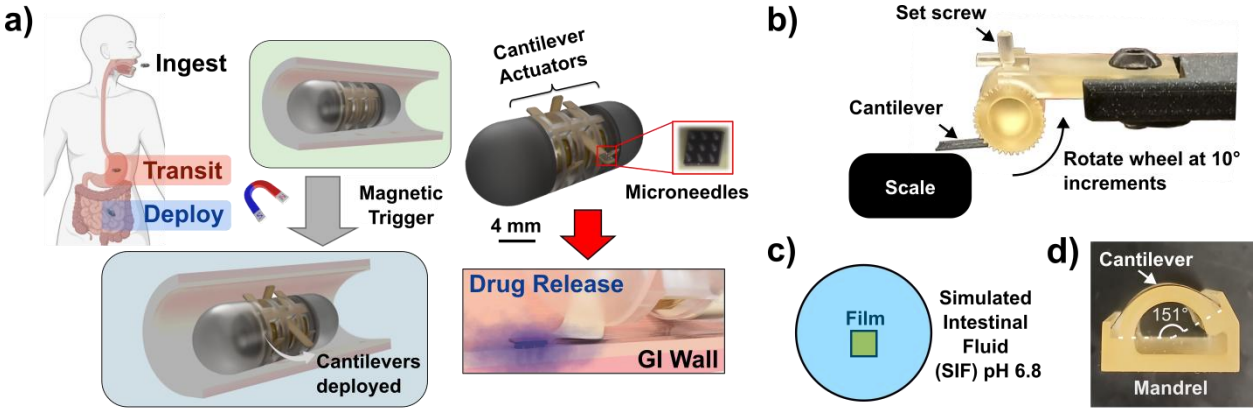
Supplementary Fig. S1: (a) Overview of ingestible capsule for localized drug delivery in the GI tract. (b) Methodology of testing cantilever blocking force on a 13 mm diameter wheel. A beam bending model was used to correlate the wheel rotation angle to the estimated cantilever tip position for plotting. (c) Methodology of cantilever material dissolution in simulated intestinal fluid mixed on a shaker at 100 rpm. (d) Methodology of testing cantilever stress relaxation by holding the cantilever in a mandrel.



Supplementary Fig. S2: (a) Normalized blocking force (i.e. blocking force/cantilever moment of inertia) vs. normalized cantilever tip displacement (i.e. tip distance from device surface/cantilever length) of PEEK, PVA, PVA-Citric 90:10 mass ratio, PVA-Citric 80:20 mass ratio, and PVA-NaCl cantilevers which were not pre-strained. The crosses represent experimental data (n = 3, mean ± S.D.) and lines represent the predicted normalized blocking force using a beam bending model. Image of the circle shows how the rotation angle of a 13 mm diameter wheel correlates to the tip distance perpendicular from the device surface, d. (b) Dissolution images of PEEK, PVA, PVA-Citric 90:10 mass ratio, PVA-Citric 80:20 mass ratio, and PVA-NaCl films in simulated intestinal fluid at Day 0, 1, 3, and 5. (c) Straining the cantilevers and measuring the relaxation angle of the cantilevers after 72 hours. Cantilever thicknesses ranged from 0.13 – 0.19 mm.