

Using Ultrasound to Aggregate Cells to Make them Visible for Noninvasive Diagnosis of Meningitis

Non-invasive ultrasound aggregation of white blood cells for painless meningitis screening.

Researchers at Purdue University have proposed a non-invasive method to diagnose bacterial meningitis in children. Bacterial meningitis is an infection that can be particularly grave for children and can lead to neurologic defects, learning disabilities and even death. The current method to diagnose meningitis involves a spinal tap or lumbar puncture to collect white blood cells, a method that is invasive, painful, and expensive. The lumbar procedure is not only a cause of stress & discomfort for the child, but it also imposes a significant cost burden. The Purdue researchers' method uses ultrasound systems to generate waves lower than 300 kHz for aggregating and focusing white blood cells in cerebrospinal fluid. This method is non-invasive and painless.

Advantages:

- Non-invasive
- Painless

Applications:

- Diagnostic detection of bacterial meningitis

TRL: 1

Intellectual Property:

Provisional-Patent, 2022-06-30, United States

Utility Patent, 2023-06-30, United States

Technology ID

2022-BABB-69853

Category

Biotechnology & Life
Sciences/Biomarker Discovery &
Diagnostics
Digital Health & Medtech/AI in
Medical Imaging
Biotechnology & Life
Sciences/Analytical & Diagnostic
Instrumentation

Further information

Patrick Finnerty
pwfinnerty@prf.org

View online page



Keywords: Acoustic levitation, Bacterial meningitis, Biomedical Engineering, Cauda equina, Cerebrospinal fluid, CSF, diagnosis, Dual frequency ultrasound, Fontanelle, Infants, Lumbar puncture, Noninvasive, Pediatrics, Reflection, Spinal canal, Spinal fluid, Spinous process, Standing Wave, Ultrasonic sector scans, Ultrasound, White blood cells