Supporting Information

Laulicht et al. 10.1073/pnas.1016367108

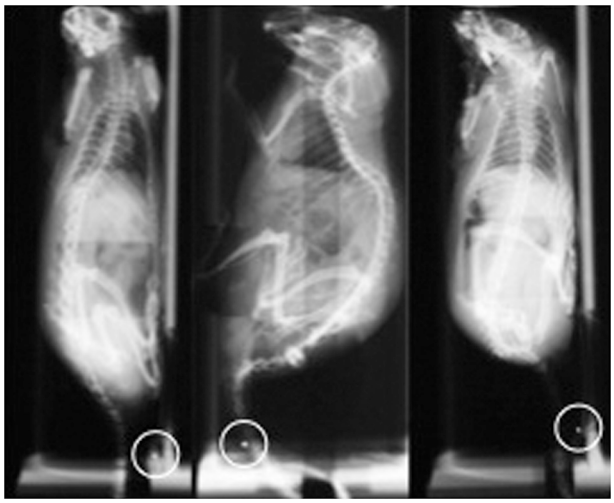
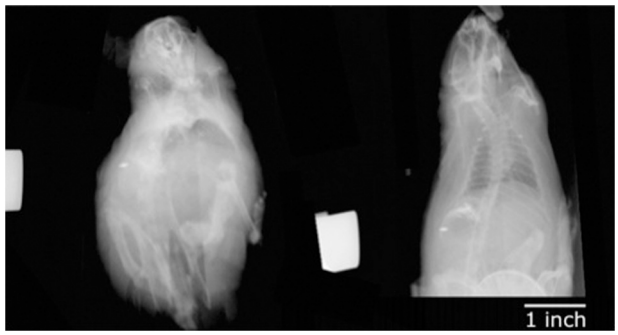
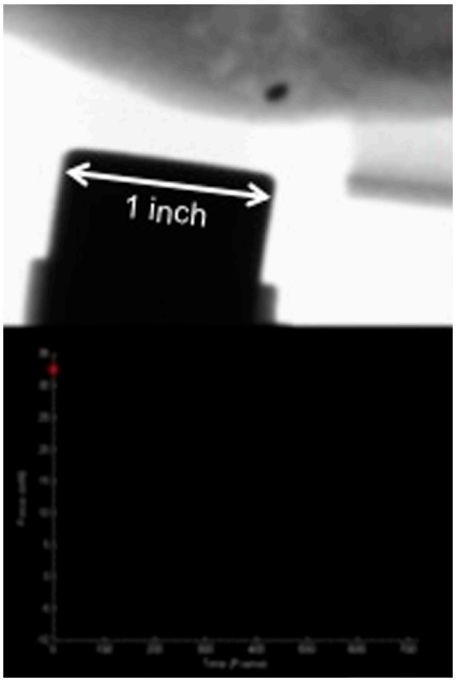


Fig. S1. X-ray transit of orally administered magnets. X-ray images taken 12 h after neodymium iron boron (NIB) magnets were orally gavaged to age-matched rats demonstrating that without the application of an external magnetic field the magnets are excreted in accordance with GI transit of a standard oral dose ($N = 3$).



Movie S1. Exemplary biplanar fluoroscopic video. Biplanar fluoroscopic videos acquired 4 h after the start of localization as part of a 12 h localization study. The 1 s video is excerpted from 30 s of real-time biplanar fluoroscopic video acquisition. Both of the fluoroscopic cameras (left and right) show the intestinal localization of the magnetic pill diagrammed in Fig. 1*B*. The internal dosage has a radiopaque cylindrical magnet flanked by less radiopaque iron-loaded alginate spheres. Simultaneous video acquisition from two orthogonal fluoroscopes enabled quantitative three-dimensional motion tracking of the internal and external magnets post hoc.

Movie S1 (MOV)



Movie S2. Close-up fluorsocopic video of magnetic force cycling post mortem displayed synchronously with measured intermagnetic force. Magnetic force cycling in a post mortem rat was captured by videofluoroscopy to show the movement of the internal magnet in response to force cycling of the external magnet in the absence of breathing. The X-ray video was recorded at a rate of 50 Hz and therefore the video corresponds to 3.5 s of real-time video (top) and the measured intermagnetic force is displayed synchronously (bottom). At the start of the video, the external magnet is closest to the internal dose yielding an intermagnetic force of 35 mN. The external magnet retreats from the internal dose to reduce force to 5 mN, then changes direction to increase force once again reaching 35 mN. During the change of direction, the external magnet undergoes sharp deceleration and acceleration that registers on the load cell as an inertial spike. In contrast with the post mortem experiment, during in vivo experiments force cycling repeats to retain the internal magnet by overcoming the intestinal propulsive forces that govern the transit of standard, nonmagnetic dosage forms.

Movie S2 (MOV)