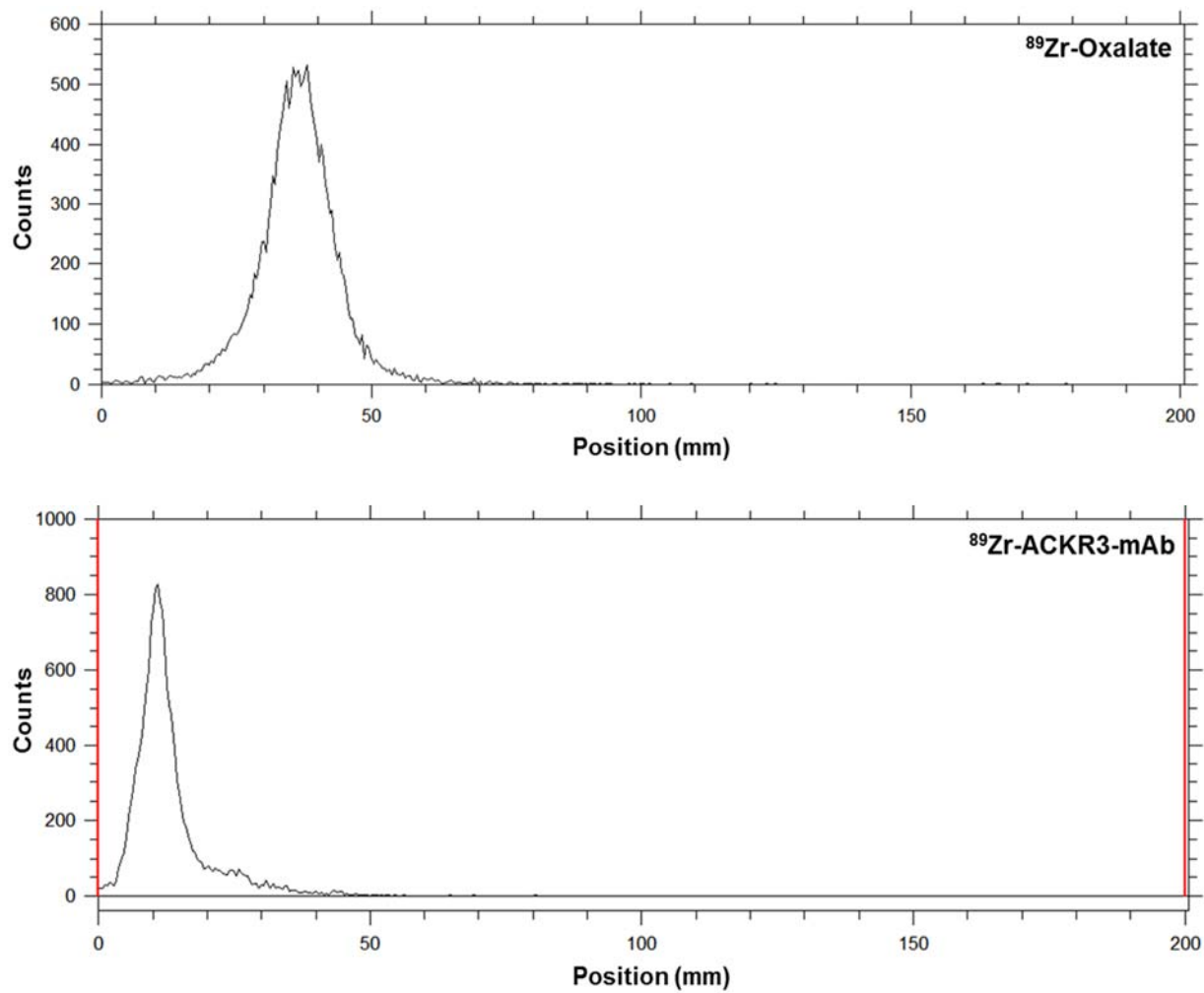
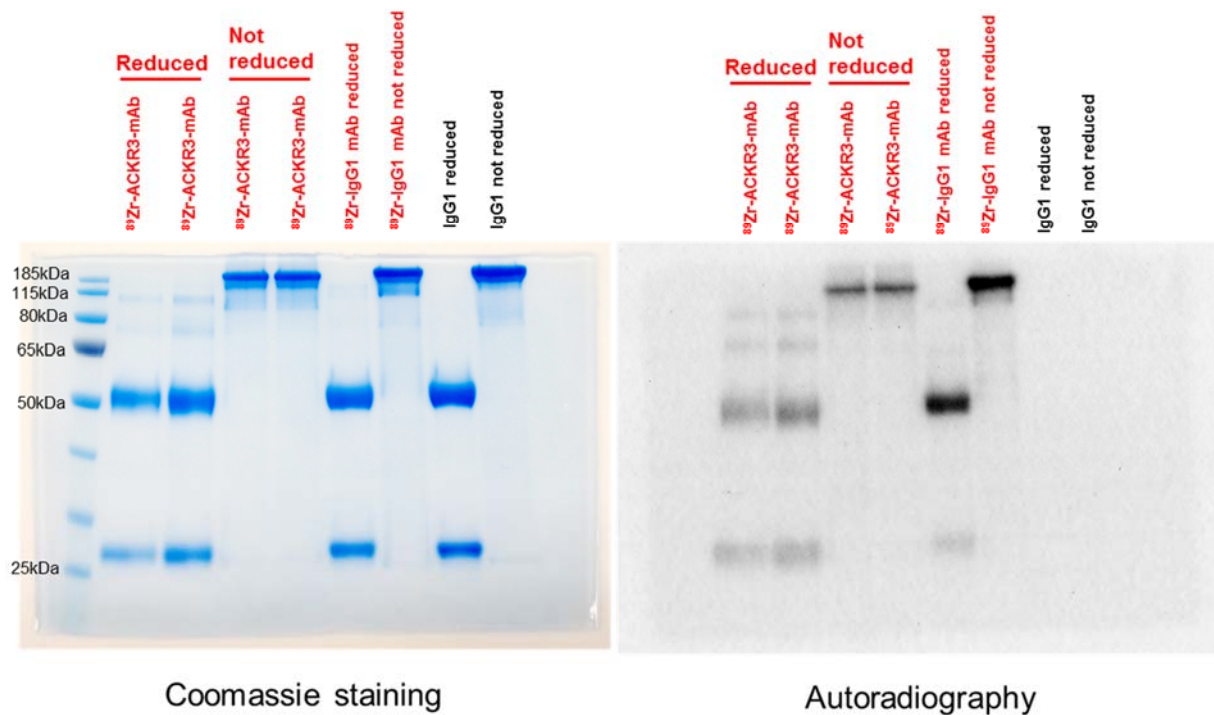


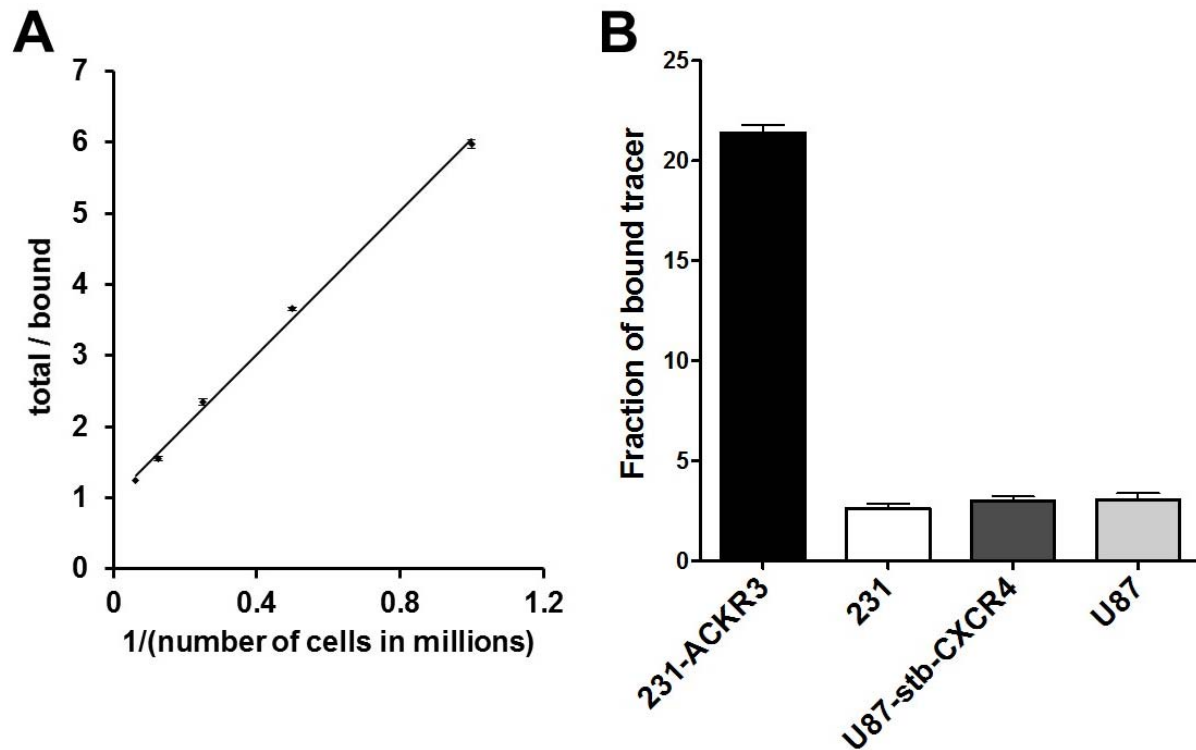
**Supplemental Figure 1.** MALDI spectra of unmodified (top) and desferrioxamine-conjugated (bottom) ACKR3-mAb



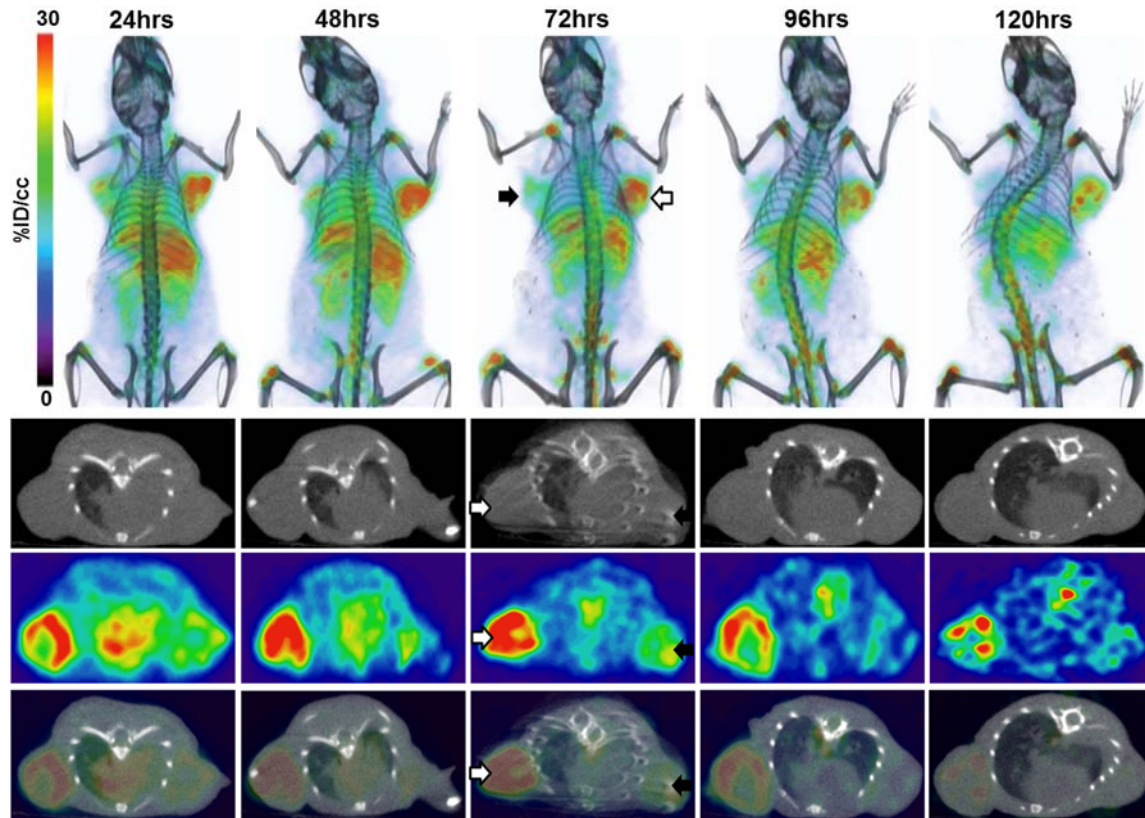
**Supplemental Figure 2.** ITLC of  $^{89}\text{Zr}$ -oxalate and  $^{89}\text{Zr}$ -ACKR3-mAb showing lack of unbound Zr-89 in purified radiolabeled ACKR3-mAb



**Supplemental Figure 3.** SDS-PAGE and autoradiography of  $^{89}\text{Zr}$ -ACKR3-mAb showing intact radiolabeled ACKR3-mAb; unlabeled IgG1 was used as an additional control/standard



**Supplemental Figure 4.**  $^{89}\text{Zr}$ -ACKR3-mAb immunoreactive fraction by Lindmo assay (A); *in vitro* evaluation of  $^{89}\text{Zr}$ -ACKR3-mAb in 231-ACKR3, 231, U87-stb-CXCR4 and U87 cell lines further supporting ACKR3-specific targeting (B)



**Supplemental Figure 5.** Volume rendered (top) and transaxial (bottom) PET-CT images of  $^{89}\text{Zr}$ -ACKR3-mAb in NOG mice bearing 231 (black arrows) / 231-ACKR3 (white arrows) tumors over 120hrs following injection.