Materials that simultaneously mimic soft tissue *in vivo* for magnetic resonance imaging (MRI) and ultrasound (US) for use in a prostate phantom have been developed. The materials contain water, agarose, homogenized lipid/protein, Cu^{++}, EDTA, thimerosal (preservative) and microscopic glass beads. Phantom material properties were measured at 22 °C. For MRI, the properties of interest are T1 and T2 times, while for US they are the attenuation coefficient, propagation speed and backscatter. The soft tissues to be mimicked in the phantom are prostate, muscle and fat. Published T1 and T2 values for prostate parenchyma are 808 ms and 98 ms respectively at 40 °C and 20 MHz, and the tissue acoustic propagation speed is in the range of 1520-1560 m/s. The prostate mimicking material has a T1 of 897+/-11 ms and a T2 of 83.6+/-0.2 ms at 22 °C and 40 MHz. The propagation speed and attenuation coefficient are 1538 m/s and 0.40 dB/cm/MHz. Muscle was mimicked with different concentrations of agarose, lipid/protein mixture and beads while fat was simulated with safflower oil. Good agreement was found with actual tissue values obtained from the literature. Glass beads used in the materials control US backscatter and augment US attenuation with little effect on T1 or T2. Current research is being focussed on extending the use of the materials to CT and building an anthropomorphic phantom for image co-registration. A preliminary phantom will contain a simulated prostate and surrounding muscle and fat.