

**Interventional Nuclear Medicine: “click” chemistry as an in vivo targeting strategy for  
imaging microspheres and bacteria**

**Supporting Information**

Page 2: Schematic depiction of  $^{111}\text{In}$ -DTPA-DBCO (**Fig. S1A**) &  $^1\text{H}$  NMR spectrum of DTPA-  
DBCO (**Fig. S1B**)

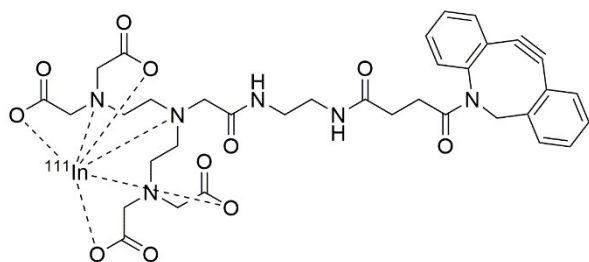
Page 3: Radio-HPLC (**Fig. S2**)

Page 4: Fluorescence imaging (**Fig. S3**)

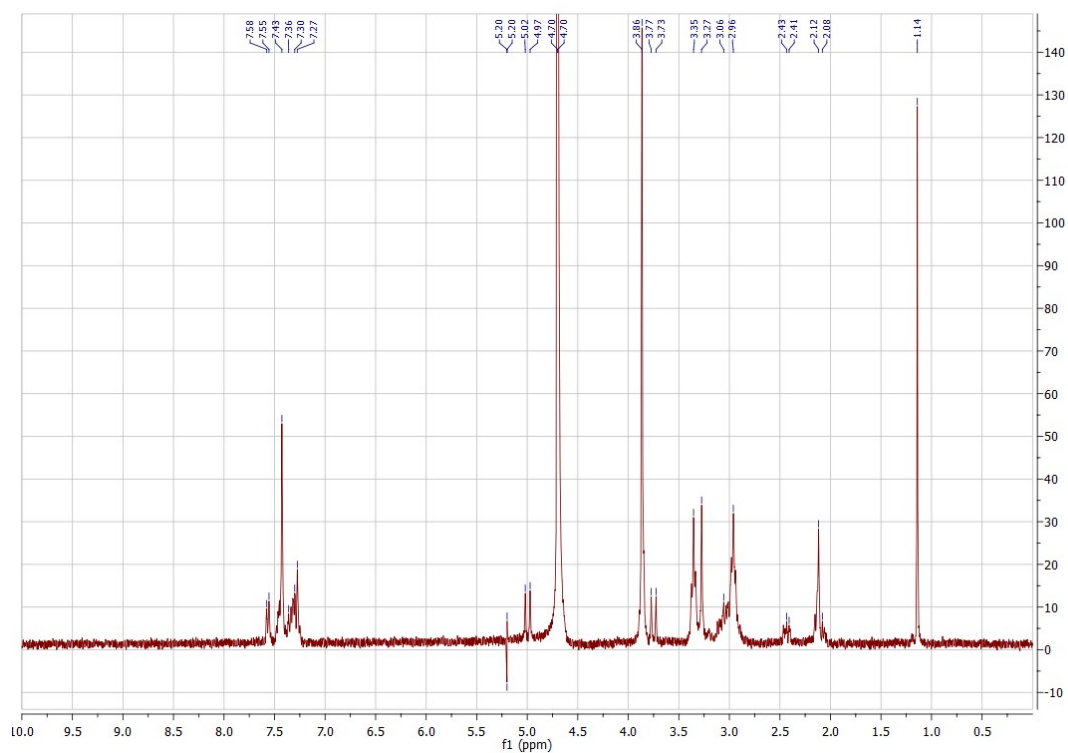
Page 5: Biodistribution (**Table S1**)

Page 6: Biodistribution (**Table S2**)

**Fig S1A.** Schematic depiction of  $^{111}\text{In}$ -DTPA-DBCO



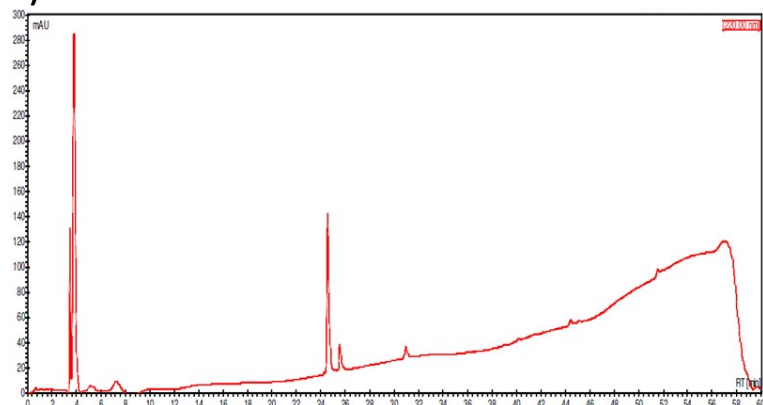
**Fig S1B.**  $^1\text{H}$ -NMR of DTPA-DBCO



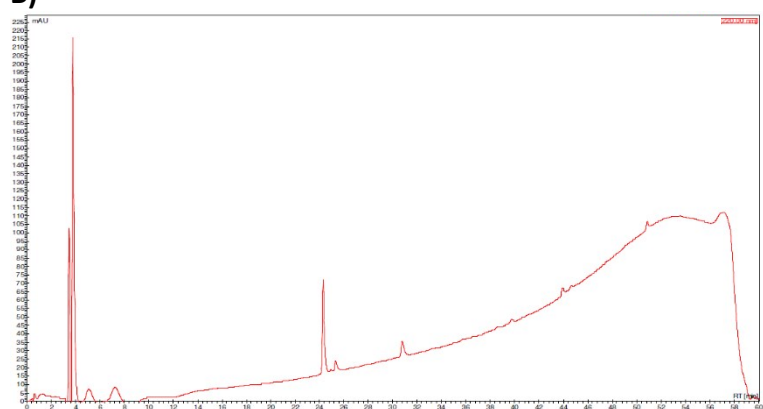
## Radio-HPLC

Fig S2

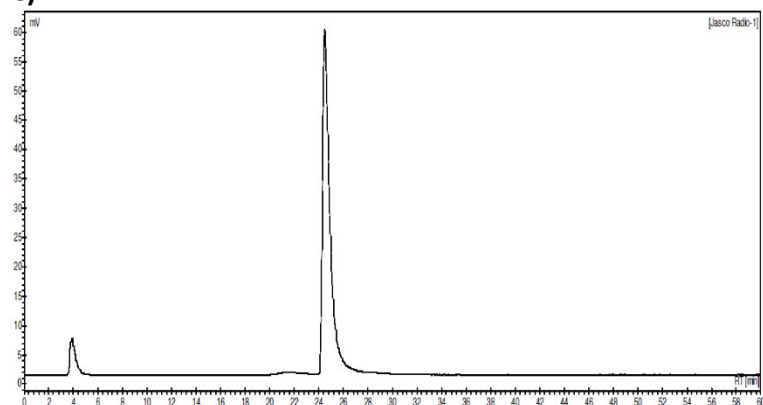
A)



B)

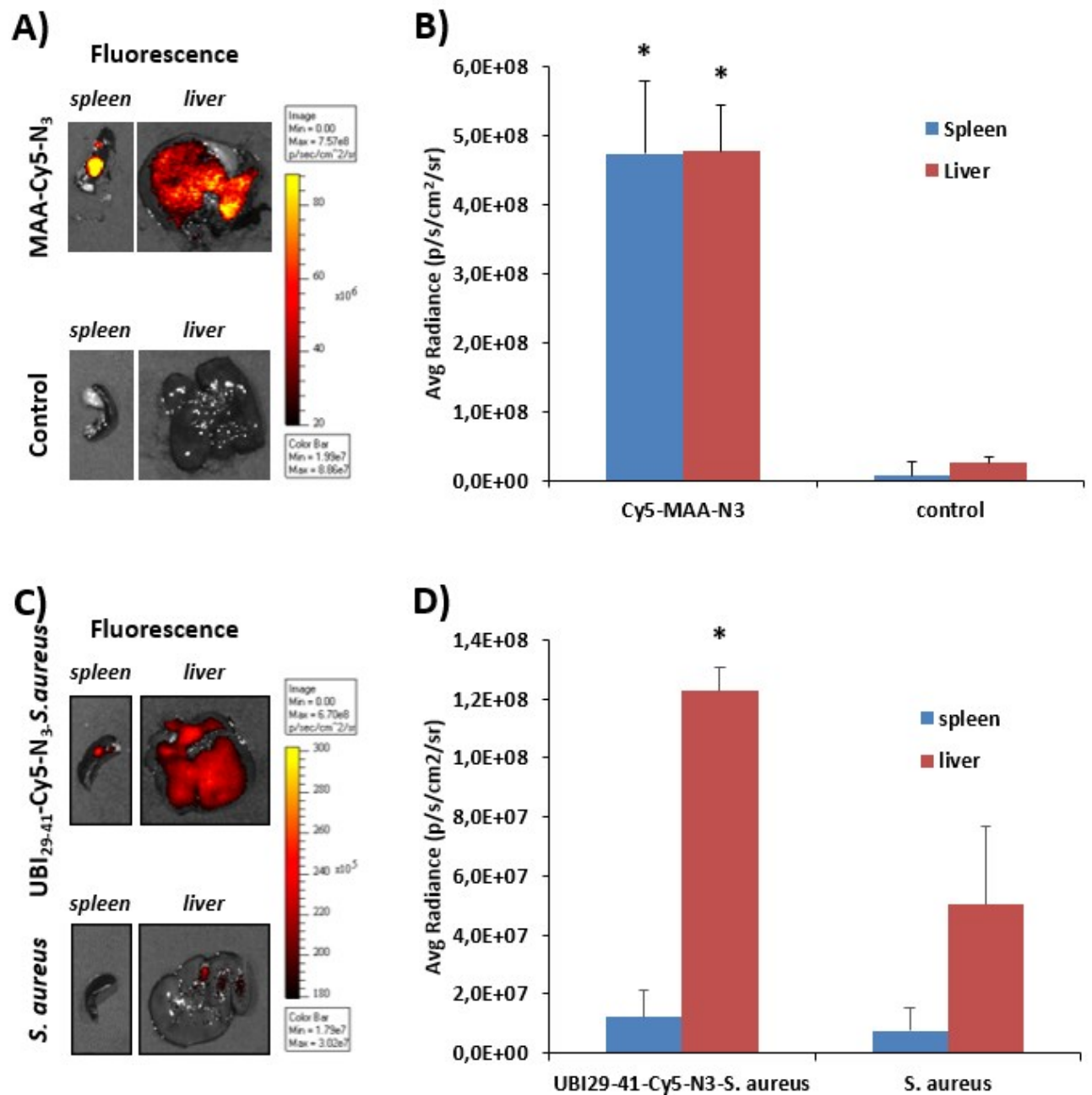


C)



**Fig S2.** Evaluation of radiochemical purity of the  $^{111}\text{In}$ -DTPA-DBCO tracer by Radio-HPLC analysis. (A) Of unlabeled DTPA-DBCO (UV signal 220 nm) the retention time,  $t_{\text{Ret}} = 24.6$  min, (B)  $^{111}\text{In}$ -DTPA-DBCO (UV signal 220 nm) retention  $t_{\text{Ret}} = 24.2$  min and (C) (radioactivity signal, RA)  $^{111}\text{In}$ -DTPA-DBCO elutes as a single peak ( $t_{\text{Ret}} = 24.5$  min) with less 5% presence of free  $^{111}\text{In}$  ( $t_{\text{Ret}} = 3.9$  min).

## Fluorescence imaging



**Fig S3.** *Ex vivo* fluorescent imaging with IVIS of murine liver and spleen after pretargeting with <sup>99m</sup>Tc-MAA-Cy5-N<sub>3</sub>. The scale bar indicates the intensity of fluorescence expressed as photons/s/cm<sup>2</sup>. Representative fluorescent images of **A)** <sup>99m</sup>Tc-MAA-Cy5-N<sub>3</sub> or **C)** <sup>99m</sup>Tc-UBI<sub>29-41</sub>-Cy5-N<sub>3</sub> in the spleen and diffusion to the liver in excised tissues at 20 h after intrasplenic administration. Quantification of the fluorescent signal of **B)** <sup>99m</sup>Tc-MAA-Cy5-N<sub>3</sub> or **D)** <sup>99m</sup>Tc-UBI<sub>29-41</sub>-Cy5-N<sub>3</sub>-S. aureus in the spleen (blue bars) or liver (red bars) in excised tissues at 20 h after intrasplenic administration. Data are expressed as the mean ± SD Average Radiance (p/s/cm<sup>2</sup>/sr) were calculated based on the photon counts measured in the tissues of 3 mice. The significance of difference ( $p < 0.05$ ) is indicated with \* = compared to control (no MAA) or unlabeled *S. aureus* according to Student's T-test.

## Biodistribution

**Table S1:** The bio-distribution of intravenously (I.V.) administered  $^{111}\text{In}$ -DTPA-DBCO after hepatic pre-targeting with  $^{99\text{m}}\text{Tc}$ -Cy5-MAA- $\text{N}_3$ . Data (expressed as the mean of the percentage of the injected dose per gram tissue (%ID/g) of 3-5 observations were calculated based on the radioactive counts measured in various tissues at 20 h ( $^{111}\text{In}$ -DTPA-DBCO) post-injection of the radioactive DBCO tracer. The significance of difference ( $p < 0.05$ ) is indicated with \* compared to non-pre-targeted mice according to Student's T-test.

Tissue	$^{111}\text{In}$ -DTPA-DBCO (I.V.) %ID/g	
	Control (no MAA)	Cy5-MAA- $\text{N}_3$
Blood	0.21 ± 0.03	0.25 ± 0.02*
Thyroid gland	1.22 ± 1.13	1.08 ± 0.21
Salivary gland	0.79 ± 0.30	0.95 ± 0.29
Heart	0.46 ± 0.16	0.60 ± 0.16
Lungs	0.41 ± 0.07	0.68 ± 0.25*
Urine & bladder	1.49 ± 0.81	1.87 ± 1.68
Liver	3.45 ± 0.52	7.46 ± 1.49*
Spleen	0.60 ± 0.16	0.95 ± 0.30*
Kidneys	7.44 ± 2.23	10.23 ± 2.95
Stomach	1.64 ± 1.78	0.83 ± 1.07
Intestines	0.85 ± 0.55	1.37 ± 1.35
Muscle	0.26 ± 0.04	0.43 ± 0.14*
Brains	0.03 ± 0.01	0.03 ± 0.01
Excreted (%ID)	85.54 ± 3.48	80.08 ± 5.88
Liver-muscle ratio	13.37 ± 2.83	18.47 ± 5.63
Liver-blood ratio	16.76 ± 3.28	29.81 ± 6.86*

**Table S2:** The bio-distribution of intravenously (I.V.) administered radiolabeled vector [<sup>111</sup>In]In-DTPA-DBCO after hepatic pre-targeting with <sup>99m</sup>Tc-UBI<sub>29-41</sub>-Cy5-N<sub>3</sub>-labeled-*S. aureus* in mice. Data are expressed as the mean of the percentage of the injected dose per gram tissue (%ID/g, n=6) and were calculated based on the radioactive counts measured in various tissues at 4 h post-injection of the host vector. \* = *p* < 0.05 compared to non-labeled *S. aureus* in mice.

Tissue	<sup>111</sup> In-DTPA-DBCO (I.V.) %ID/g	
	<i>S. aureus</i>	UBI <sub>29-41</sub> -Cy5-N <sub>3</sub> -labeled- <i>S. aureus</i>
Blood	0.09 ± 0.02	0.09 ± 0.01
Thyroid gland	0.39 ± 0.03	0.64 ± 0.19
Salivary gland	0.42 ± 0.09	0.55 ± 0.12
Heart	0.21 ± 0.06	0.29 ± 0.05
Lungs	0.23 ± 0.02	0.25 ± 0.08
Urine & bladder	0.43 ± 0.11	0.42 ± 0.29
Liver	5.99 ± 0.53	9.34 ± 1.26*
Spleen	0.44 ± 0.16	0.42 ± 0.35
Kidneys	3.87 ± 0.32	8.44 ± 4.45
Stomach	0.73 ± 0.56	1.34 ± 1.38
Intestines	1.36 ± 0.83	1.71 ± 0.44
Thigh muscle	0.17 ± 0.01	0.22 ± 0.03
Brains	0.01 ± 0.01	0.02 ± 0.01
Excreted (%ID)	90.05 ± 0.77	88.55 ± 2.3
Liver-muscle ratio	36.02 ± 3.04	43.65 ± 10.69
Liver-blood ratio	72.55 ± 17.31	108.64 ± 20.96