

# Free Floating Millimeter-Sized Distributed Implantable Gastric Seeds

ID# 2017-4698



PennState

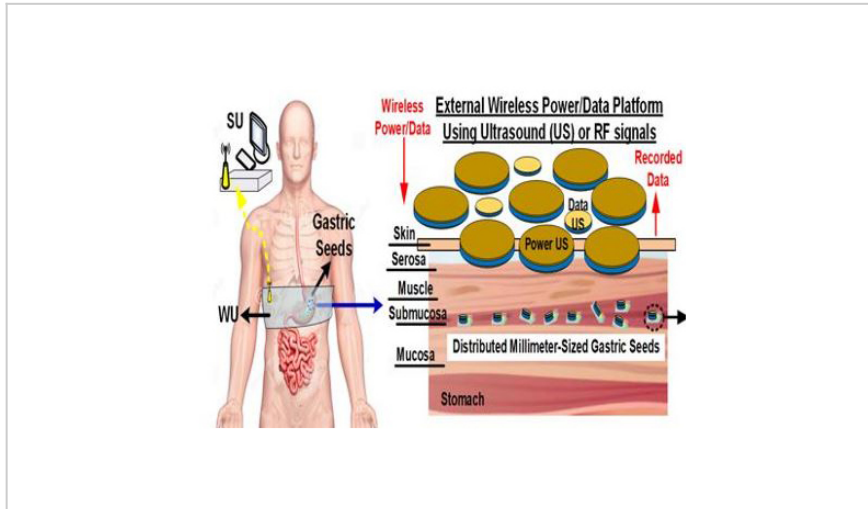


Illustration of Gastric Seeds

## Technology Summary

A network of millimeter-sized implants called “gastric seeds” have been developed for recording and stimulating gastric slow waves (SWs) inside the whole stomach for diagnosing gastric motility disorders such as gastroparesis and functional dyspepsia. The gastric seeds are endoscopically implanted in the stomach submucosa space, which allows the seeds to modulate and acquire SWs from the stomach through independent interrogation of each addressable gastric seed with unique identifications. Gastric seeds may use either ultrasound or RF signals (inductive link) for wireless power and bidirectional data transmission. For instance, when the gastric seeds communicate with ultrasound using sharp pulses, the received pulses are used to identify the location of the gastric seeds, and therefore, to measure the gastric motility.

## Application & Market Utility

The present invention would be the first diagnostic strategy to implement real-time continuous monitoring of slow wave dysrhythmias in conscious patients. This feature enables a much easier diagnoses of gastroparesis and functional dyspepsia, without patients having to undergo multiple clinical visits and tests.

## Next Steps

Inventor has a preliminary prototype that demonstrates the simplified system of the invention. Seeking research collaboration and licensing opportunities.

TECHNOLOGY READINESS LEVEL

4-7

### Seeking

Investment | Licensing | Research

### Keywords

- biomedical implants
- ultrasound
- stomach
- gastroparesis
- functional dyspepsia

### Researchers

#### Mehdi Kiani

Dorothy Quiggle Assistant Professor

[Website](#)

### Originating College

College of Engineering

### Office of Technology Management Contact

Rokita, Joseph  
jjr152@psu.edu  
814-863-6336



Invent Penn State is a Commonwealth-wide initiative to spur economic development, job creation, and student career success. Invent Penn State blends entrepreneurship-focused academic programs, business startup training and incubation, funding for commercialization, and university-community collaborations to facilitate the challenging process of turning research discoveries into valuable products and services that can benefit Pennsylvanians and humankind. Learn more at [invent.psu.edu](http://invent.psu.edu).

Penn State is an equal opportunity, affirmative action employer, and is committed to providing employment opportunities to all qualified applicants without regard to race, color, religion, age, sex, sexual orientation, gender identity, national origin, disability or protected veteran status.