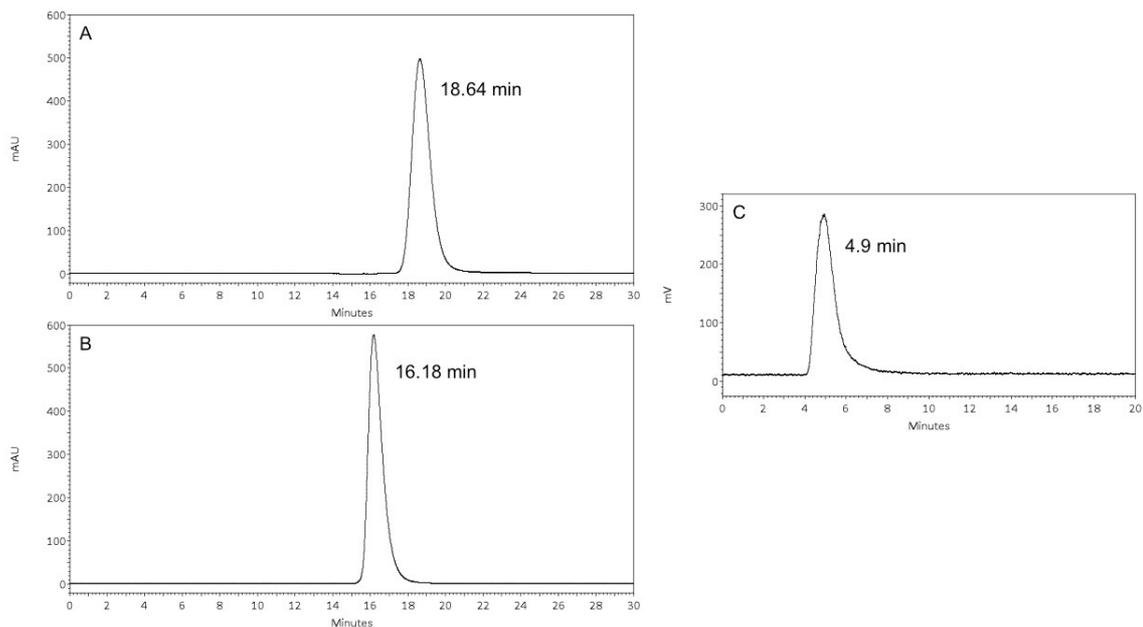
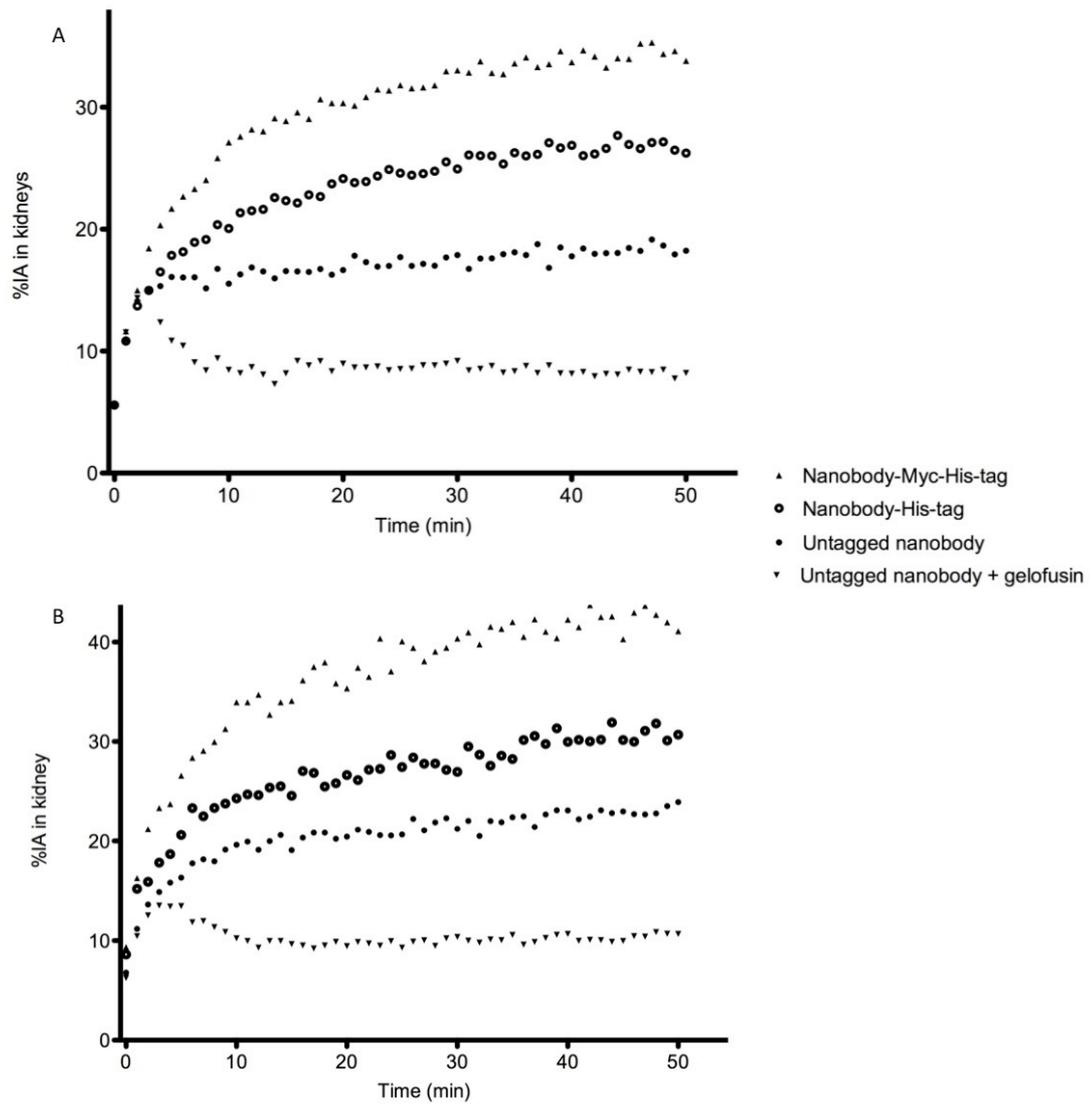


**Supplementary figure 1:** ESI-Q-ToF-MS analysis of **(A)** untagged 2Rs15d, **(B)** untagged CHX-A''-DTPA-2Rs15d and **(C)** untagged 1B4M-DTPA-2Rs15d. The reaction of CHX-A''-DTPA to untagged 2Rs15d revealed a mixture of 1, 2 and 3 DTPA conjugated to untagged 2Rs15d. Using 1B4M-DTPA, a mixture of 2 and 3 DTPA to 2Rs15d was observed. The dominant conjugation ratio (chelator:nanobody) for both 1B4M-DTPA and CHX-A''-DTPA to untagged 2Rs15d is 2:1.



**Supplementary Figure 2:** (Radio-)chromatographic analyses of Trastuzumab conjugates. **(A)** unconjugated Trastuzumab, **(B)** 1B4M-DTPA-Trastuzumab, **(C)**  $^{177}\text{Lu}$ -DTPA-Trastuzumab; **(A,B)** SEC on Superdex 75 10/30, **(B)** radio-SEC on Superdex 75 5/150GL; The R-times of the major peaks are shown in each graph.



**Supplementary figure 3:** Accumulation of radioactivity in kidneys in healthy Wistar rats (n=3 per condition) in function of time, after injecting  $^{111}\text{In}$ -labeled anti-HER2 nanobodies and gamma camera dynamic scintigraphy. **(A)** nanobody 2Rb17c, **(B)** nanobody 1R136d.