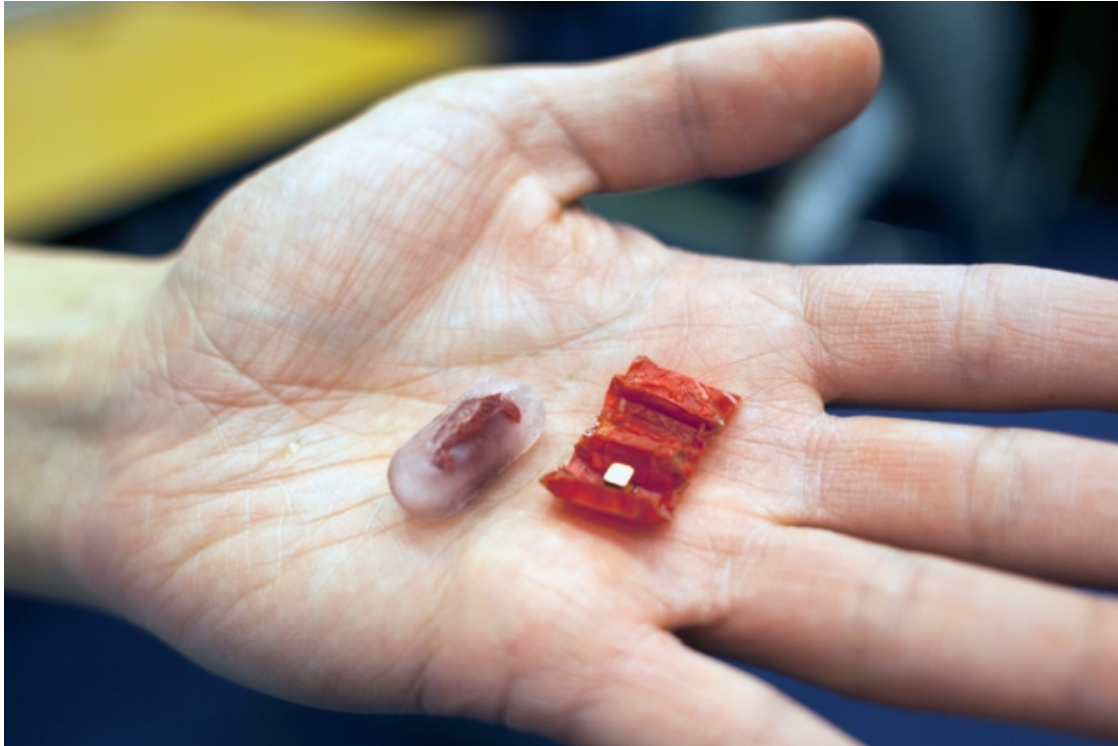


Tummy problems? Just swallow this stomach-repairing origami robot made of meat

Ars Technica (<http://arstechnica.com/science/2016/05/tummy-problems-just-swallow-this-stomach-repairing-origami-robot-made-of-meat/>) · by Beth Mole · May 14, 2016



Melanie Gonick/MIT (<http://news.mit.edu/2016/ingestible-origami-robot-0512>)

A chunk of meat that bursts open once eaten and unleashes a robot that crawls around inside of your stomach sounds like something from a horror movie. But the real-life stomach-roaming meat robot actually means no harm—on the contrary, it was designed to doctor your stomach troubles from the inside.

On Thursday, researchers at MIT revealed the origami meat robot (<http://news.mit.edu/2016/ingestible-origami-robot-0512>) that they designed to patch stomach wounds, deliver medicine, and remove dangerous foreign objects that patients may have accidentally swallowed. In early simulations with pig esophagus and gut tissue, the robot traveled down to the stomach in an ice capsule that melted along the way. Once there, the robot unfolded and could be

steered around the stomach using external magnets. In a demonstration video provided by MIT News (<http://news.mit.edu/2016/ingestible-origami-robot-0512>), the researchers show that the robot can move a button battery in their simulation stomach. The researchers presented their robot this week at the International Conference on Robotics and Automation.

“It’s really exciting to see our small origami robots doing something with potential important applications to health care,” said Daniela Rus, lead researcher on the study and director of MIT’s Computer Science and Artificial Intelligence Laboratory.

The meat robot builds on other origami robots the lab has made. It consists of two layers: one of a biodegradable shrink wrap called Biolefin and another of dried pig intestines used in sausage casings. When sections of Biolefin are warmed up, that layer contracts and, based on the folds and slits in the pork layer, the whole robot folds. This contracting and folding action fuels a “stick-slip” motion, whereby a robot appendage sticks to the stomach surface via friction, but then slips free when a new area warms, the robot folds, and its weight shifts.

Embedded in the center of one of the robot’s accordion folds is a tiny magnet that allows the robot to be steered using magnetic fields outside the body. The same magnet can pick up a button battery. Each year, thousands of kids accidentally swallow button batteries—the tiny fuel cells from toys, wristwatches, calculators, and other common household gadgets. If the battery gets stuck in the esophagus or stomach, it can leak electrical current and burn through tissue, causing potentially lethal injuries.

Ingestible origami robot (<https://www.youtube.com/watch?v=3Waj08gk7v8>)

By Massachusetts Institute of Technology (MIT) (<https://www.youtube.com/user/MassachusettsInstituteofTechnology>)



Melanie Gonick/MIT

Ars Technica (<http://arstechnica.com/science/2016/05/tummy-problems-just-swallow-this-stomach-repairing-origami-robot-made-of-meat/>) · by Beth Mole · May 14, 2016