{44m}Sc(MBq)	^{47}Sc(MBq)
1h	2.1	2.6	70	60*****
				30†
4h	6.5	8.2	270	230*****
				130†
24h	12.6	16.1	1500	1200*****
				700†

*****Predicted yield from $^{50}Ti(p,\alpha)^{47}Sc$
†Predicted yield from $^{48}Ti(p,2p)^{47}Sc$



Supplemental Figure 4. A mixture of 100mg BDGA resin, 990µL of HCl (0.1 to 10M) and 10µL of ^{48}V (100kBq/mL), ^{47}Sc (500kBq/mL) or ^{45}Ti (222MBq/mL) were prepared in quadruplicate to determine the average (n=4±1σ) K_d. Each sample was equilibrated on a rocker for 24h after which the supernatant was removed and filtered with a 0.22µm hydrophilic membrane filter. A 100µL aliquot of the filtered supernatant was diluted to 1mL with water for each sample and measured with an HPGe detector. Likewise, a 100µL aliquot of the filtered supernatant was diluted to 10mL with 2% HNO_3 for each sample and measured via ICP-MS. At an HCl concentration of 6 to 10M, no photopeak was observed for ^{47}Sc. The minimum detectable radioactivity (MDA) for ^{47}Sc was calculated based on a 2h measurement of the supernatant. These MDA quantities were used to calculate the K_d for these samples.