

Publications listed in Table S1 and Table S2 were obtained from a database query of SciFinder® (www.cas.org/products/scifinder) and Google Scholar® (www.scholar.google.com) on 2015-May-30 (see Figure 1a,b of the main manuscript for more details).

S1 Table: Nanoparticle tumour delivery efficiency

Material	Hydro-dynamic diameter [nm]	Shape	Surface chemistry	Zeta potential [mV]	Tumour model and animal	Tumour stage	Number of time points (total time period, p.i.)	AUC _{Tumour} [%ID·h/g] ^(a)	Tumour uptake [%ID/g] ^(b)	Delivery efficiency [%ID] ^(c)	Ref.
Gold	26 38 x 10 (TEM)	AR 3.8 Rods	PEG_5kDa	-18	Human cervical carcinoma (HeLa) s.c. inoculated to flank of mice	Volume:	3 (168 h)	2440.8	16.4	2.0	1
						~100 mm ³					
						Mass: ~0.1 g					
Gold	3	Spherical	Glutathione-coated	-4	Murine cervical carcinoma (U14) s.c. inoculated to right shoulder of mice (*)	Volume:	8 (72 h)	378. 1	5.3	0.7	2
						~110 mm ³					
						Mass: ~0.1 g					

Gold	6	Spherical	Glutathione/PEG_2kDa coated; Folic acid	-5	Human gastric cancer (MGC-803) s.c. inoculated to right flank of mice	Volume: ~175 mm ³ Mass: ~0.2 g	6 (168 h)	1.4	<0.1 (1E-2)	<0.1 (2E-3)	3
Gold	42	Spherical	PEG_5kDa and EGF peptide	-5	Rat glioma (9L.E29) s.c. inoculated to flank of mice	Volume ~251 mm ³	3	567.8	3.4	1.0	4
	38		PEG_5kDa	-5		Mass: ~0.3 g	(168 h)	584.8	3.5	1.1	
Gold	68	Star	PEG_2kDa and aptamer AS1411	-9	Metastatic human breast cancer (MDA-MB-231) s.c. inoculated to right flank of mice	Volume: ~500 mm ³ Mass: ~0.6 g	3 (72 h)	224.4	3.1	2.0	5
Gold	46	Spherical	PEG_5kDa and PEG_10kDa-	-7	Human melanoma (MDA-MB-435) s.c.	Volume:	6	890.0	18.5	14.0	6

			Alexa Fluor 750	-15	inoculated to hind flank of mice	~630 mm ³		680.0	14.2	11.0	
	64						(48 h)				
	104			-10		Mass:		520.0	10.8	8.2	
	166			-6		~0.8 g		241.0	5.0	3.8	
	50			-1				1200.0	25.0	18.9	
	60		PEG_5kDa and transferrin	-11				980.0	20.0	15.1	
	100		PEG_10kDa-Alexa Fluor 750	-9				1010.0	21.0	15.9	
	176			-5				400.0	8.3	6.3	
Gold	7	Spherical	Human serum albumin	Not reported	Human glioblastoma (U-87MG) s.c. inoculated to front flank of mice	Volume: ~75 mm ³	5	303.5	12.6	1.1	7
						Mass:	(24 h)				
						~0.1 g					

Gold	27 (TEM)	Spherical	Choline and PEI	Not reported	Human prostate cancer (DU145) s.c. inoculated to flank of mice	Volume:	5	4.2	0.2	0.1	8
						~300 mm ³					
						Mass: ~0.4 g					
Gold	17	Spherical	Trimethylamm onium and sulfonic groups	-10	Human carcinoma (KB) s.c. inoculated to right rear flank of mice	Volume:	3	670.8	9.3	1.1	9
						~100 mm ³					
						Mass: ~0.1 g					
Gold	31	Spherical	PEG_2kDa	-11	Human glioblastoma (U-87MG) s.c. inoculated to right front flank or right hind flank of mice	Volume:	4	79.5	1.7	0.3	10
						~300 mm ³					
						Mass: ~0.4 g					
Gold	18	Tripod	PEG_2kDa	25	Human glioblastoma (U-87MG) s.c. inoculated to right front flank or right hind flank of mice	Volume:	4	98.4	2.1	0.7	10
						~300 mm ³					
						Mass: ~0.4 g					
Gold	21	Tripod	PEG_3.4kDa	25	Human glioblastoma (U-87MG) s.c. inoculated to right front flank or right hind flank of mice	Volume:	4	128.7	2.7	1.0	10
						~300 mm ³					
						Mass: ~0.4 g					
Gold	26	Tripod	PEG_6kDa	22	Human glioblastoma (U-87MG) s.c. inoculated to right front flank or right hind flank of mice	Volume:	4	359.0	7.5	2.7	10
						~300 mm ³					
						Mass: ~0.4 g					
Gold	24	Tripod	RGD	-21	Human glioblastoma (U-87MG) s.c. inoculated to right front flank or right hind flank of mice	Volume:	4	359.0	7.5	2.7	10
						~300 mm ³					
						Mass: ~0.4 g					

Gold	30	AR 3.2	PEG_5kDa	~0	Murine colon carcinoma (CT26.wt) s.c. inoculated to flank of mice	Volume:	3	15.7	0.3	0.1	11
	(14 x 45) TEM	Rods				~120 mm ³					
						Mass: ~0.1 g					
Gold	70	Spherical	PEG_5kDa	~0	Murine mammary carcinoma (EMT-6) s.c. inoculated to right flank of mice	Volume: ~100 mm ³	3	349.2	14.6	1.8	12
	125	Disk						93.6	3.9	0.5	
	92 x7 (TEM)										
	75	AR 4.3						27.5	1.1	1.1	
	39 x 9	Rods									
	125	Cubic nanocages						124.9	5.2	0.6	

Gold	6	Spherical	PEG_1kDa	~0	Human breast cancer (MCF-7) orthotopically inoculated to mammary fat pad of mice	Volume: ~180 mm ³ Mass: ~0.2 g	4 (48 h)	275.2	5.7	1.2	13
Gold	31	Spherical	Plasma-polymerized allylamine and cetuximab antibody	Not reported	Human epithelial carcinoma (A431) s.c. inoculated to flank of mice	Volume: ~300 mm ³ Mass: ~0.4 g	6 (168 h)	618.2	3.7	1.3	14
Gold	96 <hr/> 64	Cubic	PEG_5kDa <hr/> PEG_5kDa	19 <hr/> 10	Murine mammary carcinoma (EMT-6) s.c. inoculated to hind flank of mice	Volume: ~290 mm ³ Mass: ~0.4g	3 (24 h)	31.0 <hr/> 167.4	1.3 <hr/> 7.0	0.5 <hr/> 2.4	15

Gold	60	Spherical	PEG_5kDa	-11	Human prostate cancer (LNCaP) s.c. inoculated to hind limb of mice	Volume:	3	2.5	0.1	<0.1 (3E-2)	16	
	72		PEG_5kDa and TNF- α protein	-3		~270 mm ³		52.5	2.2	0.7		
	67		PEG_5kDa	-3		Mass: ~0.3g		(24h)	61.1	2.6		0.8
	63		Carboxy-PEG_5kDa	-27		57.2		2.4	0.8			
Gold	63	Spherical	PEG_5kDa	Not reported (neutral ZP is assumed)	Lymphoblastoid (LCL) tumour cells s.c. inoculated to right flanks of mice	Volume: ~63 mm ³	4	727.2	15.2	0.2	17	
Gold	61 x 15 (TEM)	AR 4.0 Rods	PEG_5kDa and RGDfK peptide	-44	Human prostate cancer (DU145) s.c. inoculated bilaterally to flank of mice	Volume: ~75 mm ³ per tumour (2 tumours)	3 (48 h)	60.7	1.3	0.2	18	

per mouse)									

	83		PEG_10kDa					20.4	0.9	1.0	
	99		PEG_10kDa					17.9	0.8	0.9	
Gold iron oxide heterostructure	24	Spherical	PEG_2kDa and anti-EGFR small Affibody protein	-29	Human epithelial carcinoma (A431) subcutaneously inoculated to right shoulders of mice	Volume: ~220 mm³ Mass: ~0.3 g	5 (48 h)	179.2	3.7	1.0	21
Iron oxide	(16) TEM	Spherical	Silica coating, PEG, Trastuzumab antibody	Not reported	Human breast cancer (SkBr3) s.c. inoculated to flank of mice	Volume: ~65 mm³ Mass: ~0.1 g	3 (48 h)	421.8	8.8	0.7	22

Iron oxide	140	Spherical	Starch shell modified with PEG_1kDa and PSMA antigen	-12	PSMA+ PIP and PSMA- flu s.c. inoculated to opposite front flanks of mice	Volume: ~140 mm ³ Mass: ~0.2 g	5 (96 h)	275.5	2.9	0.5	²³ (+)
Iron oxide	161	Spherical	Biotin	-6	Human glioblastoma (U-87MG) s.c. inoculated to right thigh of mice	Volume: ~130 mm ³ Mass: ~0.2 g	4 (24h)	14.4	0.6	0.1	²⁴
Iron oxide	49 54	Spherical	Dextran Folic acid	-7 -9	Human nasopharyngeal epidermal carcinoma (KB) s.c. inoculated to right hind leg of mice	Volume: ~1.6 cm ³ Mass: ~1.9 g	3 (24h)	4.1 13.4	0.2 0.6	<0.1 (3E-2) 0.1	²⁵

Iron oxide	68	Spherical	PEG_5kDa	Not reported	Human glioblastoma (U-87MG) s.c. inoculated to front flank of mice	Volume: ~180 mm ³	5	123.4	2.6	0.6	26
	Not reported		PEG_5kDa and cRGD peptide	Not reported		Mass: ~0.2 g	(48 h)	258.3	5.4	1.2	
Iron oxide	51	Spherical	Human serum albumin	Not reported	Murine breast cancer (4T1) s.c. inoculated to right flank of mice	Volume: ~500 mm ³	3	48.9	2.0	1.2	27
						Mass: ~0.6 g	(24 h)				
Silica	226	Spherical	PEG_5kDa-cRGDyK-peptide	-4	Human glioblastoma (U-87MG) s.c. inoculated to front flank of mice	Volume: ~125 mm ³	4	108.9	6.1	1.3	28
	220		PEG_5kDa	-4		Mass: ~0.2 g	(18 h)	63.5	3.5	0.8	

Silica	75	Spherical	Polypyrrole	-10	Murine breast cancer (4T1) s.c. inoculated to right rear flank of mice	Volume:	3	116.6	4.9	0.4	29
						~65 mm ³					
						Mass: ~0.1 g					
Silica	125	Spherical	PEG_5kDa-Maleimide	-11	Human glioblastoma (U-87MG) s.c. inoculated to front flank of mice	Volume:	4	49.6	2.3	0.2	30
						~70 mm ³					
	129		PEG_5kDa and VEGF ₁₂₁	-10		Mass: ~0.1 g		138.5	6.3	0.4	
Silica	190	Spherical	PEG_5kDa-Maleimide	-5	Murine breast cancer (4T1) s.c. inoculated to front flank of mice	Volume:	4	72.2	3.0	0.5	31
						~144 mm ³					
	194		PEG_5kDa and TRC105	-4		Mass: ~0.2 g		182.7	7.6	1.4	

Silica	Not reported	Spherical	PEG_5kDa	Not reported	Murine breast cancer (4T1) s.c. inoculated to front flank of mice	Volume: ~144 mm ³	5	95.8	2.0	0.3	32
	175		PEG_5kDa and TRC105(Fab)	-3		Mass: ~0.2 g	(48 h)	193.9	4.0	0.7	
Silica	7	Spherical	PEG_0.5kDa	~0	Human melanoma (M21) s.c. inoculated to hind legs of mice	Volume: ~200 mm ³	3	33	0.3	0.1	33
	7		PEG_0.5kDa and cRGDY peptide	-3		Mass: ~0.2 g	(96 h) 5 (168 h)	127.8	0.8	0.2	
Silica	168	Spherical	PEG_10kDa and TRC105 antibody	-3	Murine breast cancer (4T1) s.c. inoculated to front flank of mice	Volume: ~140 mm ³	6	220.6	4.6	0.8	34
	142		PEG_5kDa	1		Mass: ~0.2 g	(48 h)	118.3	2.5	0.4	

Silica-coated gold	42	AR 1.4 Rods	Silica and PEG_2kDa	~0	Murine breast cancer (4T1) s.c. inoculated to right hind leg of mice	Volume: ~500 mm ³ Mass: ~0.6 g	3 (72 h)	86.3	1.2	0.7	35
	44	AR 1.4 Rods	Silica , PEG_2kDa, and BSA	-14				44.5	0.6	0.4	
	20	AR 4.0 Rods	BSA	-20				28.0	0.4	0.2	
	7	Spherical	BSA	-24				57.5	0.8	0.5	
CuS nanoparticles encapsulated in mesoporous silica shells	155	Spherical	PEG_5kDa- TRC105	-3	Murine breast cancer (4T1) s.c. inoculated to front flank of mice	Volume: ~144 mm ³ Mass: ~0.2 g	3 (24 h)	120.8	5.0	0.9	36
	155		PEG_5kDa	-3				24.4	1.0	0.2	

Silica-coated Mn ₃ O ₄	53	Spherical	PEG_3kDa and AS411 aptamer	-12	Human cervical carcinoma (HeLa) s.c. inoculated to left flank of mice	Volume: ~700 mm ³ Mass: ~0.8 g	4 (24 h)	105.4	4.4	3.7	37
NaGdF ₄	32	Spherical	PEG_2kDa and (cRGDyk) ₂	Not reported	Human glioblastoma (U-87MG) s.c. inoculated to right shoulder region of mice	Volume: ~1.8 cm ³ Mass: ~2.1 g	3 (22 h)	43.6	2.0	4.2	38
MoS ₂ /Fe ₃ O ₄	190	Flake	PEG_0.4kDa	-22	Human pancreatic carcinoma (PANC-1) s.c. inoculated to backside of mice	Volume: ~100 mm ³ Mass: ~0.1 g	5 (168 h)	308.8	1.8	0.2	39

Bi ₂ Se ₃	60	Plate	Poly(vinylpyrrolidone)	-17	Murine cervical carcinoma (U14) s.c. inoculated to right shoulder of mice (*)	Volume: ~115 mm ³	7	420.2	5.8	0.8	40
						Mass: ~0.1 g	(72 h)				
Calcium phosphate	80	Spherical	PEG ₁₂ kDa- <i>b</i> -PAsp	~0	Murine colon adenocarcinoma (C-26) s.c. inoculated in mice	Volume: ~100 mm ³	4	74.2	3.1	0.4	41
						Mass: ~0.1 g	(24 h)				
MnO	100	Spherical	PEG ₂ kDa and cRGD peptide	3	Human adenocarcinomic alveolar basal epithelial (A549) s.c. inoculated to right flank of mice	Volume: ~65 mm ³	3	183.1	45.8	3.6	42
						Mass: ~0.1 g	(4 h)				

Zinc oxide	101	Spherical	PEG_5kDa-TRC105	-11	Murine breast cancer (4T1) s.c. inoculated to front flank of mice	Volume:	4	128.1	5.3	1.2	43
	83		PEG_5kDa	-27		~180 mm ³					
						Mass:	(24 h)	50.3	2.1	0.5	
						~0.2 g					
Quantum dots	23	Spherical	DOTA-VEGF protein	Not reported	Human glioblastoma (U-87MG) s.c. inoculated to front flank of mice	Volume:	4	79.8	3.3	1.4	44
			DOTA			~350 mm ³					
						Mass:	(24)	17.0	0.7	0.3	
						~0.4 g					
Quantum dots	~20	Spherical	DOTA, PEG, and RGD	Not reported	Human glioblastoma (U-87MG) s.c. inoculated to left front flank of mice	Volume:	4	73.7	3.0	1.2	45
	~20		DOTA, PEG	Not reported		~350 mm ³					
						Mass:	(25 h)	12.5	0.5	0.4	
						~0.4 g					
Quantum dot – liposome	39	Spherical	PEG_2kDa-COOH	-8	Murine skin melanoma (B16-F10) s.c.	Volume:	3	225.5	3.1	0.9	46

hybrids					inoculated to right flank of mice		~250 mm ³				
	113		DOPC:Chol:D OTAP	54				(72 h)	89.9	1.3	0.4
							Mass:				
	108		DOPC:Chol:D SPE- PEG_2kDa	-28			~0.3 g		145.2	2.0	0.6
	110		DSPC:Chol:DS PE-PEG_2kDa	-25					274.2	3.8	1.1
Hydrogel iron oxide hybrid	20	Spherical	DOTA, PEG, and ChL6 mAb	Not reported	Human breast adenocarcinoma (HBT3477) s.c. inoculated on both sides of the abdomen of mice	Volume:					
	(core size; TEM)					~238 mm ³	4		829.2	8.6	2.5
						Mass:	(96 h)				47
						~0.3 g					
Polymeric	37	Spherical	PLG160-g- PEG_5kDa	-9	Lewis lung carcinoma (LLC) s.c. inoculated to right flank of mice	Volume:					
						~170 mm ³	5		1.3	0.1	<0.1
						Mass:	(48 h)				(1E-2)
						~0.2 g					48

Polymeric	71	Spherical	Hydrazine, PEG_2kDa and folic acid	4	Murine breast cancer (4T1) s.c. inoculated to right back of mice	Volume:		250.9	10.5	0.6	49
	87		Carbamate, PEG_2kDa and folic acid	2		~50 mm ³	5	195.7	8.2	0.5	
	64		mPECL	3		Mass: ~0.06 g	(24 h)	92.5	3.9	0.2	
Polymeric	72	Spherical	Cy7-labeled mPEG_5kDa- b-p-(HPMAm- Bz)	-1	Human epidermoid carcinoma (A431) s.c. inoculated to right flank of mice	Volume:		551.9	11.5	2.0	50
	72		Cy7-labeled mPEG_5kDa- b-p-(HPMAm- Bz) and Cy5.5 model drug	-1		Mass: ~0.2 g	(48 h)	464.0	9.7	1.7	
Polymeric	268	AR 4.0 Rods	PEG_5Da	-37	Non-small cell lung (A549-luc) orthotopically inoculated in mice	Volume: ~200 mm ³	6	2.7	<0.1 (4E-2)	<0.1 (1E-3)	51

					Human ovarian adenocarcinoma (SKOV-3) s.c. inoculated to left flank of mice	Mass: ~0.2 g	(72 h)	4.0	<0.1 (1E-2)	<0.1 (2E-3)			
Polymeric	22	Spherical	Pluronic P105, F127	-1	Human breast cancer (MCF-7/ADR) s.c. inoculated to right hind leg of mice	Volume: ~270 mm ³	7	28.7	0.6	0.1	52		
						Mass: ~0.3 g							
						(48)							
Polymeric	165	Spherical	PTC- <i>b</i> -PGA (vesicle)	-28	Human renal carcinoma (MRI- H-121) s.c. inoculated in mice	Volume: ~175 mm ³	6	20.1	0.8	0.2	53		
						Mass: ~0.2 g							
						(24 h)							
Polymeric	164	Spherical	PEG- <i>b</i> -PBLG (micelle)	-6				18.0	0.8	0.2			

Polymeric	124	Spherical	Poly- γ -glutamic acid and folic acid	-28	Hepatocellular carcinoma (HeDe) implanted to left kidney of rats	Volume: ~1.2 cm ³	4	22.6	0.9	1.1	54
						Mass: ~1.2 g	(24 h)				
Polymeric	62	Spherical	PEG_2kDa	-22	Human epidermoid carcinoma (A431) s.c. inoculated in mice	Volume: ~30 mm ³	3	0.1	<0.1 (1E-2)	<0.1 (2E-4)	55
	100		PEG_2kDa and C225 cetuximab antibody	-30		Mass: ~0.04 g	(8 h)	0.1	<0.1 (2E-2)	<0.1 (1E-3)	
Polymeric	227	AR 4.0 Rods	PLGA	-3	Human ovarian adenocarcinoma (SKOV-3) s.c. inoculated to right flank of mice	Volume: ~150 mm ³	6	257.2	1.5	0.3	56
	263	Cubic	PLGA	-3		Mass: ~0.2 g	(168 h)	297.1	1.8	0.3	

Polymeric	216	AR 4.0 Rods	PLGA 20% docetaxel	-3	Human adenocarcinomic alveolar basal epithelial (A549) s.c. inoculated to right flank of mice	Volume: ~150 mm ³	6	43.2	0.3	0.1	57
	216	AR 4.0 Rods	PLGA 9% docetaxel	-3		Mass: ~0.2 g	(168 h)	60.0	0.4	0.1	
Polymeric	274	Spherical	PEG_2kDa and folic acid	-12	Metastatic human breast cancer (MDA-MB-231) s.c. inoculated to right flank of mice	Volume: ~180 mm ³	6	0.7	0.1	<0.1 (1E-2)	58
	217		PLGA	-14		Mass: ~0.2 g	(12 h)	0.2	<0.1 (2E-2)	<0.1 (4E-3)	
Polymeric	30	Spherical	DACHPt- loaded micelles	-2	Human pancreatic adenocarcinoma (BxPC3) s.c. inoculated in mice (TGF- β treated)	Volume: ~100 mm ³	3	173.8	7.2	0.9	59
	69		PEG-b-P(Glu) copolymer and P(Glu) homopolymer	-1		Mass: ~0.1 g	(24 h)	138.0	5.8	0.7	

					Murine colon adeno- carcinoma (C-26) s.c. inoculated in mice			161.1	6.7	0.8	59	
				30	-2							
					Human pancreatic adenocarcinoma (BxPC3) s.c. inoculated in mice			197.3	8.2	1.0		
Polymeric	54	Spherical	DACHPt- loaded micelles PEG-b-P(Glu) copolymer and P(Glu) homopolymer	-2	Murine colon adeno- carcinoma (C-26) s.c. inoculated in mice	Volume: ~100 mm ³	4	163.9	6.8	0.8		
					Human pancreatic adenocarcinoma (BxPC3) s.c. inoculated in mice	Mass: ~0.1 g		(24 h)	125.5	5.2		0.6
					Murine colon adeno- carcinoma (C-26) s.c. inoculated in mice				182.0	7.6		0.9
					Human pancreatic adenocarcinoma (BxPC3) s.c. inoculated in mice				77.8	3.2	0.4	
				69	-1							

				Murine colon adenocarcinoma (C-26) s.c. inoculated in mice			137.7	5.7	0.7		
110		~0									
				Human pancreatic adenocarcinoma (BxPC3) s.c. inoculated in mice			76.6	3.2	0.4		
Polymeric	37	Spherical	PEG_5kDa and TRC105	Not reported	Murine breast cancer (4T1) s.c. inoculated to front flank of mice	Volume: ~180 mm ³	6	203.6	4.2	0.9	60
	37		PEG_5kDa	Not reported		Mass: ~0.2 g	(48 h)	109.8	2.3	0.5	
Polymeric	89	Spherical	Crosslinked, PEG_10kDa, and tyrosine	0	Murine colon adenocarcinoma (C-26) s.c. inoculated to back of mice	Volume: ~100 mm ³	5	65.2	2.7	0.3	61
	87		Non-crosslinked, PEG_10kDa, and tyrosine	-1		Mass: ~0.1 g	(24 h)	41.1	1.7	0.2	

Polymeric	64	Spherical	PEG	~0	Human carcinoma (KB) transplanted to abdominal region of mice	Volume: ~100 mm ³	6	132.7	5.5	0.6	62
	68		PEG and 5% folic acid	-1				117.1	4.9	0.5	
	69		PEG and 10% folic acid	-2				143.6	6.0	0.6	
	73		PEG and 25% folic acid	-2		Mass: ~0.1 g	(24 h)	135.5	5.6	0.6	
	77		PEG and 50% folic acid	-7				155.1	6.5	0.7	
	91		PEG and 100% folic acid	-9				147.9	6.2	0.6	
Polymeric	35	Spherical	PEG_12kDa	-2	Murine colon adenocarcinoma (C-26) s.c. inoculated in mice	Volume: ~167 mm ³	6	591.9	8.2	1.6	63

Polymeric	23	Spherical	PEG_0.4kDa and cRGD	Not reported (neutral ZP is assumed)	Metastatic mammary clone-66 (Cl-66) inoculated to mammary fat pad of mice	Volume: ~0.625 mm ³ Mass: ~0.8 g	5 (120 h)	717.5	6.0	4.5	64
Polymeric	35	Spherical	PEG_12kDa	-2	Murine colon adenocarcinoma (C-26) s.c. inoculated in mice	Volume: ~100 mm ³ Mass: ~0.1 g	7 (48 h)	449.5	9.4	1.1	65
Polymeric	208	Spherical	PLGA and PbAE (PTX containing)	-27	Athymic nu/nu female mice Human breast cancer (MCF-7) orthotopically inoculated to mammary fat pad of mice	Volume: ~140 mm ³ Mass:	4 (12 h)	6.0	0.5	0.1	66

					Human breast cancer (MCF-7 _{TR}) orthotopically inoculated to mammary fat pad of mice	~0.2 g		3.3	0.3	0.1	
					Human breast cancer (MCF-7) orthotopically inoculated to mammary fat pad of mice			22.5	1.9	0.4	
	208		PLGA and PbAE (CER) containing	-27	Human breast cancer (MCF-7 _{TR}) orthotopically inoculated to mammary fat pad of mice			11.0	0.9	0.2	
Polymeric	222	Spherical	Pyrene-ended poly(DL-lactic acid)	Not reported	Sarcoma-180 s.c. inoculated to axillary region of mice	Volume: ~350 mm ³ Mass: ~0.4 g	4 (48 h)	212.2	4.4	1.9	67

Polymeric	Not reported	Spherical	PEG_1.5kDa and folic acid	Not reported	Human nasopharyngeal epidermal carcinoma (KB) s.c. inoculated to the nape of the neck of mice	Volume: ~80 mm ³	4	103.0	4.3	0.4	68
	20		Poly(acrylic acid)	Not reported		Mass: ~0.1 g		132.2	5.5	0.6	
Polymeric	150	Spherical	PLGA	-16	Ehrlich ascites tumour (EAT) intramuscularly inoculated to thigh of right hind leg of mice	Volume: ~1.0 cm ³	4	19.0	0.8	1.0	69
						Mass: ~1.2 g					
Polymeric	168	Spherical	RhB-CMCNP- PS	-12	Murine hepatocellular carcinoma (H22) s.c. inoculated to axillary region of mice	Volume: ~100 mm ³	6	511.6	21.3	2.6	70
	175		RhB-CMCNP- PS	-19		Mass: ~0.1 g		407.5	17.0	2.0	

165	RhB-CMCNP-PS	-33	375.5	15.6	1.9
514	RhB-CMCNP-PS	-21	166.3	6.9	0.8
150	RhB-CMCNP-CPT	15	93.0	3.9	0.5
151	RhB-CMCNP-CPT	26	141.6	5.9	0.7
153	RhB-CMCNP-CPT	35	188.7	7.9	0.9

	301		RhB-CMCNP-CPT	24				84.8	3.5	0.4	
Polymeric	40	Spherical	PEG- <i>b</i> -P(Glu)12-40	-4	Murine colon adeno-carcinoma (C-26) s.c. inoculated in mice	Volume: ~100 mm ³ Mass: ~0.1 g	6 (72 h)	562.1	7.8	0.9	71
Polymeric	399	Spherical	PEI_25kDa	38	Ehrlich ascites tumour (EAT) s.c. inoculated to hind left flank of mice	Volume: ~1.8 cm ³ Mass: ~2.1 g	4 (24 h)	6.9	0.3	0.6	72
	276		Chondroitin sulfate-PEI	16				36.5	1.5	3.2	
Graphene oxide	37	Flake	NOTA, PEG_5kDa, and TRC105	-2	Murine breast cancer (4T1) s.c. inoculated to front flank of	Volume:	6	224.4	4.7	1.0	73

				mice	~180 mm ³					
	26		NOTA, PEG_5kDa	-16		(48 h)	Mass:	104.2	2.2	0.5
							~0.2 g			
Graphene oxide	22		NOTA, PEG_10kDa	-9			Volume:	104.2	2.2	0.5
					Murine breast cancer (4T1) s.c. inoculated to front flank of mice	~180 mm ³	5			
	27	Flake	NOTA, PEG_10kDa, and TRC105	~0			Mass:	(48 h)	200.9	4.2
							~0.2 g			0.9
Graphene oxide	90						Volume:			
	50 x 2	Flake	PEG_4kDa	-30	Murine melanoma (B16) s.c. inoculated to right arm of mice	~200 mm ³	6			
	(AFM)						Mass:	(24 h)	224.5	9.4
							~0.2 g			2.2
Graphene oxide	28	Flake	PEG_5kDa	-10	Human glioblastoma (U-87MG) s.c. inoculated to flank	Volume:	6	143.1	3.0	0.2

				of mice	~65 mm ³								
						(48 h)							
33		PEG_5kDa and VEGF ₁₂₁		-5		Mass:		244.9	5.1	0.4			
						~0.1 g							
Graphene	27	Flake	NOTA-TRC105 antibody	~0	Murine breast cancer (4T1) s.c. inoculated to front flank of mice	Volume:	4	117.9	4.9	0.9	77		
	22		NOTA	-10		Mass:		(24 h)	77.4	3.2		0.6	
						~0.2 g							
Single-walled carbon nanotubes	200 nm x 3 nm (AFM)	AR 67 Rods	PEG_2kDa	Not reported	Human glioblastoma (U-87MG) s.c. inoculated to left front legs		5	63.1	2.6	0.8	78		
			PEG_2kDa and RGD peptide			Volume:			89.7	3.7		1.1	
			PEG_5.4kDa			Mass:		(24 h)	100.5	4.2		1.3	
						~0.3 g							
								290.4	12.1	3.6			

Liposomes	96	Spherical	DPPC, cholesterol, DSPE- PEG_2kDa, Iohexol, GH680	-60	Human cervical carcinoma (ME180) orthotopically inoculated in mice	Volume: ~500 mm ³ Mass: ~0.6 g	10 (120 h)	376.8	3.14	1.9	79
Liposomes	79	Spherical	PEG_2kDa	-36	GEMMs of strain of FVB/n mice carrying a transgene for C3(1)S40 T- antigen (C3-TAg)	Volume: ~80 mm ³ Mass: ~0.1 g	9	400.0	4.2	0.4	80
					Tumours derived from BALB/c TP53- /- transplanted into inguinal mammary fat pad of mice	Volume: ~65 mm ³ Mass: ~0.1 g	(96 h)	175.0	1.8	0.2	
Liposomes	102	Spherical	PEG_2kDa and SCL	-23	Murine breast cancer (4T1) s.c. inoculated	Volume:	3	449.1	9.4	2.3	81

					in mice	~200 mm ³							
							(48 h)						
	103		PEG_2kDa and CLL	-13		Mass:		81.5	1.7	0.4			
						~0.3g							
							Volume:						
						~600 mm ³	3						
Liposomes	386	Spherical	Alendronate- hyaluronate graft polymer	20	Ehrlich ascites tumour (EAT) s.c. inoculated to hind right flank of mice			56.8	2.4	1.7	82		
						Mass:	(24 h)						
						~0.7 g							
						Volume:							
						~300 mm ³	4						
Liposomes	85	Spherical	PEG	1	Human non-small lung cancer (H292-GT) s.c. inoculated to left hind limb of mice			433.0	9.0	3.3	83		
						Mass:	(48 h)						
						~0.4 g							

Liposomes	120	Spherical	DSPE-PEG_2kDa	Not reported (neutral ZP is assumed)	Syngeneic MET1 carcinomas transplanted to mammary fat pad of mice	Volume:	4	218.8	4.6	1.0	84
						~180 mm ³					
						Mass: ~0.2 g					
Liposomes	25	Spherical	PEG_0.7kDa	-3	Human embryonic kidney (HEK293(β ₃)) s.c. inoculated in mice	Volume:	3	33.5	1.4	0.2	85
	51			-4		~116 mm ³		19.6	0.8	0.1	
	93			-6		Mass: ~0.1 g		21.7	0.9	0.1	
Liposomes	85	Spherical	PEG_2kDa	~0	Murine colon adenocarcinoma (C-26) s.c. inoculated in mice	Volume:	6	352.9	4.9	6.9	86
						~1.2 cm ³					
						Mass: ~1.4 g					

Liposomes	102	Spherical	PEG_2kDa (InVNBL)	Not reported	Murine colon adeno- carcinoma (C-26) s.c. inoculated to right hind flank of mice	Volume: ~100 mm ³	5	1264.8	17.6	2.1	87
	131		PEG_2kDa (ReDXRL)	Not reported		Mass: ~0.1 g	(72h)	175.0	2.4	0.3	
Liposomes	225	Spherical	PEG- <i>nido</i> - carborane and transferrin	Not reported	Murine colon adeno- carcinoma (C-26) s.c. inoculated to back of mice	Volume: ~270 mm ³	5	204.4	2.8	0.9	88
	168		PEG- <i>nido</i> - carborane	Not reported		Mass: ~0.3g	(72 h)	115.5	1.6	0.5	
Liposomes	90	Spherical	DSPE- PEG_2kDa	Not reported	Human breast cancer (BT-474) s.c. inoculated to upper back of mice	Volume: ~450 mm ³	9	440.9	2.6	1.4	89
			DSPE- PEG_2kDa and Anti-HER Mab fragments			Mass: ~0.5 g	(168 h)	477.6	2.8	1.5	

Liposomes	118	Spherical	DSPE-PEG_2kDa	Not reported (neutral ZP is assumed)	Murine colon adenocarcinoma (C-26) s.c. inoculated to back of mice	Volume:						
						~20 mm ³ per tumour						
						(3 tumours per mouse)	7					
						Mass:	(24 h)					
						~0.1 g (total tumour mass)						
Liposomes	200	Spherical	PEG_2kDa	-2	Anaplastic thyroid carcinoma (ARO) s.c. inoculated to flank of mice	Volume:						
						~520 mm ³	5					
								35.7	1.5	0.9	91	
						Mass:	(24 h)					
						~0.6 g						

Liposomes	100	Spherical	PEG	Not reported (neutral ZP is assumed)	Human melanoma (A375) s.c. inoculated to right flank of mice	Volume: ~1.3 cm ³ Mass: ~1.5 g	11 (72 h)	79.2	0.5	0.7	92
Liposomes	113	Spherical	PEG	~0	Murine colon adenocarcinoma (C-26) intraperitoneally inoculated in mice (*)	Volume: ~120 mm ³ Mass: ~0.1 g	7 (96 h)	136.6	1.4	0.2	93
Liposomes	130	Spherical	PEG_4kDa	Not reported (neutral ZP is assumed)	Colon adenocarcinoma (CT26) inoculated in mice	Volume: ~100 mm ³ Mass: ~0.1 g	6 (24 h)	32.4	1.4	0.2	94

Liposomes	85	Spherical	PEG_2kDa	~0	Human colorectal adenocarcinoma s.c. inoculated to right hind flank of mice	Volume:	6	258.5	3.6	0.3	95
	100					~75 mm ³					
						Mass: ~0.1		179.9	2.5	0.2	
Liposomes	107	Spherical	PEG_2kDa	~0	Murine colon adenocarcinoma (C-26) s.c. inoculated to right hind flank of mice	Volume	5	293.3	4.1	0.4	96
						~75 mm ³					
						Mass: ~0.1 g					
Liposomes	74	Spherical	PEG_2kDa	~0	Murine colon adenocarcinoma (C-26) s.c. inoculated to right hind flank of mice	Volume:	5	195.0	2.7	2.4	97
						~750 mm ³					
						Mass: ~0.9 g					

Hyaluronic hydrogel	201	Hyaluronic acid and HP- β -cyclodextrin	-14	Murine breast cancer (4T1) s.c. inoculated to right flank of mice	Volume: ~125mm ³ Mass: ~0.2 g (24 h)	18.9	0.8	0.1	98
	217	PEG_5kDa; 2 PEG per 100 sugar repeat units of hyaluronic acid	-14			19.7	0.8	0.1	
	226	PEG_5kDa; 5 PEG per 100 sugar repeat units of hyaluronic acid	-13			31.5	1.3	0.2	
	242	PEG_5kDa; 10 PEG per 100 sugar repeat units of hyaluronic acid	-11			24.0	1.0	0.2	

Hyaluronic acid hydrogel	50	Spherical	Hyaluronic acid modified with methacrylic anhydride	-45	Murine hepatocellular carcinoma (H22) s.c. inoculated to left flank of mice	Volume:	7	149.8	2.1	0.1	99		
						~50 mm ³							
						Mass: ~0.1 g							
Heparin-based hydrogel	80	Spherical	Methacrylated heparin copolymerized with cystamine bisacrylamide	-30	Murine hepatocellular carcinoma (H22) s.c. inoculated to armpit of mice	Volume:	4	176.3	7.4	0.4	100		
						~50 mm ³							
						Mass: ~0.1 g							
Chitosan hydrogel	154	Spherical	Chitosan	9	Murine hepatocellular carcinoma (H22) s.c. inoculated to right limb of mice	Volume:	6	123.2	2.6	0.6	101		
	133		Chitosan and Bj-BPP-9a peptide	9		~200 mm ³		Mass: ~0.2 g	145.8	3.0		0.7	

Hyaluronic acid hydrogel	200	Spherical	Hyaluronic acid	-15	Human non-small cell lung cancer (A549 ^{DDP}) s.c. inoculated to right shoulder of mice	Volume:	3	14.4	0.6	0.1	102
						~200 mm ³					
						Mass: ~0.2 g					
Gelatin hydrogel	133	Spherical	Thiolated	-25	Human pancreatic carcinoma (PANC-1) s.c. inoculated in mice	Volume:	6	138.1	5.8	1.0	103
	179		PEG_2kDa	-22		~150 mm ³		187.4	7.8	1.4	
	231		PEG_2kDa and EGFR peptide	-18		Mass: ~0.2 g		322.3	13.4	2.4	
Alginic acid hydrogel	132	Spherical	Alginic acid	-35	Murine hepatocellular carcinoma (H22) s.c. inoculated to right limb armpit of mice	Volume:	6	275.0	3.8	0.7	104
						~150 mm ³					
						Mass: ~0.2 g					

Gelatin hydrogel	230	Spherical	Gelatin	-8	Human melanoma (MDA-MB-435) inoculated in mice	Volume: ~100 mm ³ Mass: ~0.1 g	7 (48 h)	204.2	4.3	0.4	105
	329		PEG_2kDa	-8				668.3	13.9	1.4	
	244		Thiolated gelatin	-9				495.4	10.3	1.0	
	302		PEG_2kDa thiolated Gelatin	-7				642.8	13.4	1.3	
Cellulose hydrogel	193	Spherical	Methacrylated carboxymethyl cellulose and cystamine bisacrylamide	-26	Murine hepatocellular carcinoma (H22) s.c. inoculated to left flank of mice	Volume: ~100 mm ³ Mass: ~0.1 g	7 (72 h)	141.0	2.0	0.2	106
Dendrimers	8	Spherical	PAMAM-OH dendrimer	-1	Human ovarian carcinoma (A2780) orthotopically	Volume:	6	784.8	4.7	9.8	107

Dendrimers	Spherical	7	HPMA copolymer	-1	inoculated beneath left ovarian bursa of mice	~1.75 cm ³	(168 h)	44.9	0.3	0.6	108
						Mass:					
						~2.1 g					
Dendrimers	Spherical	6	Lysine	20	Murine colon adenocarcinoma (C-26) s.c. inoculated to back of mice	Volume:		53.6	2.2	0.3	109
						~100 mm ³	6				
		17	PEG_5kDa	-7		Mass:	(24 h)	273.4	11.4	1.4	
Dendrimers	Spherical	Not reported	PAMAM	Not reported	Human carcinoma (KB) s.c. inoculated to flank of mice	Volume:		178.2	1.9	2.0	109
						~900 mm ³	3				
		Not reported	PAMAM and folic acid	Not reported		Mass:	(96 h)	665.2	6.9	7.5	
Dendrimers	Spherical					~1.1 g					

Dendrimers	4	Spherical	Hydroxyl-functionalized PAMAM	5	Gliosarcoma (9L) intracranially implanted in rats	Volume:	6	4.6	0.1	<0.1 (1E-2)	110
						~110 mm ³					
						Mass: ~0.1 g					
Dendrimer-entrapped gold nanoparticles	72	Spherical	PEG_2kDa-RGD-peptide	6	Human glioblastoma (U-87MG) s.c. inoculated to right side of oxters of mice	Volume:	3	105.0	0.9	0.1	111
						~46 mm ³					
						Mass: ~0.1 g					
Metal-dendrimer composite nanomaterials	5	Spherical	Amine-terminated PAMAM	Positive	Murine skin melanoma (B16-F10) s.c. inoculated to dorsal surface of mice	Volume:	4	475.4	5.0	3.0	112
	5		Carboxy-terminated PAMAM	Negative		~500 mm ³		289.6	3.0	1.8	
	5		Acetylated PAMAM	Neutral		Mass: ~0.6 g		279.5	2.9	1.8	
	5										
	5										
	5										

	11		Carboxy-terminated PAMAM	Negative				44.6	0.5	0.3	
Tabacco mosaic virus	95	AR 16.7	PEG_8kDa	-36	Human glioblastoma (U-87MG) s.c. inoculated to upper flank of mice	Volume:	3	15.2	0.2	0.1	113
	300 x 18 (TEM)	Rods				~200 mm³					
						Mass:					
						~0.2 g	(72 h)				
HPMA copolymer	16	Spherical	HPMA	-19	Human ovarian cancer (A2780) orthotopically inoculated to left ovarian bursa of mice	Volume:	6	291.1	1.7	3.6	114
						~1.75 cm³					
						Mass:					
						~2.1 g	(168 h)				
PEGylated 10-hydroxycampothecin	185	AR 1.3	Poly(maleic anhydride- <i>alt</i> -1-octadecene)-poly(ethylene glycol)	-12	Murine breast cancer (4T1) s.c. inoculated to right shoulder of mice	Volume:	5	691.0	28.8	3.5	115
	Rods	~100 mm³									
	296	AR 2.0		-12		Mass:	(24 h)	555.6	23.2	2.8	
		Rods									

						~0.1 g							
		364	AR 3.2 Rods			-13			474.2	19.8	2.4		
		455	AR 4.0 Rods			-14			412.3	17.2	2.1		
Solid lipid nanoparticles	86		DOPE, cholesterol, DC-cholesterol	71	Lung cancer (H1975) s.c. inoculated to flank region of mice	Volume:	~75 mm³	3	38.0	1.6	0.1		
	135	Spherical	PEG_5kDa	1		Mass:			98.4	4.1	0.4		
	160		PEG_5kDa and cetuximab	-1		~0.1 g			102.2	4.3	0.4		
Solid lipid nanoparticles	387	Spherical	Tripalmitin	-47	Dalton's lymphoma cells s.c. inoculated to thigh of right hind leg of mice	Volume:	~900 mm³	3	1.1	<0.1	<0.1		
						Mass:				(24 h)	(4E-2)	(5E-2)	
										~1.1 g			