Supplemental material

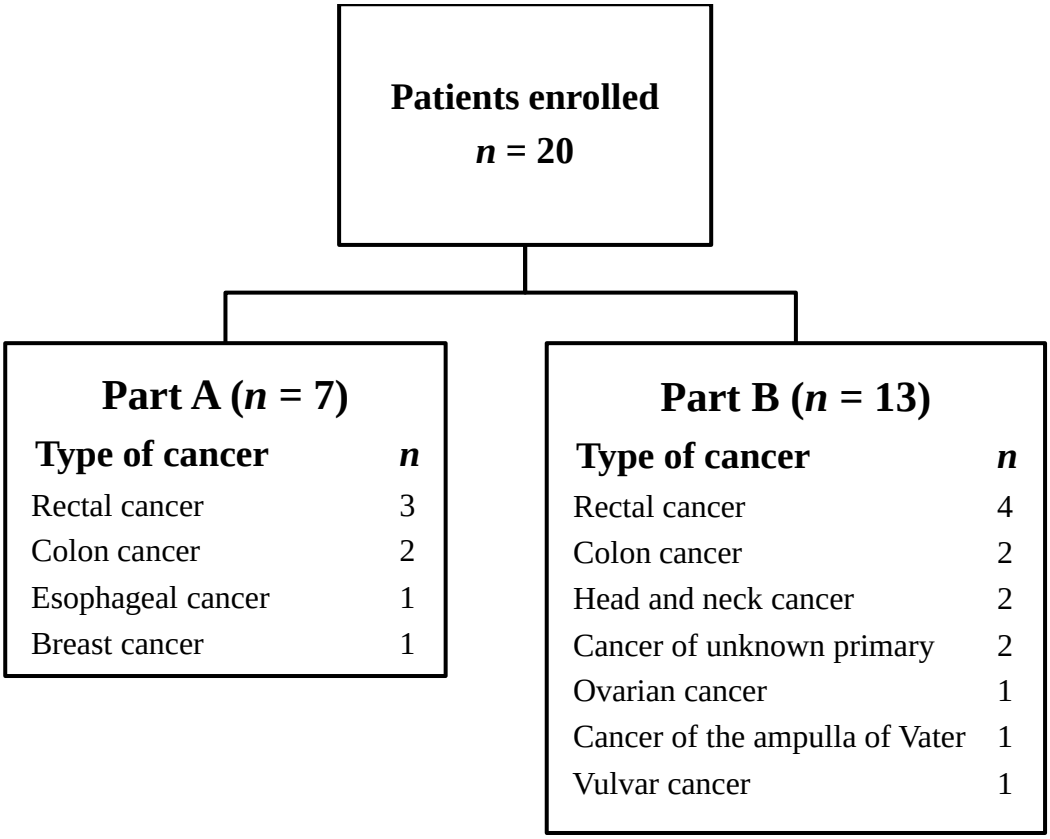

Figure S1. Cancer types per study part.

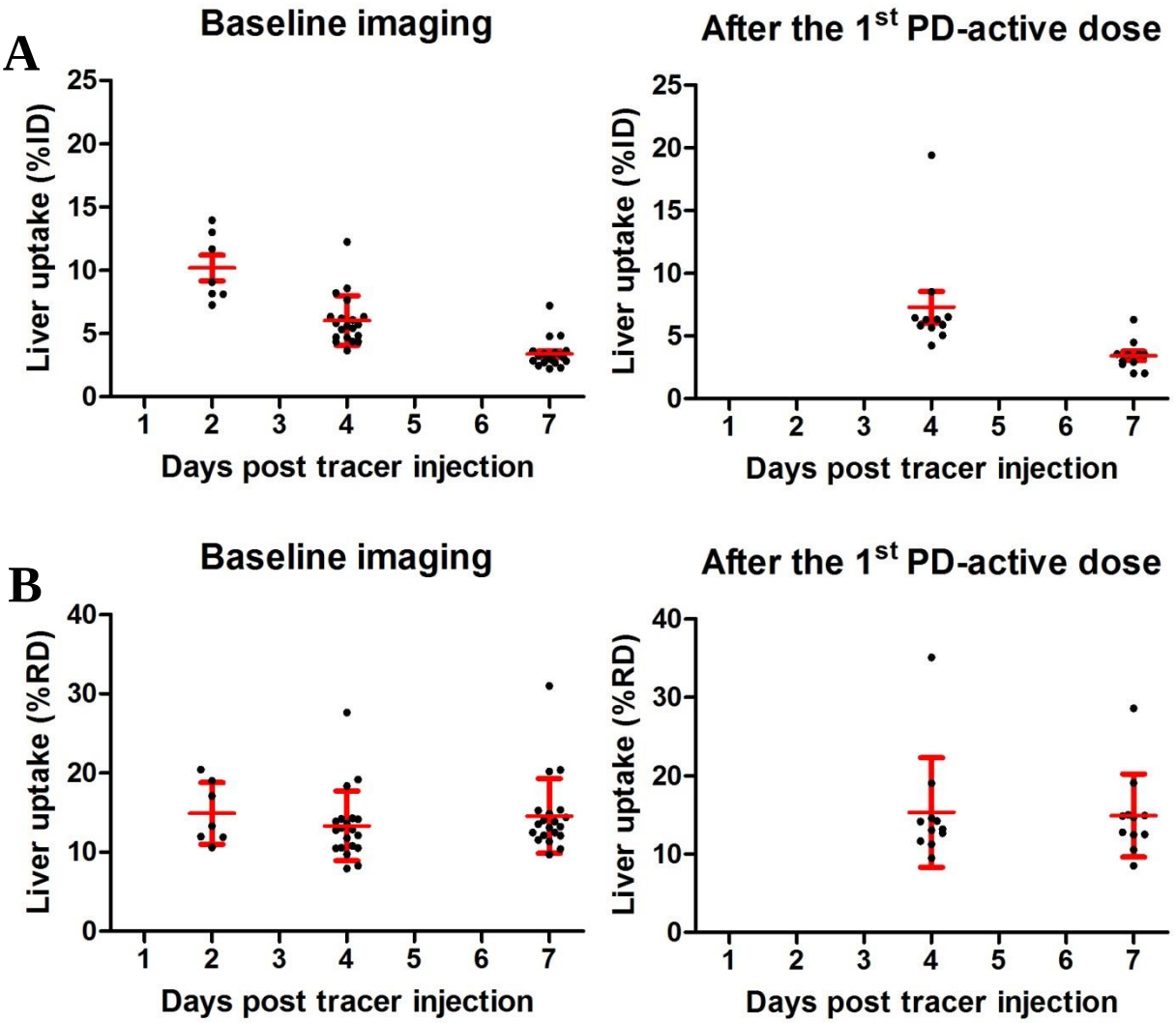

Figure S2. Mean (± SD) ^{89}Zr-lumretuzumab liver uptake at baseline imaging and after the first PD-active dose assessed on PET scan and expressed as percentage of injected tracer dose (%ID, **A**) or as percentage of at this moment remaining tracer dose (%RD, **B**).

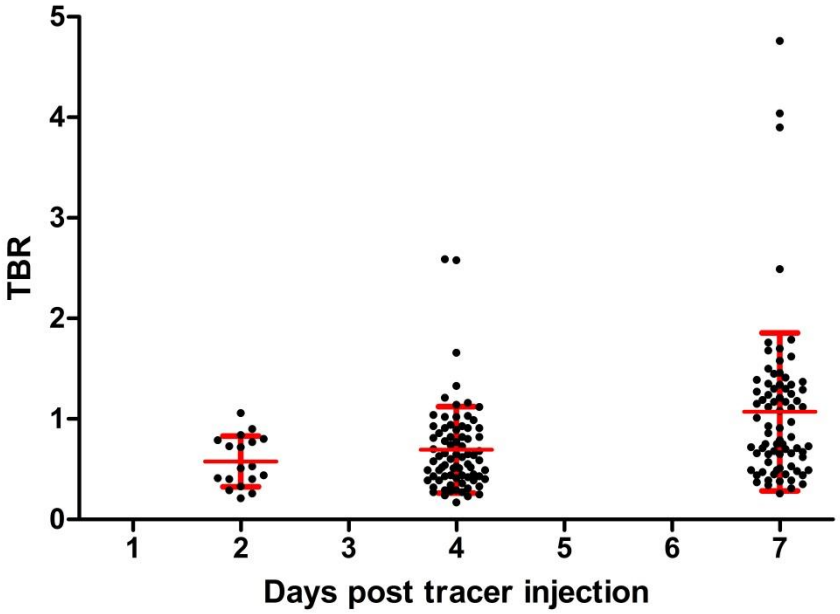

Figure S3. Tumor-to-blood ratio (TBR) on day 2 (*n* = 3 patients with 18 lesions), day 4 and day 7 (*n* = 16 patients with 77 lesions) after administration of ^{89}Zr-lumretuzumab accompanied by 100 mg unlabeled lumretuzumab (baseline).

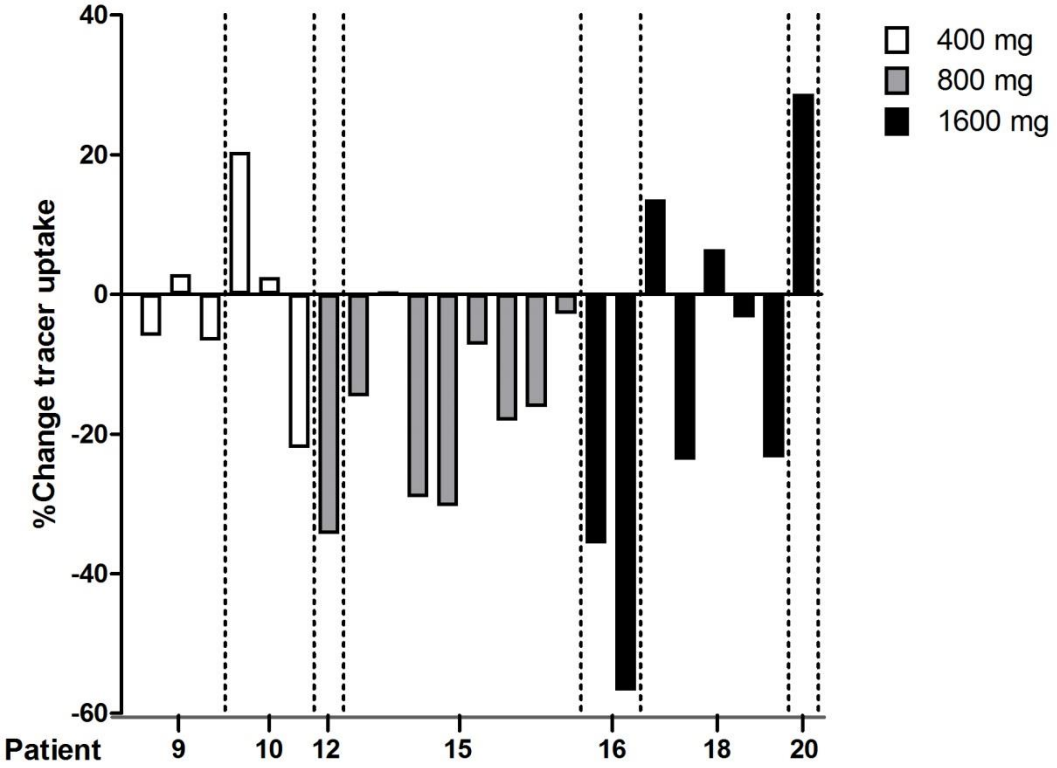

Figure S4. Percentage change of tracer uptake (as tumor-to-blood ratio) after the first PD-active dose of lumretuzumab (400, 800 or 1600 mg) versus baseline (100 mg unlabeled lumretuzumab) in 23 quantifiable lesions (n = 7 patients) 7 days postinjection.

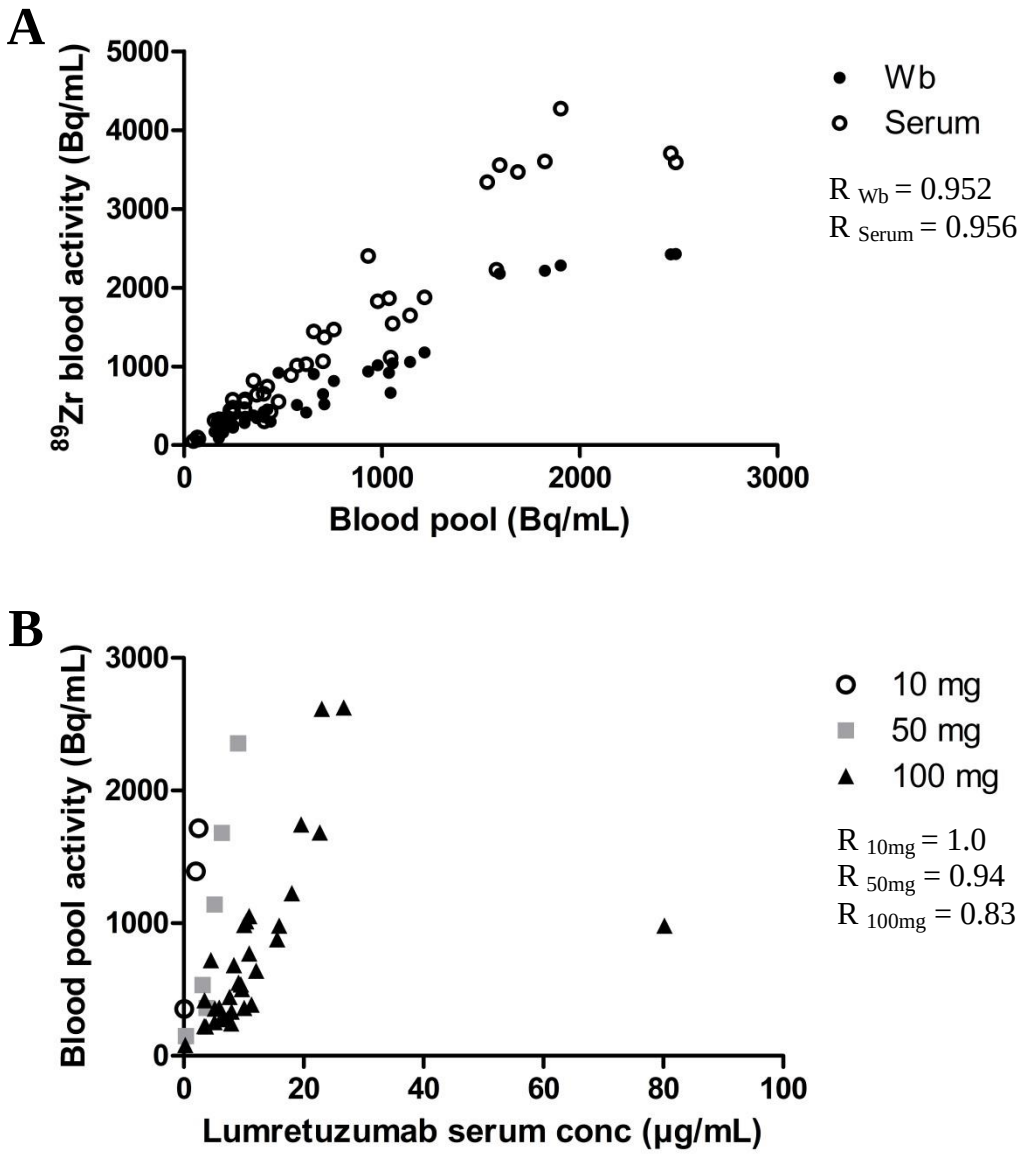

Figure S5. A. ^{89}Zr-blood activity (counts per minute of serum or whole blood (wb) converted to SUV) versus blood pool activity on PET scans (SUVmean) at baseline. **B**. Lumretuzumab serum concentration (µg/mL) versus blood pool activity on PET (Bq/mL) at baseline.

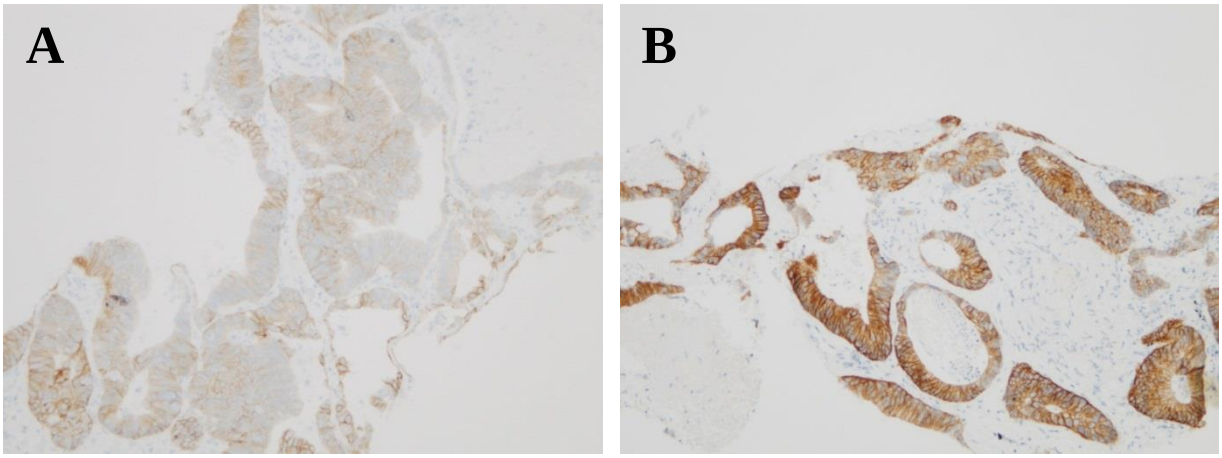

Figure S6. HER3 staining of two cases: patient 5 with low IRS (0.078, **A**) and patient 1 with high IRS (2.90, **B**).

Table S1. Lesion counts based on conventional CT and ^{89}Zr-lumretuzumab PET

Category	**Number (%)**
Total number of lesions determined on diagnostic CT:	598
Lesions with diameter < 10 mm	382 (63.9)*
Lesions with diameter ≥ 10 mm	216 (36.1)*
Lesions ≥ 10 mm and visible on ^{89}Zr-lumretuzumab PET	146 (67.6**)
Lesions ≥ 10 mm and quantifiable on ^{89}Zr-lumretuzumab PET	115 (53.2**)
10 mg unlabeled lumretuzumab	25
50 mg unlabeled lumretuzumab	13
100 mg unlabeled lumretuzumab	77
Lesions ≥ 10 mm and without visible ^{89}Zr-lumretuzumab uptake	70 (32.4**)
Hepatic metastases[a]	19
Non-hepatic lesions[b]	51
Lung	27
Lymph node	11
Bone	6
Abdominal soft tissue	3
Kidney	2
Spleen	1
Subcutaneous lesion	1

[a] Tracer uptake in all hepatic lesions is considered not visible and not quantifiable.
[b] On ^{89}Zr-lumretuzumab PET non-hepatic lesions without visible tracer uptake with a diameter of ≥ 10 mm were recorded in 17/20 patients.
*Percentage of all lesions. **Percentage of all lesions with diameter ≥ 10 mm.

Table S2. Location of tumor lesions repeatedly quantifiable on ^{89}Zr-lumretuzumab PET scans

Unlabeled lumretuzumab (mg)	**Number of patients**	**Tumor lesion, organ (*n*)**
400	2	Lung (3) Lymph nodes (3)
800	2	Lung (8) Intestine (1)
1600	3	Lung (5) Abdominal soft tissue (3[a])

[a] Two of three abdominal soft tissue lesions derived from ovarian cancer.

Table S3. SUV of blood pool and quantifiable lesions per patient over time

Patient	Lesion	Blood pool (SUVmean)				Tumor uptake (SUVmax)			
		Baseline		1st PD-active dose		Baseline		1st PD-active dose	
		Day 4	Day 7	Day 4	Day 7	Day 4	Day 7	Day 4	Day 7
9	1	5.84	4.05	7.48	5.14	4.78	3.91	5.70	4.64
	2					5.98	4.89	6.34	5.84
	3					3.80	2.86	4.21	3.74
10	1	5.64	3.50	4.74	4.37	2.97	2.48	2.25	3.72
	2					3.74	3.53	3.13	4.52
	3					5.03	4.54	3.21	4.42
12	1	3.93	2.57	4.44	2.82	3.17	3.05	2.37	2.19
15	1	4.26	3.08	5.76	4.29	2.32	2.63	2.62	3.13
	2					1.84	2.03	2.46	2.84
	3					2.50	2.85	3.52	2.82
	4					3.40	3.60	4.69	4.20
	5					3.28	4.46	3.64	4.33
	6					3.87	3.32	4.13	4.50
	7					3.88	4.23	4.00	5.46
	8					1.93	2.20	3.06	2.51
16	1	3.08	1.87	4.66	2.93	7.93	7.54	12.68	7.61
	2					7.96	8.90	7.09	6.04
18	1	4.12	3.35	6.78	3.92	2.79	2.21	2.03	1.99
	2					2.24	1.77	2.19	2.36
	3					2.64	2.65	2.90	2.37
	4					1.77	1.63	2.61	2.04
	5					1.61	1.52	2.32	1.72
20	1	4.82	3.36	5.90	3.34	5.51	5.91	6.12	7.57

Table S4. Most frequent adverse events (reported for at least 3 patients)

Event [a]	**Number of patients (%)**	**Number of patients with Grade 3 events (%)** [b]
Diarrhea	9 (45)	-
Infusion-related reaction	5 (25)	-
Abdominal pain	4 (20)	-
Upper respiratory tract infection	4 (20)	-
Urinary tract infection	3 (15)	-
Fatigue	3 (15)	2 (10%)
Pyrexia	3 (15)	-

[a] A total of 101 adverse events were experienced by 20 patients. 33 events were considered related and reported for 14 patients (70%).

[b] A total of six Grade 3 events were reported in 4 patients. Next to fatigue, hypokalemia and pruritus were observed in a single patient each (5%). No events with Grade 4 or higher were observed.