Electronic information sharing
Procurement strategies
Laboratory efficiency
Sustainable system
Lean management
Consolidation
Integrated network
Transformation
Standardization
Streamline
Expanding research
Informatics solutions
Practical metrics
Laboratory data flow
Workforce competency
Innovative laboratory management practices
The LEI needs to accomplish what more than 100 individual labs cannot accomplish by working alone.

Thomas Frieden, MD, MPH
Director, CDC

Cover photos (from top to bottom of page):
MIRU expert Laura Cruz performs a genotyping hybridization, California State Microbial Diseases Laboratory
Chemist Hung Tran prepares to separate radionuclides for analysis, Washington State Public Health Laboratory
Laboratorians being trained on LRN Conventional Methods for detecting biological threat agents at the Virginia Division of Consolidated Laboratory Services
Microbiologist Paul Temprendola performs rabies testing, San Diego County Public Health Laboratory
Laboratorian processes paper forms manually in Kenya. Before LIMS implementation, EQA panels could be sent to only 30-40 labs, and the samples would take several months to complete because of the manual process.
SUSTAINING LABORATORY SERVICES THROUGH EFFICIENCY

It seems almost trite to call 2012 another busy year. And yet—at the association and at APHL member laboratories—there was no shortage of activity, all of it consequential, brought on by routine demands for services, extraordinary public health events and new opportunities to streamline and strengthen laboratory operations.

The last of these—a reimagining of laboratories’ modus operandi that we call the Laboratory Efficiencies Initiative (LEI)—is the theme of this 2012 annual report.

It’s not that America’s public health, food safety and environmental testing laboratories need massive change. Yet, as 2013 unfolds, fiscal austerity and the threat of automatic budget cuts persist. The LEI is a far-ranging effort to assure our member laboratories take advantage of the best management science, the best thinking about efficiency to maximize the value of increasingly scarce resources. Its overriding goal is nothing less than assuring the sustainability of critical laboratory services today and into the future. We are pleased that CDC is the principal collaborator in this important and timely effort.

The LEI’s seven pillars address everything from informatics to workforce to legal matters. Already, the initiative’s value is evidenced by vibrant collaborations among laboratory leaders and stakeholders. Laboratory leaders are making more strategic decisions and sharing their experiences and best practices more than ever before. Such is the strength of our community.

APHL is better poised to support its members in two vital areas thanks to new multi-year cooperative agreements with the US Health Resources and Services Administration (HRSA) and with the US Food and Drug Administration (FDA). The new HRSA partnership enables development of APHL’s Newborn Screening Technical Assistance and Evaluation Program, or NewSTEPs—a comprehensive resource center for newborn screening stakeholders. The FDA partnership puts the association squarely in the middle of efforts to shape public health policy and improve food safety in America by bringing food safety laboratories (including many public health laboratories) to ISO accreditation standards. With great foresight, FDA, through implementation of the Food Safety Modernization Act, has invested millions of dollars in this effort and APHL is excited to work with its members towards this goal.

Other select highlights of 2012 include:

- APHL intervention to avert a test kit shortage in the midst of an unusually severe West Nile virus season.
- The first ever National Environmental Laboratory Professionals Week.
- A new contract with the Department of Homeland Security to support the agency’s Integrated Consortium of Laboratory Networks.
- Initial work on the first core competencies for public health laboratorians.
- Continued APHL support for the development of laboratory systems across the globe and for the African Society for Laboratory Medicine, which hosted its first international meeting in Cape Town, South Africa.
- Published Guidelines for the Isolation and Characterization of Shiga Toxin Producing Escherichia coli from Clinical Specimens—a multi-year collaboration with CDC and public health microbiologists from ten states.

Needless to say, we begin 2013 with a full plate. Please join us as we work to assure the vitality of the governmental laboratory systems upon which we all depend.
Fiscal austerity has been a reality for governments from the local level on up for at least the past decade. But when budget cuts compromise crucial laboratory services—such as drinking water testing or influenza surveillance—nobody gains. Simply put, a lack of reliable laboratory data hobbles outbreak investigations, disaster response and other indispensable public health services.

APHL and CDC began the Laboratory Efficiencies Initiative (LEI) to avert the worst case scenario: a crippling dearth of science-based information for governmental decision-makers. The goal is to maintain a public health laboratory system that is responsive and sustainable, even in lean fiscal years. Strategies run the gamut from joint purchasing to identifying new revenue sources.

In April, APHL hosted two forums to introduce the LEI to public health laboratory directors and to begin documenting existing practices that demonstrate efficiency. In December, LEI leaders met with public health partners to explore opportunities for collaboration. In between, APHL and CDC drafted an ambitious LEI strategic plan and advanced work under every objective. Here are highlights for three key goals.

Finding Funding to Keep Laboratory Data Flowing

Even when highly efficient, governmental laboratories are costly operations, requiring special facilities, sophisticated technology and highly trained scientists.

Again in federal fiscal year 2013 - for the third year in a row – an important source of governmental laboratory funding is expected to continue. The Epidemiology and Laboratory Capacity (ELC) grant program administered by CDC will receive funding from the Affordable Care Act (ACA - federal health reform). This ACA funding supplements the traditional base funding for ELC and enables public health laboratories to continue work on foodborne disease outbreaks, West Nile Virus and other vector-borne and infectious diseases and to improve the electronic management of laboratory data.

To assure that funders are aware of the bang they receive for laboratory bucks, APHL’s National Legislative Review workgroup flew to Atlanta to meet with policy staff from all CDC units with a significant laboratory component, including the Laboratory Science, Policy and Practice Program Office, which oversees aspects of the Laboratory Efficiencies Initiative.
Implement and sustain innovative laboratory management practices.

- Released a practical guide to assessing and planning for possible public health laboratory service changes, such as combining the services of state or local laboratories.
- Surveyed public health laboratories to gauge the cost of test instrument service contracts. APHL will follow up by investigating possible cost-savings from the use of multi-laboratory contracts.
- Offered training on “Lean” management concepts, which focus on increasing efficiency by decreasing waste of resources such as time, motion and space.
- Explored ways to consolidate APHL and CDC laboratory survey data into APHL’s Survey Resource Center, creating an online, nationwide picture of public health laboratories’ test services. Such consolidation will facilitate use of the data; for example, making it easier to identify labs that can provide surge testing for specific pathogens.
- Hosted a national meeting to discuss legal barriers to greater efficiency.

Identify, address institutional, legal and policy barriers to greater efficiency.

- With crucial support from the APHL Informatics Committee, continued work to engage in electronic information exchanges.
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Assure that public health laboratories can engage in electronic information exchanges.

- Began developing electronic laboratory surveillance messages for vaccine-preventable diseases. APHL’s Informatics Program has been helping public health laboratories transition to standardized electronic messaging protocols for years, beginning with influenza messaging. This work enables near real-time transfer of surveillance data to CDC with virtually no effort at either end, as laboratory testing instruments initiate the data transfer and the information automatically populates disease databases at CDC.
- With CDC, continued work to update APHL’s informatics architecture—including its two messaging hubs—to accommodate open source software and new CDC information technologies. APHL has been gradually taking on the role of a health information service provider, acting as an intermediary to simplify electronic communications among clinical and public health partners by 1) maintaining its own security certificates with messaging partners so government agencies don’t have to, and 2) converting data to the preferred public health PHIN MS transport protocol, if necessary for transmission to government authorities.
- With crucial support from the APHL Informatics Committee, developed an informatics self-assessment tool for APHL member laboratories. Based on core laboratory information management system requirements, the tool will enable laboratories to identify gaps in informatics policies, staffing, software, hardware and funding. It is now in testing, but will be available on the APHL website by summer 2013.

The remaining goals are to develop a comprehensive public health laboratory workforce strategy, create an LEI oversight system, draft a communications plan to educate stakeholders about the LEI and foster a culture of efficiency.

APHL has also been active outside the LEI to strengthen and streamline laboratory operations. In January 2012, for example, the Alabama Bureau of Clinical Laboratories became the 28th state public health laboratory to complete a systems assessment through APHL’s Laboratory System Improvement Program. This comprehensive review of the laboratory system involved myriad partners, such as the local homeland security office and the Alabama poison control center. Based on findings, the laboratory’s initial plans are to engage partners to enhance newborn screening reporting and beef up outreach to local universities.

APHL’s Laboratory System Improvement Group teleconference series—a bimonthly discussion of quality improvement in public health laboratories—was launched in 2011, but became firmly institutionalized in 2012. Scientists and administrators from about 20 public health laboratories routinely call in to share their own improvement and efficiency initiatives and to learn from each other.

From data handling to creative collaboration, efficiency is the watchword for America’s governmental laboratories.

APHL’s Expanding Reach:
Electronic Laboratory Reporting For Everyone

APHL’s latest informatics project—the Electronic Laboratory Reporting Technical Assistance (ELRTA) Initiative—is not focused strictly on public health laboratories. The project aims to achieve electronic reporting of laboratory disease surveillance data to governmental authorities from all reporting entities: hospital laboratories, commercial laboratories, public health laboratories and the health information exchange networks encouraged by the 2009 Health Information Technology for Economic and Clinical Health (HITECH) Act.

The state of Kansas showcases the future of electronic laboratory reporting. Prior to receiving ELRTA program assistance, the Kansas Department of Health and Environment had no capability to receive electronic laboratory reports from any of its partners. After working with APHL informatics experts, the department is able to receive digital laboratory test results for STDs, HIV and other infectious pathogens of public health significance. The data comes from the state public health laboratory, state hospital laboratories and LabCorp, one of the biggest commercial labs in the country. The shift to electronic reporting is a boon for all stakeholders, including patients and the public.
Superstorm Sandy reached the US East Coast on October 30, 2012. The massive hurricane-turned-cyclone killed more than 100 people and created scenes of apocalypse along the coast. Despite the ferocious weather and widespread power outages, public health laboratories in New Jersey, New York City and Connecticut continued to provide essential services. The New Jersey Division of Public Health & Environmental Laboratories—which was perhaps most at risk and sustained minor facility damage—did not skip a beat in newborn screening for a thousand babies born shortly before the storm hit.

Yet, although the disaster, once again, showed the dire need for governmental laboratory readiness, preparedness resources have been slow in coming. The 2012 APHL All-Hazards Preparedness Report, released in May 2012, states, “In the absence of funding designated for continued technology acquisition, workforce development, training and education in the laboratory preparedness field, the momentum and successes gained in the past decade seem poised to come to a screeching halt...”
Given the serious fiscal constraints, APHL, its member laboratories, and many collaborators are trying to help laboratories work smarter through strategic use of technology and invigorated partnerships:

- CDC’s **Laboratory Information Management System Integration (LIMSI)** project aims to enable faster, secure, electronic communication among members of the Laboratory Response Network (LRN)—a coordinated group of public health and other labs for which CDC provides standard assays to detect threat agents. The project was launched in 2010, in partnership with APHL, and will help LRN laboratories integrate the software they use to store internal records with an automated messaging service that sends high-consequence test results directly to CDC, eliminating time-consuming and redundant manual data entry. By year’s end, 16 LRN reference laboratories were able to send biothreat data to CDC using the new, automated system, and 11 more are slated to do so by June 2013.

- APHL and CDC convened the **2012 LRN National Meeting**, attended by more than 300 laboratorians and first responders. The two partners also trained 32 scientists in the use of LRN conventional methods to detect biothreat agents, and hosted a course in Hawaii to train scientists from an international laboratory in South Korea, one of the newest LRN members.

- APHL’s Public Health Preparedness and Response program was tapped by CDC to lead discussions around a key Laboratory Efficiencies Initiative goal: **strategic use of molecular infectious disease assays and testing platforms**, using the LRN as one model. Subject matter experts identified a number of issues to consider as common testing platforms are selected—biosafety, scalability for surge testing, etc.

- APHL undertook several efforts to **optimize collaboration with sentinel clinical laboratories**: (1) issued a revised definition of sentinel clinical laboratories, clarifying their public health roles, (2) partnered with the College of American Pathologists to conduct two preparedness exercises for more than 1,300 clinical labs, and (3) partnered with the American Society for Microbiology to revise the Sentinel Level Clinical Microbiology Laboratory Guidelines for Suspected Agents of Bioterrorism and Emerging Infectious Diseases.

- APHL provided member laboratories with a synopsis of the final **federal select agent rule**, issued in October. The rule introduces the concept of Tier 1 select agents—those with greatest potential for misuse and high casualties—and imposes new security requirements on laboratories that handle them. To minimize the burden of regulatory compliance, APHL worked with CDC to ensure laboratories can detect threats using non-Tier 1 agents as controls during testing.

- APHL released an **updated model of laboratory continuity of operations planning** (COOP). COOP is essential to safeguard select agents and assure the continuity of vital services, such as newborn screening, in the midst of public health calamities.

- APHL signed a contract with the **Department of Homeland Security** to support the national Integrated Consortium of Laboratory Networks (ICLN) by (1) facilitating strategic planning to best leverage the expertise of each ICLN network and (2) helping conduct a surge capacity exercise.

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**The Laboratory Services Section, Division of Prevention and Preparedness, Texas Department of State Health Services and the San Antonio Metropolitan Health District participate in a COOP tabletop exercise.**

**Colonel Lanette Hamilton, PhD, delivers the closing keynote address on Laboratories in the Combat Zone at the 2012 LRN National Meeting.**

**Microbiologist Meredith Bryans setting up a culture at the Public Health Laboratory of East Texas.**

**Agents of Bioterrorism Laboratory Training for Sentinel Laboratories, sponsored by the Texas laboratory and the NLTN. Photo provided by the Texas Department of State Health Services, Laboratory Services Section.**
Transmissible illnesses—spread by people, food or animals—have plagued societies for time immemorial. Today, powerful interventions are available to arrest their spread. Virtually all of these, from targeted vaccination to traceback investigations, depend on laboratory testing to detect, characterize and track communicable pathogens.

Last year, public health laboratories backstopped the response to an especially severe outbreak of West Nile Virus—with more than 5,000 confirmed cases, half with neuroinvasive disease. The surge in test demand brought the country to the brink of a test kit shortage. Fortunately, APHL intervened with the kit manufacturer to assure a reliable supply for public health laboratories monitoring the outbreak.

APHL supports the work of member laboratories to detect and respond to infectious and foodborne disease outbreaks. It convenes partners, promotes the development and use of laboratory innovations and advocates for the resources its members need to carry out their health-critical missions.

OPTIMIZING THE RESPONSE TO DISEASE OUTBREAKS

We could not have anticipated the unprecedented levels of both EEEv and West Nile virus in 2012. It is a tribute to our public health laboratorians that we were able to rapidly and accurately test specimens from multiple sources (humans, animals and mosquitoes).

- Sandy Smole, Director, Division of Molecular Diagnostics and Virology, William A. Hinton State Laboratory Institute, Massachusetts
The Virginia Division of Consolidated Laboratory Services was the first lab in the nation to identify a black mold, *Exserohilum rostratum*, at the center of an unusual outbreak of fungal meningitis. This information helped authorities trace the source of the outbreak to tainted lots of injectable steroids, administered to as many as 14,000 patients.

The past year also saw its share of foodborne disease outbreaks. Three people died after eating *Salmonella*-tainted cantaloupe, more than 400 were sickened by a *Salmonella*-tainted tuna product, and hundreds more fell ill after eating other contaminated products, including every-thing from ricotta salata cheese (*Listeria monocytogenes*) to spinach (*Escherichia coli 0157:H7*).

Throughout the year, APHL was involved in several important initiatives to make transmissible disease investigations faster, more resource-efficient and more effective:

- **APHL was awarded a five-year, $7.5 million US FDA cooperative agreement**, whose major focus is to aid the nation’s food and animal feed testing laboratories as they work toward ISO 17025 accreditation—a milestone that will enable the use of their data for regulatory response. The Association of American Feed Control Officials and the Association of Food and Drug Officials are key project partners.

- **In April, APHL convened a forum for multidisciplinary experts to discuss a significant shift in diagnostic testing.** Increasingly, clinical laboratories are using molecular methods, which are faster and less costly than traditional tests, but destroy patient specimens so they are unavailable for confirmatory testing or detailed analysis in public health laboratories. The experts laid out recommendations for research and other steps to enable governmental laboratories to adapt to the new testing paradigm without sacrificing important surveillance information.

- **APHL released two major documents:** (1) *Guidelines for the Isolation and Characterization of Shiga Toxin Producing *Escherichia coli* from Clinical Specimens* and (2) *The Yardstick*, a self-assessment tool that offers a set of “gold standards,” against which food safety laboratories can measure themselves.

- **As part of the Council to Improve Foodborne Outbreak Response, APHL experts helped develop voluntary guidelines for retail establishments involved in a foodborne disease event.** When can the establishment reopen? Is it okay for retailers to collect food samples for testing? The final publication will be released in 2013.

- **APHL has long promoted shared service models in which select laboratories (with ample surge capacity, electronic reporting capabilities, etc.) perform low-volume tests on behalf of other laboratories to achieve economies of scale. The association has organized shared service systems for tuberculosis testing and nucleic acid HIV testing (performed only when two serologic test results are discordant). Last year, APHL began an evaluation of these systems, looking at turnaround-times, cost-effectiveness and other performance markers. APHL also began work on a third shared service system, this one for vaccine-preventable diseases, such as measles and pertussis.

- **APHL achieved important progress on its Right Size Influenza Virologic Surveillance Project, which was envisioned after the 2009 H1N1 influenza pandemic, when public health laboratories had little ability to prioritize testing on a huge influx of specimens. Its ambitious goal is to “right size” testing, so that laboratories test the optimal number of specimens needed to provide statistically significant surveillance information, such as disease prevalence in defined populations. This exciting project will help laboratories deliver science-based answers to critical public health questions within defined confidence limits at minimal cost.
NEWBORN SCREENING: EXPECT A CELEBRATION

The year 2013 marks an important milestone: the 50th anniversary of newborn screening. In the half-century since the start of newborn screening programs, tens of thousands of infants have been spared lifelong disability or early death thanks to one of the most effective public health programs ever.

APHL’s 50 Years of Saving Babies’ Lives Campaign aims to educate both parents and healthcare providers about the details of newborn screening and follow-up activities, when necessary for the newborn. The association got a head-start on its commemoration by showcasing two public service announcements on a Times Square jumbotron in New York City. The faces of children saved by newborn screening are shown along with APHL’s anniversary website, www.50yearssavingbabies.org. Check out the website for news of other campaign events.
A second reason for celebration is APHL’s new cooperative agreement with the US Health Resources and Services Administration (HRSA). This partnership will enable APHL to develop a comprehensive newborn screening resource center, dubbed NewSTEPs, or Newborn Screening Technical assistance and Evaluation Program. NewSTEPs will offer resources to benefit all aspects of newborn screening, including a data repository with information about each state newborn screening program; training modules for nurses, clinicians and laboratory scientists; educational materials for expectant parents; and much more.
Birds disappeared from the sky after part of an 84-car freight train derailed in Paulsboro, New Jersey, in late November, leaking thousands of gallons of gaseous vinyl chloride into the air. Residents of 148 homes were evacuated as the highly toxic chemical, used to make PVC plastics, made area neighborhoods smell like industrial factories.

This incident was one of many environmental calamities in 2012 and a potent reminder why laboratory testing is so important: to measure levels of environmental contamination and human exposure to toxic substances, so individuals, health care providers, public health authorities and abatement workers know how to respond.

Last year, APHL spearheaded many activities to assure the availability of such testing.

Biomonitoring—the direct measurement of potentially harmful substances in human tissues or fluids—is the gold standard for assessing human exposures. A few years ago, APHL took the lead in creating an electronic Biomonitoring Capabilities List, documenting members’ ability to test for a broad range of chemicals. In 2012, the increasingly comprehensive list was made available to all APHL members and, in 2013, it will be open to government epidemiologists and state environmental health directors.
The list has repeatedly proven its usefulness. For example, it enabled the Kentucky Environmental Foundation to identify a public health laboratory—New York’s Wadsworth Center—able to perform specialized testing for polycyclic aromatic hydrocarbons, reproductive and developmental toxicants associated with coal mining. The Foundation had funding to test human cord blood collected from women living in a mining community.

APHL and its members also:

- Contributed to CDC’s first national biomonitoring meeting in November, attended by nearly 100 laboratorians and other public health professionals and academicians.
- Began work on a white paper, *Why Biomonitoring Should be an Integral Component of Routine Public Health Surveillance*.
- Revamped APHL’s biomonitoring listserv to cultivate a network of biomonitoring stakeholders across the country, including epidemiologists, laboratory scientists, community groups and others.

APHL’s *Meeting Community Health Needs Through Environmental Health Labs Initiative* is a crucial effort to help government environmental laboratories deliver more value to those they serve. A high point of the initiative was a September meeting that brought together community advocacy groups—such as the Center for Health and Environmental Justice—government laboratory directors and other environmental health leaders. The discussion centered on ways environmental health laboratories can use their advanced technology and highly trained chemists to address community concerns through environmental health testing—everything from water analysis to consumer product testing to biomonitoring. Getting the word out that governmental environmental laboratories exist to promote public health is an important first step.

Continuing its partnership with the US Environmental Protection Agency (EPA), APHL and EPA co-hosted a two-day *Water Security Summit* in March, bringing together laboratory scientists, water utility staff, first responders and government officials for an expansive tabletop exercise simulating a large-scale water contamination event. Exercises such as these dramatically increase the efficiency of an emergency response.

A final highlight of the year was the first ever *National Environmental Laboratory Professionals Week*, held the last full week of April. This EPA-funded, celebratory week coincided with National Medical Laboratory Professionals Week and emphasized continuing education for current laboratorians and events to promote the field of environmental laboratory practice. APHL sponsored a special webinar on writing science for the public and publicized a plethora of other association trainings: “Cryptosporidium: A Common Waterborne Parasite,” “Radiation Fundamentals” and many more. Participating laboratories hosted open houses for government officials, students and the public, as well as internal staff appreciation activities.
APHL's 2012 annual meeting theme, “One World, One Health,” is a succinct reminder that globalization encompasses far more than commercial trade; it includes the exchange of infectious pathogens as well. From SARS to influenza and HIV to TB, what goes around inevitably comes around.

Unsurprisingly, laboratory-based disease surveillance and clinical testing are just as important in Tanzania as in Tampa, Florida, to detect and halt the spread of transmissible illnesses. For that reason, APHL has been active across the globe, providing expertise in the design and operation of laboratory systems—always with an emphasis on quality and efficiency.

APHL is an important CDC partner supporting national health authorities and international agencies across the globe in efforts to strengthen national laboratory systems and to end the global HIV/AIDS epidemic.

Ensuring a Healthier World

Here are highlights from 2012:

- APHL leaders attended the first international meeting of the African Society for Laboratory Medicine (ASLM), a professional association which began with technical assistance from APHL and other partners. On December 1, 2012, more than 1,200 people from three dozen countries attended the meeting in Cape Town, South Africa, including at least ten ministers or deputy ministers of health. It ended with a strongly worded document committing signatories to take further action to strengthen African laboratory systems. The ASLM—whose board includes APHL representation—has established four laboratory coordinating centers in Africa and facilitates the networking and cross-border work essential to build a cadre of professional laboratorians on the continent.
• APHL leaders participated in the XIX International AIDS Conference—the largest AIDS meeting in the world—held in Washington, DC, July 2012. Among the long roster of prominent speakers, US Secretary of State Hillary Clinton set a goal for something once unimaginable: “a generation that is free of AIDS.” The bulk of APHL’s global work is funded by the President’s Emergency Plan for AIDS Relief, and aims to strengthen laboratory HIV/AIDS test capabilities and capacity in countries hit hardest by the pandemic.

• APHL issued its second global health strategic plan, laying out global health goals for all APHL program areas.

• APHL supported the implementation of laboratory information systems (LISs) and databases in Botswana, Ethiopia, Ghana, Kenya, Lesotho, Mozambique, Swaziland, Tanzania and Vietnam. Such systems increase laboratory efficiencies; provide data for planning; and enhance communications with local, national and international partners. In Lesotho’s Queen Elizabeth II Hospital laboratory, for example, test record transcription errors went from more than 800/month pre-LIS to zero post-LIS. Moreover, test turnaround-time data and routine, systematic quality control data became newly available after LIS installation. To date, APHL has implemented an LIS in more than 30 laboratories worldwide, most in Africa. Its LIS guidelines have been distributed to numerous health ministries through the CDC and World Health Organization (WHO).

• APHL provided structured mentorships for laboratory managers and scientists in Mozambique and Lesotho to support a pan-African movement toward quality in laboratory testing. A key quality benchmark for African laboratories is accreditation through the WHO/ASLM step-wise accreditation program. Accreditation assures patients, clinicians and funders that laboratories maintain proper workflow and managerial oversight and, importantly, produce reliable data for disease surveillance and response. APHL mentoring activities are geared toward building the skillsets needed to move laboratories through the accreditation process.

“...The enthusiasm of the participants [at the APHL-GWU Institute Training Seminar] was so infectious, it inspired me to be more and do more for my profession”

- Kim Lewis, MSc
Laboratory Advisor, APHL

DIGITAL EXTRA
Go to www.APHLcollateral-digital.com. The APHL-GWU International Institute for Public Health Laboratory Management held its annual two-week training seminar in Africa. Click the Play Button to view a photo slideshow.
For at least the past decade, governmental public health, environmental and agricultural laboratories have been in the throes of a workforce crisis. An entire cohort of senior scientist-managers is retiring, with a shallow pool of qualified candidates to replace them. The situation is worsened by a slew of new recruitment barriers, such as shrunken government benefit packages and reduced job security.

A 2011 survey of 79 APHL member public health, environmental and agricultural laboratories—with responses from laboratory directors and nearly 2,000 individual employees—quantifies the problem. For example:

- 30% of individual respondents plan to leave the workforce by spring 2015.
- Over half of individual respondents consider training opportunities important/very important to recruit qualified laboratorians (54%) and to retain them (64%). Yet half of responding laboratory directors (51%) report no, minimal or only partial capacity to provide education and training to their workers.

APHL recognizes the nation’s acute interest in maintaining a highly skilled governmental laboratory workforce to anticipate and respond to public health threats. The association strives to achieve this goal by attracting students to relevant fields of study, helping laboratories recruit and retain qualified candidates, and developing the skills of current laboratory professionals.

Honoring the Workforce, Filling the Pipeline

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Jennifer Faulwetter, PhD. Following completion of her fellowship, Jennifer accepted a Public Health Microbiologist III position at the Alaska State Public Health Laboratory in Anchorage.

The APHL EID Fellowship Program and the Orange County Laboratory met and exceeded all of my expectations.”

Emerging Leader Program alumni stay connected through the Network of Laboratory Leadership Alumni (NOLLA), a new alumni group formed in June 2012.

Inorganic Chemistry Section Director Dr. Patrick Gorski performs an analysis on the Hi-Resolution ICP-MS in the Wisconsin State Laboratory of Hygiene’s Trace Elements Clean Laboratory. The HR-ICP-MS can test for individual isotopes of elements at extremely low concentrations (Photo credit: Bob Rashid).

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Individual respondents self-evaluated no or low competence in many important areas, including data handling (42%) and emergency preparedness (54%).

APHL has been active on many fronts to address these problems. Its National Center for Public Health Laboratory Leadership was established in 2002 specifically to boost the number and skills of laboratory professionals. The Center celebrated its 10th anniversary in 2012 and boasts significant achievements for the year:

- In support of the Laboratory Efficiencies Initiative, (1) hosted three economy-focused forums, tackling such issues as smart purchasing and LEAN methodologies, and (2) began developing the first core competencies for public health laboratorians. Core competencies have existed for epidemiologists and clinical scientists for some time, but not for public health laboratorians. They will drive staff recruitment, as well as development of job descriptions, career paths and targeted training activities. The Center hopes to engage academia in developing curricula based on competencies for specific activities, such as food safety testing or newborn screening.

- Recruited its fifth class of emerging leaders to take part in networking and skill-building activities. As its group project, the class plans to develop a certificate program in public health laboratory practice.

- Put together a proposal for an on-line doctoral program in public health laboratory science, blending distance learning and hands-on lab work. The program will fill a crucial need, giving public health laboratory leaders a convenient means of earning the credentials required for laboratory directorships.

- Recruited 19 Emerging Infectious Disease Program fellows, 17 training fellows and two post-doctoral fellows. Eleven were placed at CDC laboratories and eight at state and local public health laboratories. One of these fellows, Sam Stew, delivered a well-received presentation—“Tackling Emerging Diseases in the Laboratory”—at the Disease Detectives Career Expo, co-sponsored by APHL and CDC last April at the University of Texas in Austin.

Also in 2012, APHL continued to provide its own training courses and to manage the APHL/CDC National Laboratory Training Network (NLTN). APHL-branded courses for public health and private sector laboratorians attracted roughly 16,000 registrants and addressed topics ranging from packaging and shipping requirements, to bioterrorism preparedness, mycology, influenza, tuberculosis, emerging infectious diseases, and rabies, among others. The NLTN offered 57 courses, primarily tailored for public health scientists, and attracted 6,000 registrants.

### APHL/NLTN Training Courses 2012

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<td>3795</td>
<td>35</td>
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<tr>
<td>Regulatory</td>
<td>1084</td>
<td>10</td>
<td>176</td>
<td>4</td>
<td>1260</td>
<td>14</td>
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<tr>
<td>BT</td>
<td>995</td>
<td>4</td>
<td>4568</td>
<td>17</td>
<td>5563</td>
<td>21</td>
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<tr>
<td>Virology</td>
<td>1709</td>
<td>11</td>
<td>84</td>
<td>4</td>
<td>1793</td>
<td>15</td>
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<tr>
<td>Safety</td>
<td>941</td>
<td>8</td>
<td>203</td>
<td>13</td>
<td>1144</td>
<td>21</td>
</tr>
<tr>
<td>Other</td>
<td>1386</td>
<td>25</td>
<td>756</td>
<td>8</td>
<td>2142</td>
<td>33</td>
</tr>
<tr>
<td>Total</td>
<td>16032</td>
<td>131</td>
<td>6248</td>
<td>57</td>
<td>22280</td>
<td>188</td>
</tr>
</tbody>
</table>

Digital Extra

Go to www.APHLcollateral-digital.com. APHL’s National Center for Public Health Laboratory Leadership celebrated its 10-year anniversary with a host of innovative programs over the year. Click the Play Button to view a photo slideshow.
2012 FINANCIALS

Conferences and Exhibits
$639,596

Workshops
$649,757

Membership Dues
$804,138

Other
$535,478

Grants and Contracts
$28,173,092

Total Revenue: $30,802,061
## APHL Domestic Program Expenditures

<table>
<thead>
<tr>
<th>Category</th>
<th>Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infectious Diseases</td>
<td>4,535,564</td>
</tr>
<tr>
<td>Informatics</td>
<td>4,270,578</td>
</tr>
<tr>
<td>Leadership Development</td>
<td>2,805,493</td>
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<tr>
<td>Workshops</td>
<td>2,710,920</td>
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<tr>
<td>Lab Strengthening/Leadership</td>
<td>2,710,861</td>
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<tr>
<td>Food Safety</td>
<td>1,889,951</td>
</tr>
<tr>
<td>Public Health Preparedness Response</td>
<td>1,233,806</td>
</tr>
<tr>
<td>Laboratory Systems and Standards</td>
<td>1,203,712</td>
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<tr>
<td>Environmental Health</td>
<td>1,069,752</td>
</tr>
<tr>
<td>Newborn Screening</td>
<td>843,620</td>
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<tr>
<td>Member Services</td>
<td>641,699</td>
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<tr>
<td>Conferences</td>
<td>607,106</td>
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<tr>
<td>Administration</td>
<td>282,326</td>
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<tr>
<td>Institutional Research</td>
<td>61,324</td>
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<tr>
<td><strong>Domestic Programs Total</strong></td>
<td><strong>24,866,712</strong></td>
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## APHL Global Health Program Expenditures

<table>
<thead>
<tr>
<th>Country</th>
<th>Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angola</td>
<td>17,451</td>
</tr>
<tr>
<td>Botswana</td>
<td>199,002</td>
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<tr>
<td>Central Asia</td>
<td>84</td>
</tr>
<tr>
<td>Democratic Republic of the Congo</td>
<td>103,535</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>125,712</td>
</tr>
<tr>
<td>Ghana</td>
<td>87,490</td>
</tr>
<tr>
<td>Guyana</td>
<td>21,513</td>
</tr>
<tr>
<td>Haiti</td>
<td>125,035</td>
</tr>
<tr>
<td>Kenya</td>
<td>156,051</td>
</tr>
<tr>
<td>Lesotho</td>
<td>389,715</td>
</tr>
<tr>
<td>Mozambique</td>
<td>1,208,492</td>
</tr>
<tr>
<td>Namibia</td>
<td>151,837</td>
</tr>
<tr>
<td>Nigeria</td>
<td>193,565</td>
</tr>
<tr>
<td>Other Global Health</td>
<td>457,510</td>
</tr>
<tr>
<td>Program Management</td>
<td>1,391,925</td>
</tr>
<tr>
<td>Rwanda</td>
<td>9,736</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>155,619</td>
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<tr>
<td>Sudan</td>
<td>18,888</td>
</tr>
<tr>
<td>Swaziland</td>
<td>276,895</td>
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<tr>
<td>Tanzania</td>
<td>316,671</td>
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<tr>
<td>Ukraine</td>
<td>66,987</td>
</tr>
<tr>
<td>Vietnam</td>
<td>133,489</td>
</tr>
<tr>
<td>Zambia</td>
<td>122,483</td>
</tr>
<tr>
<td><strong>Global Programs Total</strong></td>
<td><strong>5,729,685</strong></td>
</tr>
</tbody>
</table>

**Total Expenses: $30,596,397**
EMERGING LEADER AWARD

APHL’s Emerging Leader Award honors an individual whose leadership has been instrumental in one or more advances in laboratory science, practice, management, policy or education within five to ten years of working at a publicly-funded laboratory that conducts testing of public health significance.

Maria Ishida, PhD, Biological Administrator II/Molecular Administrator, Florida Department of Agriculture and Consumer Services

(Pictured above: Lyndsey Caulkins, Microbiologist, Florida Department of Agriculture & Consumer Services, Food Microbiology Laboratory, accepting award on behalf of recipient)

GOLD STANDARD FOR PUBLIC HEALTH LABORATORY EXCELLENCE AWARD

The Gold Standard Award for Public Health Laboratory Excellence is given to an APHL member who makes or has made significant contributions to the technical advancement of public health laboratory science and/or practice.

Onesia Bishop, PhD, Laboratory Director, New Jersey Division of Public Health & Environmental Laboratories, accepting on behalf of the laboratory

LIFETIME ACHIEVEMENT AWARD

The Lifetime Achievement Award honors 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.

Kenneth Aldous, PhD, Director, (pictured center) Division of Environmental Health Sciences, Wadsworth Center at New York State Department of Health

Robert Martin, DrPH, Director, (not pictured) International Training and Education Center for Health, University of Washington

ON THE FRONT LINE AWARD

The On the Front Line Award honors an individual or organization outside of the APHL membership who makes significant contributions to APHL, its membership and mission.

Martha Lamont, Director, Agriculture Marketing Service, Monitoring Programs Division, US Department of Agriculture

(Pictured above: Dan Rice, Director, Food Laboratory Division, NY State Department of Agriculture and Markets, accepting award on behalf of recipient)
The Presidential Award is presented at the discretion of the APHL president to an individual who has made significant contributions to the association’s work to promote policies that strengthen public health laboratories.

Toby Merlin, MD, Director, Division of Preparedness and Emerging Infections, Centers for Disease Control and Prevention

The Champion of the Public Health Laboratory Award honors federal, state and local elected officials and executive branch employees who have recognized the importance of state and local governmental laboratories that perform testing of public health significance either through support of legislation or federal agency decisions.

Thomas Frieden, MD, MPH, Director, Centers for Disease Control and Prevention

The Thomas E. Maxson Education, Training and Workforce Development Award is given to an APHL member who is a public health or clinical laboratory practitioner, trainer or educator who has made significant contributions to public health laboratory practice by creating, delivering or developing continuing education opportunities, programs, policies or practices for the laboratory community.

Renee Beckham, Program Specialist IV, Texas Department of State Health Services

The Healthiest Laboratory Award celebrates excellence in environmental stewardship and health promotion in both practice and policy. It recognizes APHL member laboratories demonstrating outstanding efforts to reduce their collective environmental impact and to promote health & wellness programs.

First Place: Fairfax County Health Department Laboratory

Runner-Up: State Hygienic Laboratory at the University of Iowa

Honorable Mention: Unified Utah State Laboratories: Public Health
January 2012
APHL's position statement, “Use of Non-Culture Assays to Detect Foodborne Infectious Agents,” is approved
APHL’s National Center for Public Health Laboratory Leadership convenes a meeting on procurement improvement strategies for purchasing laboratory equipment and supplies
Alabama becomes 28th state to conduct an APHL L-SIP assessment
Through the APHL PHLIP ELSM Technical Assistance Team, some public health laboratories begin sending electronic Influenza-like Illness Surveillance Network data to CDC

February 2012
APHL/CDC EID Fellowship Program receives record-breaking number of applicants for 18th class of fellows
The APHL Public Health Laboratory Interoperability Project assists US Air Force with practices for sending electronic laboratory surveillance data to CDC’s Influenza Division
ONC grants approval for APHL to use electronic laboratory reporting message profile, standardizing the way state-based lab results are communicated
APHL collaborates with CDC to standardize influenza neuraminidase inhibition testing, which detects antiviral resistance in influenza viruses
CDC, APHL and the National Institute of Health of Thailand convened an influenza laboratory management training course for influenza laboratories of Asia and Europe in Bangkok, Thailand

March 2012
APHL, CDC, and lab directors convene at the International Conference on Emerging Infectious Diseases to plan activities of the Laboratory Efficiencies Initiative
APHL launches 2012 HIV Testing Practices Survey to capture current HIV diagnostic testing algorithms used in public health laboratories
APHL co-hosts EPA’s Water Security Summit

April 2012
APHL issues revised Continuity of Operations Planning guidelines to member laboratories
APHL, CSTE and CDC organize a Culture Independent Diagnostics Forum
APHL publishes “Guidance for Public Health Laboratories on the Isolation and Characterization of STEC”
APHL organizes first National Environmental Laboratories Professionals Week and launches Public Environmental Laboratory Listserv
APHL hosts two laboratory director forums on LEI, ways to improve delivery of laboratory services
NCPHLL exhibits at UT Austin’s Disease Detectives Public Health Conference for the 5th year

May 2012
APHL convenes annual meeting in Seattle, Washington
APHL releases new Global Health strategic plan
APHL and CDC host joint meeting with public health laboratories to identify assistance methodologies to improve PHL informatics capabilities
Staff from 30 public health laboratories attend APHL’s quality improvement training
APHL releases Practical Guide to Assessing and Planning Implementation of Public Health Laboratory Service Changes
APHL forms the Newborn Screening Technical Assistance and Evaluation Program (NewSTEPs), following an award of $4.1 million from HRSA

June 2012
APHL establishes a Culture Independent Diagnostics Subcommittee
Leaders from APHL and CDC meet to develop LEI three-year strategic plan
APHL publishes Biomonitoring Guidance and Requirements for Environmental Electronic Data Delivery Submissions
APHL fields Environmental Health Survey to determine the capability and capacity of environmental laboratories
The Network of Laboratory Leadership Alumni, graduates of APHL’s Emerging Leader Program, is established
**July 2012**
- APHL establishes a Food & Feed Testing Subcommittee
- APHL and USDA hold in-person meeting for FERN Cooperative Agreement Program laboratories
- APHL delivers training on laboratory strategic planning and policy at the African Center for Integrated Laboratory Medicine in Johannesburg, South Africa
- APHL, in collaboration with CDC, awards funding to four laboratories to evaluate utilization of molecular methods for TB testing in the US and five laboratories to evaluate use of shared service models to deliver TB testing

**August 2012**
- APHL and CDC host 16th Annual PulseNet Update Meeting and 8th Annual OutbreakNet Conference
- APHL convenes legislative policy meeting to identify the legal barriers and potential solutions for public health laboratories to achieve greater efficiency
- APHL President Charles Brokopp, DrPH, addresses National Conference of State Legislatures on Environmental Health
- APHL hosts an expert panel to plan a book to honor the 50th anniversary of newborn screening
- APHL’s Emerging Leader Program inducts 5th Cohort Class
- APHL initiates 18th class of EID laboratory fellows

**September 2012**
- APHL, AFDO, and AAFCO are awarded a 5-year $7.5 Million Cooperative Agreement with FDA
- APHL collaborates with DHS Integrated Consortium of Laboratory Networks to support strategic planning and conduct a surge capacity exercise for anthrax
- APHL launches 6th All-Hazards Laboratory Preparedness Survey to determine status of state public health laboratory preparedness and response for all-hazard threats
- APHL hosts Forum on Meeting Community Needs through Environmental Labs

**October 2012**
- APHL and CDC convene the 2012 Laboratory Response Network National Meeting, attended by over 300 scientists, first responders and clinical laboratorians, in Denver, CO
- APHL comments on DHS draft guidance document on decontaminating patients in a mass chemical contamination incident
- APHL launches “Newborn Screening: 50 Years of Saving Babies Lives” Campaign with a public service announcement on the CBS jumbotron screen in Times Square, NYC
- APHL/GWU present two-week laboratory management seminar in Dar-es-Salaam, Tanzania
- NCPHLL launches new online course, Public Health Laboratory 101, to introduce new audiences to public health
- APHL in collaboration with CDC launches the VPD Referral Laboratory project and announces the 4 laboratories that will serve as Referral Centers

**November 2012**
- LRN-C Level-1 meeting is attended by 10 Level-1 labs and first responders in Scottsdale, AZ
- NCPHLL celebrates 10-year anniversary and launches new website
- The APHL/CDC National Biomonitoring Meeting attracts over 100 participants from nearly 20 states
- APHL, AFDO, and AAFCO are awarded a 5-year $7.5 Million Cooperative Agreement with FDA
- APHL collaborates with DHS Integrated Consortium of Laboratory Networks to support strategic planning and conduct a surge capacity exercise for anthrax
- APHL launches 6th All-Hazards Laboratory Preparedness Survey to determine status of state public health laboratory preparedness and response for all-hazard threats
- APHL hosts Forum on Meeting Community Needs through Environmental Labs

**December 2012**
- APHL participates in first International Conference of the African Society for Laboratory Medicine
- APHL holds LEI Partner’s Forum with representatives from APHA, ASTHO, CSTE and NACCHO
- APHL, CDC and the National Minority AIDS Council convene the 2012 HIV Diagnostics Conference in Atlanta, GA
- APHL and CDC convene the Right Size Virologic Surveillance Table Top Exercise with participation from laboratorians and epidemiologists from 15 state or local jurisdictions
- LEI Informatics Self-assessment Tool is piloted at 4 state public health laboratories, receives rave reviews
APHL SERVICE RECOGNITION

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Outgoing Board Member
Frances P. Downes, DrPH, Professor, Michigan State University and Former Laboratory Director, Michigan Public Health Laboratory

Outgoing Board Member
Mary Sue Kitchen, Laboratory Director, Fairfax County Health Department Laboratory, Local Institutional Member Representative

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Outgoing Committee Chair
Joanne Bartkus, PhD, Laboratory Director, Minnesota Public Health Laboratory Division, Infectious Disease Committee

Outgoing Committee Chair
Wanda (Willie) Andrews, BS, MT(ASCP), Laboratory Operations Director, Virginia Division of Consolidated Laboratory Services, Informatics Committee

Outgoing Committee Chair
Maureen Sullivan, MPH, Bioterrorism Preparedness Laboratory Coordinator, Minnesota Public Health Laboratory, Public Health Preparedness and Response Committee

Outgoing Committee Chair
David Mills, PhD, Laboratory Director, New Mexico Department of Health, Global Health Committee

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Shashi Mehta
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Lou Turner
Musau Wakabongo
Susanne Zanto
Christine Bean, Board Liaison
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Kris Peters, Staff Liaison
## Partner Organizations

### Centers for Disease Control and Prevention
- Center for Global Health
- Office of Infectious Diseases, National Center for Immunization and Respiratory Diseases; National Center for HIV/AIDS, Viral Hepatitis, STD and TB Prevention; National Center for Emerging and Zoonotic Infectious Diseases
- Office of Noncommunicable Diseases, Injury and Environmental Health; National Center on Birth Defects and Developmental Disabilities; National Center for Environmental Health/Agency for Toxic Substances and Disease Registry
- Office of Public Health Preparedness and Response
- Office of State, Tribal, Local and Territorial Support
- Office of Surveillance, Epidemiology and Laboratory Services; Laboratory Science, Policy, and Practice Program Office; Public Health Surveillance and Informatics Program Office; Scientific Education and Professional Development Program Office

### Other Federal Agencies
- Centers for Medicare and Medicaid Services, Division of Laboratory Sciences
- Department of Defense
- Department of Homeland Security, Office of Health Affairs; Science and Technology Directorate
- Department of State, Office of Global AIDS Coordinator
- Environmental Protection Agency, Office of Water, Office of Solid Waste and Emergency Response
- Federal Bureau of Investigation, Hazardous Materials Science Response Unit; Hazardous Materials Response and Training Unit; Chemical, Biological, Radiological Nuclear Sciences Unit; Weapons of Mass Destruction Directorate
- Food and Drug Administration, Center for Biologics and Evaluation Research, Center for Devices and Radiologic Health, Center for Food Safety and Applied Nutrition, Center for Veterinary Medicine, Office of Regulatory Affairs
- Health Resources and Services Administration, Maternal and Child Health Bureau
- National Institutes of Health, National Institute of Allergy and Infectious Diseases, Regional Centers of Excellence
- US Department of Health and Human Services, Office of the Assistant Secretary for Preparedness and Response, Office of the National Coordinator for Health Information Technology

### Associations, Non-Governmental Organizations, and Other Partners
- AOAC International
- Association of American Feed Control Officials (AAFCO)
- African Field Epidemiology Network (AFENET)
- African Society for Laboratory Medicine
- Alliance to Make US Healthiest
- American Academy of Pediatrics
- American Clinical Laboratory Association
- American College of Medical Genetics
- Association of Food and Drug Officials (AFDO)
- American Public Health Association
- American Society for Clinical Pathology
- American Society for Microbiology
- American Thoracic Society
- Association of Maternal and Child Health Programs
- Association of Schools of Public Health
- Association of State and Territorial Health Officials
- Booz Allen Hamilton
- Canadian Public Health Laboratory Network
- The Caribbean Epidemiology Center (CAREC)
- Children’s Environmental Health Network
- Clinical and Laboratory Standards Institute
- Clinton Health Access Initiative (CHAI)
- College of American Pathologists
- Columbia University Mailman School of Public Health, University Technical Assistance Program
- Council of State and Territorial Epidemiologists
- Council to Improve Foodborne Outbreak Response
- D4O - Design for Others
- Elizabeth Glaser Pediatric AIDS Foundation
- Federal University of Rio De Janeiro
- Foundation for Innovative Diagnostics ( FIND)
- Genetic Alliance
- The George Washington University, Schools of Medicine & Health Sciences and Public Health & Health Services
- Global Laboratory Initiative (GLI)
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DIAMOND
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www.abbott.com
HOLOGIC I Gen-Probe
www.gen-probe.com
HDR Inc.
www.hdrinc.com
Life Technologies Corporation
www.lifetechnologies.com
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www.luminexcorp.com
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Roche Diagnostics Corporation
www.roche.com
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www.thermofisher.com

PLATINUM
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Esri
www.esri.com/health
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www.illumina.com
OpGen, Inc.
www.OpGen.com
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www.pall.com/lab
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www.starlims.com

GOLD
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www.bd.com
Cepheid
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ChemWare, Inc.
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www.quantabio.com

SILVER
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www.apollolims.com
Applied Maths, Inc.
www.applied-maths.com
The Baker Company, Inc.
www.bakerco.com
BioFire Diagnostics, Inc.
http://www.bio-surveillance.com/
BioSentinel, Inc.
www.biosentinelpharma.com
Bruker Daltonics, Inc.
www.bdal.com/MALDiBiotyper
DiaSorin
www.diasorin.com
Global Biohazard Technologies, Inc.
www.globalbiohazardtechnologies.com
Innogenetics Inc.
www.innogenetics.com
LabWare, Inc.
www.labware.com
Trinity Biotech
www.trinitybiotech.com

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Jeffrey Modell Foundation
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Management Sciences for Health
March of Dimes
Miami Dade College
National Alliance of State and Territorial AIDS Directors
National Association for Public Health Statistics and Information Systems
National Association of County and City Health Officials
National Coalition of STD Directors
National Conference of State Legislatures
National Environmental Health Association
National Newborn Screening and Genetics Resource Center
National Tuberculosis Controllers Association
Pan American Health Organization
Pew Charitable Trusts
Public Health Accreditation Board
Public Health Data Standards Consortium
Public Health Foundation
Public Health Informatics Institute
Public Health Laboratory Center, Hong Kong
The Robert Wood Johnson Foundation
The St. John Group
Trust for America’s Health
Vanderbilt University
World Health Organization
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   Office of Infectious Diseases  
      National Center for Immunization and Respiratory Diseases  
      National Center for HIV/AIDS, Viral Hepatitis, STDs and TB Prevention  
      National Center on Emerging and Zoonotic Infectious Diseases  
   Office of Noncommunicable Diseases, Injury and Environmental Health  
      National Center for Birth Defects and Developmental Disabilities  
      National Center for Environmental Health/Agency for Toxic Substances and Disease Registry  
   Office of Public Health Preparedness and Response  
   Office of Surveillance, Epidemiology and Laboratory Services  
      Laboratory Science, Policy, and Practice Program Office  
      Public Health Informatics and Technology Program Office  
Department of Homeland Security  
Environmental Protection Agency  
Jeffrey Modell Foundation  
President’s Emergency Plan for AIDS Relief  
United States Department of Agriculture – Food Safety and Inspection Service  
US Food and Drug Administration  
US Health Resources and Services Administration  
World Health Organization