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# ULTRASOUND-DRIVEN VESTIBULAR-EVOKED MYOGENIC DIAGNOSTIC TEST

## DIAGNOSTICS

System for diagnosing vestibular otolith function using focused ultrasound and infrared pulses.

### TECHNOLOGY TYPE

Software  
Ultrasound  
Medical Device

### STAGE OF DEVELOPMENT

- Demonstrated proof of concept in animal models.
- Additional research required to optimize delivery method.

### IP PROTECTION

#### PCT Pending

Ultrasonic Vestibular Analysis  
WO2017123807A1

### LEARN MORE

Reference Number: U-5903

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### TECHNOLOGY SUMMARY

The vestibular system is vital part of a person's ability to balance. Almost 69 million Americans have experienced vestibular dysfunction. An additional 8 million American adults report a chronic problem with balance, while 2.5 million report a chronic problem with dizziness. Diagnosing vestibular dysfunction requires a series of expensive and invasive tests, such as vestibular evoked myogenic testing. These tests are often inaccurate and can cause patient discomfort.

The *ultrasound driven vestibular-evoked myogenic diagnostic test* uses focused ultrasound and infrared pulses to stimulate vestibular organs. These thermal pulses activate vestibular-evoked myogenic potentials in the neck and ocular muscles. The myogenic potentials are averaged over time to generate a waveform that represents vestibular organ function. The magnitude and latency of the stimulus-response is then used to diagnosis vestibular otolith function.

### FEATURES AND BENEFITS

- Improves specificity and accuracy of vestibular dysfunction testing.
- Facilitates stimulation of individual vestibular organs.
- Reduces patient discomfort by eliminating cochlea exposure to loud sounds.

### RECENT PUBLICATIONS

Iversen, M.M., Christensen, D.A., Parker, D.L., Holman, H.A., Chen, J., Frerck, M.J., Rabbitt, R.D. (2017). Low-intensity ultrasound activates vestibular otolith organs through acoustic radiation force. *The Journal of the Acoustical Society of America*. 141:4209. doi: [10.1121/1.4984287](https://doi.org/10.1121/1.4984287)

### INVENTOR PROFILE

**Richard Rabbitt**, Ph.D., [Professor - Bioengineering](#)

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