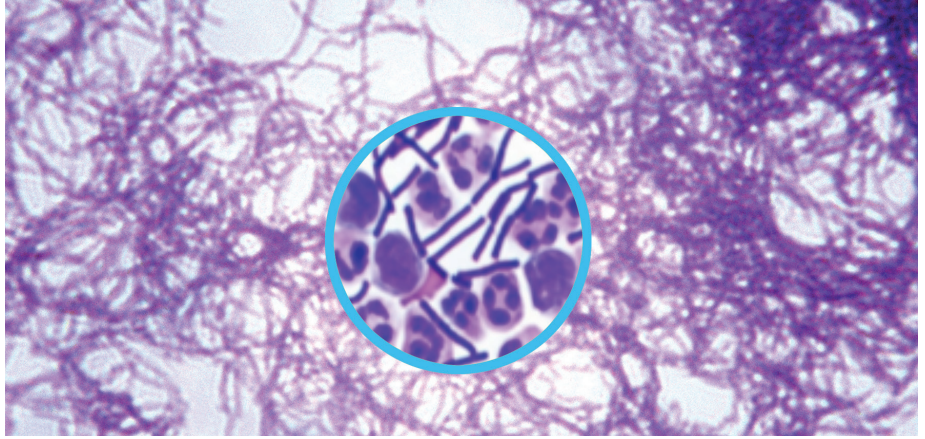


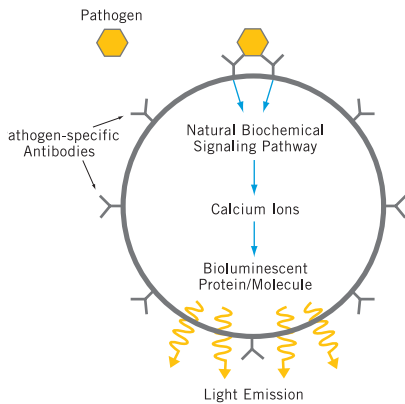


BIO-SCAN™

HIGH-SPEED DETECTION
FROM PATHSENSORS, INC.



PathSensors' Bio-Scan™
Assays use CANARY®
Biosensor Technology



BioSensors Available

<i>Salmonella spp.</i>	<i>Dengue virus</i>
<i>Listeria</i>	<i>RVF virus</i>
<i>E. coli</i> O157:H7	<i>Vibrio cholerae</i> (strains O139 & O1)
<i>Bacillus anthracis</i> spores	<i>Chlamydia spp.</i>
<i>Francisella tularensis</i>	<i>Methicillin – Resistant</i> <i>Staphylococcus aureus</i>
<i>Yersinia pestis</i>	Group B Strep
<i>Orthopox virus</i>	VEE virus
<i>Ricin toxin</i>	Prion protein
<i>Botulinum toxin</i>	FMD virus
<i>Brucella spp.</i>	<i>Shigella dysenteriae</i>
<i>Bacillus subtilis</i> spores	- Digitonin labeled probes
<i>Campylobacter</i>	- Double stranded DNA complex
<i>Ralstonia spp.</i>	
<i>Potyvirus</i>	
<i>Phytophthora spp.</i>	

NOTE: Not all biosensors are available on all PathSensors hardware platforms. Contact us for more information.

Bio-Scan™ Anthrax Assay Kit

THE BIO-SCAN™ ANTHRAX ASSAY KIT IS PART OF THE PATHSENSORS FAMILY OF BIO-SCAN™ ASSAY SOLUTIONS, WHICH OFFER HIGH SPEED, HIGH-SENSITIVITY PATHOGEN DETECTION.

The Bio-Scan™ Anthrax Assay Kit allows for unparalleled detection of low levels of *Bacillus anthracis* (*Ba*) in less than 5 minutes. The Bio-Scan™ Anthrax Assay Kit can be used with PathSensors' high performance Zephyr™ analysis platforms for a comprehensive and cost effective detection solution.

PathSensors' Bio-Scan™ Assays use breakthrough CANARY® technology originally developed by MIT-Lincoln Laboratory. Independent tests have shown that PathSensors' CANARY® provides superior speed to detection and sensitivity compared to technologies such as PCR. The technology utilizes biosensors created from B lymphocytes (white blood cells) modified to express surface-bound, target-specific antibodies and a bioluminescent protein. When the biosensor binds to its target pathogen, the antibodies trigger the intracellular release of calcium. This calcium causes the bioluminescent protein to emit light. Sophisticated algorithms analyze this light output, resulting in definitive "positive" or "negative" test results.

Advantages of this system are speed and sensitivity. The speed of detection is a result of rapid intracellular signaling. The sensitivity is achieved through signal amplification within the cell. The technology identifies targets in minutes with analytical sensitivities down to picograms of target per sample.

Assay Specifications

Analytical Sensitivity (LoD)	<i>B. anthracis</i> Ames, 100 spores* <i>B. anthracis</i> Vollum, 500 spores* <i>B. anthracis</i> Sterne, 500 spores*
Assay Sensitivity	500 spores/mL (no powder)
(>98% P₁₀)	500-5,000 spores/mL (in powder)
Resistance to Interferents	0 False Positives with 27 powders
Time to Results	5 minutes

* performance validated by Battelle, Columbus, OH



DETECTING PATHOGENS AT THE SPEED OF LIGHT

Ba Assay Protocol:

- Dilute collected sample
in Sample Diluent
- ▼
- Centrifuge for 2 minutes
- ▼
- Decant supernatant,
add 1 mL Sample Diluent
- ▼
- Decant supernatant,
add 250 µL Sample Diluent
- ▼
- Start Zephyr instrument,
enter operator ID &
assay barcode
- ▼
- Centrifuge sample 2 minutes
- ▼
- Add Biosensors
- ▼
- Centrifuge 5 seconds
- ▼
- Transfer sample to luminometer
(read for 1 minute)
- ▼
- RETRIEVE RESULTS**

About PathSensors:

PathSensors is a leading biotechnology solutions and environmental testing company, providing high speed, high sensitivity, pathogen and threat detection solutions.

PathSensors' solutions can detect a wide range of threats, including anthrax, ricin, *Ebola* and *salmonella*. PathSensors' technology is being used today by government and commercial customers for multiple applications.

Testing and Results:

The Bio-Scan™ Anthrax Assay has been extensively tested for the ability to detect *Bacillus anthracis*, both alone, and in combination with a variety of suspicious powders.

The suspicious powders used for testing were:

Acetaminophen	Borax®	Epsom salt	MiraLAX®	Tooth powder
Aerosil powder	Chalk	Foot powder	Powdered sugar	Tums™
Ajax®	Corn starch	Gym chalk	Road dust	Yeast
Baking powder	Dairy creamer	Infant formula	Salt powder	
Baking soda	DiPel	Instant pectin	Spackling powder	
Bentotite	Dry milk	Kaolin	Talcum powder	

SOURCE: Suspicious Powders Panel, Critical Reagents Program.

Each powder was tested alone, and spiked with various concentrations of sporulated *Bacillus anthracis* (*Ba*) Sterne to determine both the extent of interference the powder might have on the detection of *Ba*, and also the number of false positives that might be produced by the powder alone. *Ba* was also tested in the absence of powder.

Concentrations of 100 to 10⁶ *Ba* spores were spiked into 5mg of each powder, and allowed to dry for 30 minutes. The material was then swabbed and processed through the assay protocol shown in the box to the left. There were no false positive results with any of the powders. **The limit of detection for *Ba* in the absence of any powder was 500 spores/mL.** This data agrees with previous liquid assay testing performed at Battelle (Columbus, OH) showing LoDs of 100 and 500 spores for the virulent *Ba* strains Ames and Vollum, respectively. In the presence of the various powders, the limit of detection for *Ba* was 500 to 5,000 spores depending on the powder. **The time from swab collection to results was 5 minutes.**

TECHNOLOGIES FOR FIRST RESPONDERS - BA SPECIFIC

Supplier: Device	Approx. Time (min)	Reported LoD (spores/mL)
CANARY®		
PathSensors: Zephyr™/Bio-Scan™	5	< 1,000
IMMUNOASSAY		
Typical Immunoassay Device	5 - 20	Typical >10,000
PCR		
Typical PCR Device	30-60	Typical > 1,000

SOURCE: Based on validation testing at Pacific Northwest National Labs.

