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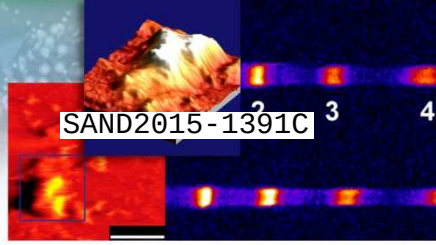

BaDx: Credit card sized pathogen detector

Melissa R. Finley

R&D Systems Research and Analysis

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Sandia MedTech Showcase

U.S. DEPARTMENT OF ENERGY | NNSA National Nuclear Security Administration

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Technology Overview

Diagnostic test to identify bacterial pathogens: Lab on a Chip

Clinical or environmental sample:

- ***Detects ~100 spores***

***Bacillus anthracis* detection:**

- Self contained
- Portable
- Requires no infrastructure
- Safe and secure

Selective micro-culture

Decontamination

Immunoassays

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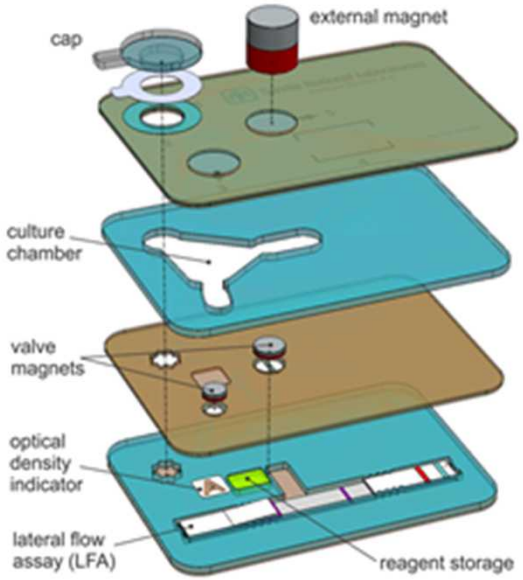
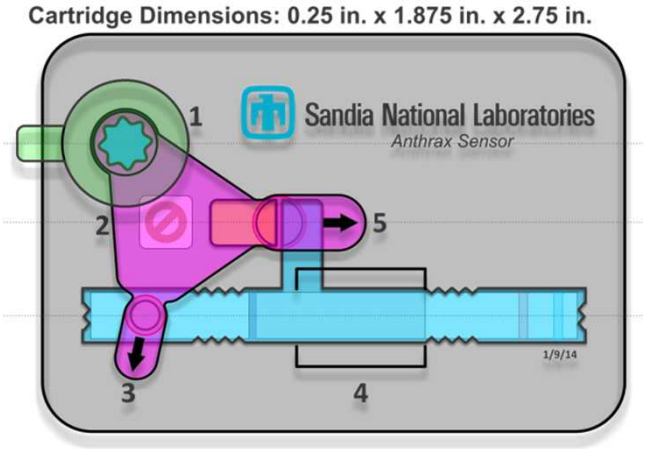
Underlying Technology

Microfluidic platform for bacterial detection made from laser ablated plastic laminates

- Selective bio-amplification
- Magnetic valve system facilitate chamber communication
- Commercial lateral flow assay
- Integrated decontamination





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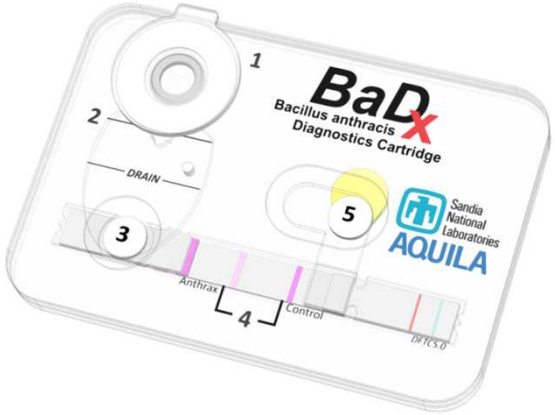
Key Advantages

- **Adaptable:** Multiple bacterial pathogens
- **Easy to use:** Requires no expertise
- **Inexpensive:** $5 - $10
- **All inclusive:** Laboratory on a chip
- **No infrastructure requirements:** No power, instrumentation, or reader required
- **No sample prep**: Direct analysis of samples including clinical and environmental
- **Selective amplification:** Minimize contaminants, as sensitive as the gold standard
- **Safe and secure:** self-contained with decontamination methods included
- **Long shelf life**: Approximately one year and can be maintained at room temperature



Portable and light weight: Credit card size

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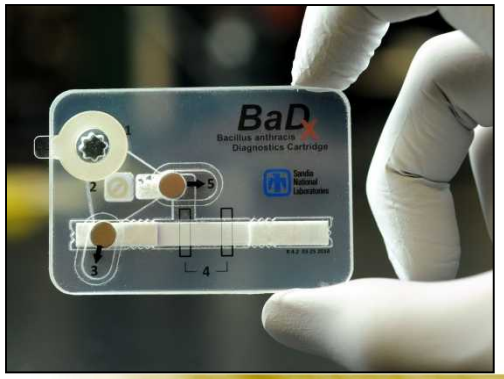
Differentiating factor from existing technology

- **One step:** Inoculation can be done on-sight
- **Easy to use:** Multiple laboratory steps are not needed
- **All inclusive:** Media and reagents are within the device
- **Portable:** Laboratory on a chip
- **Power-free**: No infrastructure requirements
- **Self-contained:** Inaccessible once inoculated and sealed
- **Safe and secure:** Pathogen is inaccessible once inoculated, supports laboratory biosafety and biosecurity



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Commercial Applications

- **Adaptable to detect bacterial pathogens**
  - Nosocomial infections: environmental monitoring and support remediation efforts
    - Hospitals, clinics, homes
  - Foodborne pathogens
  - Environmental surveillance
- **Diagnostic laboratories**
  - Low-resource environments
  - Field outbreaks and biosurveillance
- **Animal and public health professionals**
  - Enhance diagnostic capabilities in clinics
- **First responders**
  - Detection of bioterrorism
  - Naturally occurring outbreaks
  - Support remediation

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