

A close-up photograph of a microscope objective lens, showing its cylindrical metal body and the lens at the bottom. The lens is positioned over a slide, and a bright light source is visible at the very bottom, illuminating the slide. The background is a blurred laboratory setting with a blue perforated metal surface.

# ***BPHL 2017***

***Bureau of Public Health Laboratories Annual Report***



## ***Never a Dull Moment in Public Health!***

**Greetings! We are very pleased to present the 2017 Bureau of Public Health Laboratories' (BPHL) annual report. In 2017, the Florida Department of Health's BPHL continued to "contribute to a healthier Florida by providing diagnostic screening, monitoring, reference, research and emergency public health laboratory services." This report takes a closer look at some of BPHL's activities and significant events including:**

- **An in-depth look at syphilis testing at BPHL**
- **BPHL performing newborn screening testing for other states**
- **BPHL U.S. Naval Academy Internship Program**

**The report also includes an article about BPHL's preparation and operations before and after Hurricane Irma. This storm created unique challenges as its unpredictable path impacted all three BPHL locations! BPHL staff were up for the challenge and dedicated staff reported to work to ensure essential functions were completed.**

**I am very proud of the work of BPHL staff who are committed to promoting and protecting the health of all Floridians. We hope you enjoy learning more about BPHL and look forward to continuing to serving Floridians in 2018!**

**Susanne Crowe, MHA  
Interim Chief, Bureau of Public Health Laboratories**

**Florida's Bureau  
of Public Health  
Labs (BPHL)  
has locations in  
Jacksonville,  
Miami & Tampa**

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# 2017 BPHL TIMELINE

## January

### Implementing New Testing

The molecular laboratory continued to expand its testing capabilities in 2017. The laboratory implemented a new molecular assay for the detection of Carbapenem-resistant *Enterobacteriaceae* (CRE), the Cepheid GeneXpert® CARBA-R assay. In addition, whole genome sequencing (WGS) technology was enhanced with three BPHL staff becoming certified to perform WGS for the CDC PulseNet program which performs fingerprinting of *Salmonella* spp., Shiga-toxin producing *E. coli*, *Listeria* spp. and *Campylobacter* spp.

## February

### Visiting Biosafety Official Program

BPHL hosted the Biosafety Official (BSO) from the Oklahoma State Public Health Laboratory (OPHL) as part of the Association of Public Health Laboratories (APHL) Visiting BSO Program. The purpose of the program is to strengthen biosafety and biosecurity in public health laboratories. It is anticipated that through the free and mutual exchange of practices and procedures, participating laboratories will improve and enhance the implementation of their respective biosafety and biosecurity programs.

## March

### Learn from Experience

A Zika virus after action meeting with BPHL, the Bureau of Epidemiology, and county health departments was held in Tallahassee with the goal of determining more efficient methods to capture lab and epi data in 2017. All record tracking documents and processes related to Zika testing, reporting, sharing and resulting were discussed.

## April

### Adding to the Research

BPHL participated in a study between several state laboratories and APHL to assess the safety and accuracy of MALDI-TOF (which uses mass spectrometry technology for the identification of various microorganisms). BPHL staff performed testing and were co-authors on a publication.

## May

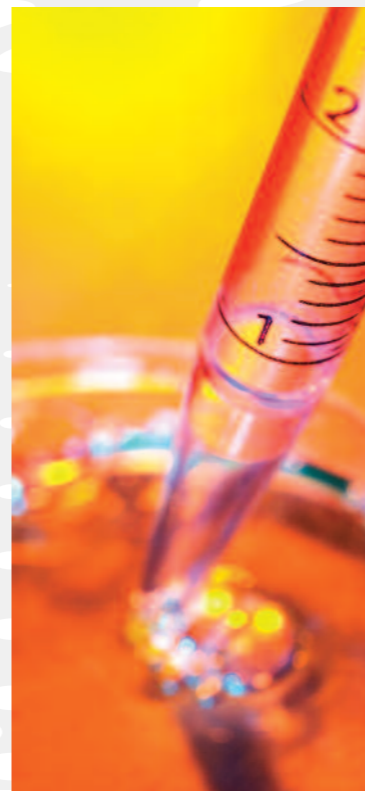
### United States Naval Academy (USNA) Public Health Laboratory Internships

BPHL-Miami hosted the first USNA Public Health Laboratory Internship Program. The internship was three weeks long and included lectures, field experiences and actual laboratory testing. Read “United States Naval Academy (USNA) Public Health Laboratory Internship Program” on page 8.

## June

### A Day in the Life

BPHL-Tampa participated in the pilot session of the Epi:Lab Exchange program. In this exchange program, laboratorians shadow epidemiologists for a three day period to gain a better understanding of a day in the life of an epidemiologist. Similarly, epidemiologists spend three days in the laboratory to see how the laboratory operates from accessioning samples to testing to reporting.



# 2017 BPHL TIMELINE

July

## Tuberculosis Cluster Alert

The mycobacteriology laboratory identified a *Mycobacterium tuberculosis* complex strain with an unusual drug susceptibility pattern, which was mono-resistant to Ethionamide. The CDC's Division of TB Elimination (DTBE), Tuberculosis Genotyping Information Management System (TB GIMS) sent an official cluster alert on June 7, 2017 for Pinellas County. This was a unique cluster not previously seen in the U.S.

August

## Syphilis Testing in Florida

Nationwide, syphilis cases are on the rise. In 2017, BPHL continued to provide essential diagnostic testing for syphilis as part of our statewide STD testing program. Read "The State of Syphilis Testing in the State of Florida" on page 6.

September

## Not Even a Hurricane can Stop BPHL

All three BPHL laboratories were located in areas impacted by Hurricane Irma and were officially closed due to the storm. However, this did not stop BPHL staff from performing essential functions. Read "Hurricane Irma 2017" on page 4.

October

## Providing International Assistance

BPHL-Tampa laboratory director visited Puerto Rico, October 23-27, 2017 as part of an APHL team of three state laboratory directors and one staff member to do an assessment of the Puerto Rico (PR) public health laboratory system. This was in response to the destruction caused by Hurricane Maria which hit the island as a category 4 hurricane. The BPHL mycobacteriology laboratory also provided testing for *Mycobacterium tuberculosis* complex for Puerto Rico since their public health laboratory was not able to provide this essential testing.

November

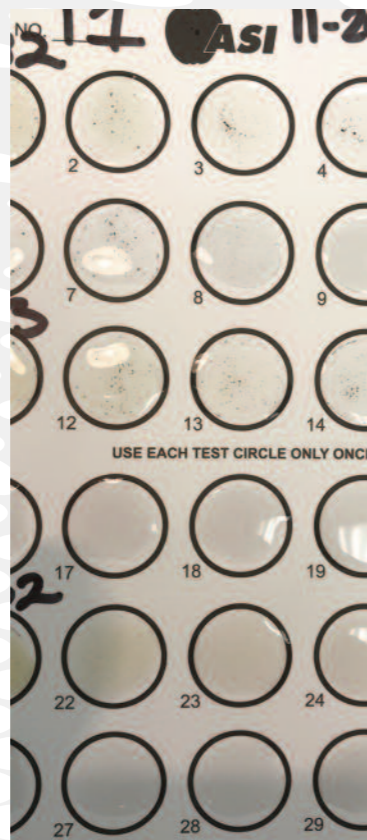
## Providing National Assistance—NBS Cystic Fibrosis Testing

BPHL was contacted by the Centers for Disease Control and Prevention (CDC) regarding BPHL's capacity to assist other states. At this time, only six states, including Florida, were called upon to assist other states with CF DNA testing. Read "Cystic Fibrosis Testing Crisis" page 3.

December

## CoLABoration with Other State Laboratories

The interim bureau chief and an assistant laboratory director attended the "Southeast CoLABorators" meeting at the Tennessee State Laboratory in Nashville, TN, on December 6 and 7. The group comprises eight states in the southeast region and the meeting provided an opportunity to share best practices and develop opportunities for COOP, training, shared services and other activities.



# Cystic Fibrosis Testing Crisis

**Cystic fibrosis (CF) is a genetic disorder that affects the transport of chloride in the body.** The respiratory and digestive systems are the primary organs that are affected by this disease, but the sweat glands and reproductive system are also usually involved (Grosse, et al., 2004). Screening for CF can be performed by a few different methods and there are two main approaches. One approach is to screen for Immunoreactive Trypsinogen (IRT), which if elevated requires a second screen. If the levels are still elevated, DNA testing is performed to identify the most common gene mutations associated with CF disease. The second approach, which is used at BPHL-Jacksonville, is to measure IRT and then perform DNA testing for the most common gene mutations on the highest four percent of IRT results for that day. This approach is recommended by the [National Newborn Screening and Genetics Resource Center](#).

Until February 2016, BPHL was using the Hologic method to perform DNA testing for CF gene mutations. After careful evaluation, it was determined that the Luminex method identified more of the CF gene mutations and is a more reliable method. Consequently, in February 2016, BPHL officially switched to the Luminex CF60v2TM method. On March 31, 2016, newborn screening laboratories were informed that Hologic was recalling all CF kits due to false positive results. The recall included kits produced as far back as the spring of 2015. The good news was that since BPHL had already switched to the Luminex kit, there were no interruptions in CF DNA testing. The bad news was that BPHL had to retest all babies with positive DNA results reported during the previous 10 month period which were obtained with the recalled lots of Hologic kits.

Newborn screening programs in other states were also facing CF testing challenges related to the recall. Many states were using the Hologic method at the time of the recall and had no other method available for testing for CF DNA in their laboratories. BPHL was contacted by the Centers for Disease Control and Prevention (CDC) regarding BPHL's capacity to assist other states. At this time, only six states, including Florida, were not using the Hologic assay and these states were called upon to assist other states with CF DNA testing. In April 2016, BPHL newborn screening laboratory was contacted by the Michigan and Texas public health laboratories with requests for assistance with CF DNA testing. Due to existing memorandums of understanding (MOU) with Texas and Michigan public health laboratories, BPHL was able to quickly start receiving samples from both states. BPHL received a total of 59 samples from Texas (positives only) between April 8 and May 4. Texas was in the process of validating the Luminex assay at the time the recall occurred so they did not require assistance beyond one month. BPHL tested a total of 2,828 samples from Michigan during a 6-month period between April and September 2016.

This incident highlighted the importance of having a [Continuity of Operations Plan \(COOP\)](#) in place. BPHL COOP includes MOUs with various states to make it easier to maintain testing in support of a quick recovery from disasters or other unforeseen events. COOP planning is especially important for the newborn screening laboratory where many of the tests screen for diseases that are life-threatening or can cause serious harm if not detected and treated promptly. With over 200,000 babies born every year in the state of Florida, Florida's newborn screening laboratory is one of the busiest in the country. Despite the workload, BPHL staff were able to accommodate other states' testing needs without disrupting testing for Florida babies.

## References

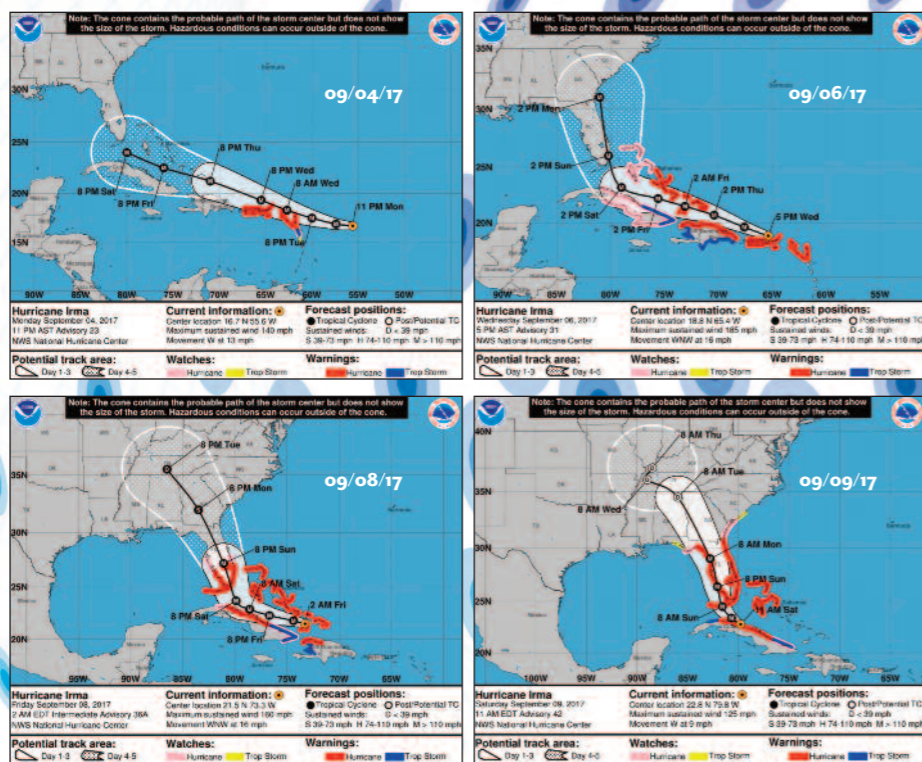
Grosse, S. D., Boyle, C. A., Botkin, J. R., Comeau, A. M., Kharrazi, M., Rosenfeld, M., & Wilfond, B. S. (2004, October 15). MMWR Newborn Screening for Cystic Fibrosis. Retrieved from CDC Web site: [www.cdc.gov/mmwr/PDF/rr/rr5313.pdf](http://www.cdc.gov/mmwr/PDF/rr/rr5313.pdf)



Patricia Miles, NBS technologist, is transferring reagents to the PCR plate for the next step in the procedure for CF testing.

# The Changing Path of Hurricane Irma

In 2014, the Department conducted a statewide hurricane exercise to evaluate the preparedness and response capabilities of the agency, including BPHL. The exercise involved a scenario of a hurricane that tracked up the state impacting the entire Florida peninsula and causing damage to all three BPHL laboratories. The exercise evaluated how BPHL utilized the continuity of operations plans (COOP) to maintain essential services during and after the hurricane. Little did anyone know that in 2017 the scenario enacted in this exercise would become a reality.



## 2017

**August 26:** The National Hurricane Center began monitoring a tropical wave that developed near West Africa.

**August 31:** This wave became Hurricane Irma.

**September 4:** Governor Scott declared a state of emergency.

**September 5:** Hurricane Irma was tracking westward and grew to a category 5 hurricane.

**September 6:** As Hurricane Irma moved westward through the Caribbean, Floridians closely monitored the projected path of the storm and the cone of uncertainty. The Department's Bureau of Preparedness and Response began issuing reports twice a day. Projections were that Irma would take a sharp north track from the north coast of Cuba, beginning on September 10. This projection would take Irma up the east coast of Florida impacting Miami and Jacksonville as a major storm.

**September 8:** The predicted path had Irma tracking north up the west coast of Florida impacting Tampa as a major hurricane on September 11.

The changing path of Irma meant that all three BPHL locations had to implement their respective hurricane preparedness plans beginning the week of September 2. Fortunately, each year, prior to hurricane season, BPHL reviews and revises hurricane preparedness plans which include:

- **How to deal with essential testing such as rabies, newborn screening and biothreat testing.**
- **Preparing the buildings, lab sections and equipment (unplugging non-critical devices and covering instruments and computers with plastic).**
- **Ensuring backup generators, security cameras and fire alarms are fully operational.**
- **IT system preparations including offsite backup.**
- **Notifications to federal and other partner agencies.**
- **Notifications to Department staff on campus including security guards and janitorial staff.**
- **Ensuring staff are fully aware of the situation as early as possible to prepare themselves.**
- **Ensure staff are aware of how to obtain information on building closures (Everbridge).**

## State Agencies Shut Down September 8 and 11

Governor Scott announced that all state agencies would be closed Friday September 8 and Monday September 11. This meant that the laboratories would be closed for four consecutive days. This was a concern for the Newborn Screening Program because babies are born 365 days a year and testing delays could be detrimental. However, because the Governor declared all state offices closed, BPHL could only ask for volunteers to come in to work on Friday and Saturday. As always, we had many dedicated staff who volunteered to come to the lab to receive and triage samples, perform data entry and complete testing. Samples that did not require immediate testing were properly stored until normal operations resumed. Notifications regarding the laboratory closures were sent to customers so that arrangements could be made for any specimens requiring emergency testing. Triage, Biowatch and Newborn Screening staff worked both Friday and Saturday. Many data entry staff worked on Friday as well. The TB area worked on Friday and had two staff come in on Saturday to report out results. These staff also had to complete their own personal/family preparedness plans.

So what did happen? Hurricane Irma struck the north coast of Cuba on September 9, with the outer bands hitting Florida's southern coast and Miami with 50 mph winds, before turning north as a category 4 hurricane and striking Cudjoe Key, with winds of 130 mph early on September 10. That same morning, Miami was slammed with 90 mph winds due to the enormity of the storm and the winds continued as Hurricane Irma then turned slowly north to make a second landfall at Marco Island, south of Naples as a category 3 storm. Because of Irma's monstrous size, the hurricane force winds stretched over 115 miles and its tropical force winds stretched over 300 miles, covering all of the Florida peninsula's width of 130 miles.

On September 11, Hurricane Irma continued as a category 1 storm, passing east of Tampa on a northeastern path through Florida, before exiting the state at the Georgia and Florida state line. This path over land effectively weakened the storm such that it passed Tampa to the east as a category 1 hurricane late Sunday evening.

Vanessa Martinez and Daniel Perry, Miami BioWatch staff members, cover their real-time PCR thermocyclers used for the detection of agents of bioterrorism in preparation for the arrival of Hurricane Irma.



The enormous size and slow forward speed of 7 mph affected the east coast of Florida causing very heavy wind gusts and substantial flooding from Miami up to Jacksonville. The change in path also meant that Governor Scott announced that all state agencies would remain closed on Tuesday September 12. Consequently, each of BPHLs were affected differently by this storm.

### **Miami**

During the early afternoon of Thursday, September 7, BPHL-Miami Laboratory Director informed staff that they may depart for the day to make personal preparations and that the laboratory would be closed on Friday, September 8 and until further notice. BioWatch operations were suspended following the testing performed on Thursday, with staff staying until 7 p.m. to complete work.

Plans were made to notify BPHL-Miami staff when the laboratory re-opened using the Everbridge notification system. An Everbridge alert was sent on Friday evening informing employees that the laboratory would be closed on Monday, September 11.

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An estimated 4.5 million of Florida Power and Light's 4.9 million customers lost power at some point during the storm, including 92% and 85% of customers in Miami-Dade and Broward counties, respectively.

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Following the storm, damage to infrastructure and trees was apparent across Miami-Dade and Broward counties. An estimated 4.5 million of Florida Power and Light's 4.9 million customers lost power at some point during the storm, including 92% and 85% of customers in Miami-Dade and Broward counties, respectively. An estimated 75–80% of traffic lights in Miami-Dade were damaged or non-functional following the storm.

On the morning of Monday, September 11, the facility manager arrived to inspect the building, reporting laboratory preparations went quite well. No major damage was observed to the laboratory or property. Minor leaking was discovered in several areas due to cracking, gaps in doors, or other building defects. The destruction in the Miami-Dade and Broward counties from the winds did affect three staff member's ability to return to work on Wednesday, September 13.

### **Jacksonville**

On Saturday, September 9, BPHL-Jacksonville maintenance staff waited until everyone left before securing the buildings. The buildings were physically locked because the security guards were being released from duty at 3:00 p.m., and sand bags were placed at all doorway entrances. On Monday, September 11, maintenance staff returned mid-morning to assess the

laboratory. There was flooding in the Sowder building basement, Hardy building first floor and Hanson first floor. The Hanson first floor is used mainly for storage and as many items as possible were moved up to the second floor ahead of the storm. Items that remained on the first floor were placed on pallets (about 4 inches high). Unfortunately, the flooding was about 6–8 inches throughout the building so the items stored on pallets were wet with stormwater. Maintenance removed large tree debris and used a wet vac to remove most of the water on Monday. On Tuesday September 12, 12 employees volunteered to come in and clean out all the storage areas so the floors and walls could be dried with fans. The guard service returned to duty Tuesday morning at 6:30 a.m. and all lab employees returned to work Wednesday morning.

### **Tampa**

On Saturday, September 9, BPHL-Tampa secured the building and released the security guard from duty at 3 p.m. Sand bags were placed at all doorway entrances. The security monitoring company was informed the building would be on lockdown, secured and fully armed until Tuesday September 12. On Monday September 11, BPHL-Tampa maintenance mechanic did a cursory check of the laboratory. It was very good news. The building was operating on full, main power and there was no evidence of any flooding. The retention pond next to the laboratory was very full, but had not breached its banks. On Tuesday September 12 BPHL-Tampa laboratory director did a more extensive review of the state of the laboratory, as well as began receiving deliveries from couriers. Again he found very little damage except for two ceiling tiles blown off due to wind. There were no roof leaks and the building never lost power during the storm. The guard service returned to duty Tuesday morning at 7 a.m. and testing at BPHL-Tampa resumed to 100% on Wednesday September 13.

An after action review by BPHL found that communications with all staff before and after the storm was good at all lab locations. Messages were pushed out to all employees using the Everbridge system. Each lab location has the ability to send out messages to just their location or to all three locations. The system was used several times before and after the storm to send notifications to staff.

The impact of Hurricane Irma on BPHL could have been far worse than it was. BPHL-Tampa laboratory director was part of a team assembled to assess the public health laboratory system in Puerto Rico after that island was devastated by Hurricane Maria. This was a totally different outcome. The public health laboratory in Puerto Rico was without power, the roof was leaking and there was substantial structural damage due to the wind. All reagents and samples were lost and there was no public health testing capacity in Puerto Rico. Had Hurricane Irma maintained one of the predicted paths, then one or all of the BPHLs would have been in the path of a category 4 hurricane. It is unknown how these laboratories would resist such a storm.

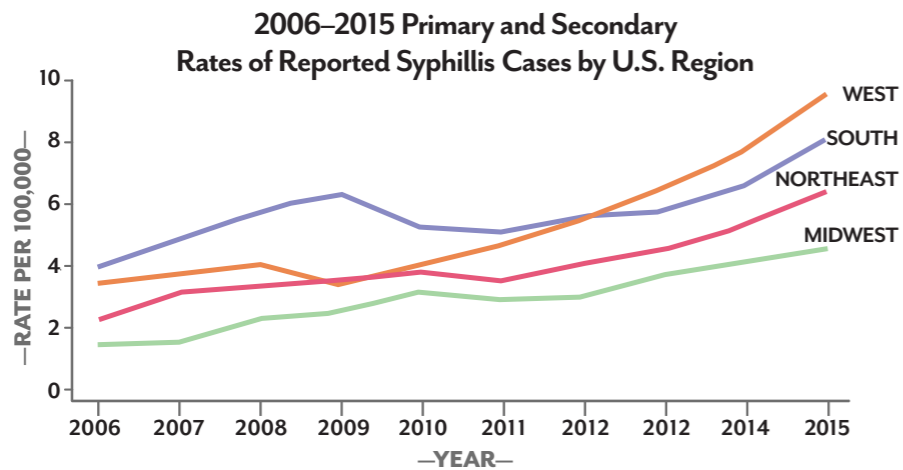
# The State of Syphilis Testing in the State of Florida

Syphilis is an ancient disease with the first documented cases of syphilis occurring in Italy over 500 years ago. It is caused by *Treponema pallidum*, a bacterium called a spirochete due to its corkscrew configuration. There are four stages of disease: primary, secondary, latent and tertiary. The primary stage typically begins three weeks after infection and is characterized by small painless sores called chancres. As the disease progresses to the secondary stage, commonly a rash may develop on the palms of the hands and bottoms of the feet. Although these symptoms will go away with or without treatment, the primary and secondary stages (P&S) are the most contagious phase of the disease and if left untreated, the infection will get worse. In the latent and tertiary stages, the patient is not infectious and may appear asymptomatic, however, the disease can cause damage to the heart, brain, nerves, bones and other parts of the body that can last for years and eventually cause death.

Syphilis is sexually transmitted from person to person through direct contact with an infected syphilitic ulcer/sore called a chancre. In addition, syphilis can be transmitted from a mother to her unborn child during pregnancy causing congenital syphilis. Congenital syphilis can result in a miscarriage, a still birth or a live birth where there are severe outcomes for the infant such as physical deformities, mental retardation, other disorders or death.

**The Centers for Disease Control and Prevention (CDC) collects and disseminates data nationwide on all Sexually Transmitted Diseases (STDs).** CDC reports that syphilis rates are increasing at concerning rates and that despite being an easily diagnosed and treatable disease, syphilis continues to be a public health issue of great concern. The CDC data in 2000–2001 show syphilis rates at the lowest recorded rates since 1941 but have increased almost every year since 2006, resulting with an increase in primary and secondary syphilis in 2014–2015 of 19% (7.5 cases per 100,000 population)—the highest since 1994. The graph on this page comparing 2006–2015 primary and secondary regional rates shows the South consistently ranking in the top one or two position.

Discussing the nationwide trend, Dr. Gail Bolan, Director of CDC’s Division of STD Prevention, states that the troubling increase in syphilis among newborns, young people and gay and bisexual men, emphasizes the continued need for extending preventive services for all Americans, suggesting “To reverse the STD epidemic, we should all learn to talk more openly about STDs—with our partners, parents and providers.”



Source: CDC Division of STD Prevention Sexually Transmitted Disease Surveillance 2015

## SYPHILIS TESTING: BPHL JACKSONVILLE, MIAMI AND TAMPA

TEST	2015	2016
Rapid Plasma Reagin	141,511	149,023
Positive Rapid Plasma Reagin	6,135	7,592
Percent of Positive Rapid Plasma Reagin	4.3%	5.1%
Enzyme Immunoassay	6,849	8,221
Fluorescent Treponemal Antibody/ Treponema pallidum Particle Agglutination	529	388
<b>Total</b>	<b>148,889</b>	<b>157,632</b>

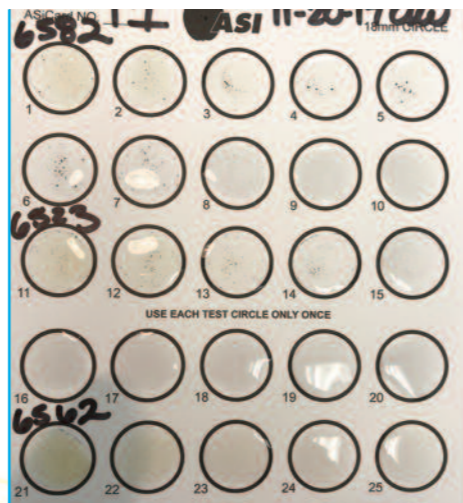
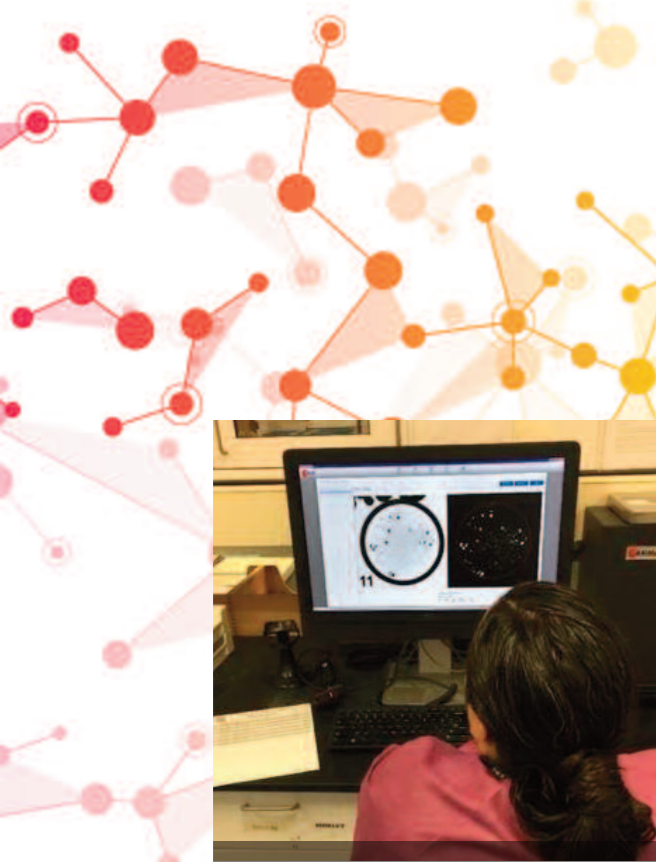
The increasing positive percentage rate, 4.3% to 5.1%, of the RSP screening assay, reflects the nationwide trend from the CDC report.

## Florida’s Statewide STD Testing Program

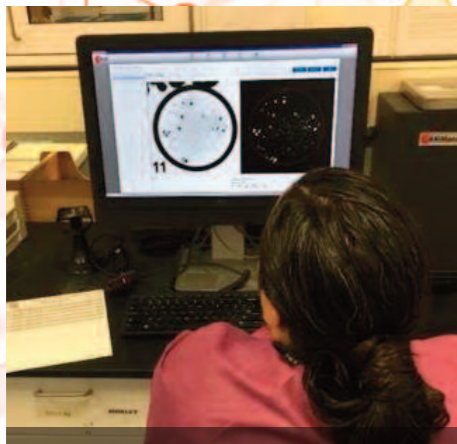
The BPHL in Jacksonville, Miami and Tampa provides diagnostic testing for syphilis as part of our statewide STD testing program. BPHL routinely performs syphilis testing for county health departments, STD clinics and other health care providers throughout Florida. BPHL uses the “Traditional Algorithm,” starting with a non-treponemal test called Rapid Plasma Reagin (RPR) for screening and reflexing positive results to a treponemal test by enzyme immunoassay (EIA) to confirm syphilis. Discordant results are tested with a second treponemal test as tie-breaker. The table shows the total number of syphilis tests performed statewide at BPHL locations, indicating a 5.87% increase between 2015 and 2016.

At BPHL, blood specimens are received in red top or marble top serum separator tubes (SST) for syphilis testing. The RPR detects nonspecific antibodies usually produced in response to lipoidal material, mainly cardiolipin, in the blood of the patient and it can indicate syphilis infection. However, because this test is not specifically looking for antibodies against the actual bacterium, but rather for antibodies against substances released by cells when they are damaged by *T. pallidum*, it is called a “non-treponemal” test. In addition to screening for syphilis, RPR can be used to track the progress of the disease over time and the response to therapy by looking at how much antibody is present. This is a good test to screen for syphilis because it is rapid, easy-to-perform, and cost efficient.





Detail picture of a Rapid Plasma Reagin (RPR) Card, showing clumping of black particles (agglutination) that denotes a positive reaction to non-specific antibodies which can indicate syphilis infection. This test must be followed by a confirmatory test for *T. pallidum* antibodies.



In Jacksonville, a digital particle agglutination reader called ASiManager-AT™ is used to provide objective and standardized test interpretation of the RPR tests. Serology laboratory technician Lucy Stevens is reading and reviewing the RPR results using the digital reader.



All RPR positive specimens are reflexed to Trinity BioTech's TrepSure EIA (total antibody IgG + IgM) assay using Dynex Agility automated EIA processor. This instrument performs all the specimen and reagent handling and pipetting, washing, incubation, absorbance detection and calculation of results. The EIA instrument provides for positive identification of specimens and automatic download of results when interfaced with Labware.

## The EIA Test

The EIA test is performed on all RPR-positive specimens to confirm a diagnosis of syphilis. This test is a “treponemal” test because it specifically detects antibodies to syphilis in the patient’s blood.

In instances where RPR and EIA results are discordant, a second treponemal test is required to rule out a false positive initial EIA. At BPHL, we currently use a *Treponema pallidum* particle agglutination test (TP-PA).

In recent years, evaluations have been performed to determine whether this is the best way to test for syphilis. Although the RPR is a good method for screening and shows good correlation with disease status, RPR does take subjective interpretation, may result in false-positive results, requires manual processing and is less sensitive than newer FDA approved screening alternatives. Whereas, the EIA is a much more costly test, these tests have improved greatly over the years and there are newer and more sensitive treponemal immunoassays on the market. In 2008, the CDC issued a report describing a new syphilis testing algorithm, named the “Reverse Sequence Algorithm” which uses the more sensitive and specific treponemal test for screening first and, if positive, reflexes to a non-treponemal test. This report demonstrates that the reverse algorithm captures as many as 26% primary and 39% latent syphilis cases that were RPR non-reactive and therefore missed with the Traditional Algorithm.<sup>3</sup> BPHL is evaluating the Reverse Algorithm to assess the additional cost against the treatment savings due to averted downstream transmissions resulting from the higher sensitivity of the algorithm, particularly in detecting the disease during its infectious state.

## New Test Program at CHDs

In addition to changes at BPHL, changes are also happening at the community level. A new test program at the CHD level involves the use of a CLIA waived point-of-care rapid test called Syphilis Health Check (SHC), distributed by Trinity Biotech in the USA, using finger stick blood for the detection of syphilis. SHC is performed on individuals without a prior syphilis infection by skilled non-laboratorian health care personnel. Because results are available in 10 minutes, the patient can be treated immediately if needed. In 2016, a Department study conducted in Escambia County evaluated the performance of SHC in comparison to TrepSure EIA and concluded that SHC had a relatively low positive predictive value (61.5% of reactive SHC were not confirmed by EIA) and 4 out of 14 EIA positive specimens were missed by SHC. This study proves that SHC results should be interpreted with caution, and “further evaluation of the sensitivity and specificity of SHC in additional health care settings is needed to determine whether SHC might be beneficial in identifying patients who might have syphilis, especially in settings where phlebotomy is unavailable.”<sup>2</sup>

In the U.S., there are 20 million new STD diagnoses each year. Half of these new STD cases are diagnosed in young people aged 15–24 years of age. One out of every four sexually active female teens has had an STD. There are more cases of syphilis reported in females between the ages of 20–29 than any other age group. In 2016, there were 2,406 reported primary and secondary syphilis cases in Florida, and one out of every 20 persons with a reportable STD in Florida is also co-infected with HIV. This is significant because if a person has an untreated syphilis infection, it can both facilitate HIV transmission and increase the chances of becoming infected with HIV.

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# BPHL-Miami Hosts the First U.S. Naval Academy Public Health Laboratory Internship Program

At right: BT Coordinator Stephen White demonstrates the colony morphology of *Bacillus anthracis* to the interns in BPHL-Miami's Biosafety Level 3 laboratory (BSL-3) suite. During their visit to the BSL-3 suite, the interns received training on donning and doffing appropriate PPE and basic biosecurity measures.



**BPHL-Miami and the United States Naval Academy (USNA), Annapolis, Maryland, established a Public Health Laboratory (PHL) internship program for USNA undergraduate midshipmen in 2017.** The internships were fully funded by the Defense Threat Reduction Agency (DTRA) within the U.S. Department of Defense. To prepare for the internship, a team at BPHL organized training, lectures, field experiences and actual laboratory testing activities for the midshipmen. The internship lasted three weeks and all interns were required to complete a project and prepare a final presentation. BPHL staff helped the interns with developing and completing their project and presentations. To assess the effectiveness of the internship, a pre- and post-evaluation questionnaire about their knowledge of PHLs was given to the interns.

The internship schedule included opportunities for hands-on experiences at the bench level, including performing laboratory tests of drinking water and observing clinical testing. The interns also had opportunities to attend lectures presented by state and federal subject matter experts and national webinars and trainings. They also participated in a tabletop case study exercise and made several field excursions to study public health in action, including collecting water samples for beach water testing and visiting the Centers for Disease Control and Prevention (CDC) quarantine station at Miami International Airport.

BPHL staff from Jacksonville, Miami and Tampa, staff from the Department of Health in Miami-Dade County and the CDC shared their expertise for the thirteen lectures and presentations that were provided. Data from the post evaluation questionnaire and exit interviews show that the interns enjoyed the field trips and preferred the laboratory bench work over the lectures and "packaged" webinars that were required by the program. Overall, the interns' PHL knowledge scores increased by 45% between the pre- and post-internship questionnaire.

The PHL internship program was well received by both the midshipmen and the USNA as applications at the USNA for the internship program have increased 167% for the upcoming summer program at BPHL-Miami.

## Lectures & Presentations

Public Health Laboratories: Dr. Leah Gillis

Biosafety: Darryl Pronty

Laboratory Methods: Elesi Quaye & Dr. Moira Vignoles

Bioterrorism & Preparedness: Darryl Pronty & Stephen White

Emergent Infectious Diseases: Stephen White

STDs: Dr. Moira Vignoles

Microbiology & Parasitology: Elesi Quaye

Rabies Testing: Elesi Quaye

Epidemiology at the State, Federal & International Level: Dr. Ann Schmitz

Epidemiology at the Local Level: Isabel Griffin

Tuberculosis: Dr. Marie-Claire Rowlinson

Newborn Screening: Dr. Bonnie Taffe

Chemical Threats: Dr. Jason Palcic

Arbovirus: Lea Heberlein-Larson

## Faculty

**BPHL-MIAMI**  
Dr. Leah D. Gillis  
Darryl Pronty  
Elesi Quaye  
Dr. Moira Vignoles  
Stephen White

**BPHL-JACKSONVILLE**  
Dr. Marie-Claire Rowlinson  
Dr. Bonnie Taffe  
Dr. Jason D. Palcic

**BPHL-TAMPA**  
Lea Heberlein-Larson

**CDC**  
Dr. Ann Schmitz

**FLORIDA DEPARTMENT OF HEALTH IN MIAMI-DADE COUNTY**  
Isabel Griffin

**Internship applications have increased 167% for the upcoming summer program.**



## *There's No Testing Without Support*

**Most people are familiar with the important testing done at BPHL—what isn't so familiar is the work happening behind the scenes that is a vital part of the process. Staff in Jacksonville, Miami and Tampa work diligently each day receiving the thousands of samples that are delivered to BPHL for testing.**

### **Receiving**

Their work begins when they sign for the shipments. Next, they don their personal protective equipment (PPE) so they can safely open the packages and manually sort through all the specimens paying close attention for any samples such as those for tuberculosis testing that need to be opened under a biological safety cabinet (BSC). Every day they face the challenge of deciphering incorrectly completed requisitions or inadequately labeled boxes and specimens to ensure they are routed to the correct department for testing.

### **Shipping**

Staff are not only responsible for receiving shipments but also sending shipments out of the laboratories. They fulfill orders from providers for shipping cans, forms and collection kits. They also must be certified in packaging and shipping regulations because they ship samples to other BPHL locations and the CDC.

### **Handling**

Their job does not stop there. The staff has the duty of handling the biohazardous waste for BPHL. They go to each section and retrieve the biohazard bins and replace them with empty bins. The heavy filled bio-waste bins are then prepared for pickup by the bio-waste handling company.

### **And Then There was Zika**

As busy as they are, during the Zika response they picked it up! With the large uptick in the number of samples being submitted to BPHL, came an increase in incorrectly packaged and labeled boxes, requiring even more of the support staff's valuable time to process. With the addition of staff to this area of the lab, and with everyone pitching in, they were able to successfully handle the additional workload while directing samples to the correct place, and safely receiving and sending out biological samples and other materials as needed.

# 2017 Academic & Professional Achievements

## National Scientific Journals & Publications

### **Genomic Epidemiology Reveals Multiple Introductions of Zika Virus into the United States**

Grubaugh ND, Ladner JT, Kraemer MUG, Dudas G, Tan AL, Gangavarapu K, Wiley MR, White S, Thézé J, Magnani DM, Prieto K, Reyes D, Bingham AM, Paul LM, Robles-Sikisaka R, Oliveira G, Pronty D, Barcellona CM, Metsky HC, Baniecki ML, Barnes KG, Chak B, Freije CA, Gladden-Young A, Gnirke A, Luo C, MaInnis B, Matranga CB, Park DJ, Qu J, Schaffner SF, Tomkins-Tinch C, West KL, Winnicki SM, Wohl S, Yozwiak NL, Quick J, Fauver JR, Khan K, Brent SE, Reiner Jr RC, Lichtenberger PN, Ricciardi MJ, Bailey VK, Watkins DI, Cone MR, Kopp EW, Hogan KN, Cannons AC, Jean R, Monaghan AJ, Garry RF, Loman NJ, Faria NR, Porcelli MC, Vasquez C, Nagle ER, Cummings DAT, Stanek D, Rambaut A, Sanchez-Lockhart M, Sabeti PC, Gillis LD, Michael SF, Bedford T, Pybus OG, Isern S, Palacios G, Andersen KG. *Nature*. June 2017. Vol 546, Pages 401–405.

### **Zika virus evolution and spread in the Americas**

Metsky HC, Matranga CB, Wohl S, Schaffner SF, Freije CA, Winnicki SM, West K, Qu J, Baniecki ML, Gladden-Young A, Lin AE, Tomkins-Tinch CH, Ye SH, Park DJ, Luo CY, Barnes KG, Shah RR, Chak B, Barbosa-Lima G, Delatorre E, Vieira YR, Paul LM, Tan AL, Barcellona CM, Porcelli MC, Vasquez C, Cannons AC, Cone MR, Hogan KN, Kopp EW, Anzinger JJ, Garcia KF, Parham LA, Gélvez Ramírez RM, Montoya MCM, Rojas DP, Brown CM, Hennigan S, Sabina B, Scotland S, Gangavarapu K, Grubaugh ND, Oliveira G, Robles-Sikisaka R, Rambaut A, Gehrke L, Smole S, Halloran ME, Villar L, Mattar S, Lorenzana I, Cerbino-Neto J, Valim C, Degraeve W, Bozza PT, Gnirke A, Andersen KG, Isern S, Michael SF, Bozza FA, Souza TML, Bosch I, Yozwiak NL, MaInnis BL, Sabeti PC. *Nature*. June 2017. Vol 546, Pages 411–415.

**Comparative performance of the Geenius™ HIV-1/HIV-2 supplemental test in Florida's public health testing population** Fordan S, Bennett S, Lee M, Crowe SJ *Clin Virol*. June 2017 Vol 91, Pages 79–83.

### **Epidemiology of Pediatric Zika Virus Infections**

Griffin I, Zhang G, Fernandez D, Cordero C, Logu T, White S, Llau A, Thomas L, Moore E, Noya-Chavaco P, Etienne M, Rojas M, Goldber C, Rodriguez G, Mejia-Echeverry A, Rico E, Gillis L, Cone M, Jean R, Rivera L. *Pediatrics*. Dec 2017. Vol 140(6).

## National Meetings & Presentations

### **10th National Conference on Laboratory Aspects of Tuberculosis, April 17–20, Atlanta, GA**

“The Molecular ‘MDR Screen’ is an Important Tool in the Diagnosis and Initiation of Appropriate Therapy in TB Patients in the State of Florida,” poster presentation: Calin Chiribau.

“MIC—Many Inherent Challenges,” Marie-Claire Rowlinson, Presenter.

### **American Society for Microbiology (ASM) Microbe Meeting, June 1–4, New Orleans, LA**

“Embracing CIDTs in the Public Health Laboratory,” Marie-Claire Rowlinson, Presenter.

“Laboratory Testing Plays an Important Role in the Determination of Local Transmission of Zika Virus in Florida,” poster presentation: Stephen White.

“Public Health Lab Efforts to Support Biosafety in Clinical Laboratories,” Leah Gillis, Presenter.

### **Association of Public Health Laboratories Annual Meeting, June 11–14, Providence, RI**

“Behavior Madness—9—Small Details of Competencies: Tasks, Skills, and Behaviors,” Leah Gillis, Presenter.

“New Tools and Resources Available to Help Advance Competency Adoption and Implementation,” Leah Gillis, Presenter.

“The Florida Experience: A Laboratory's Perspective,” Andrew Cannons, Presenter.

“Rapid Implementation of Zika RT-PCR Testing in Anticipation of an Outbreak Response: Lessons Learned at the Bureau of Public Health Laboratories-Miami,” poster presentation: Stephen White.

“Concurrent Comparison of Two Real-time PCR Assays for the Detection of Zika Virus RNA in Clinical Specimens from an Outbreak,” poster presentation: Stephen White.

“Urosurvey as a Public Health Tool to Identify Locally Acquired Cases of Zika Virus: Experiences of the Bureau of Public Health Laboratories-Miami,” poster presentation: Stephen White.

## Boards & Committees

### **Association of Public Health Laboratories (APHL)**

Informatics Committee, Susanne Crowe; Infectious Disease Committee, Marie-Claire Rowlinson; TB Subcommittee, Marie-Claire Rowlinson; Vector-borne Diseases Subcommittee, Lea Heberlein-Larson; Workforce Development Committee, Leah Gillis; Biosafety and Biosecurity Committee, Andrew Cannons & Leah Gillis; Network of Laboratory Leaders Alumni, Andrew Cannons, Leah Gillis, Mary Ritchie & Marie-Claire Rowlinson; HIV/HCV Subcommittee, Berry Bennett; Public Health Preparedness and Response Committee, Andrew Cannons.

### **The NELAC Institute (TNI)**

NELAP Accreditation Council, Carl Kircher; Laboratory Accreditation Body Expert Committee, Carl Kircher; Laboratory Accreditation Systems Executive Committee, Carl Kircher; Consensus Standard Development Program Executive Committee, Carl Kircher; Proficiency Testing Program Executive Committee, Carl Kircher; Chemistry Fields of Proficiency Testing Subcommittee, Carl Kircher; National Environmental Field Activities Program Executive Committee, Carl Kircher; Microbiology Committee, Vanessa Soto Contreras.

### **Florida Public Health Association**

Board of Directors, Berry Bennett; Florida Consortium of HIV/AIDS Researchers Executive Board, Berry Bennett.

### **Florida Viral Hepatitis Planning Group**

Susanne Crowe

### **Biowatch Advisory Committee**

Jacksonville Biowatch Advisory Committee, Susanne Crowe; Miami Biowatch Advisory Committee, Leah Gillis; Tampa Biowatch Advisory Committee, Andrew Cannons.

### **American National Standards Institute (ANSI)**

International Conformity Assessment Committee, Carl Kircher.

### **International Organization for Standardization**

Technical Interface Group, Carl Kircher.

*While working to keep  
Florida healthier, you helped  
communities near and far.*

*Thank You for  
Your Years  
of Public Service*

**35**

**Valerie Mock**

**30**

**Sally Fordan**

**Jackie Sayers**

**Theresa Taylor**

**Yvette Wilson**

**25**

**Janice Ballew-Stone**

**Nancy Cohen**

**Pamela Colarusso**

**Tom Dates**

**Imelda Ignacio-Hernando**

**Carl Kircher**

**Maria Pedrosa**

**Ester Rivera**

**20**

**Amy Gardner**

**15**

**Beth Burden**

**Jeanette Gill**

**Leah Gillis**

**Regina Jones**

**Shirley McCauley**

**Elesi Quaye**

**10**

**Marionaise Coleman**

**Arlene Juanillo**

**Jenny Nichols**

**Matthew Schimenti**

**5**

**Marshall Cone**

**Deborah Freeman**

**Maria Galino**

**Deborah Griffin**

**Amra Misic**

**Marie-Claire Rowlinson**

**Stephen White**

## *Retirements*

**Richard France, Tampa, 13 years**

**Oria Smith, Jacksonville, 20 years**

**Ronald Baker, Jacksonville, 35 years**