

UNIVERSAL BACTERIAL SENSOR

*Diagnostics and detection of all bacterial
infectious disease*



SUMMARY

The need for agnostic diagnostics that can provide early and rapid information on any emerging threat, that can be used at the point of need is the holy grail of diagnostics. Our platform, inspired by innate immune recognition, melds tailored novel assays with sensitive detection for the universal detection of bacterial pathogens at the point of need.



MARKET APPLICATION

Sepsis diagnosis is a \$370 Million market. For saving lives, the disease needs to be diagnosed and treated within 12 hours. Current diagnostics require 14 hrs. Universal diagnostics has the potential to break into the \$1.05 Billion point of care infectious disease market, and \$3.35 B clinical microbiology market. With emerging antimicrobial resistance, and the post-antibiotic era predicted in 2050, this need is expected to increase.

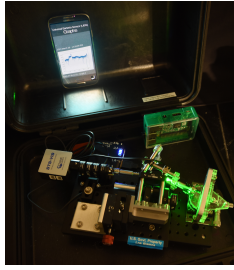
BENEFITS

The Universal Bacterial Sensor (UBS) provides a rapid diagnostic that can be applied at the point of care. It is universally applicable to all pathogens to identify bacterial infection. Moreover, the sensor is not susceptible to pathogen evolution, including emerging antimicrobial resistance.

- Universal
- Rapid Analysis
- Drop of blood for all diagnostic applications
- On-site sample processing
- Ultra-sensitive
- Novel proprietary assays for amphiphilic targets in clinical samples
- Ultrasensitive waveguide based biosensor

CONTACT

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WHY WE ARE BUILDING UNIVERSAL BACTERIAL SENSOR

Our sensor provides an accurate diagnosis in minutes that identifies the class of bacterial pathogen causing the infection (Gram-negative, Gram-positive, or Gram-indeterminate), which can directly inform the treatment strategy without the need for blood culture. A rapid diagnosis allows for immediate treatment, which can save lives. Our sensor removes bias associated with the choice of diagnostic used. It is field portable and easy to use: simplifies the sample to answers pipeline.



WHAT'S BEHIND OUR TECHNOLOGY

We have developed a suite of novel assays for direct detection of amphiphilic biomarkers in aqueous blood. This is based on understanding of host-pathogen biology from our work. We have a novel sensor platform for the ultra-sensitive detection of these biomarkers at the point of need, rapidly and accurately. We have also developed the first microfluidics samples processing approach, and multiplex assays, for these greasy biomarkers in blood, which facilitates field readiness.



OUR COMPETITIVE ADVANTAGES

Multiplex, rapid detection of all bacterial pathogens in blood, within minutes, at the point of need, using a fieldable sensor technology. The gold standard for diagnosing sepsis is blood culture (minimum 12 hours). Once a positive blood culture is obtained, further testing is performed using clinical laboratory instruments (bioMérieux, BioFire, etc.) to inform treatment options. Other molecular assays (Roche) can be used, but require a positive blood culture. Clinicians diagnose sepsis using non-specific physiological examination (temperature, pulse rate, etc.) and testing of host factors such as lactate levels, but these are unreliable and do not inform treatment.



OUR TECHNOLOGY STATUS

Components of the technology are at various levels of tech readiness with the benchtop sensor and assays being further developed than the field portable unit and microfluidics chip. We are seeking a commercialization partner to collaborate with us through a Cooperative Research and Development Agreement (CRADA) to further develop the technology for commercial purposes. We are very interested in continued research and development of the different versions and components of UBS.



PUBLICATIONS AND IP

U.S. Pat. No. 9,835,618

U.S. Pat. Appl. No. 2017/0307604