



Microbial Pulse

EFFECTIVE ANTIBIOTIC SELECTION IN MINUTES

Development Team

CEO Danielle France, PhD, MIT

Biological Engineer with 18 years experience in academic, start-up, and federal lab R&D

CTO Fred Walls, PhD, U. Wash

Physicist with renowned low-noise sensor electronics expertise. Fellow IEEE, American Physical Society

Ian Babson, Microbiologist

Josh Cynamon, Business Dev.

Funding = Non-Dilutive

2018 \$112,000 NIST Science and Technology Entrepreneurship Program (N-STEP)

2019 \$225,000 NSF SBIR Phase I

Market: Urinary Tract Infections

Testing upon hospital admission for UTI delivers 10:1 ROI to hospital through decreased length of stay

13 million UTIs

3 million urgent

800,000 hospitalized

Largest 1300 US hospitals net \$500M annually

Intellectual Property

US Patent 9,725,752 issued 8/2017

What We Do...

MPD technology cuts the time to accurate antibiotic prescriptions from 2 days to < 2 hours, by “taking the pulse” of bacterial pathogens. A panel of sensors detects nanomechanical fluctuations from the bacteria that reveal which antibiotics will effectively treat an infection. In less than 2 hours, physicians receive a menu of proven susceptible treatment options while also getting an early flag on multidrug resistance.

Direct-from-sample, culture-free, phenotypic UTI susceptibility in < 2 hours

... and Why

SEPSIS is responsible for 1 of every 3 deaths in US hospitals, claiming 258,000 lives as the costliest condition in the healthcare system.

25% of sepsis cases originate as urinary tract infections (UTIs), common infections that are no longer easily cured by common antibiotics as antimicrobial resistance rates climb.

When physicians must wait 2 DAYS for test results identifying the right antibiotic for a UTI, patients suffer. Incorrect prescriptions lead to worsening infections, lives lost, and increased antibiotic resistance.

Business Model

MPD technology requires an installed proprietary instrument that reads sensors contained in a one-per-patient disposable test cassette. Hospital clinical laboratory customers can generate over \$200K revenue per instrument per year on an ongoing basis.

Development Stage

Initial proof of concept was performed at NIST (Boulder). Since 2017 **major technical risks have been retired on non-dilutive funding**:

1. Full digital electronic implementation 2. Direct from UTI sample testing showing uropathogenic *E. coli* susceptibility to ampicillin in 2.5 hours. 3. Disposable low cost cassette prototype retaining sensor performance.

Technical development now focuses on full clinical sample testability and building a beta instrument ready for conducting clinical trials.

Microbial Pulse Diagnostics seeks \$650K seed funding

* Treat urinary tract infections without guesswork * Save lives * Save money * Protect existing antibiotics