Supplementary Information

Image-Guided Nanodelivery of Pt(IV) Prodrugs to GRP-Receptor Positive Tumors

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Figure S 1. Schematic synthesis of the pegylated thioctic acid precursors.



Figure S 2. A. TA-Pt1: $m/z [C_{13}H_{27}Cl_2N_3O_5PtS_2H]^+$: calc. = 636.0; found = 636.2, $[C_{13}H_{27}Cl_2N_3O_5PtS_2-Na]^+$: calc. = 658.0; found = 658.2. **B. TA-Pt2**: m/z: $[C_{20}H_{40}PtCl_2N_4O_8S_2H]^+$ calc. = 795.1; found = 795.3 $[C_{20}H_{40}PtCl_2N_4O_8S_2Na]^+$ calc. = 817.1; found = 817.2.







Figure S 3. Characterization of the thioctic acid-containing Pt(IV) prodrug **TA-Pt1** by multinuclear ¹H, ¹³C and ¹⁹⁵Pt NMR analysis in DMSO-d₆.



13C-NMR 1H-NMR 1H_std DMS0 [re] 1219.7 1053.8 172.0965 180.0149 178.1845 69.5193 69.1681 69.0724 5 0.8512 8.6951 8.6705 8.4467 8.0987 <4.0945 1724 - 2.7292 - 2.6346 4408 4151 3889 2889 2766 2766 0784 0638 0638 8788 8788 8788 8798 8708 8519 65173 65173 65173 65173 65173 55173 55173 5574 74877 5574 74877 5574 74877 5574 74877 5574 74877 55747 55747 55747 55747 55757 55777 577755 57775 5 - 3.3899 2-Т Т 0.1 195Pt-NMR 0.8 6 0.6 6.4 1 8. 0 0.2 0.0 3.5 2.5 4.0 3.0 (ppm) 2.0 COSY HSQC 19 06 19 TA-PEG2-Pt HSQC DMSO 19 06 19 19 06 19 TA-PEG2-Pt COSY DMSO 19 06 19 35 f1 (ppm) 3.0 -20 . 5.5 3.5 3.0 f2 (ppm) 2.5 2.0 4.1 2.5 f2 (ppm)

Figure S 4. Characterization of theathioctic acid-containing Pt(IV) prodrug **TA-Pt2** by multinuclear ¹H, ¹³C and ¹⁹⁵Pt NMR analysis in DMSO-d₆.



Figure S 5. TEM imaging of the Pt(IV) prodrug-containing AuNPs.



Figure S 6. iTLC radiochromatograms of ⁶⁷Ga-AuNP-BBN-Pt2 and ⁶⁷Ga-AuNP-BBN-Pt3.



Figure S 7. Binding Affinity curves and IC_{50} values of the Pt(IV) prodrug-containing AuNPs obtained by competitive binding assay using PC3 cells and [¹²⁵I-Tyr4]BBN as the GRPR-specific radioligand.

Table S 1. Biodistribution data of ⁶⁷Ga-AuNP-BBN-Pt1 in PC3 xenograft model, upon bolus intratumoral administration, performed at 1, 24 and 72 h post-administration.

Organ	% Injected Dose/organ			
	1 h	24 h	72 h	
Blood	3.4 ± 0.7	1.29 ± 0.02	0.43 ± 0.08	
Liver	0.7 ± 0.3	7.0 ± 0.9	4.7 ± 0.6	
Intestine	0.9 ± 0.4	3.1 ± 0.2	2.3 ± 0.2	
Spleen	0.04 ± 0.01	0.43 ± 0.01	0.17 ± 0.02	
Heart	0.14 ± 0.01	0.05 ± 0.01	0.06 ± 0.01	
Lung	0.16 ± 0.07	1.1 ± 0.2	0.20 ± 0.07	
Kidney	0.3 ± 0.1	1.1 ± 0.1	1.3 ± 0.1	
Muscle	2.3 ± 1.0	2.2 ± 0.1	2.5 ± 0.3	
Bone	0.9 ± 0.3	4.6 ± 0.7	8.3 ± 1.0	
Stomach	0.13 ± 0.05	0.28 ± 0.03	0.25 ± 0.02	
Pancreas	0.08 ± 0.02	0.19 ± 0.06	0.22 ± 0.09	
Brain	0.03 ± 0.01	0.05 ± 0.01	0.04 ± 0.01	
Tumor	77.5 ± 0.7	34.3 ± 1.6	25.6 ± 10.6	
Excretion	2.2 ± 1.0	34.5 ± 0.8	40.7 ± 2.6	