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Summer 2025 Issue 2

# Retention Drives Innovation

## Making the Case for Public Health Laboratory Workforce Support

Inside:



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## FEATURE



## APHL PROGRAMS




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The Association of Public Health Laboratories (APHL) works to strengthen laboratory systems serving the public's health in the US and globally. APHL's member laboratories protect the public's health by monitoring and detecting infectious and foodborne diseases, environmental contaminants, terrorist agents, genetic disorders in newborns and other diverse health threats.




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*At APHL 2025, I had the opportunity to sit down with Dr. Megan Crumpler, Dr. Scott Shone, Scott Becker and Michelle Forman for a wide-ranging conversation. This is a brief snippet of that conversation that has been edited for clarity. You can hear the full conversation in episode 34 of Lab Culture, available on APHLBlog.org.*

*~G.S.*

**Gynene Sullivan:** I want to shift the conversation a little bit to talk about Megan and your tenure as president of APHL. Did any surprises come up while you were having your year?

**Megan Crumpler:** Maybe a few.

**Sullivan:** Just a few?

**Crumpler:** Yeah.

**Sullivan:** So, what were some of the high points of your tenure while you've been president?

**Crumpler:** I think just the friendships that I've made with some in this room. Being able to really be in the weeds of decision making and being a part of that. I received a compliment from one of our colleagues the other day saying, "I think you'll be remembered as a president who was really good at making decisions." And I said, "well, that's my whole personality, so good."

I'm glad it's showing through. And I was really touched by that because I joked with them and said my friends come to me with their paint colors and say, "Megan, what color?" And I pick it, and they say, "okay, thank you," because that's what I'm good at doing.

I started with my focus supporting the fellowship and internship programs. We host six fellows in our lab and have interns. We've definitely utilized that program and are so grateful for it. My goal was also retention. We've got these great people in, so how do we keep them? And the definition of retention has now changed. It's now how do we grab these people and find a way to even think about keeping them, let alone wanting them to stay with us. So that's changed. Thankfully, the fellowship and internship program is still kicking, so we'll utilize that as much as we can. Early on in the new administration, I actually was at APHL headquarters, and I was there with Scott, and we cried together. It was very powerful to be present with APHL staff and say, we are here for you, what can we do? I am here for you. I wanted to make sure that they saw that their president was here for the members and here for APHL staff. I was very grateful actually to be there that week, even though it was very challenging.

**Scott Becker:** So was I!

**Crumpler:** While that was not a great time, I think it was a highlight for me because I was able to physically contribute. And that's really important to me. I love community. I love being around people. I always tell my kids, "If something bad happens to someone, you just show up." I don't know what happened and you don't have to say anything. But you just show up because that's what you know, that's what we do for the people that we care for.

**Sullivan:** Would that be your advice to incoming president Scott Shone to be present and show up for your people?

**Crumpler:** Yes, but I don't think I have to tell him that!

**Scott Shone:** It has been remarkable to be part of the of the trio of past president Tim Southern and then Megan as president and then me as president-elect. I think the three of us have worked together and it's been very informative for me to learn from them and ask lots of questions. And in her decisive nature, Megan has given me direct answers. "Don't worry about this," or "This is something." I think her tenure has been remarkable. And I'm glad I was in my role to see this and to be with the two of them who are not only colleagues but have become really close friends as well.

**Sullivan:** And what are you looking forward to as president-elect?

**Shone:** A really quiet, calm, easy, uneventful tenure. I think that there's not a lot going on in the world. So, I'll just sit back and rally and let Scott Becker tell me when he needs me, then I'll click my heels together and return to Kansas.

**Michelle Forman:** We all want that!

**Sullivan:** Yes, we do. You let us know when that happens.

**Shone:** I appreciate the compliment, Megan, because I 100% value our teams—not just my team in North Carolina, but all our colleagues across the country. You know, lab directors and public health laboratory scientists don't always agree on everything, but we come to this role with a set of core values and a passion that really is not met in most other professions. And it's balanced, unfortunately, by modesty and so we know what we all do, and we compliment each other like "Great job, Megan" and "Great job, Tim." I don't include myself in this because I'm a pretty vocal person, but I think we as a community stay silent. And I think that we heard during [the APHL 2025] keynote address that we have to be less modest. What I think I bring is a passion for storytelling. I just love to tell stories and figuring out ways to tell them to whatever audience we're telling it to. So, if it's a bunch of laboratorians, we can talk geek speak. And that's fine. But that's not typically the group that needs to hear from us. And so, I was thinking about Megan's comments about tours, is when we do that, think about what they may have seen in the news or social media or whatever that came from what we do and try to tie that in and walk by the rabies lab. Remember that Bobcat that tested positive [for rabies] last week? We tested that head right here. Or that cinnamon applesauce that got recalled? This is the lab right here. You just walked by the machine that found that. And that makes it real. It's hard to have priorities. I know, historically, the presidents of APHL have presidential priorities. It's hard to have a specific "I want to do this for the organization or for the members" because the landscape is not only changed, but still changing. But what I think is important is being true to the goals and our values at all costs because while we lose funding and we might lose members of our team, if we begin to backtrack on what we know is important that's when we actually lose. And so I think it's a duty of mine to work with Scott and the leadership team at APHL and the board and all the members to figure out how to use my voice to tell the stories so that we can have substantial progress and a very new landscape, but still protect the citizens of our jurisdictions in the way that we know is most critical. ■

# Empowering Leaders to Mitigate Burnout in Public Health Laboratories

By **Kenlie Fite**, DrPH, MPH, CPCLC, lead specialist, Leadership Programs and **Kathleen Street**, MS, PMP, CLF, manager, Leadership Programs

Burnout is not just a personal issue—it is a workforce sustainability concern. Public health laboratory professionals often face high workloads, tight deadlines and demanding responsibilities, which leads to burnout. From emergency response efforts to staffing shortages to the ever-growing demand for testing and reporting, laboratory professionals are under constant pressure to perform every task to a high degree of quality and accuracy.

While the COVID-19 pandemic spotlighted the vital role of laboratories, it also revealed the toll of chronic stress on individuals and systems alike. In the fast-paced, high-stakes world of public health laboratories, burnout can feel like an unavoidable side effect of the job. Creating a sustainable, supportive environment is essential to long-term workforce effectiveness.

## Set Boundaries

One of the biggest contributors to burnout is the absence of clear, enforceable boundaries. Boundaries around time, energy and focus are necessities.

- **Identify your most critical boundaries.** What do you need to protect—focus time, family time or your energy at the end of the day?
- **Take a clear position.** Decide how you will respond when your boundary is challenged.
- **Automate when possible.** Use calendar blocks, email filters and status updates to protect your time.
- **Be consistent.** Repetition builds new norms.

"Micro boundaries" can also be built into a workday, such as turning off notifications during certain hours or keeping work applications off personal devices.

## Use Time Management Tools

Trying to do everything is not leadership. One effective method to prioritize what matters is the Eisenhower Matrix, which separates tasks into:

- Urgent & Important – Do it now.
- Important but Not Urgent – Schedule it.
- Urgent but Not Important – Delegate it.
- Neither – Delete it.

## Redefine Success

Too often, laboratory professionals became accustomed to constant "yes" responses, especially during crises like the COVID-19 pandemic, which leads to juggling endless responsibilities. This mindset is unsustainable. Leadership means choosing strategically what to say "yes" to—and what to decline.

One powerful mindset statement by Stephen Covey states, "The key is not spending time but investing it." This means:

- Let go of tasks that can and should be delegated.
- Value high-level thinking and team development over micromanagement.
- Say "no" to things that don't align with your priorities or role.

## Support Resilience in Yourself and Others

Burnout prevention is about building resilience. Leaders encourage a culture and organizational climate that:

- Normalizes taking time off and disconnecting
- Celebrates progress over perfection
- Promotes open conversations about workload and well-being
- Provides tools and frameworks for solving problems.

APHL, through programs such as the **Emerging Leader Program** (ELP) and **Laboratory Leaders of Today** (LLOT), equips laboratory leaders in various organizational roles with practical strategies that empower them to create supportive, sustainable work environments. These programs regularly discuss strategies that can mitigate burnout for individuals working at all levels in public health laboratories.

## Recognize That Empathy Has Limits

While empathy is important in leadership, constantly absorbing others' stress without boundaries can wear leaders down. Leaders practice emotionally intelligent empathy when they:

- Set boundaries on how much emotional labor you absorb.
- Schedule buffer time between meetings to reset.
- Prioritize breaks—even short ones—and honor them.
- Protect off-hours as true recovery time, not a backup work zone.

## Do Not Wait for a Breaking Point

Burnout rarely announces itself. It creeps in, masked as fatigue, disconnection or declining performance. The good news? It's preventable and can be mitigated. With clear boundaries, effective time management, and a shift in leadership habits, laboratorians can cultivate cultures that prioritize sustainability and human well-being alongside scientific excellence. ■

# MSU Veterinary Diagnostic Laboratory Reaps the Benefits of the Career Pathways Program

By **Rudolph Nowak**, MPH, senior specialist, Marketing and Communications

Fellow Zoe Rice; Kim Dodd, dean of Michigan State University's College of Veterinary Medicine; fellow Danielle Gregory and John Buchweitz, Nutrition & Toxicology Section chief at MSU's Veterinary Diagnostic Laboratory; take a minute to pose at the laboratory.

Fellows and interns see the benefits of the Career Pathways in Public Health Laboratory Science program through networking, professional development and employment opportunities. But these early-career scientists are not the only ones benefiting. The laboratories receive tangible benefits, such as a fully funded extra set of hands in the laboratory and the possibility of tapping a project supply fund that supports laboratories hosting fellows.

The Michigan State University Veterinary Diagnostic Laboratory (MSUVDL) is also realizing less tangible program benefits as well.

"We have the privilege of hosting these brilliant, curious people who want work in a diagnostic laboratory," said Kim Dodd, dean of MSU's College of Veterinary Medicine and former director of the veterinary diagnostic laboratory. "They've been able to contribute significantly to some of our priorities as a laboratory."

The MSUVDL is self-funded and run like a nonprofit or state laboratory. Therefore, additional staffing through fellowships and internships has been a way to employ university students or recent graduates with little to no impact to its budget since the Career Pathways program pays the program participants.

## "They are all intrigued."

Fellows and interns work side-by-side with laboratory staff, interacting on the same benches and with the same instruments. The only difference is that interns and fellows are research- and development-specific with their activities. Laboratory staff are reminded about the Career Pathways program during monthly faculty meetings, and other sections of the laboratory are considering submitting proposals for fellowships and internships to APHL, according to John Buchweitz, Nutrition & Toxicology Section chief at MSUVDL

"Staff are going to evaluate what it's going to be like for them to have a fellow come in and help them with their method developments and help advance their section and their technology. They are all intrigued," Buchweitz said.

Buchweitz also sees laboratory staff benefitting from the exchange of new ideas and perspectives, while interns and fellows receive the benefit of learning from the experience of seasoned scientists.

"I think it is a nice dynamic for our staff to learn from these fellows what it takes to bring a method from basically an idea, a concept into actual laboratory practice. And I think our fellows and interns see the application of these methods and realize the seriousness of why we put so much emphasis on quality, why we put so much emphasis on trying to standardize and harmonize methods," Buchweitz said.

## A Fusion of Benefits

Buchweitz added that the fellows have brought a renewed energy to the laboratory and contributed to some rather significant advancements.

The synthesis of fellows and staff can be illustrated through Fellow Danielle Gregory. Gregory's discussions with Dodd clarified the needs of the laboratory and what Gregory hoped to accomplish during her fellowship.

"(Dean Dodd) wanted research particularly in next generation sequencing to be a core part of the veterinary diagnostic laboratory in addition to the services that they offer their clients," Gregory said. "I feel like even just listening to how they use the different microbiology techniques and how they make decisions about cases taught me so much. The workflow is so different, and you never know what you are going to get. I feel there is a room full of microbiologists; there is so much experience, and they are talking about things that I have never heard of, or realistically, wouldn't be able to learn."

Zoe Rice, another fellow, who attended this year's APHL annual conference, is expected to attend the America Association of Veterinary Laboratory Diagnosticians conference, where she will have an opportunity to present in front of the US Food and Drug Administration (FDA) and other laboratories.

"The work that she has generated, it is quite fascinating. I can tell you the higher ups at FDA are absolutely in love

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# Public Health Laboratory Ambassadors Engage Communities in New York

By **Christopher Brandon**, PhD, research scientist, New York State Department of Health-Wadsworth Center; **John P. Kelly**, research scientist, New York State Department of Health-Wadsworth Center; and **Hailey Reiss**, specialist, Academic Partnerships

Christopher Brandon teaching students how to use micropipettes at one of the sessions. Photo: Rise High.

APHL's Public Health Laboratory Ambassadors program seeks to promote public health laboratory science and careers to students and the public through outreach events in their communities. Ambassadors volunteer their time to plan and participate in these outreach events. Recently, Public Health Laboratory Ambassadors from New York State Department of Health-Wadsworth Center planned and held a series of outreach events for high school students.

## Planning

Ambassadors developed a course to take place on three consecutive Saturdays in collaboration with the Rise High Program hosted at Center for Advanced Technology in Schenectady, NY. The course was designed to allow ninth grade high school students to experience molecular biology assays and their role in the public health laboratory. Students were given a comprehensive background in public health, taught how to utilize basic molecular biology equipment, engaged in lectures about DNA replication, received instruction on a polymerase chain reaction (PCR) assay used in the newborn screening laboratory and learned gel electrophoresis techniques.

Planning took place from May 2024 to January 2025. Guidance and support were provided by Rise High, the Wadsworth Center and the Public Health Laboratory Ambassadors program. Supplies included expired reagents and equipment lent to the cause. Organizers spent $200 on external reagents. Through approaching laboratories for volunteers, four organizers and nine in-class volunteers were identified.

## Implementation

The most difficult challenge of event planning was estimating how much time activities would take. In anticipation of this, multiple back-up activities were prepared. Since the event took place over the course of three Saturdays, organizers were able to reassess plans for the next lesson after each event. Several activities were redesigned for the following week based on the results from the previous week. One key takeaway was the importance of not being rigid in the design – the teaching needed to be flexible to account for unexpected changes. Each week had a different attendance, which changed group dynamics. This was easy to adapt to but was unexpected. In retrospect, for an event spanning multiple weeks,

## Key Tips for Implementing an Outreach Event

- Bring back-ups of everything. It is far better to be over-prepared than under-prepared.
- Be prepared to adapt. There may be something unexpected that comes up, and that's ok. Roll with it!
- Reach out to friends and family outside of your field for feedback. They will provide a new perspective that may not be apparent to others in your profession.
- Attending APHL Public Health Laboratory Ambassadors-recommended webinars was an extremely helpful tool. During preparation, we were able to connect not only with APHL staff, but also with experienced activity organizers across the country.
- Bring a laid-back attitude. These activities are meant to be fun! Not every student will have the same experience and that is okay. These activities are educational enhancers, not mandatory tasks for students. Don't push too hard and allow yourself to enjoy the experience.

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# Expert training at your fingertips!

The Association of Public Health Laboratories (APHL) is thrilled to officially launch the APHL Learning Center (ALC) with over 250 professional development opportunities and growing!

The ALC is APHL's new learning management system that offers high quality educational activities on a variety of topics in convenient formats, from laboratory-specific resources to those serving the broader public health community. You can search for and enroll in training, complete evaluations and manage your certificates all in one place.

Begin by browsing the course catalog to view all available trainings. When you are ready to enroll, use your APHL credentials to sign in and access your training. If you're new to APHL, create a free account to enroll in our professional development opportunities.

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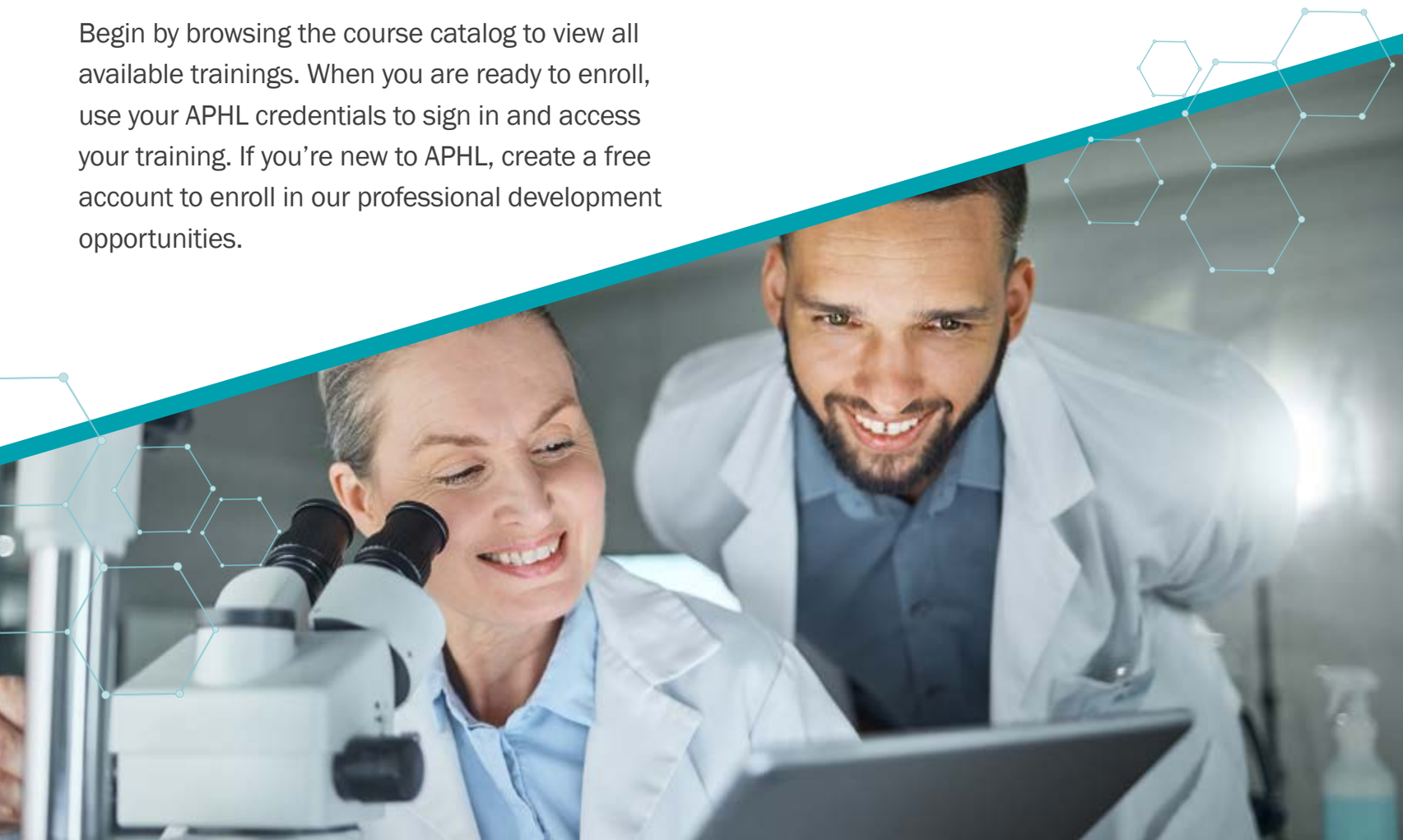

# From Internship to Fellowship: Growing the Public Health Laboratory Workforce

By **Edgar Kopp**, MS, MT(AAB), supervisor, Molecular Virology, Florida Department of Public Health Bureau of Public Health Laboratories—Tampa; **Darrel Gibson, Jr.**, fellow, Florida Department of Public Health Bureau of Public Health Laboratories—Tampa; and **Peyton Merriman**, fellow, Florida Department of Public Health Bureau of Public Health Laboratories—Tampa

Fellows Darrell Gibson Jr. and Peyton Merriman. Photo: Peyton Merriman.

*The Career Pathways in Public Health Laboratory Science: an APHL-CDC Initiative has proven to be a valuable avenue to provide aspiring public health professionals with diverse, practical experience in a laboratory setting. Students enrolled in academic programs can get a first taste of public health laboratories through the Internship Program, while graduates can take on their own projects and pursue professional development opportunities through the Fellowship Program. In recent years, some scientists have advanced directly into the fellowship program after completing their internships, and this has provided a unique opportunity for fellows and mentors alike. To better understand the path these scientists took, and the benefits found in this route, we share the perspectives of two current fellows who transitioned from interns, Darrell Gibson Jr. and Peyton Merriman, and their mentor, Ed Kopp.*

## Darrell Gibson, Jr.

**Florida Bureau of Health Public Health Laboratories—Tampa**

I attended the University of South Florida pursuing a bachelor's degree in cell and molecular biology, and was enrolled in a Master's in Public Health program when I discovered APHL's Career Pathways program. While pursuing my studies, I had also been working at a major cancer center and was interested in gaining experience at a public health laboratory to fulfill requirements towards my MPH. When my supervisors informed me about the APHL internship, it was a perfect fit: I could be paid while completing a degree requirement, meaning I wouldn't need to balance schoolwork with employment. Instead, I could gain more immersive experience in public health. I was particularly attracted to this opportunity as the laboratory was already hosting interns and fellows, so I would have their experience and connections to look to as I got deeper into the internship. As my internship was ending and with graduation near, I discussed the option of transitioning to the fellowship with my mentor, and some aspects made this option especially attractive. Through the fellowship, I would be able to gain more in-depth experience in Virology, I liked the laboratory's staff and how they work together, I could learn more about infectious diseases, and I could attain more professional development through conferences and other opportunities afforded to fellows.

## Peyton Merriman

**Florida Bureau of Health Public Health Laboratories—Tampa**

I attended the University of South Florida working towards a bachelor's degree in chemistry. A supervisor at the public health laboratory contacted my principal investigator to spread awareness about the Career Pathways program, and this piqued my curiosity. Since I already had practical laboratory experience as an undergraduate while researching malaria, I realized that the internship would allow me to learn more about public health and how infectious diseases are addressed through public health laboratory testing and was excited to learn more about the testing of infectious agents—in particular, how molecular and antibody diagnostic tests work in practice. As the end of my internship approached, I heard of the fellowship opportunities from previous fellows and APHL's documentation and was drawn to the opportunity of gaining broader experience across the entire public health laboratory and its place in the greater public health world as well as the chance to get more hands-on experience and work more independently.

## Ed Kopp, MS, MT(AAB)

**Supervisor, Molecular Virology**

**Florida Bureau of Health Public Health Laboratories—Tampa**

Peyton and Darrell look back on their internship fondly and recall the opportunities and skills they gained from it. They were able to talk to fellows while still interning themselves, allowing them to have the right expectations of what the fellowship would entail. They gained foundational laboratory skills as well as soft skills, which allowed them to be more comfortable in the laboratory, know what is expected, be more familiar and work well with other scientists, and be more acclimated to the public health laboratory environment. Training received as interns further developed their skills and, through experience, honed their professional communication skills as well as their knowledge of workplace etiquette. The internship's laboratory opportunities were narrowly focused but allowed them to get an awareness of other parts of the laboratory and what might be of interest to them as fellows.

Transitioning from intern to fellow came with some additional benefits. Initiating the fellowship contract and the onboarding process took less time than usual, giving them more time to grow additional skills and experience other parts of the laboratory. Their work

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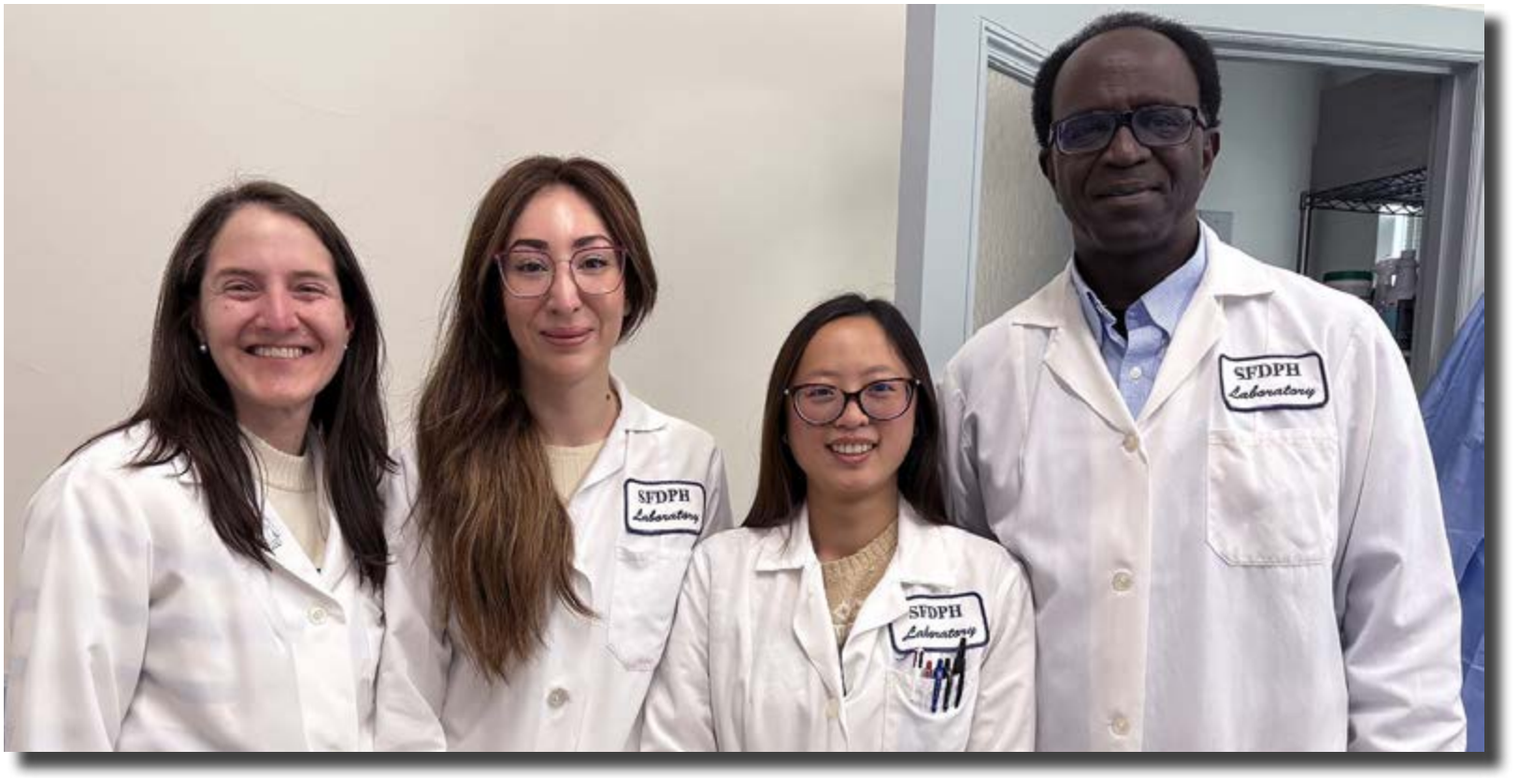
# Testing Innovations in San Francisco Address Surge in Mpox Cases

By **Rudolph Nowak**, MPH, senior specialist, Marketing and Communications




San Francisco Public Health Laboratory's molecular team, from left, Lina Castro, Monica Jacinto, Annie Sheih and Dr. Godfred Masinde.

In 2022, the United States experienced an outbreak of Clade IIb mpox, with San Francisco being particularly affected. The San Francisco Public Health Laboratory (SFPHL) was receiving over 100 specimens per day—far more than surrounding counties.

At the time, SFPHL was unable to test specimens in-house and had to send samples to Laboratory Response Network for Biological Threats Preparedness (LRN-B) laboratories, which also faced testing limitations. "It was juggling," said Lina Castro, MPH, assistant laboratory director of SFPHL. "Some specimens would go to the state laboratory, others to Sonoma and Santa Clara County public health laboratories. We'd then have to compile the results and report everything to the US Centers for Disease Control and Prevention (CDC). It was very overwhelming."

This process caused a major backlog. Seeing the delays, Godfred Masinde, PhD, laboratory director of SFPHL, decided the laboratory needed to perform mpox testing internally to provide faster results.

"We had to find a way to move forward," Masinde said.

Mpox, formerly known as monkeypox, is a zoonotic disease caused by the monkeypox virus, part of the Orthopoxvirus genus. There are two distinct clades: Clade I (subclades Ia and Ib) and Clade II (subclades IIa and IIb).

The 2022 global mpox outbreak was caused by the Clade IIb strain. On May 17, 2022, the Massachusetts State Public Health Laboratory, an LRN-B member, detected the first US mpox case. Since then, according to the CDC, more than 100,000 cases have been reported across 122 countries—including 115 countries where mpox had not been previously documented.

In November 2024, the California Department of Public Health confirmed the first US case of Clade I mpox. As of April 2025, four cases of Clade I mpox have been reported in travelers returning from affected areas in Central and Eastern Africa.

## Innovation in Testing

In July 2022, CDC enabled commercial laboratories to implement an mpox assay

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## MSUVDL Benefits

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with what she has accomplished in the little time that she has been with us." Buchweitz said.

Dodd enjoys promoting both the veterinary diagnostic laboratory and the Career Pathways program.

"Every time I get to talk to students as a captive audience, tell them all how veterinary diagnostic laboratories are going to save the world and it's the world's best career - it's shameless. APHL has allowed us to be able to make good on those promises and to get students excited about the work that happens at our laboratory, which has been priceless." Dodd said. "It has been an impressive program. It has allowed us to bring in people, have them do super cool projects that directly serve our mission. And that that, of course, is one of our goals as well," Dodd said." ■

## PHL Ambassadors

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it is important to have activities to catch students up that may have been previously absent. When not teaching, volunteers organized supplies and refined workflows to prepare for future events.

### Reflection

Having a rotating cast of volunteers each week proved beneficial. Students were very interested in talking about individual public health careers and pathways to those careers. The rotation of volunteers made it possible to revisit this question each session, providing students with a range of different experiences. There are many possible career pathways, and it is important for students to see this in action. New volunteers each week also brought a fresh energy and excitement to the lessons. Many agreed that event planning experience is key to improving this activity. For many, this was the first time engaging not only with the community, but with a younger generation of scientists. Consistency and repetition will allow both organizers and volunteers to improve this event and others like it in the future.

Reflecting on her experience, volunteer Erin Hughes, Research Scientist 2 at New York State Department of Health-Wadsworth Center, said, "So often an outreach interaction is limited in time, space and resources. Taking part in Rise High allowed an expanded time to share our own lived experiences in the public health field and infuse passion into the subject matter. The experience of performing a real experiment is invaluable. When the lesson has suddenly jumped off the screen and into their hands—students learn exactly how they, too, can make a real impact on the world." ■

## Growing Workforce

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as interns laid the foundation for their bigger projects as fellows. Entering the fellowship already understanding expectations and the project—including already having discussed the details of the project plan with their mentor—allowed them to hit the ground running.

Fellows in general have a great sense of community, further enabled by the resources provided by APHL, but starting as interns meant they already had connections in the laboratory world and could build connections more quickly. They also found that when a laboratory is already hosting interns and fellows, they could turn to each other to understand aspects of the fellowship like logistics, travel and policies, making these sometimes obtuse topics more digestible. They had a firm footing in biosafety and quality principles from their internship; they had a solid sense of why many laboratory practices are done, which allowed them to tackle a project with greater understanding.

While some fellows may come in with hands-on laboratory experience or work experience, interns who become fellows are especially well equipped as they already have the basic skills necessary to succeed in a public health laboratory and complete a project. Their interpersonal skills are well developed for the setting, and they can work well both in a team with other scientists as well as independently. Previous interns are more open with their thoughts and needs and able to have productive conversation, perhaps due to being more acclimated to the specific public health laboratory and its culture. ■

APHL | CAREER PATHWAYS in Public Health Laboratory Science
*An APHL-CDC Initiative*

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APHL-CDC Public Health Laboratory

## Internship Program

Interns will join a public health laboratory team to make an impact on protecting the health of our communities. Interns assist scientists working on meaningful projects while building skills such as general lab practices (e.g., pipetting, calibrations, etc.), data analysis, report management, problem solving, teamwork, effective communication and more.

- **Eligible candidates:** Current student enrolled at an accredited institution and in pursuit of a relevant certificate, associate's, bachelor's, master's or doctorate* degree
- **Flexible start and end dates**
- **Hours and program length:** Flexible hours with an average of 20 hours a week, length varies

Interns have the opportunity to network with laboratory professionals and be supervised by a mentor during their internship.

* **Genomic data internship only**

APHL-CDC Public Health Laboratory

## Fellowship Program

Fellowships support a wide spectrum of public health laboratory program areas, such as: bioinformatics, biorisk management (biosafety), environmental health, infectious disease, informatics, food safety, newborn screening and quality management. Each fellow will be trained in alignment with established public health laboratory core competencies and functions and will work on unique program-specific projects and other initiatives in host laboratories.

- **Eligible candidates:** Bachelor's, master's or doctorate degrees
- **Applications:** Accepted year-round
- **Flexible start and end dates**
- **Hours and program length:** Approximately 40 hours a week, one to two years

## Help Shape the Future!

### Mentors Needed

Are you an experienced laboratory professional who would like to guide and direct a fellow through their fellowship program? Your contribution defines the program and contributes to their leadership and professional development.

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# San Francisco

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to expand testing capacity across the US. Around the same time, SFPHL received primers and probes from the California Department of Public Health (CDPH) to implement a generic mpox assay. However, because the assay couldn't differentiate between Clade I and Clade II, specimens were considered select agents.

To address this, Masinde used CDC's published Clade I and II mpox sequences to develop a multiplex assay that could simultaneously target both clades.

Since obtaining an actual human sample of Clade I mpox wasn't possible, the laboratory prioritized creating a non-infectious specimen for validation. Masinde leveraged expertise gained while working in Silicon Valley biotech, where synthetic DNA is frequently used for assay validation. Synthetic DNA (gBlocks) consists of double-stranded fragments with a specific sequence targeted by the assay. These fragments also have known concentrations, which help determine the limit of detection for a test.

"We had plenty of negative mpox specimens that we had previously tested," Castro said. "We just needed to make them positive for mpox Clade I." She and Masinde designed synthetic DNA from the CDC-published sequences.

"In situations where you don't have access to a unique specimen or pathogen, adaptation is key," Masinde noted. "The lesson here is that synthetic DNA is an invaluable tool for validating tests during emergencies. gBlocks are non-infectious, their concentration is known, and they can serve as positive controls."

During the summer of 2022, the Los Angeles County Public Health Laboratory reported a cluster of mpox specimens with a 700bp deletion in the region targeted by the CDC's Clade II test. By then, SFPHL had already completed two validations: one for the generic mpox assay and another for the Clade I/II multiplex assay.

Because of the mutation, SFPHL had to send all negative specimens to CDPH for confirmation, as they were performing the non-variola orthopoxvirus test.

"It was back to the drawing board," said Masinde. SFPHL updated its multiplex Clade I/II assay to include the non-variola orthopoxvirus target, ensuring detection of all circulating strains.

Two years after the mpox Clade II outbreak started, a new outbreak of Clade Ib broke out in the Kivu province in the Democratic Republic of Congo. This time the Clade Ib variant had an 1100bp deletion in the region that was targeted by the CDC's Clade I test. SFPHL adapted and developed and validated a new multiplex assay that included targets for mpox Clade I, Clade Ib, non-variola orthopoxvirus and ribonuclease P (RNase P.)

## Collaboration Leads to Validation

SFPHL is not part of the LRN-B, a network of laboratories responding quickly to emerging biological threats. However, with APHL's support, SFPHL consulted the US Food and Drug Administration (FDA) to ensure its test development approach complied with evolving laboratory-developed test (LDT) regulations.

The FDA confirmed that contriving specimens with synthetic DNA was acceptable for assessing test performance. Additionally, for specificity analysis, the FDA agreed that in silico evaluation using the National Center for Biotechnology Information (NCBI) database was sufficient to demonstrate no cross-reactivity with other viruses. These tools helped SFPHL validate its assay in less than two weeks.

"This approach worked because the CDC allowed mpox testing in commercial laboratories with APHL's assistance," Masinde said. "This allowed our lab to multiplex the test—screening for mpox targets in one well and human controls in another. By multiplexing all targets, assay became more cost-effective, increased throughput, and reduced turnaround times."

SFPHL also collaborated with APHL to share its approach to assay development and validation with other LRN-B laboratories.

"Our assay was specific to San Francisco's instrumentation," Masinde noted. "And our SOP was tailored to our lab. But we worked with APHL to create a generic SOP to help other laboratories implement the assay using their available instruments," Castro added. "It's nice when another lab can say, 'Okay, how did you do it?' instead of reinventing the wheel."

## The Future of Testing

Public health threats like bird flu and measles continue to emerge, yet laboratories may lack essential materials to develop new assays. With this innovation, if a lab has access to the genetic sequence, it can validate and test samples efficiently.

"We're looking to apply this technology to prepare for new and re-emerging diseases," Castro said. "For example, if we detected a positive measles specimen in San Francisco and needed to scale up testing, we could multiplex two primer sets for measles and create synthetic DNA to rapidly validate and implement a high-throughput assay."

SFPHL's innovative test development approach underscores the vital role of laboratories in protecting public health. Without timely detection of infectious diseases like mpox, tracking and containing outbreaks is difficult. The staff's expertise, technological advances, and scientific ingenuity helped them respond swiftly to the 2022 mpox outbreak. Their development of synthetic mpox DNA provided a solution for obtaining positive specimens and offers a roadmap for future outbreak response. ■

# CALL FOR ARTICLES:

# From The Bench

## a regular feature of *Lab Matters*

*Lab Matters*, APHL's flagship publication, is seeking submissions from laboratorians at all levels of practice for "From the Bench," a member-driven section of its quarterly magazine.

We welcome both technical and non-technical articles covering topics across public health laboratory science, administration, careers and management. Articles may be 600-1200 words in length.

We're looking for a few key components in "From the Bench" articles –

1. **A compelling story.** Tell us about an initiative that streamlined an administrative process or fostered relationships with external communities. Describe how your lab has worked with other public health partners to stop an outbreak or respond to an environmental health threat. Or tell us how you dealt with an initiative that failed.
2. **A complete story.** Give us an article with a beginning, middle and end. The end should provide some resolution of the narrative. You don't need to have fully implemented the new algorithm, analyzed all the research data or completed the electronic laboratory reporting system discussed in your article.
3. **An insider's view.** We want articles told from the unique perspective of a laboratory scientist that will be interesting and informative for APHL members and partners.

**Share your story with peers!**

### We can help!

We will work with you to write the article, from connecting you to a writing consultant to providing editing assistance if you wish to write the article yourself.

If you have **questions** or would like to **submit a story idea**, please contact:

Gynene Sullivan, MA
Manager, Communications
gynene.sullivan@aphl.org
240.485.2750

# APHL 2025: Laboratory Science and Public Health Meet in Portland


Over 1,100 public health scientists and administrators attended APHL 2025 in Portland, OR May 5–8. APHL welcomed over 100 fellows and interns from the Public Health Laboratory Fellowship and Internship Programs: an APHL-CDC Initiative. Brian Castrucci, DrPH, spoke to a rapt audience about the rise of anti-science during the Dr. Katherine Kelley Distinguished Lecture. And APHL presented its annual awards for outstanding achievements in laboratory science, creative approaches to solving today's public health challenges and exemplary support of laboratories serving the public's health. The following awards were presented:

**Lifetime Achievement Award –** Recognizes individuals who have established a history of distinguished service to APHL, made significant contributions to the advancement of public health laboratory science or practice, exhibited leadership in the field of public health and/or positively influenced public health policy on a national or global level. This is not a retirement award, but a true Lifetime Achievement Award.

- **Burton Wilcke**, emeritus associate professor, University of Vermont

**Gold Standard Award –** Given to an APHL member who makes or has made significant contributions to the technical advancement of public health laboratory science and/or practice.

- **Kirsten St. George**, chief, Laboratory of Viral Diseases, New York State Department of Public Health Wadsworth Center

**Silver Award –** Honors a laboratorian with 10 to 15 years of service in a Governmental public health laboratory (either Public Health or Environmental/Agricultural laboratory). The honoree will be recognized as a leader both within their home laboratory as well as external to their laboratory.

- **Will Probert**, research scientist supervisor, California Department of Public Health
- **Suzanne Stanton**, biomonitoring coordinator, chemist V, Vermont Department of Health Laboratory

**On the Front Line Award –** Honors an individual or laboratory outside of the APHL membership who makes significant contributions to the advancement of public health laboratory science and/or practice.

- **Food Emergency Response Network program staff**, Food Safety and Inspection Service, US Department of Agriculture (USDA)
- **Food Emergency Response Network and Laboratory Flexible Funding Model program staff**, US Food and Drug Administration (FDA)

**Emerging Leader Award –** Honors an individual whose leadership has been instrumental in one or more advances in laboratory science, practice, management, policy or education early in their career.

- **Jasmine Guillet**, division director of health safety and training, Massachusetts State Public Health Laboratory

**Leadership in Biosafety and Biosecurity Award –** Honors a laboratorian with over 10 years of related service in the field of biosafety and biosecurity in a state and/or local public health laboratory. The honoree will be recognized as a leader both within their home laboratory as well as external to their laboratory (for example, by serving in a leadership role in committees/taskforces at the national level).

- **Peter Iwen**, director, Nebraska Public Health Laboratory


**LEAD Award –** Recognizes the legacy of Eva J. Perlman, APHL's first chief learning officer, who over three decades helped shape the public health laboratory workforce and represented the attributes of "serving those who have served." This award honors an individual who exhibits the attributes of a leader, encourager, advocate and developer, and who has 10 or more years of service in a state, local or territorial public health laboratory, or other public health laboratory partner. This year there are two LEAD award winners.

- **Erin Bowles**, Wisconsin State Laboratory of Hygiene (retired)
- **Lori Pillsbury**, laboratory administrator, Oregon Department of Environmental Quality

**Presidential Award –** The APHL Presidential Award was selected by Dr. Megan Crumpler during her Presidential year (2024–2025) for the significant contributions that were made to the association's work to promote policies that strengthen public health laboratories. Dr. Crumpler chose one outstanding individual and one outstanding group for this year's Presidential Award.

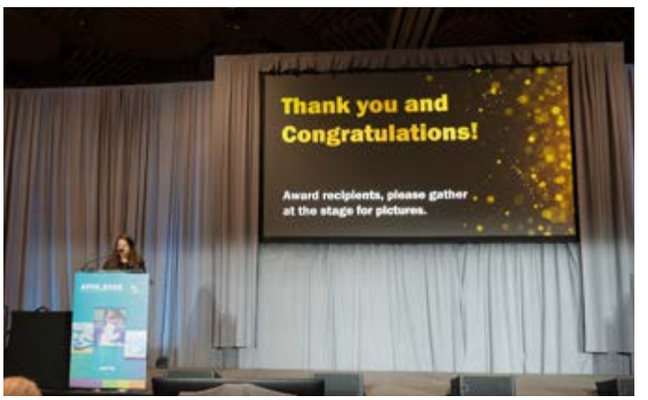
- **Mandy Cohen**, director, US Centers for Disease Control and Prevention (2023–2025)
- **APHL Incident Command Team** for the 2025 Fiscal Crisis

**Healthiest Laboratory Award –** Given to an APHL member laboratory that is committed to safety, environmental process, environmental policy and employee health and wellness.

- State jurisdictional award winner: **California Department of Public Health Center for Laboratory Sciences**
- Local jurisdictional award winner: **San Diego County Public Health Laboratory**

Award for Outstanding Contribution to Workforce, Training and Continuing Education – Honors an individual who has made significant contributions to the advancement of workforce development and training in public health laboratory science and practice; worked to provide continuing education opportunities, programs, policies or practices internally and/or through outreach to public health partners; or demonstrated a history of service with APHL committees, taskforces or workgroups focused on workforce development, continuing education or training.

- **Susan Mikorski**, laboratory outreach program manager, New Jersey Department of Health Public Health and Environmental Laboratories ■




# APHL 2025 — Thank You for Joining Us in Portland!



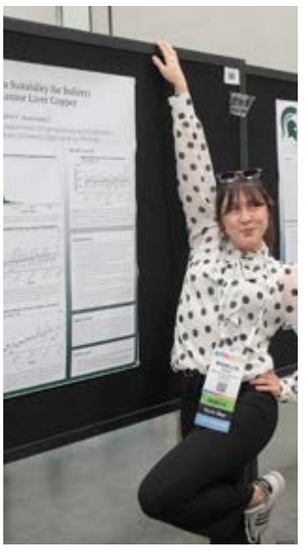




Portland Dachshund Rescue
achshundrescue.org





APHL 2025


# Wastewater-based Epidemiology Sheds Light on COVID-19 Trends in Ethiopia

By **Robbie Barbero**, PhD, chief business officer, Ceres Nanosciences; **Tara Jones-Roe**, vice president, Sales and Marketing, Ceres Nanosciences; and **Daniel Goldfarb**, field applications scientist, Ceres Nanosciences


Ceres Nanosciences, APHL Global Health Team, and APHL Country Directors after a day in the laboratory. Photo: Ceres Nanosciences

Public health laboratories in the United States are relying on wastewater-based epidemiology (WBE) as a cost-effective and scalable tool for tracking infectious diseases. However, there have been some questions about whether the same methods used in the United States can be effective in low- and middle-income countries. To address this question, APHL and Ceres Nanosciences teamed up with the Ethiopian Public Health Institute (EPHI) to evaluate the potential of WBE in a region of the world with limited access to widespread clinical testing and fewer laboratory resources. The project, the results of which were published last year in *Frontiers in Public Health*, demonstrated how WBE can provide a clearer picture of disease spread in communities where traditional case reporting may not capture the full scope of infections.

## A New Frontier in Disease Monitoring

Ethiopia, like many resource-challenged countries, faces challenges in clinical disease surveillance. Limited healthcare infrastructure, uneven access to medical facilities and underreporting of cases—particularly among asymptomatic individuals—can make it difficult to track the true burden of infectious diseases like COVID-19. This is where WBE offers a game-changing solution.

In 2023, Ceres Nanosciences hosted APHL staff and APHL country directors from Ethiopia, Zambia, Kenya and Mozambique and provided hands-on training for WBE laboratory methods. The APHL country directors returned to their jurisdictions to share these methods with their local public health laboratory teams.

From February to November 2023, researchers in Ethiopia collected wastewater samples from three

APHL Country Directors receiving WBE training at Ceres Nanosciences. Photo: Ceres Nanosciences

treatment plants across Addis Ababa: Kality, Bulbula and Mikililand. Using the methods they learned while visiting Ceres Nanosciences, they analyzed these samples for traces of SARS-CoV-2. The results were striking: viral RNA was detected in 94% of untreated wastewater samples, signaling widespread infection in the community, even as officially reported COVID-19 cases remained relatively low.

## Bridging the Gap Between Clinical and Environmental Data

One of the most significant findings from this study was the stark contrast between wastewater-based infection estimates and reported clinical cases. In the catchment area served by the Kality Treatment Plant, for example, researchers estimated that the number of infected individuals was approximately 330 times higher than the number of cases officially reported during the study period. This suggests that many infections—whether mild, asymptomatic or simply unreported—went undetected by traditional healthcare-based surveillance methods.

For public health officials in Ethiopia, and in similar settings worldwide, this kind of information is invaluable. By using wastewater as an early warning system, governments and health agencies can detect disease surges before hospitals begin to see an uptick in severe cases. This allows for more proactive responses, such as targeted public health messaging, resource allocation and emergency preparedness planning.

## A Model for the Future

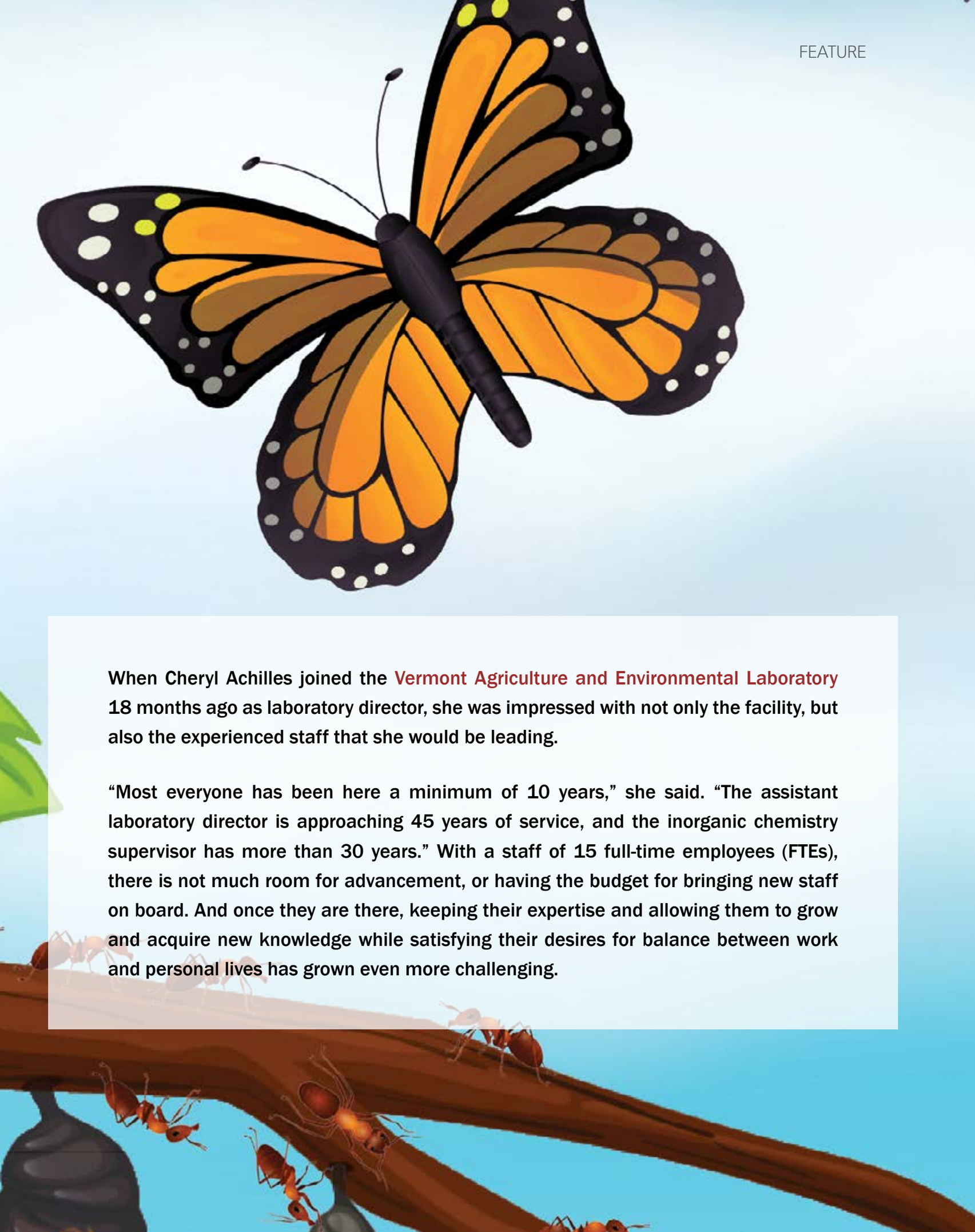
As Ethiopia and other countries continue to strengthen their public health surveillance systems, WBE presents a scalable, cost-effective strategy to complement clinical testing. Beyond COVID-19, this method holds promise for tracking other infectious diseases, such as cholera, measles and antimicrobial-resistant bacteria.

The success of this project demonstrates that even in resource-limited settings, innovative and collaborative approaches can enhance disease monitoring and response. By embracing wastewater surveillance as part of its public health toolkit, Ethiopia, Kenya, Zambia and Mozambique are paving the way for more data-driven, proactive disease control strategies—an approach that could benefit countless other nations facing similar challenges. ■

*Ceres Nanosciences is an APHL Platinum Level Sustaining Member.*

# **Retention Drives Innovation:** Making the Case for Public Health Laboratory Workforce Support

By **Gynene Sullivan**, MA, manager, Communications



When Cheryl Achilles joined the Vermont Agriculture and Environmental Laboratory 18 months ago as laboratory director, she was impressed with not only the facility, but also the experienced staff that she would be leading.

"Most everyone has been here a minimum of 10 years," she said. "The assistant laboratory director is approaching 45 years of service, and the inorganic chemistry supervisor has more than 30 years." With a staff of 15 full-time employees (FTEs), there is not much room for advancement, or having the budget for bringing new staff on board. And once they are there, keeping their expertise and allowing them to grow and acquire new knowledge while satisfying their desires for balance between work and personal lives has grown even more challenging.

As staffing is a critical part of public health infrastructure, Achilles is only one of many laboratory leaders who is thinking seriously about the growing challenges in staff retention. Because staff retention drives laboratory innovation, and public health laboratories must innovate to meet changing mandates within their communities.

## Weathering A Changing Landscape

In March 2025, the US Department of Health and Human Services (HHS) announced that it will terminate more than $11 billion in COVID funding that was awarded to state and local health departments. Much of that funding supported testing and pandemic response, but it also provided critical investments in public health infrastructure—including funding for public health laboratories to strengthen testing capacity, modernize facilities and more—to prepare for future health threats.

An additional blow came soon after, with the announcement that HHS would streamline its operations with a reduction in force of 10,000. The hardest hit was laboratory services among HHS departments, including at the US Centers for Disease Control and Prevention (CDC) a primary supporter of many public health laboratories.

For public health laboratory directors, the funding seesaw is nothing new—in the 1980s there was a similar drastic contraction in healthcare and public health industries, and after the events around September 11, 2001, there was a large funding infusion into readiness and response activities. But having just weathered a pandemic and with the (re) emergence of mpox, tuberculosis, polio and bird flu, among other diseases, the recent funding claw backs, recissions and staffing reductions feel ill-timed.

While many long-time public health laboratorians may be used to the ebb and flow of funding, newer scientists have found it hard to adjust to the changes. Many laboratories around the country have had a lot of departures since the COVID-19 pandemic, which came at a price: loss of knowledge about processes, procedures and partner relationships that allow public health laboratories to meet testing and response challenges. To provide some stability, especially for newer laboratorians, directors are changing their way of thinking about how their laboratories operate. Taking a page from corporate industry, some public health laboratories are bringing a more business-like approach to recruiting and retention.

***While many long-time public health laboratorians may be used to the ebb and flow of funding, newer scientists have found it hard to adjust to the changes.***

"For many of the challenges we face, the public health laboratory is already very well positioned to respond to evolving needs," said Luke Short, PhD, director of the Dallas County Health and Human Services Public Health Laboratory. "I don't view our laboratory as a nonprofit agency; we are a business, our shareholders are the community we operate in, our customers are the clinics and the people they serve, and our profit is going to be helping the community in whatever way we can."

**"For many of the challenges we face, the public health laboratory is already very well positioned to respond to evolving needs."**

***Luke Short, PhD**, director of the Dallas County Health and Human Services Public Health Laboratory*

Short emphasizes that looking at change as opportunities that are on the horizon rather than restrictions can also help prepare laboratories for adaptation and staff retention, ensuring that laboratorians remain agile enough to respond to new situations within their communities. Approaching new projects and innovations using return on investment (ROI) practices can benefit not only the laboratory, but funders as well.

"Once you quantify a project and restructure your arguments to numbers and people that are helped, that becomes less anecdotal and more concrete for funders to evaluate," he said. In addition, by providing the type of data and information for day-to-day activities, that leaves room for the endeavors that ordinarily would not be funded.

"Create room for those aspirational projects and you can create a roadmap for being able to do the innovative work," said Short.

## Gathering Data to Strengthen Retention

An important part of tracking employment trends, especially in laboratories, is to gather data through workforce surveys. In spring 2024, APHL fielded a new workforce profile survey of its members, and received over 1,900 responses to questions about demographics, job satisfaction and factors influencing decisions to stay or leave their current position. Like surveys fielded in 2016 and 2022, responses

were anonymous, all questions were optional, and the data were collected with convenience sampling. The data showed a slight drop in those intending to leave within four years, from 42% in 2022 to 38.6% in 2024. Short-term retention has improved, with fewer respondents planning to leave the laboratory within one year, but the three-to four-year range for departure remains steady.

More telling in this figure is the fact that of those that do plan to depart in the next two years, 16% are planning to retire, thus leaving the public health laboratory workforce altogether. Victor Waddell, PhD, chief for the Arizona Bureau of State Laboratory Services, has closely followed trends in career metrics since he joined the laboratory as a scientist in the Laboratory Response Network for Biological Threats (LRN-B) laboratory in 2001.

"We work very closely with our HR department and the Arizona Department of Health to follow data and trends for our workforce," he says. "If there are any areas that are showing a higher turnover, we act quickly to investigate those reasons." After becoming laboratory director in 2014, Waddell started focusing on developing career path programs within the laboratory. In 2018, the program became a reality, enabling early and mid-year career laboratorians to have an avenue to promotion as well as cross training in areas of interest. Even though the focus is ensuring that the laboratory's operational mandates are fulfilled, it also gives laboratorians a concrete progression for their careers.

"If a position opens up for a Scientist II and there is a Scientist I who has satisfied the career track requirements, they have the opportunity to apply for the position non-competitively," Waddell said. "If there is an opportunity to promote from within, we are very interested in taking it."

For individuals being recruited to join a laboratory, the top three most important factors they consider are job security, work/life balance and benefits. For those deciding whether to remain at their laboratory, the top three factors are work/life balance, job security and a safe/secure work environment. While balance and security are important in both stages, benefits play a bigger role in recruitment and retention.

> **"Giving scientists not only the opportunity to try different directions as they are starting their careers, but to work on projects that they are professionally invested in is a sure way to build their enthusiasm in a public health laboratory career."**
>
> ***Victor Waddell, PhD**, chief for the Arizona Bureau of State Laboratory Services*

In addition to annual, sick and vacation leave, newer perks for laboratorians may include flexible work schedules, mental health resources in addition to standard health benefits, and additional wellness benefits that were not available even five years ago.

In Vermont, the agriculture and environmental laboratory is almost in the geographic heart of the state and is adjacent to a small local university. While there are a few laboratorians who live 5–10 miles away, other staff are commuting 30–120 miles round trip. So, in addition to the distance, there is also the isolation of the physical location which could be an impediment to retention. But Achilles is aware of how invested her colleagues are in the mission of the laboratory.

"People are in the laboratory because they want to be there," she said. "And as a leader, it is my responsibility to listen to my people when they have an issue, idea or suggestion. We will never be able to compete with private laboratories as far as income or cost of living adjustments, so we have to meet our colleagues where they are and provide what we can."

## The Importance of Mentors

Every laboratorian at some point in their career was just starting out at the bench, looking at their first agar plate, loading their first molecular diagnostic test into an instrument, visiting a site to do soil testing, or pulling a water sample from a private well. Even if it was 10-20 years ago, relating those experiences inside and outside the laboratory to new and rising laboratorians is integral to career growth.

"Our members and colleagues have more formal career resources available to them than ever," said APHL Chief Learning Officer Christine Bean, PhD, MBA, MLS(ASCP), who also served as director of the New Hampshire Public Health Laboratory. "But those early career stories passed down from mentor to fellow, from supervisor to bench scientist, even from a legacy director to a new director, are really important." Having fellows and interns in the laboratory, even for a temporary assignment can not only lift some of the programmatic burden from FTEs, but it can also reinvigorate their love of public health through teaching and mentoring.

"By continuing to develop public health laboratory staff starting with the Fellowship and Internship programs all the way up

to APHL's Laboratory Leaders of Today program and the APHL Retention Scorecard, we are continuing to support our members whenever possible and help them with some of their tougher conversations with their scientists, like if the position is still ideal for their career growth," Bean said.

In Arizona, where the laboratory is located in the heart of the Phoenix city center, the laboratory has taken advantage of the Public Health Laboratory Fellowship and Internship Programs: an APHL-CDC Initiative to jump start developing the next generation of laboratorians.

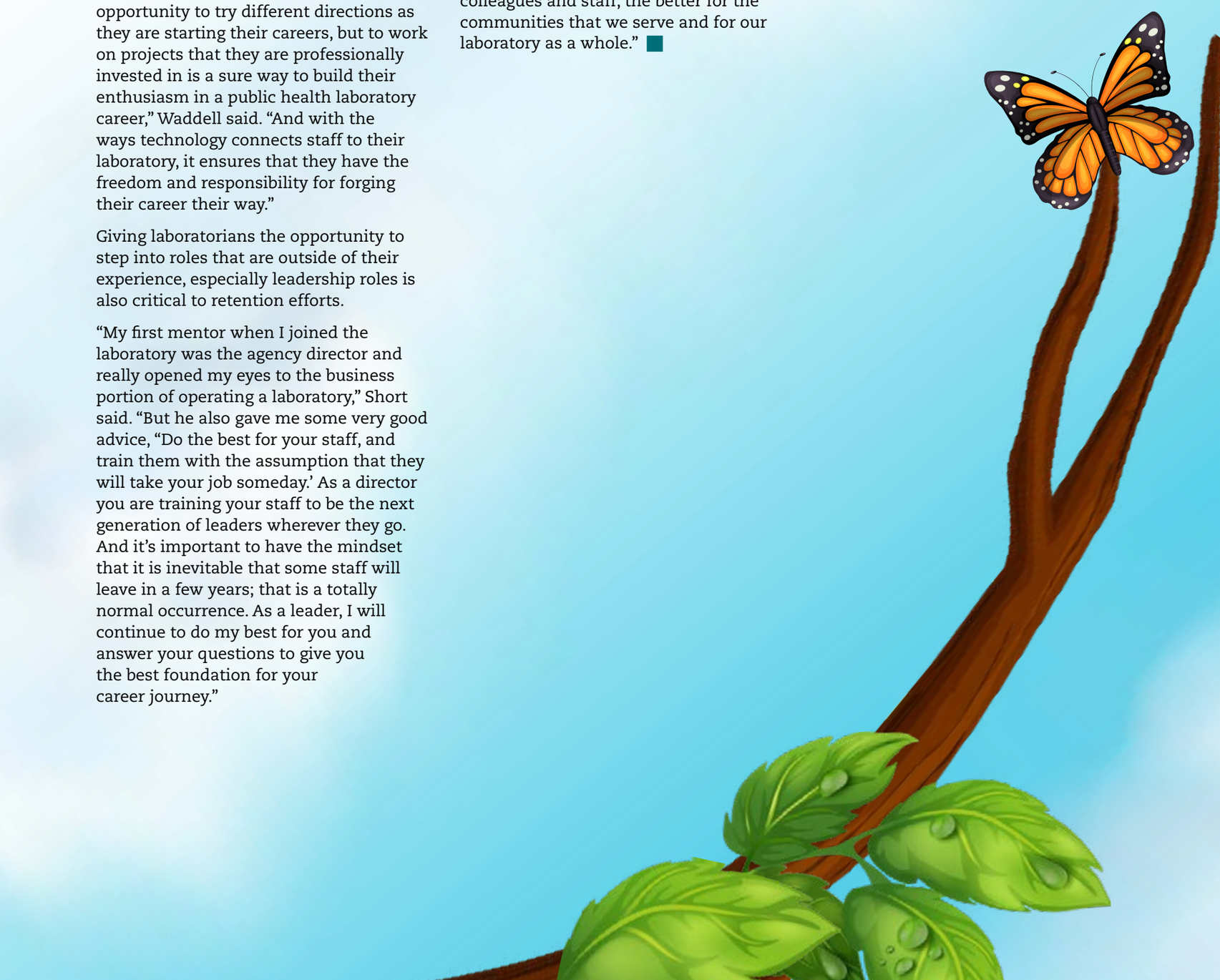
"Giving scientists not only the opportunity to try different directions as they are starting their careers, but to work on projects that they are professionally invested in is a sure way to build their enthusiasm in a public health laboratory career," Waddell said. "And with the ways technology connects staff to their laboratory, it ensures that they have the freedom and responsibility for forging their career their way."

Giving laboratorians the opportunity to step into roles that are outside of their experience, especially leadership roles is also critical to retention efforts.

"My first mentor when I joined the laboratory was the agency director and really opened my eyes to the business portion of operating a laboratory," Short said. "But he also gave me some very good advice, "Do the best for your staff, and train them with the assumption that they will take your job someday.' As a director you are training your staff to be the next generation of leaders wherever they go. And it's important to have the mindset that it is inevitable that some staff will leave in a few years; that is a totally normal occurrence. As a leader, I will continue to do my best for you and answer your questions to give you the best foundation for your career journey."

Short's way of thinking is not just seen in Dallas County, a laboratory that serves a broad community of urban and rural settings. Other laboratory directors also see a change in the relationships between scientists and administrators. In APHL's survey, relationships to peers, relationships to supervisors and a career path for growth and promotion all appeared in the top 10 reasons for staying at a laboratory.

"The nice thing about public health laboratories is that you are always learning, regardless of where you are in the org chart," said Achilles. "And the more open communication and transparency you have with your colleagues and staff, the better for the communities that we serve and for our laboratory as a whole." ■



# Introducing the **Human & Animal Food Laboratory Professionals Curriculum Framework**

The Laboratory Curriculum Framework is a competency-based curriculum framework — a career-spanning, visual schematic — for human and animal food laboratory professionals. The framework is being used for:

- Training development
  *courses and other learning events*
- Cataloging existing training
- Career development
- Competency assessment

The goal of this framework is to foster a competent workforce trained to a consistent standard. While this framework was originally created for analysts working in human and animal food laboratories, many competencies and training materials have a broader reach.

Learn more and start using the framework and evaluation tools at **www.aphl.org/HAFL-Framework**

## Framework Levels

The framework spans four professional levels (entry, mid, expert and director), and depicts the content areas in which laboratory professionals must possess competencies (i.e., knowledge, skills, abilities, behaviors and attributes) in order to successfully perform their job functions.

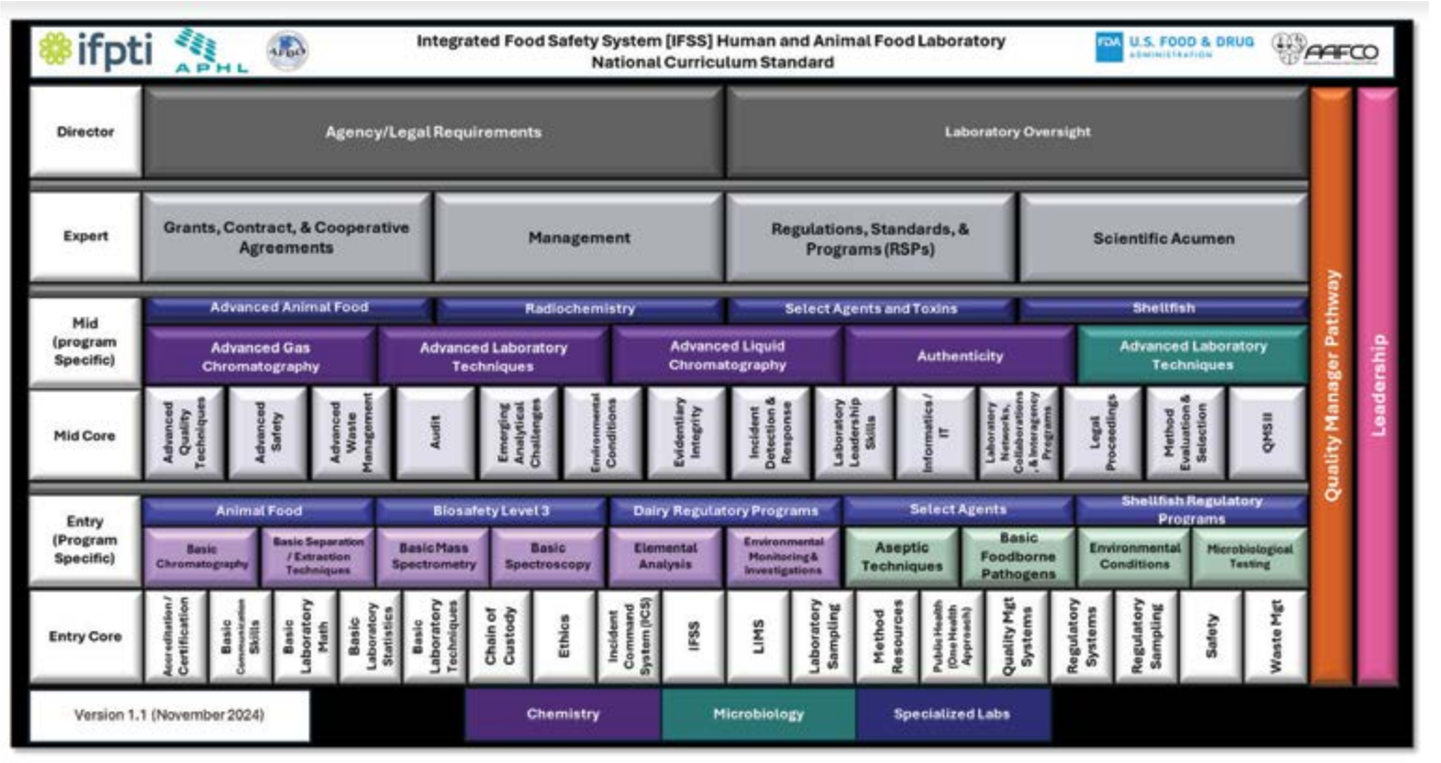
## Building Analyst Competency

The framework outlines the competencies that laboratorians should possess in various stages of their career and in various disciplines (Microbiology, Chemistry, Specialized Testing). You can use these competencies to determine where you or your supervisee have knowledge gaps and identify learning resources to gain these competencies.

Competencies List: **www.ifpti.org/ncs-lab-competencies**
Interactive Framework: **www.ifpti.org/ifss-lab**

## Training Available

Competency-based training courses are currently in development to complement the curriculum framework. These courses can be found on APHL's Learning Portal at **learn.aphl.org/learn**.



# Best Practices for Healthy Laboratories

By **Sydney Comet**, MPH, associate specialist, Environmental Health

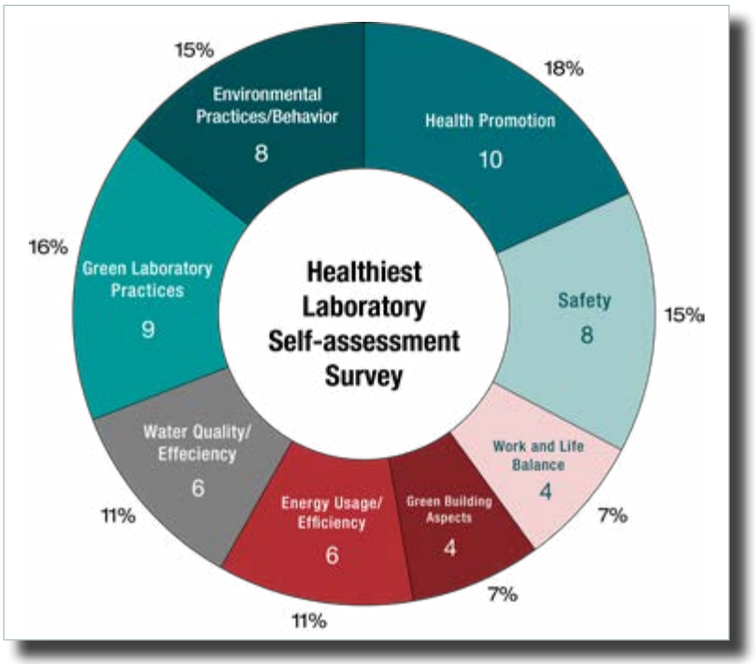



**Figure 1**. The Healthiest Laboratory Self-assessment Survey is comprised of eight sections with a total of 54 activities.

The health and environmental impacts of laboratories play a considerable role in their staff's well-being. Previous research has shown that employees' "well-being" is closely tied to worker retention, levels of productivity and health.[1] Furthermore, environmentally friendly policies in workplace environments have been shown to reduce operating costs, attract more employees and improve the morale of current workers.[2]

## APHL Healthiest Laboratory Award

Started in 2010, APHL's Healthiest Laboratory Award celebrates laboratories for excelling in environmental stewardship and health promotion. The award is sponsored by APHL's Platinum-Level Sustaining Member HDR Architecture.

"We are proud once again to sponsor this award, primarily due to our longstanding corporate commitment to enhancing public health laboratory facilities and for our leadership in wellness and sustainability," says HDR's Public Health Director, Warren J. Hendrickson. During the nomination period, member laboratories are asked to complete the Healthiest Laboratory Self-assessment Survey. There are two dedicated categories for this award; one for local laboratories and one for state laboratories. Winners are selected annually based upon survey responses and are awarded $1,500 to be used for workplace wellness, such as water stations, bus passes or exercise equipment.

The survey is comprised of eight sections with a total of 54 activities (**Figure 1**): health promotion (10), safety (8), work and life balance (4), green building aspects (4), energy usage/efficiency (6), water quality/efficiency (6), green laboratory practices (9) and environmental practices/behavior (8). Each section of the survey contains a list of policies and activities where laboratories can indicate what they have implemented. From the 2024 survey respondents, the health promotion and safety sections had the most implemented activities, while water and energy efficiency had the least.

## Previous Award Winners

Previous award winners have implemented successful ongoing strategies to maintain health and sustainability in their laboratories and employees. Below are several examples of activities accomplished by previous award winners:

- **2017** — The City of Milwaukee Health Department Laboratory created an internal rewards system for staff.
- **2018** — North Dakota Department of Health: Division of Laboratory Services used their garden to grow strawberries, tomatoes and peppers.
- **2019** — Colorado Department of Public Health and Environment, Laboratory Services Division used the funds from the award to install water bottle filling stations in the laboratory.
- **2020** — District of Columbia Department of Forensic Sciences Public Health Laboratory had excellent energy efficiency practices including housing their laboratory in a LEED Platinum facility.
- **2021** — Kentucky Public Health Laboratory brought in trained professionals that could educate staff on physical, emotional, financial and spiritual wellbeing.

Award winners stated that many of their activities were already a priority for their agency and were little-to-no cost to implement. Activities that had the most impact included those that are sustainable, such as dedicated wellness programs. For laboratories looking to create more health and environmentally friendly policies, past winners advise engaging with staff about what changes should be made, encouraging them to participate in wellness activities and making the safety and wellness

**References**

1. Wright, T. A., & Cropanzano, R. (2004). The role of psychological well-being in job performance: a fresh look at an age-old quest. *Organizational dynamics*, 33(4), 338-351.
2. Swathi, A., & Johnpaul, M. (2025). Eco-Friendly Practices Impact on Organizational Climate: Fostering a Sustainable Work Culture. In *Green Management Approaches to Organizational Behavior* (pp. 145-174). IGI Global Scientific Publishing.

of employees a main priority at the laboratory.

## Using the Survey as a Tool

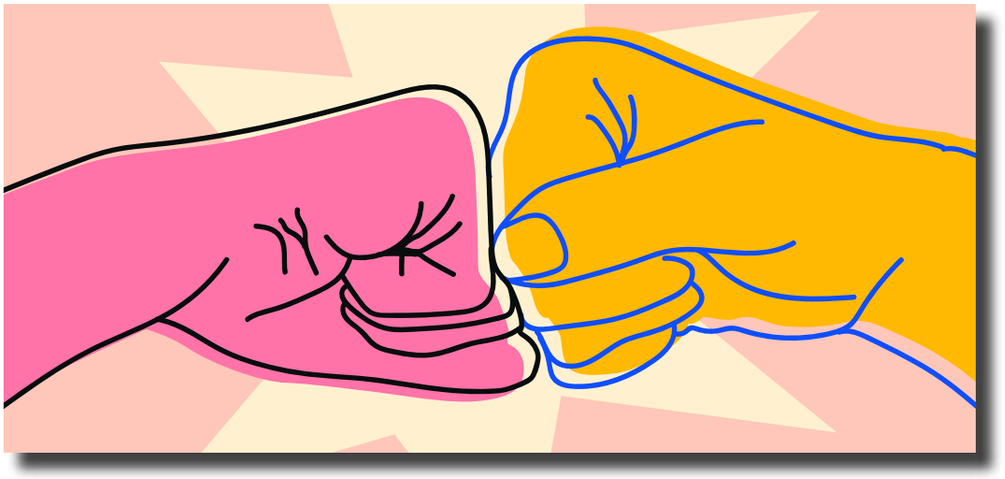
Even if your laboratory doesn't feel ready to apply for the award, the survey can be a great tool to help you. The survey is broken into several distinct sections which can be used to evaluate where the laboratory may be succeeding in health and environmental stewardship, and which areas might need more improvement. Ideas for incorporating more wellness and environmental sustainability practices can also be generated from the survey questions. **Table 1** outlines some of these ideas, along with other best practices taken from the completed survey of previous award winners. Be on the lookout for other future APHL resources to help laboratories determine viable paths towards increasing their own health, wellness and environmental activities. ■

| Survey Section | Tips for Your Laboratory |
|---|---|
| **Health Promotion** | • Create a dedicated wellness committee<br>• Start a monthly newsletter with health advice for employees<br>• Provide incentives for employees to engage in healthy lifestyle activities<br>• Plan outdoor activities such as picnics or sporting tournaments for employees<br>• Create teams for 5k run/walk events<br>• Offer free medical surveillance programs |
| **Safety** | • Mandatory ADA compliance training<br>• Monthly safety meetings with all employees or a committee with representation from all areas<br>• Rotating safety inspections with all employees<br>• Create a job hazard analysis for each position in the laboratory<br>• Safety award for improvements/actions to ensure safety |
| **Work and Life Balance** | • Designated lactation rooms<br>• Designated exercise spaces<br>• Promote professional development |
| **Green Building Aspects** | • Include windows in the laboratory or stairwell<br>• Become LEED-certified<br>• Become WELL-certified |
| **Energy Usage/Efficiency** | • Update lighting systems to incorporate motion detection, high efficiency bulbs or add timers to lights<br>• Policy to turn off machines when not in use |
| **Water Quality/Efficiency** | • Update sinks to be water efficient<br>• Add water bottle refilling stations |
| **Green Laboratory Practices** | • Recycling plastic, gloves and glassware<br>• Keep high-volume gases in large-volume tanks outside the laboratory<br>• Re-usable plates and utensils for staff events |
| **Environmental Practices/ Behavior** | • Offer funding/reimbursement for public transportation<br>• Provide incentives for walking/biking to work<br>• Practice green purchasing policies by buying recycled or environmentally certified products |

**Table 1.** Best Practices Taken from Previous Award Winners

# Expanding Non-fatal Overdose Surveillance with Innovative Partnerships

By **Kelsey Granger**, MHS, specialist, Environmental Health



Overdose biosurveillance, a public health practice where public health laboratories test residual blood and urine specimens from patients presenting to emergency departments (ED) with symptoms of nonfatal overdose to identify causative substances, expanded to 20 jurisdictions under the US Centers for Disease Control and Prevention (CDC) Overdose Data to Action in States (OD2A-S) cooperative agreement in 2023. To successfully launch an overdose biosurveillance program, laboratories must implement multi-faceted outreach strategies to develop broad community networks working collectively towards an urgent common goal: preventing overdoses. While fatal overdoses declined nationally by almost 24% in 2024, overdose continues to be the leading cause of death in Americans aged 18–44.

## Missouri

The Missouri State Public Health Laboratory (MSPHL) works closely with the Missouri Hospital Association (MHA) in a unique partnership which facilitates rapid onboarding of and fosters continuing relationships with hospital partners. After MSPHL tests specimens received from partner hospitals, aggregate data about the prevalence of specific drugs, as well as drug trends clustered within demographic groups or geographic areas, is shared with hospital and community partners focused on certified peer specialists and community coalitions on a quarterly basis. Since collaborating with participating hospitals, biosurveillance has positively impacted patient care: ED staff now receive additional information about drug overdose symptoms and substance use in their hospital populations, facilitating frequent discussion on best practices and clinical quality improvement. Armed with high-quality biosurveillance data, "Providers are more likely to provide timely screening, effective intervention, and referrals to connect patients to further treatment or support" says Hannah Prince, director of Substance Use Programming at MHA. MSPHL and MHA anticipate that biosurveillance data, when combined with medical examiner and law enforcement data, will enable Missouri to reduce overdose morbidity and mortality across the state.

## Florida

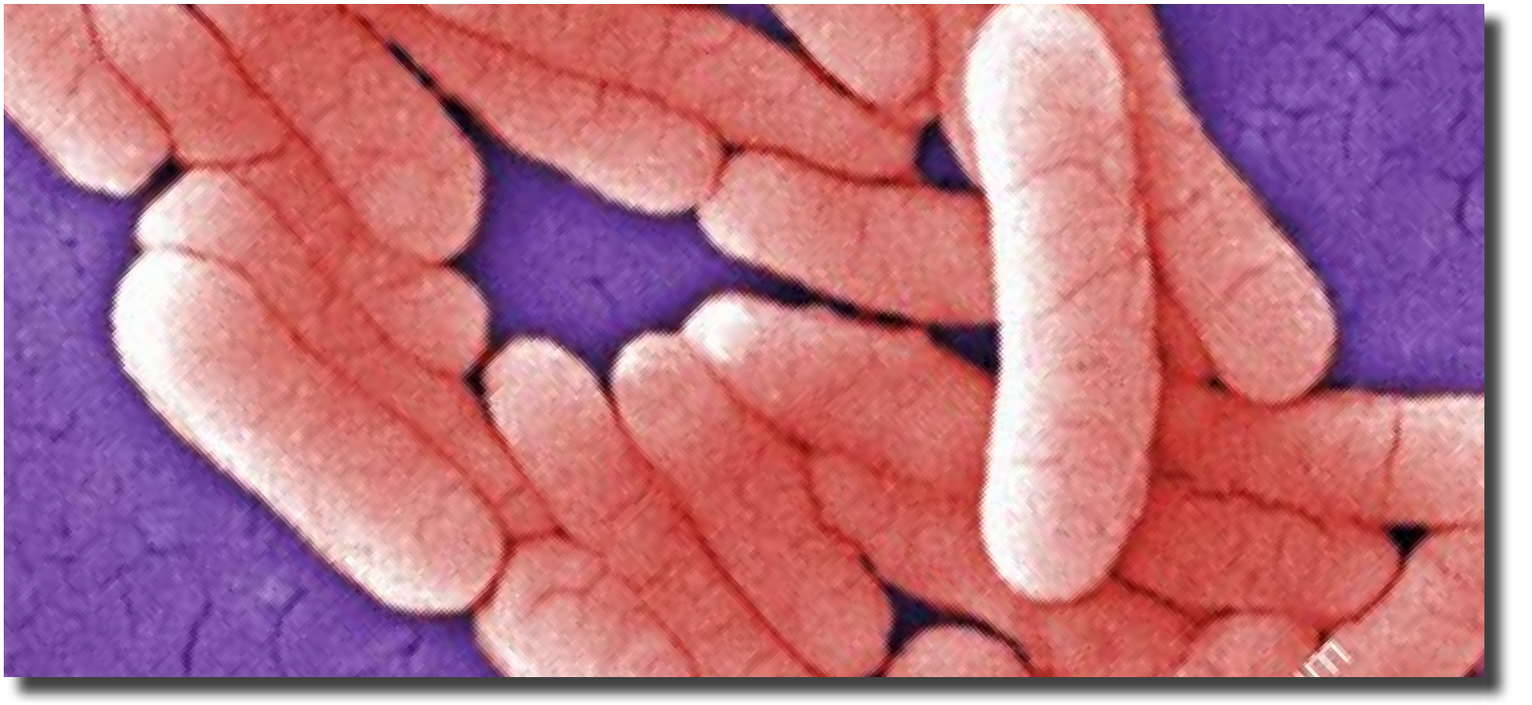
By providing a clear understanding of the substances contributing to non-fatal overdoses in the community, Florida's overdose program plays a vital role in their efforts toward effective prevention of fatal overdoses. Since 2022, Florida's Bureau of Public Health Laboratories has tested over 3,000 non-fatal overdose specimens submitted by their partner hospital, Tampa General Hospital. Results are shared with the partner hospital, hospital coordinators, county health departments, and other local agencies, including fire and rescue paramedicine, law enforcement, and mental and behavioral health centers. These organizations use their data to adjust community resources, improve patient care, and reduce the likelihood of fatal overdose.

## Vermont

The Vermont Department of Health Public Health Laboratory (VDHL) prioritized internal and external partnerships when launching its overdose biosurveillance program. With partner hospital laboratories and Vermont Health Statistics and Informatics (VHSI) they developed a workflow to streamline the often-challenging specimen acquisition process. When a patient is treated for a non-fatal overdose, Drug Overdose Surveillance and Epidemiology (DOSE) epidemiologists at VHSI receive electronic health record information from syndromic surveillance systems. VHSI then uses this data to determine eligibility of residual clinical samples associated with overdose cases for inclusion in biosurveillance testing. If specimens are eligible, VHSI relays a specimen request list to hospital laboratories who then pull and de-identify specimens. To protect patient privacy (especially with respect to the small population size of Vermont), VHSI washes specimens of select demographic data and submits them to VDHL, where comprehensive testing for substances commonly indicated in non-fatal overdoses is performed. Jill Warrington, VDHL laboratory director, emphasizes, "Vermont's biosurveillance program has increased interconnectivity among previously disparate toxicology-based initiatives across the state, enabling a more comprehensive understanding of Vermont's overdose patient population and insight to potential behavioral patterns that affect drug use." ■

# Culture-independent Diagnostic Tests: A Response to a Longstanding Public Health Challenge

By **Allison Gennety**, specialist, Food Safety



A colorized scanning electron micrograph of *Salmonella typhimurium* bacteria under 12,000X magnification. Photo: CDC/ Bette Jensen.

For over a decade, culture-independent diagnostic tests (CIDTs) have steadily reshaped how clinical and public health laboratories detect pathogens. While their speed and low cost are beneficial for rapid diagnoses and patient management, longstanding concerns about their variability and impact on public health have persisted.

Aside from not having cultured isolates for disease surveillance and outbreak detection, performance is also an issue. Variability in test sensitivity and cross reactivity has led to false positives and low confirmation rates for various organisms in both clinical and public health laboratories. Performance issues undermine patient treatment decisions and appropriate public health response, as well as stress laboratory time and limited resources when staff search for organisms that are not truly there.

APHL and its members have been monitoring this issue over the past several years, and significant progress has been made toward addressing false positive concerns in collaboration with clinical laboratory and industry partners. These efforts have led to improvements in test accuracy for pathogens like *Cryptosporidium* and Norovirus, and similar work is underway with *Vibrio* spp and *Campylobacter* spp.

In addition to pathogen-specific efforts, APHL recently published a CIDT Fact Sheet that outlines steps public health laboratories, clinical laboratories, federal partners and manufacturers can take to monitor CIDT performance and address issues. Some suggested steps include:

- Ensuring that public health laboratories have clear lines of communication with partners; manufacturers and clinical laboratories are encouraged to do the same;
- Monitoring confirmation rates in real time;
- Encouraging clinical laboratories to submit isolates or clinical material to their public health laboratory for robust disease surveillance; and
- Encouraging public health and clinical laboratories to report discrepancies or abnormal CIDT results to the manufacturer and to FDA MedWatch.

Beyond the technical fixes, APHL is also working on helping strengthen other aspects of usage to support public health laboratories in this CIDT era. This includes ensuring there are accurate resources and training supplies around CIDT related challenges through actions such as webinars. APHL has also updated CIDT survey data from targeted member surveys to see how laboratories are dealing with CIDTs, keeping members informed, identifying gaps and recommending best practices. APHL and its members are also producing documents to streamline bacterial isolate recovery more efficiently and cost effectively from CIDT positive specimens, starting with *Salmonella*.

As the public health community keeps up with increased CIDT-positive sample submission and false positive events, APHL will continue to provide resources and training to help members stay up to date on the latest information involving CIDTs. The challenges are evolving, but so are the solutions. ■

# Metagenomics May Offer Value Across Many Areas of Public Health

By **Sydney Comet**, MPH, associate specialist, Environmental Health; **Erin Morin**, MHS, specialist, Environmental Health; **Tyler Wolford**, MS, senior program manager, Public Health Preparedness and Response; and **Kirsten Larson**, MPH, senior program manager, Food Safety

Metagenomics, the study of all genetic material within an environment, is a revolutionary science that can be used to tackle complex public health challenges. In comparison to traditional microbiology methods, such as pathogen-specific amplicon-based sequencing or culture-based methods, metagenomics enables an unbiased, comprehensive approach to pathogen identification and characterization. Pathogen-agnostic approaches can be used for identifying unculturable microorganisms or detecting emerging, rare or unexpected pathogens, while targeted approaches are used for pathogen-specific surveillance. The potential of metagenomics makes it a powerful tool to address threats to public health. This article will provide examples and considerations of how metagenomics may be used in public health laboratories.

## Enteric Disease Outbreaks of Unknown Etiology

The US Centers for Disease Control and Prevention's (CDC's) Enteric Diseases Laboratory Branch, APHL and nine state public health departments are collaborating on an Undetermined Outbreaks (UnO) Pilot Project intended to characterize enteric disease outbreaks of unknown etiology (OUEs) using a two-tiered pathway. Well-characterized OUEs, those with robust epidemiological information, are initially analyzed for known pathogens using highly multiplexed amplicon sequencing (HMAS). Outbreaks that are negative or ambiguous for known pathogens on the HMAS panel, are then analyzed via a shotgun metagenomic workflow. Both reference-based and reference-free approaches are used to identify common genomic material across outbreak specimens to place them phylogenetically, relative to known organisms on the tree of life.

Solving OUEs is an important activity for public health. OUEs provide a powerful means for identifying new or under-recognized pathogens affecting the population. In addition to increasing our understanding of the etiology of foodborne disease, OUE investigations can also function as a quality control measure for culture independent diagnostic tests (CIDTs) which largely dominate testing for enteric pathogens in clinical settings.

## Threat-agnostic Sentinel Surveillance

A collaborative effort is currently underway between CDC, APHL, the Johns Hopkins University Applied Physics Laboratory and a combination of state, veterinary and federal laboratories to develop and optimize laboratory workflows and a bioinformatics pipeline for pathogen-agnostic detection using direct-from-specimen metagenomic sequencing of various specimen types. These workflows will provide public health laboratories with the ability to screen specimens for a wide variety of pathogens using platforms already available in most public health laboratories.

This project also includes development of a standardized, open-sourced metagenomics pipeline for public health laboratory use for identification of pathogens using metagenomic sequencing techniques. Development of a bioinformatics pipeline will allow laboratories to better leverage direct-from-specimen next-generation sequencing (NGS) methods while reducing the need for dedicated bioinformatics staff. Additionally, implementation flexibilities will allow for wider adoption and capabilities without requiring local high-power computing resources.

These methods can be leveraged by public health laboratories for a variety of use cases (e.g., facilitating outbreak investigations, serving as a stopgap diagnostic for novel pathogens, characterizing genomes of novel or modified organisms). Additionally, these methods can help augment existing or yet-to-be developed surveillance and early warning systems to improve front-line detection capabilities for emerging pathogens for which no current tests exist.

## Wastewater Surveillance

Metagenomics of wastewater may provide critical information regarding microorganisms present in a pooled community sample, potentially identifying an emerging infectious disease threat. However, compared to clinical metagenomics, it has limited practical uses for public health laboratories because the current technology and approaches for wastewater metagenomics are slow, expensive and generally cannot produce deep, accurate information about the full microbial community composition. This is due to the heterogenous nature of wastewater that inhibits the number of recognizable genome fragments that can be accurately tied to specific microorganisms.

Wastewater surveillance programs may be able to use PCR coupled with metagenomics to gain greater insight into a community's disease burden. Given its potential and the rapidly developing technology, there could be expanded use for metagenomics to help further identify pathogens in wastewater in the future, but more research is needed to uncover its practical applicability.

While metagenomics may not be appropriate for all public health activities, it is a powerful tool that offers many advantages, though brings many additional considerations. APHL's Next Generation Sequencing (NGS) subcommittee is currently developing a resource for laboratories as they look to onboard metagenomic assays. ■

# Innovating Laboratory Workforce Competencies Globally

By **Hewan Moges**, specialist, Global Health; **Reshma Kakkar**, senior manager, Global Health; and **Matthew McCarroll**, principal specialist, Global Health

Yogi Berra famously said, "If you don't know where you are going, you'll end up someplace else." The Laboratory Workforce Competencies Assessment Tool is an online application for laboratory personnel to create developmental plans by identifying gaps in knowledge, skills and abilities. Originally developed by state public health laboratories in collaboration with the US Centers for Disease Control and Prevention (CDC) and APHL, the tool was recently adapted to a global context through several rounds of review by global health subject matter experts and developed into an online format that could be deployed within countries. Transformation of the Public Health Laboratory Competencies into a globally relevant online format was timely as laboratories universally face rising demands for skilled staff, quality assurance and efficient service delivery, especially amid health crises.

The tool provides a framework for evaluating 15 domains within three broad categories: General, Cross-cutting Technical and Specialized. Sub-domains within General include Quality Management Systems, Workforce Training, Emergency Management Response, Communications, Security, Management & Leadership and Ethics. The Cross-cutting Technical domain focuses on General Laboratory Practice, Safety, Surveillance and Informatics. The Specialized domain includes Microbiology, Chemistry, Bioinformatics and Research.

The first iteration of the online tool currently includes the Informatics domain, while the additional domains continue to be developed. This version provides assessors and users with a framework to:

- Outline informatics knowledge, skills and abilities necessary for laboratory professionals to deliver laboratory services efficiently.
- Enhance quality improvement, personnel management and workforce development.
- Create personal development plans that address gaps in informatics knowledge.
- Initiate specific informatics training needs at the organizational and individual level.
- Articulate staff performance expectations related to informatics.
- Assess individual staff performance.
- Develop standardized position descriptions that incorporate informatics.

Users can conduct workforce competency assessments and view results within facilities and across a jurisdiction, either as a one-time assessment or to compare assessments over time. The tool operationalizes guidelines through key features like secure data storage, user-focused design and phased maturity models.

## Implementation of the Workforce Competencies

The Workforce Competencies was developed using a three-phase approach:

1. Pilot the tool in selected countries.
2. Make additional enhancements and configurations to the tool, using piloting feedback as a guide.
3. Transition the tool to the respective Ministries of Health and provide them full ownership and training on using and maintaining the tool.

Pilot users gained insights into the process of online tool development, key technical requirements and the global application of this framework to enhance workforce skills and laboratory standards. The pilot was rolled out in Kenya and Zambia. The tool was introduced to each Ministry of Health through a three-day, hands-on workshop in which representatives from national and regional laboratories were able to familiarize themselves with the tool and begin to use it for their facilities.

For questions or to learn more about the Workforce Competencies tool, please contact Hewan Moges, specialist, Global Health, hewan.moges@aphl.org. ■

We acknowledge the pioneering impact made by APHL's member-state public health laboratories, which has enabled the development of the current global online workforce compentency tool. Its capability to aid any jurisdiction or country enhances workforce competency, which is essential for effective surveillance, emergency response and public health initiatives. The tool is vital to supporting worldwide critical health infrastructure and data-driven decision-making, while adapting to future laboratory needs, elevating laboratory efficiency.

# Promoting Laboratory Leadership and Multidisciplinary Collaboration to Strengthen Global Health Security in Uganda

By **Samuel Gidudu**, Msc.MLS, Laboratory Leadership Program Coordinator, Uganda National Institute of Public Health; **Alex Riolexus Ario**, PhD, Uganda Public Health Fellowship Program Director, Uganda National Institute of Public Health; and **Jocelyn Isadore**, MPH, manager Global Health

Mbwabwa Emmanuel, laboratory professional in Kyotera district, and Winnie Agwang, Cohort 2024 laboratory leadership fellow, develop an Anthrax laboratory outbreak database in December 2024**.** Photo: David Kyobe.

In response to growing health threats, there is an increasing demand for skilled laboratory leaders who can navigate complex laboratory environments. The Global Laboratory Leadership Programme (GLLP) addresses this need by focusing on workforce development and strengthening laboratory systems. With a One Health approach, the program aims to enhance global health security by equipping laboratory leaders with the competencies to manage health crises and build resilient national laboratory systems.

A model implementation of the GLLP is in Uganda, where, with technical assistance from APHL and financial support from US Centers for Disease Control and Prevention, Makerere School of Public Health and Baylor Foundation Uganda, it was integrated into the Uganda Public Health Fellowship Program—a program implemented by the Uganda National Institute of Public Health in the Ministry of Health. This model fully embraces GLLP's core values of ownership and sustainability. Launched in 2023, the Laboratory Leadership Program (LLP) is a two-year, post-master's, non-degree-granting program. It combines didactic sessions, fieldwork, project-based learning, mentorship and community-building activities to develop leaders who can address public health laboratory system challenges and work collaboratively with other health professionals, especially epidemiologists.

A key feature of Uganda's LLP is its coordination with the Field Epidemiology Training Program (FETP), which has traditionally focused on developing public health experts in epidemiology. Although some FETPs have historically included laboratory personnel, there has been a tendency for laboratory FETP graduates to transition into epidemiology roles, leaving gaps in the laboratory sector. Uganda's model tackles this by creating a laboratory-focused leadership program that fosters workforce retention, promotes collaboration between laboratory and epidemiology teams and enhances response to public health outbreaks through laboratory collaboration with FETP.

## A Collaborative Approach to Outbreak Response

The success of the LLP is evident in its role in responding to health emergencies, such as the recent Ebola outbreak in Uganda. Working collaboratively with FETP epidemiologists, laboratory leadership fellows provided vital support to the response efforts and were instrumental in several key activities that contributed to the effective management of the outbreak:

- **Establishing Subnational Laboratory Rapid Response Mechanisms.** Fellows set up structures at subnational levels to ensure rapid outbreak management. This was through functionalizing the subnational laboratory pillar and the laboratory rapid response team.

Cohort 2024 laboratory leadership fellow and Cohort 2023 field epidemiology fellows attend a cholera outbreak rapid response team meeting in Adjumani, Uganda on February 2024. Photo: Drichi Wilson Tokwinyi.

- **Coordinating Between Laboratory and Other Health Sectors.** Fellows facilitated communication and collaboration between laboratory teams, epidemiology teams and other health sectors ensuring smooth operations and timely communication.
- **Logistics Coordination.** Fellows ensured the delivery of Ebola sample collection kits to affected areas, enabling timely sample collection, packaging and referral to testing laboratories.
- **Coordinating Sample Collection and Testing.** Fellows oversaw Ebola sample collection, testing and result reporting. They ensured all suspected cases were tested, and results were shared at the Ministry of Health level.
- **Providing Daily Laboratory Response Updates.** Fellows kept stakeholders, including epidemiologists, informed with daily updates on laboratory activities, including testing statistics, positive gains and areas of improvement.
- **Advocating for Laboratory Support.** Through advocacy efforts, laboratory leadership fellows were able to garner the necessary support and resources from laboratory stakeholders and partners.
- **Monitoring Sample Management and Turnaround Time (TAT).** Fellows tracked sample management and ensured rapid testing and reporting, minimizing delays in case identification and response.

In addition to their Ebola response activities, laboratory leadership fellows also analyzed mpox laboratory data and provided critical information for decision-making during national pillar meetings. This analysis led to discussions about the rising positivity rates despite active surveillance, which was further explored with FETP fellows, showcasing the synergy between the two programs.

Uganda's LLP, implemented in corroboration with FETP, serves as a model for GLLP implementation worldwide. The program has demonstrated the importance of collaboration between laboratory and epidemiology teams in improving outbreak identification and response. The successes during the Ebola response and the analysis of mpox data underscore the significance of effective training and coordination in strengthening laboratory systems and public health responses. With more cohorts currently in training, the program's success will continue to resonate, supporting Uganda's public health infrastructure and offering a framework for other countries looking to build resilient laboratory systems in the face of global health threats. ■

# PulseNet Africa: Building Capacity and Relationships Across the Continent to Strengthen Foodborne and Antibiotic Resistance Genomic Surveillance

By **Angela Poates**, lead specialist Global Health and **Jessica Rowland**, MHS, specialist Global Health

Yaya Bah (The Gambia) and Vakou N'dri Sabine (Côte d'Ivoire) strengthen their sequencing skills at the PulseNet Africa ONT training held in The Gambia in July 2024. Photo: Ebenezer Foster-Nyarko.

In 2023, the Africa Centers for Disease Control and Prevention (Africa CDC) launched the Africa Pathogen Genomics Initiative 2.0 (Africa PGI 2.0)—a strategic roadmap aimed at transforming disease surveillance and public health response across the continent, with the ultimate goal of enhancing early disease detection, improving outbreak response and strengthening public health decision-making across Africa.

While PGI 2.0 set the stage for advancing pathogen genomics, another critical player in Africa's public health landscape, PulseNet Africa, was undergoing its own revitalization. Originally established in 2010 as a regional arm of PulseNet International, the network has long been dedicated to foodborne disease surveillance and antimicrobial resistance (AR) detection. However, in 2024, PulseNet Africa took on a renewed mission through two key activities: an advanced genomic training in The Gambia and a regional strategic meeting in Zambia.

The first major milestone in PulseNet Africa's renewed efforts was an Oxford Nanopore Technologies (ONT) training session held in The Gambia in July 2024, which also happened to be the very first PulseNet International ONT-based training. The training, focused on cholera surveillance, gathered participants from four African nations. Scientists sequenced cholera isolates, analyzing their genomic data to assess antimicrobial resistance patterns. The findings revealed the widespread presence of AMR genotypes, underscoring the importance of a coordinated, continent-wide response to drug-resistant pathogens. More importantly, the success of this training extended beyond data analysis. The participants later collaborated on a scientific manuscript, marking a tangible outcome of their shared expertise and commitment to genomic data-sharing.

Buoyed by the success of the ONT training, PulseNet Africa convened a regional meeting in Zambia in December 2024. This gathering brought together representatives from 11 countries who engaged in in-depth discussions on the current state of enteric genomic sequencing in Africa. During the meeting, participants identified key challenges hindering the expansion of genomic surveillance, including limited infrastructure, funding constraints, and the need for more skilled personnel. The meeting also led to the creation of several working groups to continue to promote and communicate the activities and success of PulseNet Africa members.

PulseNet Africa will also undertake a feasibility study in 2025. Modeled after the successful PulseNet Asia Pacific

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A 2024 PulseNet Africa Regional Meeting group photo. Photo: Ebenezer Foster-Nyarko.

# Local Public Health Laboratories Respond to Influenza A (H5N1): Achievements and Lessons for Preparedness

By **Brandon Bonin**, DrPH, MS, HCLD (ABB), director, Santa Clara County Public Health Laboratory; **Krishna Surasi**, MD, MPH, assistant public health officer, Santa Clara County Public Health Department; **Denise Lopez**, DrPH, MS, HCLD(ABB), director, Tulare County Public Health Laboratory; **Lisa Seliskar**, supervising public health microbiologist, Tulare County Public Health Laboratory; **Elizabeth Toure**, MPH, senior specialist, Infectious Diseases; and **Susan Trow**, PhD, senior specialist, Infectious Diseases


Santa Clara County team members (from l to r:) Laboratory Director Brandon J. Bonin, Senior Public Health Microbiologist Melanie Diep, Public Health Microbiologist Hailey Chua, Senior Public Health Microbiologist Syeda Iqbal, Public Health Microbiologist Douglas Medrano and Assistant Laboratory Director Rensen Khoshabian. Photo: Daisy Moreno.

The avian influenza A(H5N1) virus infecting wild birds around the world spread into uncharted territory this past year, impacting not only the nation's poultry industry but also dairy cows. The evolving outbreak underscores the importance of rapid detection, effective surveillance and collaboration – with public health laboratories playing a central role. California, with its vast agricultural landscape, has acutely felt the effects of the outbreak.

## Local Laboratories Respond

California's local public health laboratories, spanning urban centers to rural communities, have been essential to timely detection and response throughout the state. The Tulare County Public Health Laboratory (TCPHL) was thrust into the response, quickly establishing testing protocols to monitor agricultural workers with occupational exposures. While diagnostic testing for influenza typically involves respiratory specimens, this outbreak has primarily manifested as conjunctivitis in human cases.

"When the first dairy herd tested positive in our county, our laboratory did not yet have conjunctival swabs verified for the [US Center for Disease Control and Prevention's (CDC's)] influenza H5 assay, due to a lack of human specimens available in California," recalls Denise Lopez, DrPH, MS, HCLD(ABB), director of TCPHL. "APHL connected us with Michigan Department of Health and Human Services Laboratories. They provided enough material for us to get this sample type verified and start testing within a few days."

Santa Clara County focused on the most actionable data for their more urban population. They refined a three-pronged strategy of subtyping as many influenza A positive specimens from healthcare facilities as possible, testing retail raw milk and testing specific populations of sick cats (which are also susceptible to the virus). They faced challenges, including the need to blaze their own trail for milk testing before federal protocols were available.

"It's a big response for a small laboratory," admits Brandon Bonin, DrPH, MS, HCLD(ABB), director of the Santa Clara County Public Health Laboratory. However, supportive and forward-thinking leadership, communication with CDC and drawing on their COVID-19 pandemic surge testing experience all enabled their success.

## Lessons Learned and Looking Ahead

The successes of these California local public health laboratories come with lessons learned that can inform future preparation. "Scaling up pre-analytic and post-analytic processes can be just as challenging as testing capacity," notes Lisa Seliskar, supervisory molecular biologist at TCPHL. For TCPHL, piloting changes to specimen collection or test ordering with select submitters before broader implementation was key to reducing mistakes and reporting delays. Other aspects of TCPHL's standard specimen submission process proved beneficial for outbreak response. For example, they provide submitters with a commercial reagent that inactivates pathogens and preserves nucleic acids. This allows patient swabs that test positive by rapid methods to be reused for molecular testing at TCPHL. "There's no need for a second swab to be collected… this greatly improved sample submission for our influenza surveillance," Lopez highlights.

Effective submitter collaboration is also a theme for Santa Clara County, which emphasized the value of communicating with hospital submitters on a laboratory director to laboratory director level.

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# Innovations in Informatics: From Fellow to Full-Time

By **Rachel Shepherd**, senior specialist, Informatics

The strength of the public health system and its ability to modernize is dependent on workforce capacity. Like many public health laboratories, the Missouri State Public Health Laboratory (MSPHL), has struggled over the years to staff and retain specialized technical positions with qualified candidates who are passionate about public health. In 2022, to build a consistent pipeline of new talent, MSPHL onboarded five fellows across the laboratory, including their first ever Informatics Fellow, Dené Hall.

The Public Health Laboratory Fellowship Program: an APHL-US Centers for Disease Control and Prevention (CDC) Initiative prepares scientists for careers in public health laboratory science. MSPHL identified an ideal candidate who had years of experience in laboratory science, healthcare system implementations and epidemiology, in addition to a degree in Informatics. For her part, Hall saw the fellowship in Missouri as a wonderful opportunity to pivot in her career, get back to the lab and leverage her information technology (IT) experience.

For her fellowship project, Hall created a work instruction manual—a step-by-step procedure for configuring, updating and operating the laboratory information management system (LIMS) to complete laboratory workflows. This project filled an important gap in the laboratory's documentation and MSPHL now uses these resources to train incoming staff at all levels and as a reference guide for existing staff.

Throughout the course of her fellowship, Hall rotated through each unit in the laboratory, talking to the bench scientists and learning about each division and how they worked together or supported one another. This exposure enabled her to develop a comprehensive understanding of how the data flows through the laboratory and why; it also strengthened the partnership and trust between the laboratorians and the informatics staff and helped breakdown silos across domains.

The Informatics team was in a state of transition when Hall began, and she helped create cohesion across what was largely a new team. It was clear she was a great fit and the laboratory wanted to hire her at the conclusion of her fellowship. While they had to wait for more than a year for the position to become available, Hall now serves in the role as Informatics Unit Chief. She was able to step into the position as someone with existing relationships and an intimate knowledge of the laboratory, Missouri's LIMS and the organization at large.

MSPHL hopes to bring on more informatics fellows in the future. Hall particularly sees this as an opportunity to attract talent from a wide range of backgrounds—computer science, IT and healthcare. While many fellows tend to come straight from university, Hall hopes to convey to people like her, who have longstanding careers and are eager for something different, that working in public health is lifechanging. "It's never too late to do what you want to do." ■

As part of its ***Innovations in Informatics: Laboratory Success Stories*** series, APHL is currently collecting laboratories' informatics success stories to showcase innovations and highlight what the public health community stands to lose without dedicated and long-term support. How has your laboratory combatted informatics challenges and developed solutions that improve laboratory operations, ultimately contributing to a healthier public? Share your story. And check out other stories from colleagues to get inspired:

**Colorado:** Whole Genome Sequencing Mandate-Need for Electronic Ordering
**Wyoming:** A Portal to Save the Day
**Oregon:** Streamlining the Laboratory Approach to Surveillance Reporting
**Fairfax County (VA):** Modernization through Cloud Migration

# Making the Case for Public Health Laboratory Informatics Team Rightsizing

By **Justin Nucci**, data systems manager, Colorado Department of Public Health & Environment; **Elizabeth White**, LIMS administrator, Wyoming Public Health Laboratory; and **Sean Hannigan**, specialist, Informatics

Ensuring a well-structured and sustainable informatics workforce is critical for the success of public health laboratories. As laboratories navigate increasing data demands, interoperability requirements and digital modernization, understanding the key roles within an informatics team and their respective responsibilities becomes essential.

It is necessary for public health laboratory leadership to recognize the complexity of managing a laboratory information management system (LIMS) and the diverse skill sets required for its effective administration. While a single staff member may sometimes fulfill multiple roles within an informatics team, a sustainable and efficient LIMS administration strategy ensures that all key responsibilities from system configuration to data integration are adequately addressed.

The APHL Informatics Committee is currently developing a new **Informatics Rightsizing** resource to provide guidance on workforce planning strategies that align with public health laboratory needs. The resource will provide further guidance on workforce structuring, funding sustainability and professional development strategies.

## Addressing Informatics Workforce Challenges

Public health laboratories face unique challenges in maintaining an informatics workforce that balances expertise, sustainability and adaptability. Among the most pressing are:

- **Recruitment and Retention.** The demand for specialized informatics roles often outpaces the availability of qualified candidates. Shortages in experienced workforce, particularly in skilled technical roles, such as LIMS administration and HL7/FHIR data integration, creates operational bottlenecks that are made more challenging by steep competition with the private sector. Discrepancies in remote work eligibility have also led to additional concerns in some states.
- **Job Classifications.** Without a distinct job series for informatics professionals in many states, various roles can be misclassified under information technology (IT) or laboratory job families. These incorrect classifications impact career advancement, appropriate compensation and recruitment efforts. Establishing a standardized informatician classification would enhance workforce sustainability by creating clear career pathways and ensuring competitive salaries.
- **Funding Instability.** Sustainable funding models must be developed to transition temporary roles into permanent positions, relieving the uncertainty of having to rely on grant funding, building resiliency into public health laboratories and securing operational capabilities into the future.
- **Training and Professional Development.** Creating a centralized repository of high quality, role-specific training resources tailored to public health laboratory informatics will enhance workforce preparedness. Resources should go beyond theoretical applications by including practical, scenario-based content aimed at intermediate skill levels, allowing learners to apply concepts in realistic laboratory informatics contexts.

## Best Practices for Informatics Team Structure

To support an effective informatics workforce, laboratories should consider best practices in team structuring, staffing models and professional development.

1. **Define Core Informatics Roles and Skills.** Establishing clear and standardized job descriptions for essential informatics roles ensures clarity in responsibilities and facilitates workforce planning. While the roles are defined here individually, it is very often that multiple roles are held by one person. Core roles include:
   - **LIMS Specialist/Manager.** Unlike traditional IT professionals, LIMS administrators must possess a deep understanding of laboratory workflows, regulatory requirements and data integrity principles, in addition to the technical skills needed to manage, configure and optimize LIMS platforms. This dual competency ensures that laboratory operations are effectively integrated with informatics solutions.
   - **Integration Specialist.** This role is distinct due to its technical depth in health data standards, such as HL7 v2, HL7 CDA, and FHIR, and its critical function in enabling interoperability between the LIMS, electronic health records (EHRs) and public health reporting systems. Integration specialists often collaborate across IT, informatics and clinical teams to develop and maintain data exchange interfaces. Key skills include interface engine configuration, message mapping

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and a strong understanding of public health reporting requirements.

- **General Data Analyst.** This role turns raw laboratory data into actionable insights that are ready for downstream uses. They are focused on cleaning, structuring and analyzing routine data from various systems to support reporting and decision-making. They often support epidemiologists and program staff by building queries, conducting quality checks and preparing summary reports. Technical competencies include using SQL, Excel, R or Python for analysis, and familiarity with relational databases.
- **Customer Support Specialist.** This position's combination of customer service skills and informatics knowledge ensures that clients can access the data they need efficiently and securely. Support specialists are responsible for onboarding new users, resolving access issues and providing training or documentation. They may also escalate system issues or enhancements based on user feedback. Familiarity with LIMS interfaces, user management systems, and communication platforms is essential.
- **Application Developer.** Unlike general IT developers, their work is grounded in the unique requirements of laboratory testing, reporting and data exchange. They may develop web portals, automate tasks or build modules within existing systems to improve efficiency. Core competencies include software development, database integration and secure coding practices. This role ensures that informatics systems evolve in-step with laboratory needs.
- **Network Manager/Specialist.** This role focuses on connectivity, uptime and security rather than software or data analysis. Tasks may include configuring firewalls, managing virtual private networks (VPNs) and coordinating with state IT teams to maintain laboratory-specific access. Specialized skills include network protocol knowledge, cybersecurity best practices and experience with hardware and system monitoring tools. Their work ensures uninterrupted access to systems critical for public health operations.
- **Project Manager/Business Analyst.** This position plays a critical part in aligning day-to-day informatics initiatives with broader public health objectives. They are responsible for developing strategic plans, defining workforce and funding needs and ensuring compliance with grant deliverables. Furthermore, they serve as key liaisons between public health leadership, federal agencies and local interested parties, ensuring that informatics initiatives meet both operational and policy-driven goals.
- **Data Visualization Specialist.** Unlike traditional data positions, this role stands out for its emphasis on storytelling to interested parties through data and its use of tools such as Tableau, Power BI or R Shiny. They work to build dashboards that support surveillance, outbreak response and policy decisions. In addition to technical fluency, strong communication and design skills are crucial. Their output helps public health professionals make informed decisions quickly and confidently.

2. While public health laboratories require dedicated informatics staff to manage data systems effectively, certain highly specialized roles such as integration specialists, network managers and security experts may be supplemented by vendor support or core IT staff. Collaboration with external partners can bridge gaps in technical expertise, particularly in resource-constrained environments where in-house staffing is limited.
3. **Implement Cross-training Initiatives.** Encouraging cross-training among informatics staff reduces reliance on single points of expertise and improves overall team resilience. For example, Alabama's public health laboratory microbiology staff were cross-trained in LIMS administration and became critical assets to the informatics team when it came time for a new LIMS implementation.
4. **Develop a Workforce Sustainability Model.** Identifying long-term funding strategies, such as transitioning grant-funded positions into permanent roles, is critical for maintaining a stable workforce. Public health laboratories should advocate for dedicated informatics personnel separate from traditional IT support structures to overcome the challenges faced by slow response time and insufficient expertise.
5. **Enhance Training and Professional Development.** Establishing a centralized repository of high-quality training resources tailored to public

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## PulseNet Africa

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pilot, this study will demonstrate the capabilities of PulseNet Africa laboratories in AR detection and pathogen surveillance. In alignment with the One Health approach, the study will not only focus on human health but also integrate data from animal and environmental sources, ensuring a comprehensive strategy against infectious disease threats.

The reinvigoration of PulseNet Africa, in alignment with Africa PGI 2.0, represents a significant leap forward in enhancing genomic surveillance. By building trust among members, fostering regional collaboration, training a skilled workforce and prioritizing data-sharing, these efforts are laying the groundwork for a more resilient continent-wide disease surveillance system. As Africa continues to embrace pathogen genomics, these activities will play a pivotal role in foodborne and AR surveillance for the continent. ■

## Influenza A (H5N1)

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Recognizing their request for specimens for influenza A subtyping went beyond submitters' normal responsibility, Santa Clara County made it as easy as possible. They established a weekly courier and streamlined the necessary paperwork by matching specimens to additional health and demographic data in the California Reportable Disease Information Exchange ("CalREDIE") system.

The roles of these laboratories in leveraging routine surveillance networks for rapid response and implementing detection in new specimen and sample types, while leaning on established relationships, underscores how important collaboration across the public health network is. Whether maintaining influenza surveillance over the summer months with ongoing vigilance for influenza A(H5N1) or gearing up for the next respiratory season, the PHL community stands prepared for new and existing threats. ■

## Team Rightsizing

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health informatics provides staff with continuous learning opportunities. This repository should include training in LIMS management, HL7/FHIR data exchange and data visualization; and go beyond theoretical applications by including practical content, appropriately framed in the laboratory context, aimed at intermediate skill levels.

### Moving Forward

As public health laboratories continue to modernize their data infrastructure, ensuring the appropriate workforce composition remains a priority. By defining core informatics roles and skills, implementing best practices in staffing and addressing workforce challenges, laboratories can build a sustainable and adaptable informatics team. ■

# Safeguarding Newborn Health: The Urgent Need to Strengthen the NBS Workforce

By **Funke Akinsola**, program manager, Newborn Screening and Genetics

Newborn screening (NBS) programs play a crucial role in detecting life-threatening conditions in infants, ensuring timely intervention and treatment. However, these programs face significant workforce challenges that threaten their ability to operate efficiently. The APHL NBS Workforce Subcommittee initiated focus groups to understand NBS program activities thought to be essential functions of NBS program activities, to identify critical staffing needs and discuss how unaddressed workforce challenges may affect NBS programs' capacity to operate at an acceptable standard of care. The Newborn Screening Focus Group Report delves into the state of the NBS workforce, highlighting staffing shortages, recruitment struggles and retention challenges. Addressing these issues is vital to safeguarding the health and future of newborns across the nation.

## The Challenge

The report is based on insights from two virtual focus groups conducted in July 2023, along with pre- and post-focus group surveys. It identifies key barriers in hiring and retaining qualified professionals within NBS programs. Some of the primary challenges include:

- **Attracting High-quality Applicants.** Many NBS programs struggle to compete with private industry salaries and face difficulties in finding experienced professionals, particularly in laboratory and follow-up operations that typically include weekend work.
- **Lengthy Hiring Processes.** Outdated recruitment systems, rigid job descriptions, and lengthy hiring procedures make it challenging to fill vacant positions in a timely manner.
- **Retention Issues.** Workforce shortages lead to excessive workloads, increasing the risk of burnout. Additionally, retirements contribute to knowledge loss within the sector.
- **Impact of COVID-19.** While the pandemic introduced new funding

opportunities, it also caused hiring freezes and talent loss to higher-paying industries.

## Effective Recruitment and Retention Strategies

Despite these challenges, some programs have found success using strategies such as:

- **Upfront Communication.** Being transparent about career growth opportunities and offering training has helped manage expectations among new recruits.
- **Increased Visibility.** Engaging with funding authorities and conducting awareness campaigns in universities have improved recruitment efforts.
- **Flexible Work Arrangements.** Remote work options and flexible scheduling have contributed to higher job satisfaction and retention.
- **Unionization.** Some programs have successfully leveraged unionization to improve job security and benefits for employees.

## Consequences of Workforce Shortages

Staffing shortages in NBS programs have far-reaching effects, including:

- **Delays in Screening and Follow-up.** A lack of sufficient staff can hinder timely follow-up for newborns who require further testing, potentially delaying critical diagnoses.
- **Inability to Implement New Testing Methods.** Expanding screening to include additional disorders is challenging without adequate personnel.
- **Compromised Quality Assurance.** Workforce gaps can impact the accuracy and reliability of screening processes.

## A Path Forward

To address these pressing issues, NBS programs must adopt strategic solutions, including:

- **Competitive Compensation.** Offering salaries that align with industry standards can help attract and retain skilled professionals.
- **Modernized Recruitment Processes.** Streamlining hiring procedures and revising job descriptions to reflect NBS-specific skills can improve recruitment efficiency.
- **Enhanced Professional Development.** Investing in staff training and career growth opportunities will foster expertise and commitment within the workforce.
- **Public Outreach and Education.** Strengthening awareness campaigns among healthcare professionals and the public can generate interest in NBS careers.

NBS programs are essential to public health, ensuring that infants receive timely diagnoses and interventions for life-threatening conditions. However, persistent workforce challenges threaten their efficiency and effectiveness. By implementing strategic recruitment and retention initiatives, increasing funding support, and enhancing professional development opportunities, NBS programs can build a stronger, more sustainable workforce. The health and well-being of future generations depend on the resilience of these programs—investing in their workforce is an investment in newborn health. ■

# Value of Federal Funding in Supporting Public Health Laboratory Preparedness and Response

By **Chris N Mangal**, MPH, senior director, Public Health Preparedness and Response

Recognizing LRN leaders at the 2024 LRN-B Technical Meeting, Atlanta, GA.

In 2001, following the worst terrorist attack on the United States, a second wave of terrorism followed with the use of biological weapons—specifically *Bacillus anthracis* spores—distributed via the postal system and resulting in 22 infections and five deaths. The anthrax attacks of 2001 highlighted vulnerabilities in biological defense but also brought to light the value of the Laboratory Response Network (LRN) as a critical asset poised to detect acts of terrorism as well as other emerging threats. Using the system developed primarily with federal funding, laboratories across the LRN collaborated to identify the cause of the infections with the Florida Department of Health, Bureau of Public Health Laboratories Microbiologist, Philip A Lee, MSc, identifying the first case of anthrax in 2001.

The LRN was established in 1999 through a collaborative effort involving founding partners, US Centers for Disease Control and Prevention (CDC), Federal Bureau of Investigation (FBI) and APHL to ensure an effective laboratory response to bioterrism. Today, the LRN is an integrated network of local, state and federal public health, hospital-based, food testing, veterinary, environmental testing and international laboratories providing laboratory diagnostics and capacity for biological and chemical threats, other public health emergencies and looking to integrate radiological testing as well.

The LRN is a unique asset in the nation's growing preparedness for public health threats. The linking of state and local public health laboratories, veterinary, agricultural, military and water and food testing laboratories is vital and unprecedented.

The LRN is comprised of a variety of laboratories with public health laboratories mainly serving as reference laboratories—these are laboratories that perform higher level tests to detect threat agents and provide training and guidance to other laboratories, such as private clinical laboratories. Following the anthrax attacks of 2001, public health laboratories across the US saw their role quickly evolve to include working with new partners such as the FBI. This new and evolving role was supported with funding via the Public Health Emergency Preparedness Cooperative Agreement (PHEP), administered by the CDC'S Division of State and Local Readiness (DSLR), and scientific leadership from subject matters experts across the CDC.

Following the anthrax attacks of 2001, the total CDC PHEP Cooperative Agreement funding to public health agencies peaked in 2003 at $970 million (unadjusted)—a year in which public health laboratories received $167.7 million for biological and chemical threats preparedness. Over the years, the CDC PHEP Cooperative Agreement funding has steadily decreased, with 62 jurisdictions receiving $653,738,609 in FY24. **Jurisdictions across the US rely on the CDC to provide support for public health preparedness and response.** In fact, on an annual basis, approximately 90% of funding for laboratory preparedness and response comes from the CDC PHEP Cooperative Agreement.

Since 2002, the CDC PHEP Cooperative Agreement has provided significant assistance to public health departments, including laboratories, across the US. These funds have enabled laboratories to:

- Bolster its workforce by recruiting and hiring personnel such as laboratory scientists and threat preparedness coordinators who lead assay develop development and testing; training and outreach staff who connect with and engage private clinical laboratories and hospitals; and safety officers

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# Strengthening Biosafety Workforce Through Community Engagement

By **Michael Marsico**, program manager, Public Health Preparedness and Response

APHL continues to build its community of practice to enhance biosafety and biosecurity in public health laboratories and beyond. This community is comprised of laboratory biosafety professionals who interact regularly to enhance their knowledge and skills in biosafety and biosecurity. APHL provides opportunities for these biosafety professionals to connect via a number of platforms, such as APHL's ColLABorate communities and in-person opportunities for professional development and networking. Here are three takeaways from public health laboratory staff regarding these opportunities.

## Building the Fundamentals of Safer Practices Through In-person Training

In 2024, APHL convened three Biosafety Technical Workshops to provide training to biosafety professionals on biosafety fundamentals and to network with each other.

**Darryl Pendergrass**
***Biosafety/Safety/Security Officer***
*Alabama Department of Public Health*

*"When I attended the APHL Biosafety Technical Workshop, I gained valuable knowledge and insights into performing my job as the Biosafety Officer for the Alabama Department of Public Health (ADPH) Bureau of Clinical Laboratories (BCL). Networking with other state Biosafety Officers and learning about their successes and struggles gave me tips and inspiration to perform my duties better. Whether it's how to make training more entertaining so that knowledge is retained better or new insights into performing risk assessments, I found time spent with other public health biosafety officers invaluable. The most important thing I gained and immediately put into practice at the BCL was a new risk assessment tool. This new tool has made risk assessments less subjective and more qualitative. I have started with all testing methods and procedures, both new and old, to conduct risk assessments using the new tool. This will increase the safety of laboratory personnel and public safety by better understanding and mitigating potential risks. I look forward to attending future workshops and sharing knowledge with other state biosafety officers."*

## Biosafety Professionals Exchanging Knowledge and Resources

The APHL Biosafety Peer Network Program aims to strengthen biosafety and biosecurity by connecting PHLs to facilitate mentoring and information sharing among biosafety professionals. The exchange is expected to advance and harmonize biosafety and biosecurity in laboratories, while fostering a collaborative community—and ultimately improving PHL biosafety and biosecurity nationwide.

**Heather Matthies**
***Laboratory Safety Officer***
*Washington State Department of Health*

*"Representing the Washington State Public Health Laboratories (WAPHL) with my safety partner, Nicole Martin, and "CoLABorating" with the Wisconsin State Laboratory of Hygiene (WSLH) safety team, Hannah Gander, Rebecca Fahney and Jared Kunich, we brought home a couple of safety concepts and incorporated those into our WAPHL Safety Team.*

*We took the WSLH idea of safety subcommittees for special projects and "spill drills" and cross pollinated that idea to expand our own safety team to create a first aid team subcommittee, thus creating two more chair/co-chairperson leadership roles for staff and started developing several "mini drills" designed to be quick, five-minute drills where lab staff can easily incorporate safety concepts into their routines These drills. also provide easy refresher training and mentoring moments for supervisors to use with staff.*

*By having APHL provide opportunities such as the Biosafety Peer Network Program for public health safety professionals to come together to share knowledge, ideas, and inspirations on how our respective labs operate and to learn from each other on ways to improve laboratory safety and culture has helped both of our teams."*

## Creating the Next Generation of Biosafety Workforce

The Public Health Laboratory Fellowship Program: an APHL-US Centers for Disease Control and Prevention (CDC) Initiative, prepares scientists for careers in public health laboratory science and supports a wide spectrum of program areas including biosafety and biosecurity. APHL provides opportunities for these fellows to network with other public health laboratory staff and to collaborate with them on fellow sponsored projects.

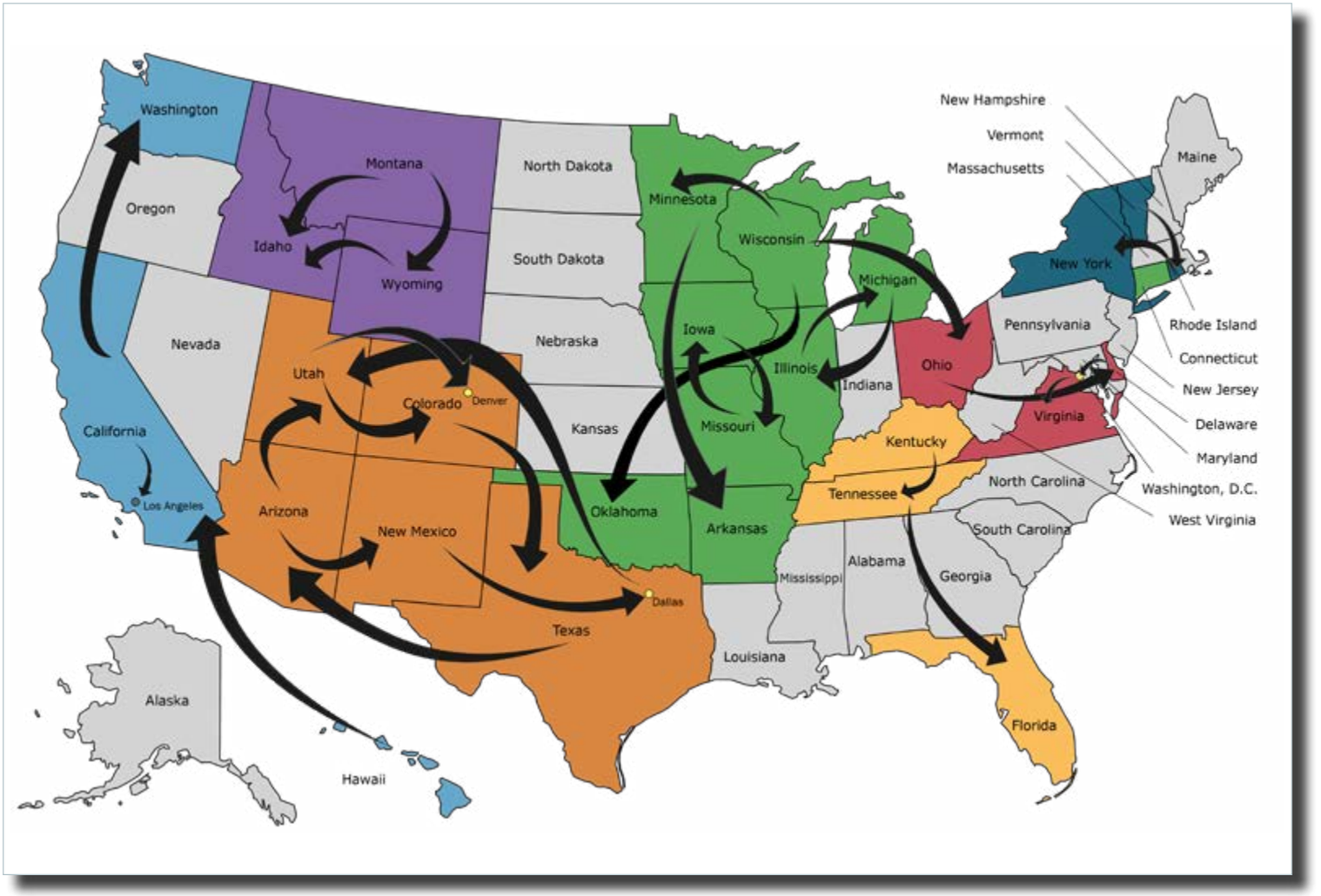
**Joseph Romanow**
***Fellow***
*New Hampshire Public Health Laboratories*

*"I have had the opportunity to work at the New Hampshire Public Health Laboratories (NH PHL) these past 1.5 years as a fellow in the field of Biosafety and Biosecurity. With the help of my mentor, Michael Stevenson, PhD, I have assisted with many projects relating to those fields and then some. I was fortunate to be involved with the APHL/CDC ISO 35001 (Biorisk Management) Program that occurred at the NH PHL, where activities included safety objectives, revamping the chemical inventory, updating the biospill and chemical spill kits, and my own personal project that I took on for my APHL fellowship: validating the biowaste sterilization cycles for the autoclaves within the NH PHL. I got to participate and share these experiences with other professionals and fellows at pilot program site meetings. This has been a rewarding fellowship, and I thank APHL, NH PHL and Michael Stevenson for this experience."*

APHL utilizes a multifaceted approach to building and maintaining a robust biosafety and biosecurity community—this includes virtual platforms such as ColLABorate, webinars and national calls, in-person training, peer-to-peer exchanges and fellowship programs. ■

# Connecting Laboratories, Strengthening Skills: The Power of the Peer-to-Peer Learning Program

By **Susan Baughman**, MSW, senior specialist, Quality Systems and Analytics




The Regional Consortia allows APHL members to share testing services, expert guidance and resources with participating laboratories. One of their key activities is the Peer-to-Peer Learning Program. Since its inception in 2019, this program has allowed laboratory professionals to visit a fellow laboratory in the same regional consortium to receive a hands-on learning opportunity. To date, 27 laboratories have hosted 48 laboratorians representing 24 laboratories.

An analysis of over 40 post-trip reports and four in-depth interviews showed that participants gained firsthand experiences, professional connections and tangible resources that have lasting benefits.

## The Power of Connection

A major outcome was the personal-professional connections participants made. These important connections were a significant highlight in the post-trip reports and the in-depth interviews. A participant from the Wisconsin State Laboratory of Hygiene spoke about how this program gave her more resources, support, and partnerships with other environmental laboratories.

"I was about a year and a half in as a director, and I was getting stressed out and burnt out. [The trip] gave me a renewed energy, it gave me ideas on how to approach structure and other things to improve the laboratory."

Ryan Bernard, formerly from the Missouri State Public Health Laboratory, visited the Iowa State Hygienic Laboratory in February 2023.

"Professionally, it generated a lot. Networking was phenomenal. I made connections that continue to impact me."

Caitlin McDonnell from the Ohio Public Health Laboratory highlighted how she was able to develop a friendship with her host and how greatly that has benefitted her work.

"Developing a relationship personally and professionally was the biggest impact and the longest-term impact...we continue to

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# APHL Fellows Coordinate Recent L-SIP Assessments

By **Tina Su**, MPH, program manager, Quality Systems and Analytics

Since 2007, the APHL Laboratory System Improvement Program (L-SIP) has advanced the efficacy of state and local public health laboratory systems through a guided process of performance evaluation, system improvements, and periodic evaluation and reassessment. The program gives APHL member public health laboratories an opportunity to convene a one-day, systemwide assessment with local, state and federal public health partners to identify system strengths, opportunities for improvement, and potential future quality improvement activities that address the gaps identified during the assessment day.

The planning process to ensure a successful assessment day is lengthy and comprised of many parts, starting with identifying the assessment date/time. Developing the system partner invitation list, managing RSVPs, coordinating with the assessment venue, ordering catering, event logistics, and writing the assessment summary report are also critical steps to an effective assessment. The responsibility for all these details might be challenging for one laboratory staff member, given their existing daily tasks. But having a group of public health laboratory staff members split these tasks might be equally demanding because of the required coordination. The Public Health Laboratory Fellowship Program: an APHL-CDC Initiative—specifically the Quality Management track—offers a solution by placing a fellow who is interested in quality improvement and public health initiatives in the laboratory.

**Ryli Hockensmith, MPH**

**Kentucky Department for Public Health Division of Laboratory Services**

*"Having the ability to connect and collaborate with another fellow, learning from their advice and experiences, made a significant difference in my L-SIP planning process. I gained valuable insight on how another state approached their assessment, and, more importantly, how they might do things differently. This allowed me to make more informed decisions on what would work best for my public health laboratory."*

It gives the fellow the opportunity to plan, coordinate and execute the L-SIP assessment as one of their major projects. This strategy has allowed public health laboratories in Georgia, Arizona, Arkansas, Kentucky and Oregon a chance to make their assessments possible.

## Exposure to Public Health Laboratory Systems

One of the major components of the L-SIP planning process is identifying partners to invite to the event. This activity requires knowledge about the public health laboratory system that a new fellow might not be aware of but encourages them to collaborate with other laboratory staff to brainstorm and develop their list. Consulting with partners outside the laboratory broadens the fellow's understanding of what entities are involved in the system and how they work together.

## Existing Network of Fellows

An added benefit for public health laboratories using a fellow to coordinate the L-SIP assessment is that there is a small cohort of APHL fellows who have served in this role already at other public health laboratories. The "new" fellow can reach out to this group for advice and support, creating an opportunity to build professional connections within the APHL fellow network as well as sharing their knowledge and experiences.

This L-SIP assessment planning process allows fellows to work collaboratively with APHL staff, APHL members, fellow laboratory staff and their system partners and sharpen skills such as event coordination and written communication. This unique, win-win opportunity allows fellows to jump start their careers in public health.

For more information about L-SIP, contact Tina Su, MPH, Quality Systems and Analytics. ■

**Selamawit Demile**

**Arizona Department of Health Services State Public Health Laboratory**

*"I gained hands-on experience in managing logistics, resolving unexpected challenges and engaging effectively with diverse partners through the L-SIP planning process. These experiences have enhanced my ability to organize events, communicate effectively and navigate public health systems. This helps me build a strong foundation for a successful career in public health."*

# Federal Funding

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to protect the laboratories and the public;

- Improve detection time by procuring modern technologies such as real-time detection equipment and automated platforms;
- Procure maintenance contracts to ensure equipment in the laboratory is functioning;
- Modernize facilities to ensure safe laboratory operations;
- Update outdated messaging systems and transition to electronic laboratory reporting of results;
- Provide training on scientific methods, biosafety, quality and other laboratory topics;
- Implement contracts with key service providers such as courier services;
- Strengthen knowledge, skills and abilities of staff by supporting participation in national conferences and other appropriate training opportunities

APHL works closely with CDC, other public and private partners and public health laboratories to provide opportunities to further strengthen the laboratory workforce. Examples of these initiatives include:

- **Public Health Laboratory Fellowship and Internship Programs:** designed to encourage graduates to enter the public sector and build a rewarding career in laboratory science. To continue to strengthen the preparedness and response workforce, APHL implemented a new fellowship track focused on Emergency Preparedness and Response.
- **LRN-B Coordinator Peer Network Program:** a new three-to-five day immersive peer-to-peer approach to support biothreat preparedness coordinators with addressing specific knowledge and training needs such as standard operating procedures for detecting biological threats, outreach to sentinel clinical laboratories, proficiency or challenge testing and operations of an LRN-B Reference Laboratory. Contact APHL at emergency.preparedness@aphl.org.
- **Emergency Preparedness and Response Leadership Workshops and Trainings**: APHL in partnership with CDC convene several training opportunities which are designed to strengthen the knowledge, skills and abilities of the PHL workforce.

Collectively, the CDC PHEP Cooperative Agreement and other federal support have strengthened and continue to strengthen the nation's ability to effectively respond to all public health threats, including terrorism, natural disasters such as hurricanes, infectious diseases, and other emerging threats. When federal funding is scarce, the impact is felt across the US. Providing funding to CDC programs such as the PHEP Cooperative Agreement is an investment in protecting the public's health in every corner of the nation.

For more information on APHL's work in public health preparedness and response, visit: Public Health Preparedness & Response or contact us at: emergency.preparedness@aphl.org. ■

# Peer-to-peer

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rely on each other, we email [questions and resources] back and forth quite often."

## Enhancing Efficiencies, Capacity and Quality

Learning about operating procedures, policies and methodologies in other laboratories was another major outcome of the program. Over two-thirds of responses mentioned how gathering best practices, specific resources and workflows could enhance efficiencies, capacity, quality and safety in their own laboratory.

One participant had been working in her public health laboratory for eight years but had never been able to tour any other public health laboratory. She described how the experience broadened her perspective.

"It was really interesting to see the variation in compliance, and how we are both complying in different ways," noting that she continues to work with her host laboratory to exchange documents and ideas. One example she gave was a pre-audit readiness checklist, "When I saw this checklist, I thought it was awesome. We tailored it to our laboratory and the systems we use, this was very valuable, and [other] teams echoed the same sentiment; it has been beneficial all around."

Bernard spoke on how a significant impact of the trip was learning about his host laboratory's courier practices, tracking mechanisms and specimen accountability.

"Leadership at [my laboratory] was extremely happy with the outcome and supportive of process improvement and testing to see if it worked." When asked if there were any barriers to implementing any of the practices learned from Iowa State Hygienic Laboratory, he noted, "If anything [The Peer-to-Peer Learning Trip] took barriers away from us."

## A Worthwhile Experience

This highly worthwhile program experience, coupled with the fact that all participants were able to develop skills collaboratively, makes this experience invaluable to public health laboratory professionals and their laboratories.

One participant summed up the experience: "During these peer-to-peer trips, you learn a thousand times more than just a video or webinar… [the trip] was really, really, really productive, I cannot imagine anything substituting for that." ■

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## APHL Sustaining Member Program

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