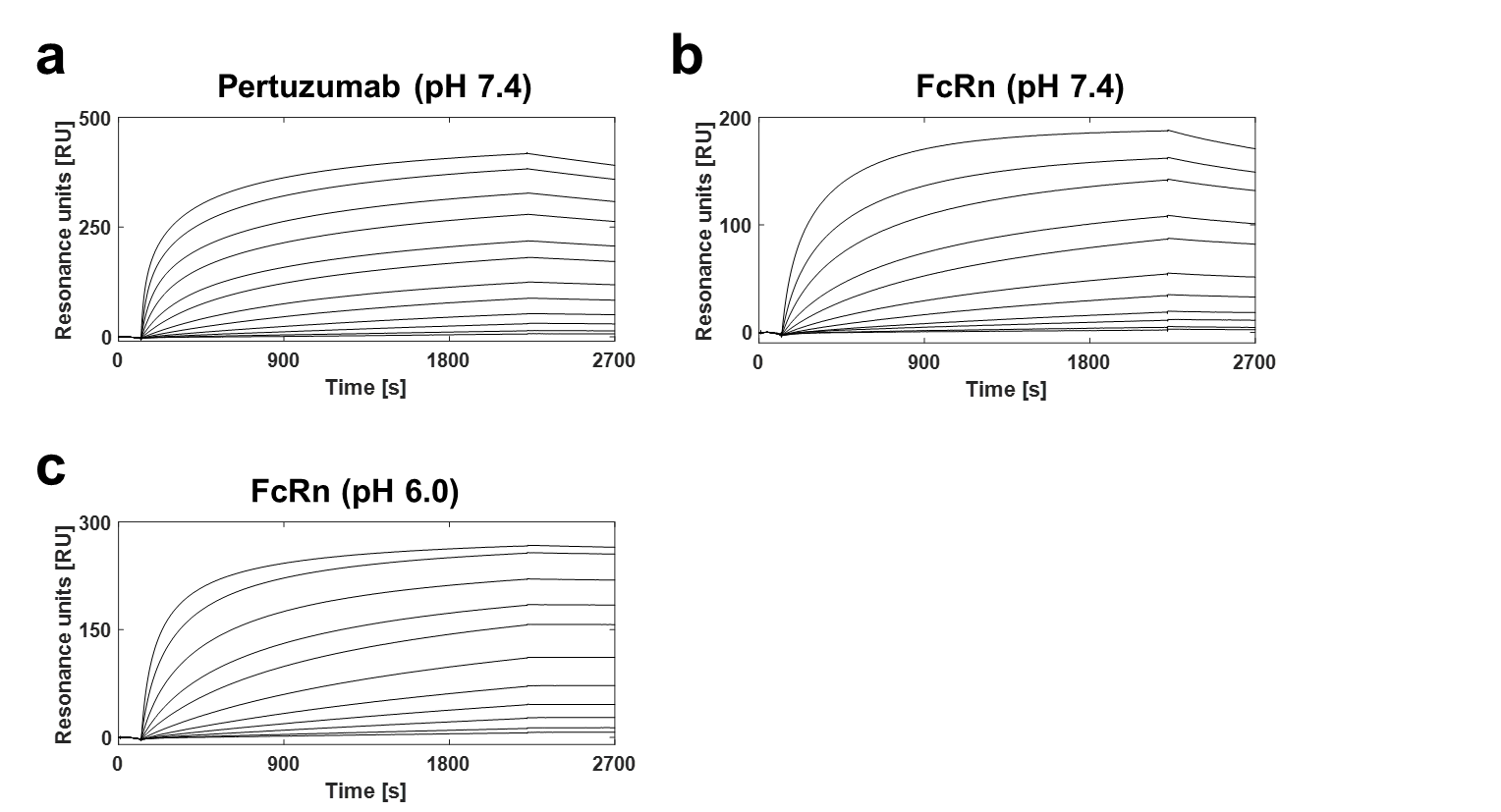
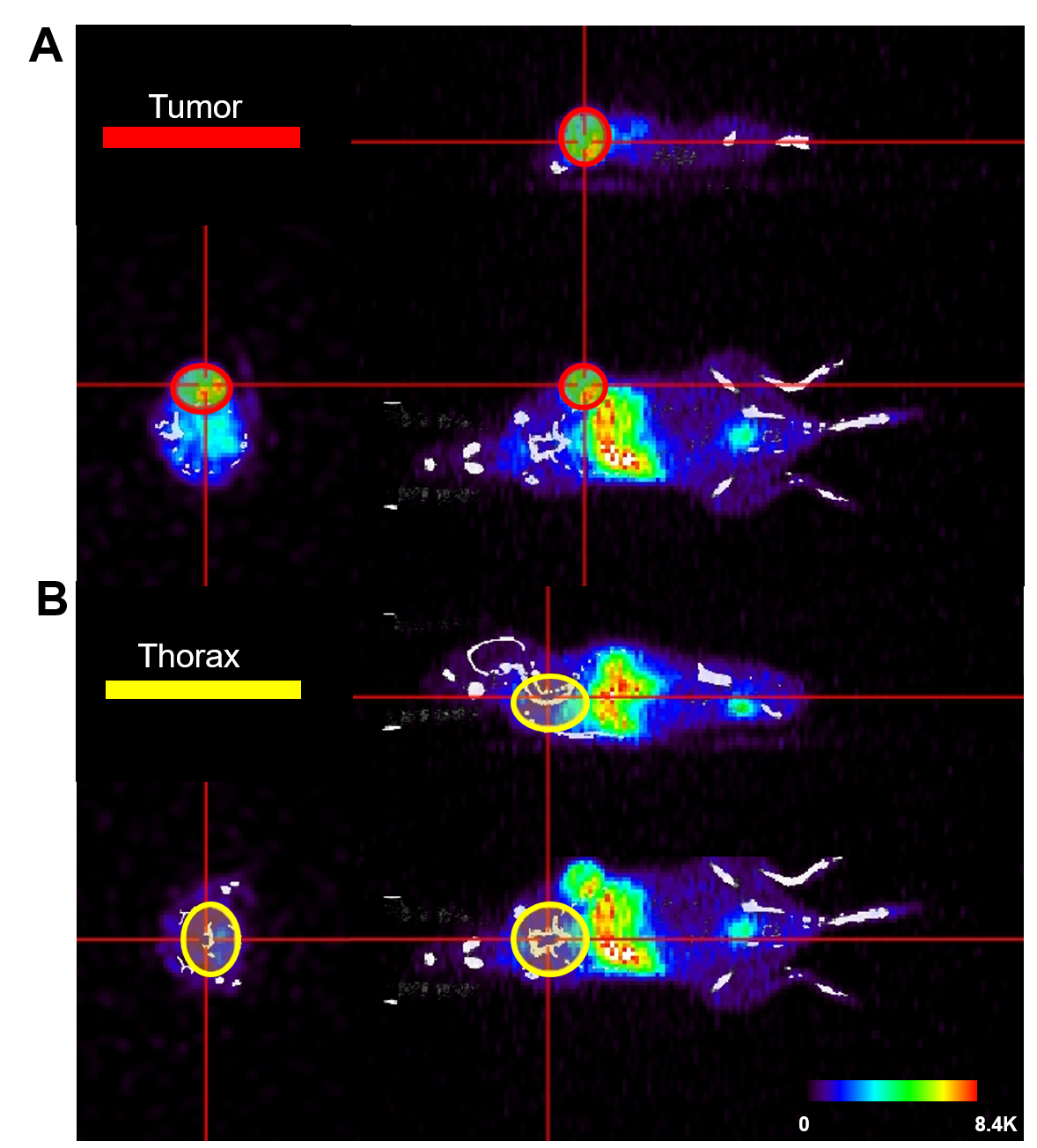
**Supplementary data**

**Selective depletion of radiolabeled HER2-specific antibody for PET contrast improvement**

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**Supplementary Figure 1.** Surface plasmon resonance analyses of the interaction of immobilized pertuzumab (572.6 RU) or mouse FcRn (672.8 RU) with HER2-Seldeg. HER2-Seldeg was injected at either pH 7.4 (a,b) or 6.0 (c) at concentrations ranging from 0.195-400 nM (a), 0.195-200 nM (b) or 0.195-100 nM (**c**) at a flow rate of 10 ml/min and equilibrium dissociation constants (KDs) determined. Flow cells were regenerated at the end of each cycle using 0.1 M glycine/1 M NaCl/10% v/v glycerol pH 2.0 (pertuzumab) or 0.1 M NaHCO3/0.15 M NaCl pH 9 (mouse FcRn). Representative traces for duplicate or triplicate injections for each analyte concentration are presented.



**Supplementary Figure 2.** Different views of the regions of interest (ROIs). The tumor ROI (a) and the thorax ROI (b) were overlaid with PET and CT images to determine contrast measures (ROIs for a PBS-treated mouse from the experiment described in Figure 2 is shown as an example). The intensity in the displays is linearly adjusted.

**Supplementary Videos**

**Supplementary Video SV1:** PET/CT 3D volume rendering of the PBS-treated mouse shown in Figure 2b at 30 h following 124I-pertuzumab injection (6 h post-PBS injection).

**Supplementary Video SV2:** PET/CT 3D volume rendering of the HER2-Seldeg-treated mouse shown in Figure 2b at 30 h following 124I-pertuzumab injection (6 h post-Seldeg injection).

**Supplementary Video SV3:** PET/CT 3D volume rendering of the MOG-Seldeg-treated mouse shown in Figure 2b at 30 h following 124I-pertuzumab injection (6 h post-Seldeg injection).

**Supplementary Video SV4:** PET/CT 3D volume rendering of the PBS-treated mouse shown in Figure 2b at 44 h following 124I-pertuzumab injection (20 h post-PBS injection).

**Supplementary Video SV5:** PET/CT 3D volume rendering of the HER2-Seldeg-treated mouse shown in Figure 2b at 44 h following 124I-pertuzumab injection (20 h post-Seldeg injection).

**Supplementary Video SV6:** PET/CT 3D volume rendering of the MOG-Seldeg-treated mouse shown in Figure 2b at 44 h following 124I-pertuzumab injection (20 h post-Seldeg injection).