

FAST | EASY | AFFORDABLE | SAFE | RELIABLE

TruArray BTA Test for Identifying Biothreat Agents



OVERVIEW

The natural occurrence of disease caused by biothreat agents is relatively rare. Because of the unfortunate reality and potential for bioterrorism, limited vaccination and prophylactic coverage, and a tendency for naturally occurring infections to occur in less industrialized or remote areas, surveillance activities and rapid detection are essential for controlling disease outbreaks worldwide. However, many of these agents present with a common and non-descript set of symptoms (sudden fever, chills, headaches, diarrhea, muscle aches, joint pain, dry cough, progressive weakness), such that a surveillance and diagnostic tool should test for multiple organisms simultaneously. The TruArray BTA Kit is the first field-portable, array-based tool for simultaneously detecting biothreat agents in a single assay.

TRUARRAY BTA TEST CAPABILITIES

- **Integrated Workflow:** Akonni TruDiagnosis® Systems utilize the TruDx™ 1000 Reader, TruCycler™ Satellite Thermal Cycler, and Akonni TruTip™ XT DNA Kits with Beads for workflow-integrated extraction, amplification, hybridization, detection, and analysis.
- **Broad Coverage:** Simultaneously detects *Bacillus anthracis*, *Yersinia pestis*, orthopoxidae, and Venezuelan equine encephalitis virus, representing both DNA and RNA genomes. Prototype assays available to detect *Francisella tularensis*, *Brucella* spp., *Burkholderia mallei* and *pseudomallei*, *Rickettsia prowazekii*, *Clostridium perfringens*, and *Coxiella perfringens*.

- **Sensitive and Specific:** Utilizes the polymerase chain reaction to offer single-target detection limits as low as 10^2 CFU or 10^3 PFU mL^{-1} swab or whole blood.
- **Field Portable:** Ready for deployment in a mobile laboratory, field trailer, or low-resource setting. Components of the TruDx 1000 system have been tested on-site at the U.S. DOE Integrated Field Research Center in Rifle, CO. The TruArray BTA kit and TruDiagnosis System is also used in the field as a next generation system for detecting biothreat agents.

TRUARRAY BTA TEST BENEFITS

- **Rapid:** Starting from samples of 100 μl to 1.5 ml or more, the TruArray BTA test delivers definitive results in a few hours with a total hands on time (sample-to-answer) less than one hour.
- **Accurate:** Simultaneous analysis from a single sample removes variability and delivers results you can trust.
- **Simple:** Easily operated by a single technical specialist, including batch processing capabilities. Simple data output and reporting that requires minimal training to understand.
- **Scalable:** Sample preparation solutions for nasal swabs, nasopharyngeal aspirate, whole blood, and culture will prepare TruArray-ready DNA in as few as 4 minutes. Multi-channel, fully automated TruTip sample preparation for higher-throughput settings.

MARKETS

INFECTIOUS DISEASES

GENETIC DISEASES

ONCOLOGY

PHARMACOGENETICS

ENVIRONMENTAL

BIOTHREAT

FORENSICS

TRUARRAY ADVANTAGE

In 2002, Akonni Biosystems acquired an exclusive license for medical applications of gel-element array technology developed by the Engelhardt Institute for Molecular Biology and Argonne National Laboratories. Since then, Akonni has significantly advanced the technology through improvements in manufacturing and providing an integrated, sample-to-answer capability for clinical laboratories or low-resource settings. The technology is now supported by over 100 scientific publications and 30 issued or pending patents. TruArray tests are well positioned to be the industry leader in molecular diagnostic tests.

A.	B.	Organisms per mL	TruArray Ave S/N	RAPID Ave C _t
	B. anthracis	10 ⁶	17.69	27.06
		10 ⁴	10.68	30.25
		10 ³	12.00	33.37
		10 ²	0.26	NEG
	Y. pestis	10 ⁶	78.94	27.04
		10 ⁴	96.11	30.67
		10 ³	47.49	33.31
		10 ²	27.85	36.53
	Vaccinia	10 ⁶	15.93	29.45
		10 ⁴	17.75	32.15
		10 ³	11.20	36.55
		10 ²	8.94	NEG
	VEE	10 ⁶	166.13	31.00
		10 ⁴	145.73	31.15
		10 ³	30.71	NEG
		10 ²	22.67	NEG

(A) Example microarray images for each of the TruArray BTA targets. (B) Target organisms were amended onto replicate (n=3) swabs at the indicated target load (CFU or PFU), and detected either with the Akonni TruArray BTA kit or the gold-standard TaqMan assay. Ct = threshold cycle at which fluorescence intensity exceeds 10X the background value. S/N = signal to noise ratio.

YOUR TRUARRAY BTA TEST KIT

Akonni TruArray BTA tests are available as pre-packaged kits providing all materials and reagents needed to perform 10 tests. The TruArray BTA kit is provided with species-specific amplification primers and a single amplification master mix that is designed for single-step amplification and labeling of both DNA and RNA genomes in a single reaction. For multiplex amplification with the TruArray BTA kit or the expanded prototype, please contact your Akonni representative today. For best results, we recommend using Akonni TruArray MRSA tests as part of an integrated workflow that includes TruTip XT DNA Kits with Beads, the TruCycler Satellite Thermal Cyclers for amplification and hybridization, and the TruDx 1000 Readers for image capture, data processing, data analysis, and reporting.

FDA STATUS

All of Akonni Biosystems tests are currently for Research Use Only, and are not for use in diagnostic procedures. Akonni is working to develop these products into Food & Drug Administration (FDA)-cleared diagnostic tests.

TO ORDER

200-10600

TruArray BTA test kit for detecting four biothreat agents. Includes primers mixes, buffers and reagents required to perform 10 tests.

100-10000:

TruDiagnosis System for multiplexed molecular diagnosis. Includes the Akonni TruDx 1000 Reader, Akonni TruCycler Satellite Thermal Cycler, and laptop computer with data collection and analysis software. Systems include one year warranty against defective parts. Accepts international AC; 90-264V, 50-60 Hz AC.

300-10300

TruTip XT DNA Kit with Beads (60 SPT) for hard-to-lyse microorganisms. Includes materials required to perform 60 extractions.

300-10301

TruTip XT DNA Kit with Beads (60 LPT) for hard-to-lyse microorganisms in thicker or more viscous samples. Includes materials required to perform 60 extractions.

To order call +1 301.698.0101

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For Research Use Only. Not for use in diagnostic procedures. No claim or representation is intended for the diagnosis, prevention, or treatment of a disease.

Protected by 1 or more U.S. Pat: 6,460,094; 6,442,734; 6,795,949; 7,096,435. Other patents issued and pending.

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