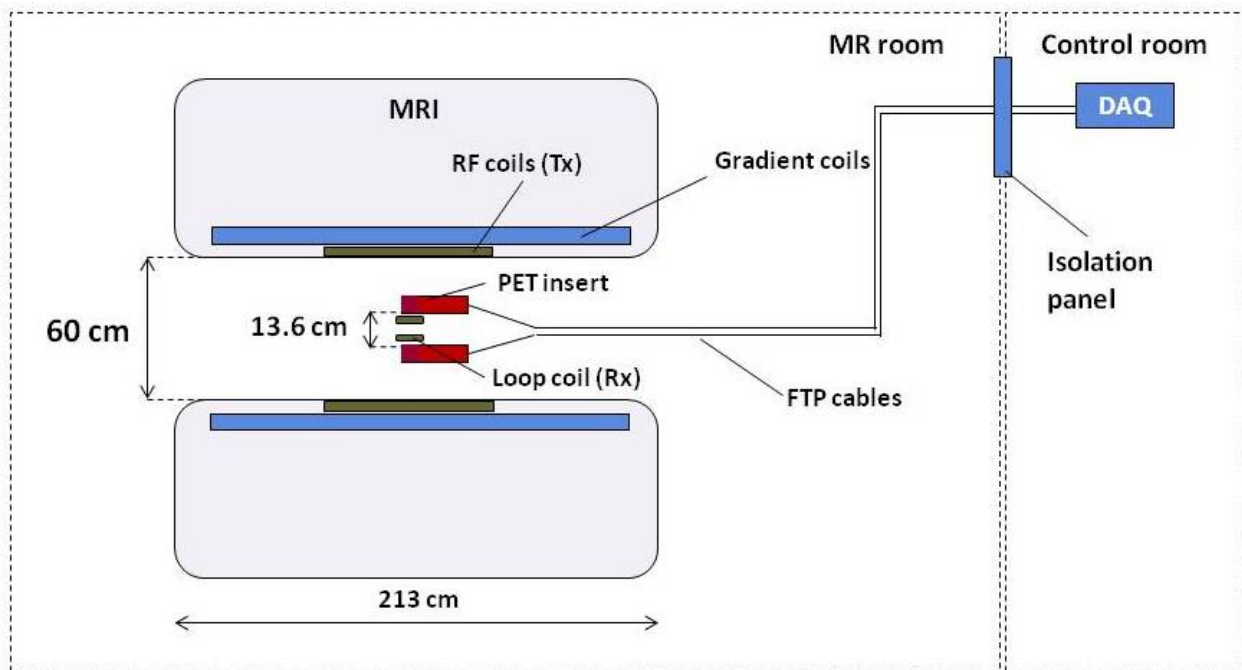
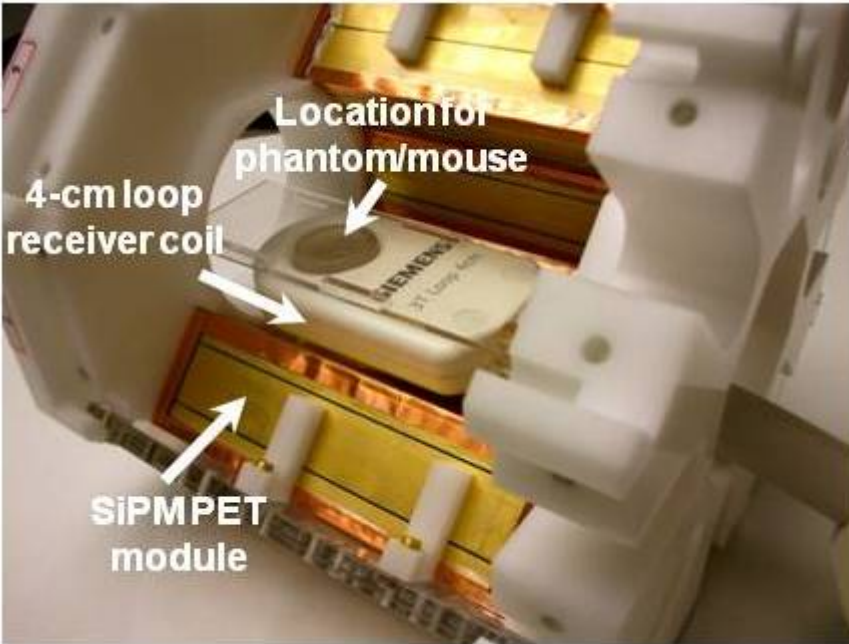


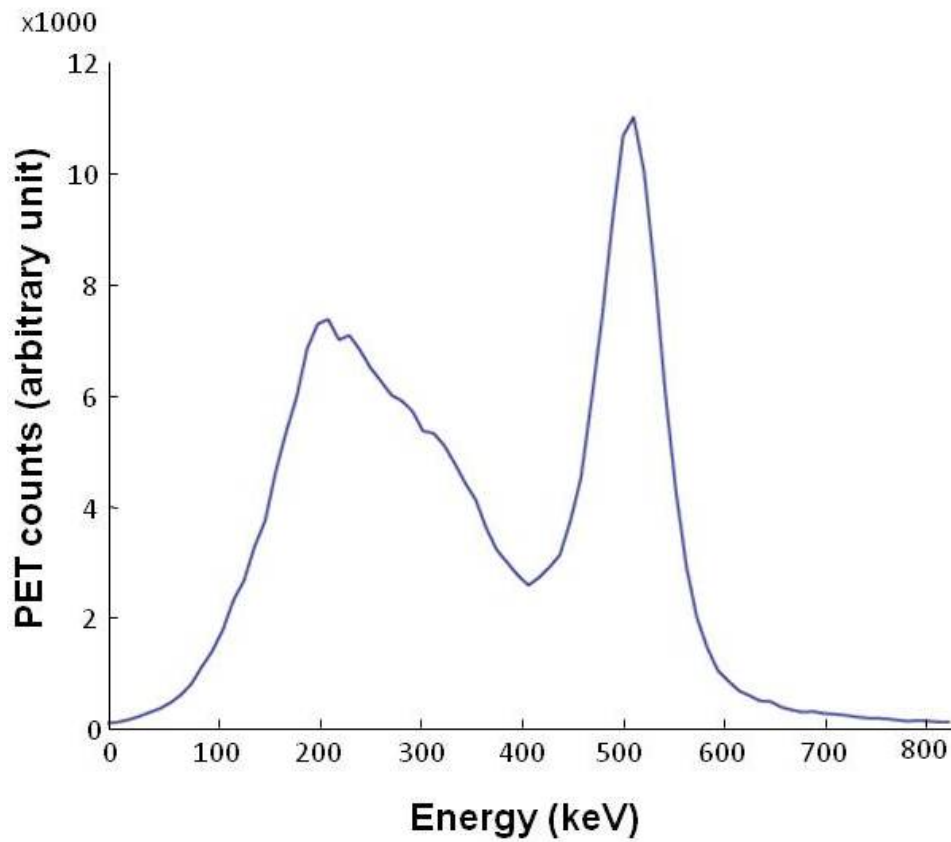
SUPPL. FIGURE 1. Scintillation crystal and silicon photomultiplier (SiPM). (A) 20×18 $\text{Lu}_{1.9}\text{Gd}_{0.1}\text{SiO}_5\text{:Ce}$ (LGSO) crystal array. (B) Four multichannel SiPMs combined to yield 8×8 channels.



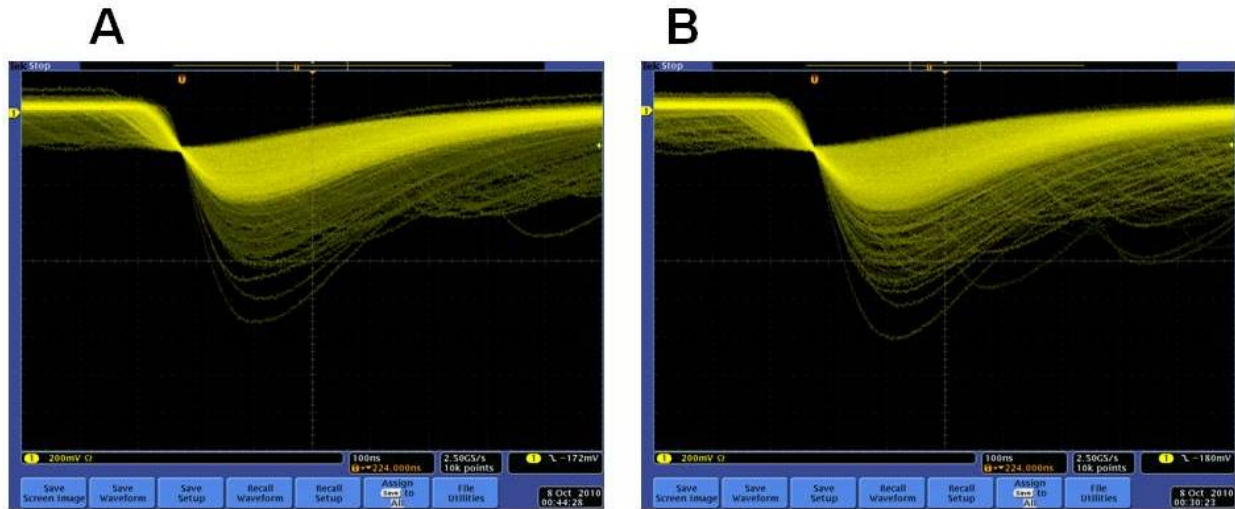
SUPPL. FIGURE 2. Experimental setup for simultaneous PET/MRI studies.



SUPL. FIGURE 3. Radiofrequency (RF) coil and coil holder placed inside the scanner.



SUPL. FIGURE 4. Average energy spectrum of a block detector after peak alignment.



SUPPL. FIGURE 5. Raw SiPM PET signals acquired without (A) and with (B) application of RF pulse sequences.