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The mission of the Integrated Consortium of Laboratory Networks (ICLN) is to coordinate federally sponsored analytical laboratory services for chemical, biological, radiological, and nuclear incidents through planning, identification of resources, prescribing of key process steps, and information sharing.

VET-LIRN NETWORK SPOTLIGHT:

15 Years of Vet-LIRN: Strengthening Human and Animal Health Through One Health Collaboration

The Veterinary Laboratory Investigation and Response Network (Vet-LIRN) recently reached a major milestone—15 years of service to human and animal health–a milestone highlighted in the *Journal of Food Protection* (Nemser et al., 2025). Created in 2010, Vet-LIRN is a coordinated network of 48 Veterinary Diagnostic Laboratories (VDLs) across North America working in partnership with FDA's Center for Veterinary Medicine (CVM). Together, this network provides critical laboratory capacity that directly supports CVM's mission to protect public and animal health.

From Animal Food Safety to a Broader Mission

As highlighted in the *Journal of Food Protection*, Vet-LIRN began with a strong emphasis on animal food safety, including testing diagnostic samples from animals to help identify problems in pet and livestock feeds. Over time, its role has expanded to address a wider set of CVM priorities. Today, Vet-LIRN:

- Investigates animal foodborne illness outbreaks, often triggered by consumer complaints
- Develops and applies methods to detect microbial and chemical contaminants in animal foods
- Monitors antimicrobial resistance (AMR) trends in animal populations
- Promotes responsible use of antimicrobials in veterinary settings
- Prepares for and responds to emerging threats such as COVID-19 and Highly Pathogenic Avian Influenza (HPAI)

This expanded scope reflects the growing recognition that animal health, food safety, and human health are closely connected.

Real-World Impact on Public Health

Over the past 15 years, Vet-LIRN has contributed to a number of high-impact public health investigations. Examples include work on:

- Multidrug-resistant Campylobacter infections in puppies
- Aflatoxin contamination in pet foods
- Salmonella in pig ear treats
- Botulinum toxin in alfalfa cubes

Through its AMR monitoring program, Vet-LIRN provides critical data that help track resistance and guide responses to both zoonotic and foodborne outbreaks. These efforts ensure that emerging issues are identified early and addressed quickly, underscoring Vet-LIRN's growing role as a national resource for coordinated, science-based responses to challenges at the intersection of animal and human health.

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https://www.icln.org
ICLN@hq.dhs.gov

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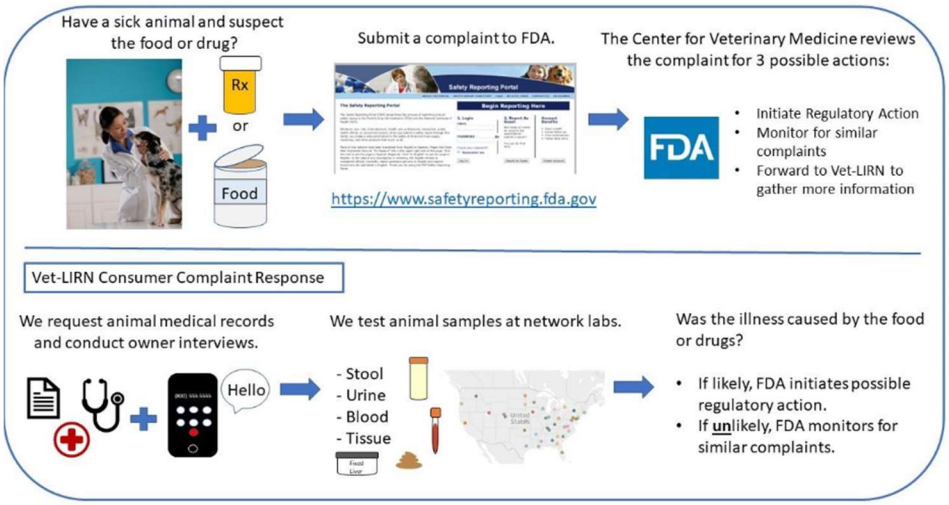

Figure (right):
Nemser, S.M., Ceric, O., Guag, J., Pauley, S., Jones, A., Proia, K., Miller, M.R., Tkachenko, A., Rotstein, D., Hodges, A., Reimschuessel, R., Tyson, G.H., The Veterinary Laboratory Investigation and Response Network: 15 Years of Promoting Human and Animal Health by Collaborating with the Veterinary Diagnostic Laboratory Community, *Journal of Food Protection* (2025), doi: https://doi.org/10.1016/j.jfp.2025.100625

One Health in Practice

Vet-LIRN's work is grounded in the One Health concept—the idea that human health, animal health, and environmental health are interdependent. Animal foods can be a source of human illness, antimicrobial-resistant pathogens can move between animals and people, and emerging pathogens often cross species barriers.

By collaborating with partners such as the U.S. Department of Agriculture (USDA), the Centers for Disease Control and Prevention (CDC), the National Antimicrobial Resistance Monitoring System (NARMS), the National Animal Health Laboratory Network (NAHLN), and other members of the Integrated Consortium of Laboratory Networks (ICLN), Vet-LIRN helps ensure that laboratory-based responses are coordinated across sectors. This networked approach enhances national readiness for zoonotic and foodborne threats and demonstrates what One Health looks like in day-to-day practice.

Building Preparedness for Emergencies

Vet-LIRN's VDL partners play a unique role in testing for animal pathogens, making them essential to emergency preparedness and response. During the COVID-19 pandemic, many VDLs—including those in Vet-LIRN—supported screening of animal samples for SARS-CoV-2 and, in some cases, provided surge capacity for human testing under provisional Clinical Laboratory Improvement Amendments (CLIA) certification.

Vet-LIRN also coordinated proficiency exercises to evaluate SARS-CoV-2 detection methods across a range of laboratories, including academic, government, and private institutions. These exercises demonstrated the ability of participating labs to reliably detect the virus in multiple sample types and strengthened overall testing confidence. In addition, Vet-LIRN worked with federal and state partners and local veterinarians to coordinate necropsies for animals that tested positive for SARS-CoV-2, helping to better understand the virus's impact in animal populations.

Looking Ahead: Future Directions for Vet-LIRN

As Vet-LIRN reflects on 15 years of network-building and accomplishments, it is also looking ahead to the next phase of its work. Several priorities will shape the network's future:

- Enhancing laboratory capacity to detect new and emerging chemical contaminants in animal foods
- Expanding testing capabilities to quickly identify and respond to novel pathogens and other emerging issues
- Continuing to develop and share methods and tools through cooperative agreements, helping VDLs address new analytical challenges and close capability gaps
- Strengthening One Health collaborations to improve understanding of how animal foods, animal pathogens, and antimicrobial resistance influence human and environmental health

By continuing to invest in laboratory readiness and cross-sector collaboration, Vet-LIRN will remain a key asset for CVM and its partners. The network's One Health approach ensures that threats at the animal–human interface are identified and addressed efficiently, supporting CVM's mission to protect both human and animal health in the years to come.

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New High-Throughput Method Speeds Anthrax Sponge-Stick Sample Processing

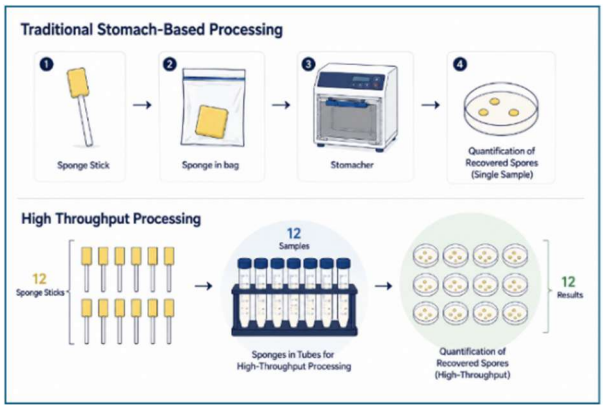
*Based on publication: Brisson, V. L., Kane, S. R., Shah, S. R., 2025. Development of a high-throughput method for processing sponge-stick samples to detect viable Bacillus anthracis spores. Journal of Microbiological Methods, 235, 107149.

A wide area biological warfare or bioterrorism incident involving *Bacillus anthracis* spores remains a critical planning scenario for agencies engaged in CBRNE preparedness and response. In such an event, affected areas must be extensively sampled to determine the severity and extent of contamination and potential exposure. This drives large, targeted sampling campaigns and generates a high volume of samples for analysis. Enhancing sampling and analytical methods is therefore essential to delineate contamination boundaries and confirm the effectiveness of decontamination operations.

Understanding the extent of contamination is a prerequisite for safely reopening facilities following an anthrax incident. Current targeted testing strategies typically begin with molecular analyses such as real time Polymerase Chain Reaction (PCR) to detect and identify *B. anthracis*. Once detected, laboratories apply viability-based methods—such as microbiological plate culture and Rapid Viability–Polymerase Chain Reaction (RVPCR)—to determine the presence and quantity of intact, viable spores that may pose a risk to human health.

Sponge-stick samplers are the most commonly used and preferred surface sampling tools among responders, including EPA On-Scene Coordinators (OSCs). In 2011, the Centers for Disease Control and Prevention (CDC) developed and validated a stomacher-based method for processing sponge-stick samples to recover B. anthracis spores. While effective, this approach processes only one sample at a time and requires a relatively large extraction buffer volume (90 mL). These factors limit the number of samples that can be processed concurrently and reduce overall laboratory throughput. Since that time, no major enhancements have been implemented to increase sponge-stick processing throughput, leaving a persistent bottleneck for rapidly analyzing the large number of samples expected during anthrax response and cleanup operations.

To help address this challenge, the Homeland Security Research Program within EPA's Office of Research and Development, in collaboration with the Department of Energy's Lawrence Livermore National Laboratory, has developed and published a new high-throughput method for processing sponge-stick samples to detect viable Bacillus anthracis spores.



In this approach, sponge-sticks are placed into 50mL tubes containing 25 mL of extraction buffer and shaken on a platform vortexer or orbital shaker to release spores from the sponge. The resulting suspension is transferred to separate tubes, and a secondary extraction step is performed in the original tube using an additional 10 mL of buffer to further improve spore recovery. The study found that platform vortexers and orbital shakers yielded higher spore recoveries than reciprocating shakers (**Figure**).
The high-throughput method allows laboratories to process up to 12 sponge-stick samples simultaneously. Spore recoveries were comparable to those achieved using the traditional low-throughput stomacher-based method—approximately 60% recovery at the 10^2spore level and 75% recovery at the 10^4spore level across three replicate experiments. The new method was also demonstrated to be compatible with RVPCR analysis and capable of detecting as few as 40 spores per sponge, even in the presence of nonsterile Arizona Test Dust, a commonly used environmental particulate simulant.

Once fully validated, this high-throughput sponge-stick processing method could be adopted as a performance-based approach across laboratories in EPA's Environmental Response Laboratory Network, an ICLN member network, and by laboratories worldwide. In addition, it may serve as a model for developing similar high-throughput sponge-stick processing methods for other biological threat agents.