

# SpinDx - Platform for Point-of-Care Medical Diagnostics

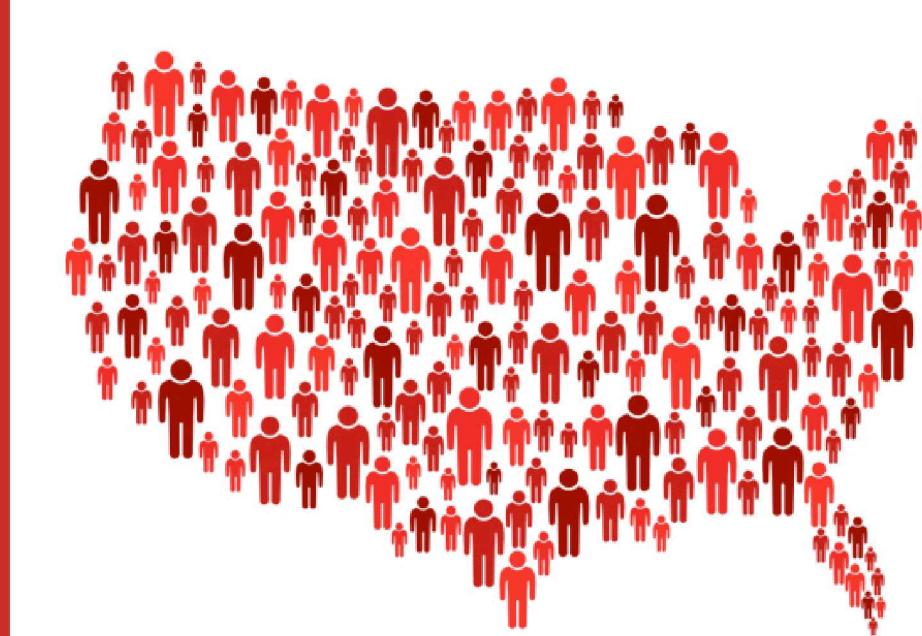
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## INTRODUCTION

- Sepsis** is one of the leading causes of death globally due to difficulties in rapid diagnosis of the disease
- No single biomarker** allows for rapid and reliable diagnosis
- Laboratory tests such as blood culture are **too slow** to give actionable information



AT LEAST 1.7 MILLION  
ADULTS IN THE U.S.  
DEVELOP SEPSIS  
EACH YEAR, AND  
NEARLY 270,000 DIE  
AS A RESULT.

GET AHEAD  
OF SEPSIS

KNOW THE RISKS. SPOT THE SIGNS. ACT FAST.



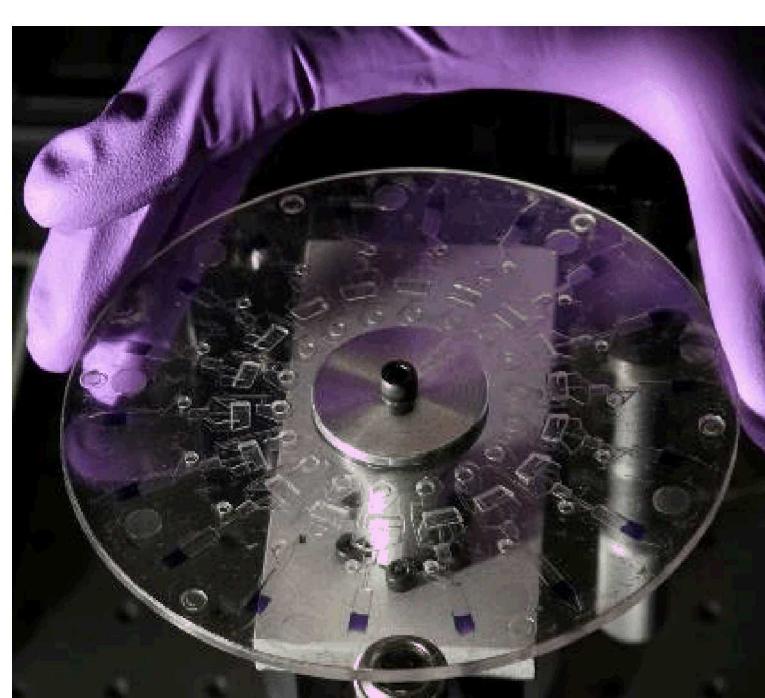
## TECHNOLOGY OVERVIEW

**SpinDx** is a **portable platform technology** capable of performing multiplexed immunoassays for panels of up to 20 targets at a time

**Disposable assay disks** (cartridges)  
• preloaded and pre-packaged with reagents within microfluidic channels

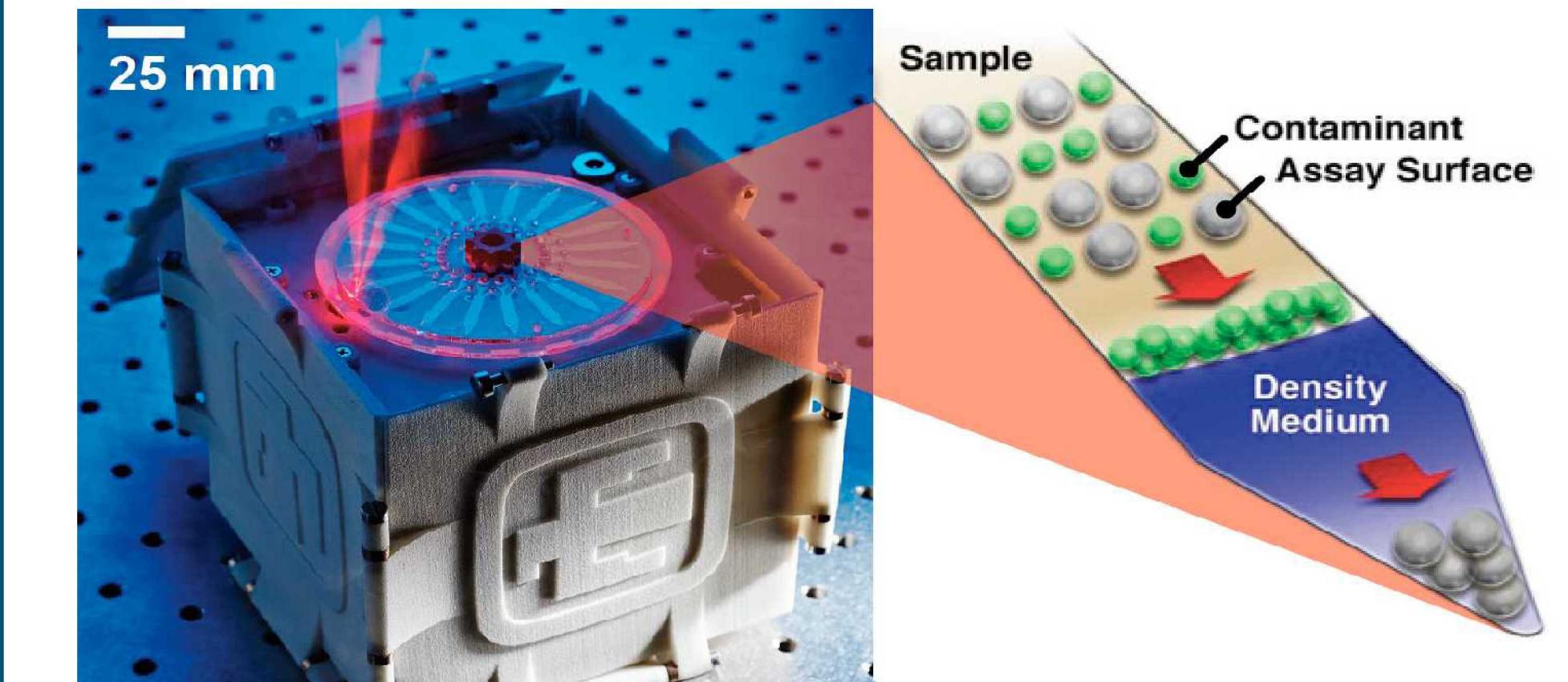
**Miniaturized fluorescence optics**  
• detection of proteins, carbohydrates, and nucleotides

**Microfluidic platform**  
• allows for small sample sizes and POC uses



## PRODUCT/TECHNOLOGY DESCRIPTION

**Much smaller sample size needed** compared to ELISA



### High Sensitivity

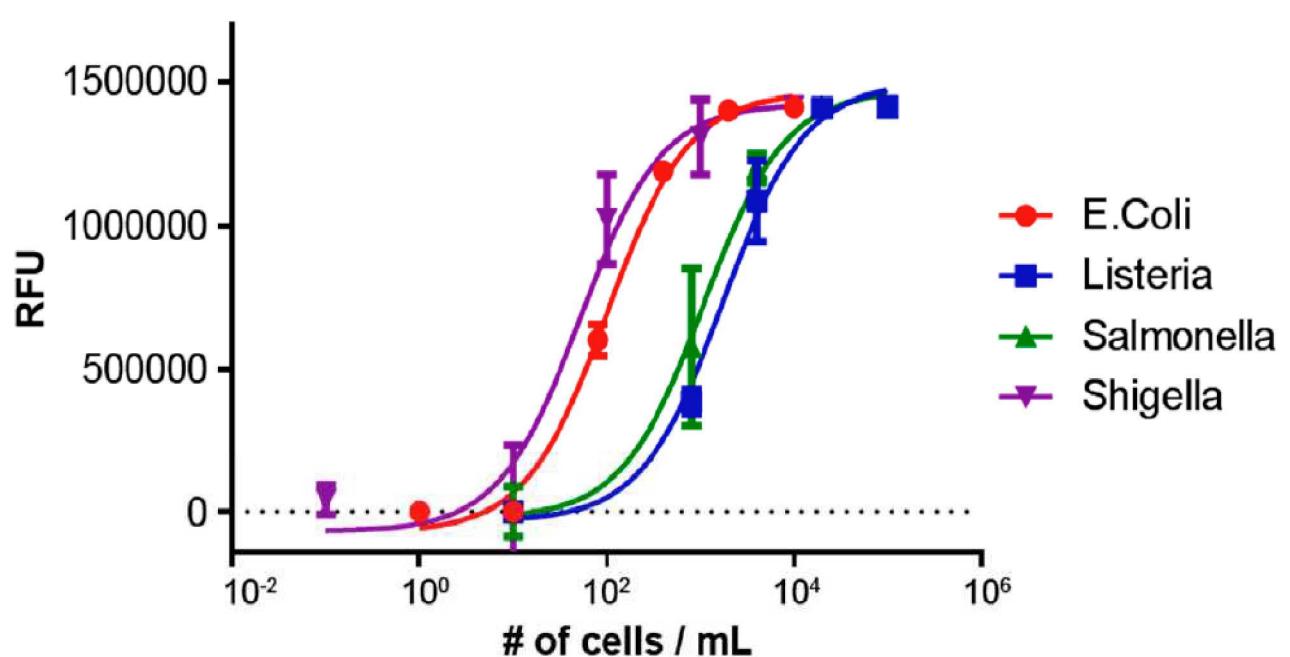


Figure 2. Multiplexed detection of *E. coli*, *Listeria*, *Salmonella*, and *Shigella* from a stool sample. Each target pathogen was detected in the presence of a background pool of the other non-targeted pathogen to demonstrate specificity and selectivity.

### Low Detection Limit

	LOD (# of Cells)						
	Microfluidic Singleplex			Microfluidic Multiplex		Conventional Singleplex	
	Buffer	Urine	Blood	Stool	Buffer	Stool	Buffer
<i>E. coli</i>	11	34	33	9	51	31	38
<i>Listeria</i>	999	796	1668	320	2849	238	1745
<i>Salmonella</i>	2416	703	1200	974	1154	328	2648
<i>Shigella</i>	53	33	61	20	94	12	1236

Table 1. The limit of detection was determined for the full panel of bacteria in a variety of sample matrices, including assay buffer, urine, blood, and stool. Singleplex detections were performed for all matrices and multiplex detections were confined to assay buffer and stool. Conventional ELISA detections in assay buffer are also shown for comparison.

### Minimal Sample Prep Needed

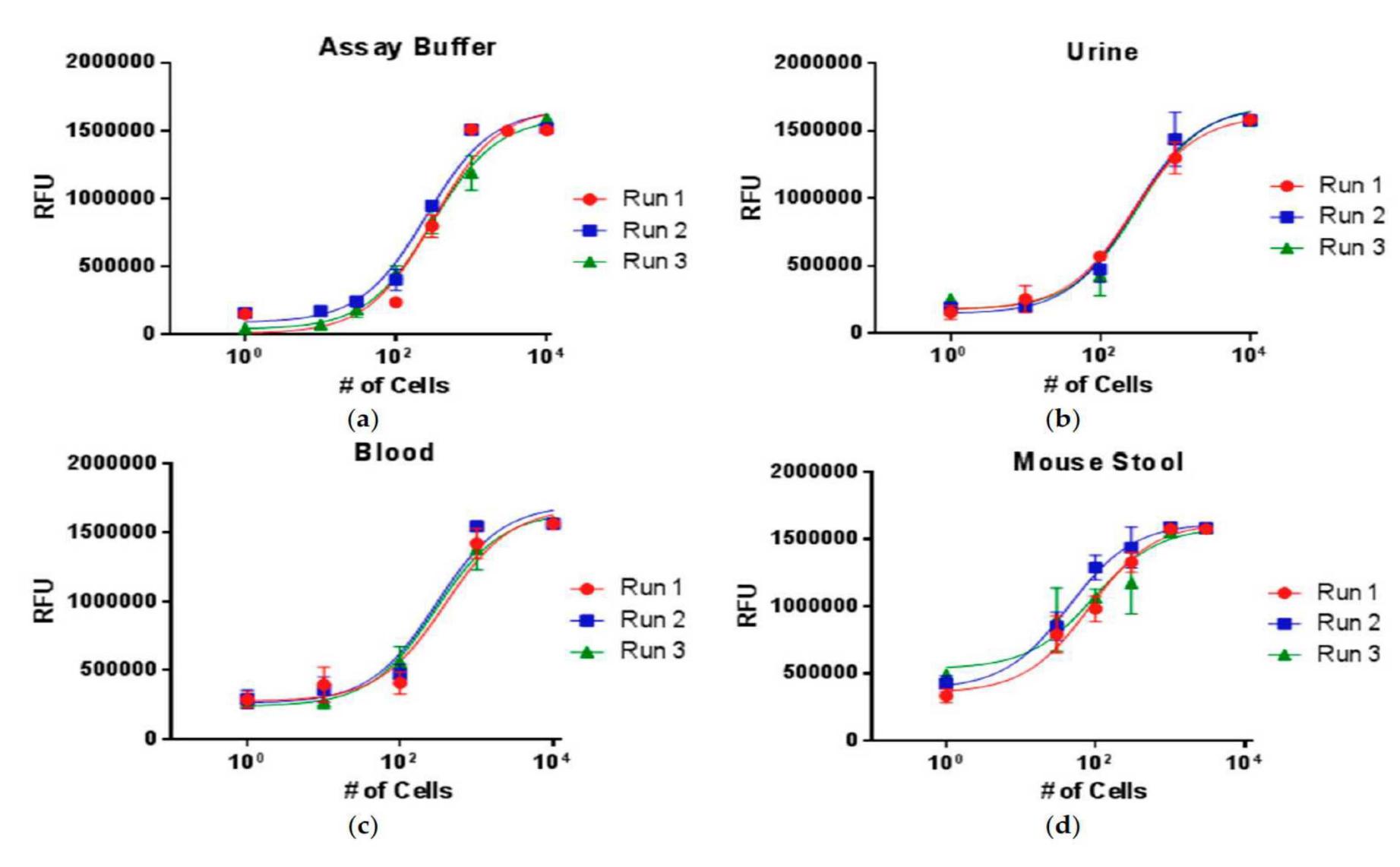


Figure 4. The ability to work with clinical samples without extensive sample preparation was demonstrated with the detection of *E. coli* in a variety of complex sample matrices: (a) buffer; (b) urine; (c) blood; and (d) mouse stool.

## PRODUCT PROFILE

- Allows **direct analysis of clinical samples** with minimal sample prep or pre-treatment.
- Compact and portable** for easy point-of-need use
- Dramatically **reduces time** between sample acquisition and diagnostic results
- Enables **rapid administration of treatment** to maximize positive patient outcomes

## BUSINESS MODEL

- Multiple revenue streams possible
  - Capital equipment sales – device enclosure
  - Consumables sales – cartridges
  - Customized assays and cartridges

## ADVANTAGES

**Cost effective, rapid solution** for wide range of in vitro and POC diagnostic testing needs

- infectious disease, cardiac markers, neonatal/ pediatric monitoring, others

**Expandable to multiple markets**  
• food testing, veterinary, agriculture

### Multiple Simultaneous Assays

- detect multiple sepsis microorganisms
- allows for redundancy with same assay in multiple microfluidic channels

## STAGE

- SpinDx** is currently an advanced laboratory prototype (TRL 5-6), approximately 10 units produced in-house.
- Developed with **Sandia internal funding**, and transitioning to government sponsorship (NIH, DHS, DTRA)
- Available through **non-exclusive license** with field of use carve outs and periods of restraint
- Ready for **transfer to a commercialization partner** for optimization, productization, and scale-up.

## CONCLUSIONS

- SpinDx** is ideally suited for rapid diagnostics at the point of need for medical emergencies such as sepsis.
- SpinDx** is a platform technology that is readily adapted to many different assays and panels of biomarkers.

## ACKNOWLEDGEMENTS



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