

# Extracts from the Lab

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## I Want to Be a “Microbeeologist”!

Amanda Cosser, MPH

Biomonitoring Program Manager, Analytical Chemistry Program



*In 2003, the Association of State and Territorial Health Officers conducted a survey to determine the state of the public health workforce; what they learned was alarming. There was a trend toward workforce shortages and a 2007 follow-up survey revealed similar results: the public health workforce was older than the rest of the American workforce with an average age of 47 for current workers and 40 for new hires.<sup>1</sup> Today, with not only an aging workforce but also changes to public health lab (PHL) funding since the 2008 economic recession, it is very evident that PHLs are in need of highly trained, motivated young scientists. This is why current PHL scientists need to create opportunities to talk with high school students about the PHL sciences and foster excitement about this as a potential career before those students go to college.*

In 2005, when Andrea was just five years old, she held her sister’s hand as she slowly walked through the microbiology building at the University of New Hampshire. Andrea listened to Mandi’s stories of culturing bacteria and the importance of hand washing. As she stared wide-eyed at a blown up photograph of *E. coli* Andrea exclaimed, “Sissy, I want to be a microbeeologist like you when I grow up!”

Fast forward to 2015 and that little girl is now a high school sophomore who excels in school and is still interested in science. That young student, my sister, called me one day with a small dilemma. “Sister, I need to job shadow next week for school. I know it’s short notice, but do you think I can spend the day at the New Hampshire Public Health Labs with you? I HAVE to shadow next week otherwise they won’t promote me to the next grade. I could shadow a teacher at Mom’s school, but I really want to learn more about what you do!”

“Oh my gosh!” I thought, “What a great opportunity to get a young student interested in the PHL sciences!”

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Of course I was excited about the idea of spending the day with my sister at work, but I was even more excited about the thought of introducing the field of public health lab science to this hardworking, intelligent teenager—maybe she would work in a public health lab some day!

The New Hampshire Public Health Laboratories (NH PHL) Management Team is highly supportive of inviting the public to see our lab and learn about the importance of what we do, so I quickly asked our Laboratory Director, Dr. Christine Bean, if it was possible to set up a job shadowing experience on such short notice.

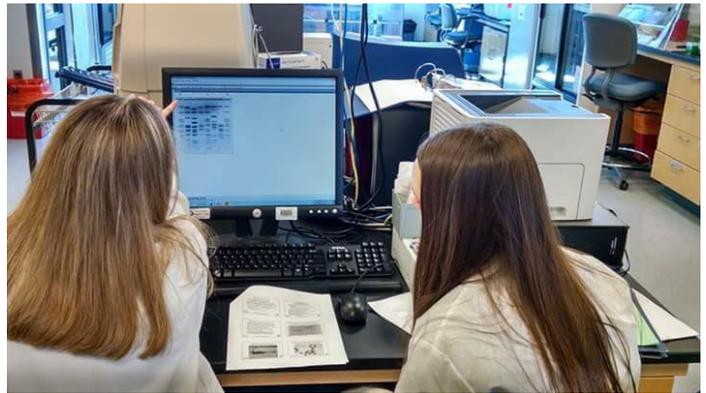
Dr. Bean replied, “That sounds great, Mandi, but I will have to consult with the rest of the Management Team and the Safety Committee about this. I’ll get back to you as soon as I can.”

Worry set in as I felt this opportunity slowly slipping out of my grasp. “I’m not sure I’ll be able to get approval and plan this on such short notice,” I thought. “This is such a great opportunity to introduce Andrea to public health lab work, it would be really unfortunate if she couldn’t come.”

I began drafting a schedule in case permission was granted and tentatively asked scientists in the Virology, Molecular Diagnostics, Arbovirus, Food Emergency Response, and Clinical Microbiology Units if they would volunteer to talk with Andrea and let her observe some testing. Fortunately, I only had to wait a couple of days before I received the good news from Dr. Bean, “Mandi, it’s fine for your sister to job shadow with you on April 15th, but she cannot go into the BSL-3 labs. Make sure she is with you or someone in the laboratory at all times.”

“Woohoo!” I exclaimed to myself. Immediately I shared the exciting news with Andrea and let the PHL job-shadowing-experience volunteers know that Andrea would be with us on April 15th.

Less than a week later, my little sister spent the day

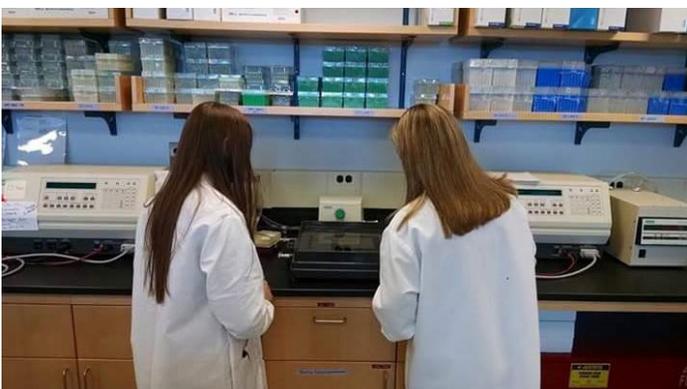


with me and my colleagues at the NH PHL. Her day began with a safety orientation and then she was whisked away to learn about *Salmonella* serotyping and Gram staining followed by pulsed-field gel electrophoresis and how it’s used in outbreak investigations. During our mid-morning break, Andrea enthusiastically described to me, “*E. coli* are rod-shaped and *Staph* are round and they stain different colors...Oh! And there was an outbreak of *Salmonella* at a summer camp because of a contaminated blender and I got to see how the lab found that all the cases were linked!”

“This is going well! She’s enjoying her day,” I thought. Andrea spent the rest of her morning learning about virology culture and respiratory virus surveillance. After a quick lunch and an iced coffee for a treat (big sister had gotten her up at 5:00 a.m. to work out



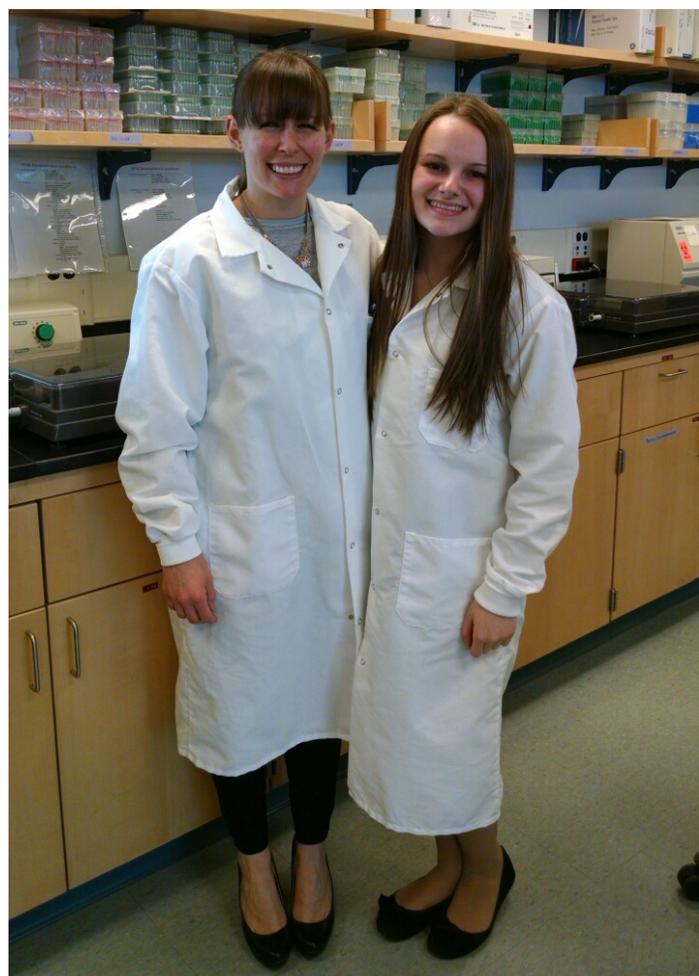
before work!), Andrea headed off to learn about arbovirus surveillance and tick-borne disease testing followed by molecular testing with me. Andrea observed as I extracted ribonucleic acid (RNA) from a lysed norovirus specimen and when I asked her if she wanted to try, she exclaimed, “Yes!” I stood next to her, the proud sister



with a big smile on my face as I watched my mini-me perform an RNA extraction. The look on her face told me that she was having a great time at the lab!

Andrea's afternoon ended with a detailed introduction to the Food Emergency Response Network and then a debriefing of how her day went. Between Andrea's excited responses and the positive emails my colleagues sent me throughout the day I knew that the scramble to get permission to have her at the lab was well worth it.

There are many potential "microbeeologists" out there. We need to do our part to introduce them to the exciting field of public health lab sciences now, before they start working on their undergraduate degrees. Your lab may need to examine or even develop a policy regarding areas of the lab that can



be accessed, what can be observed, and whether any lab techniques can be performed. A little investment now in policy development and spreading the word about job shadowing at PHLs can pay off greatly in the future for workforce recruitment. Sure, five-year-old Andrea went from wanting to be a "microbeeologist" to wanting to be a cheerleader a week later, but then she came back around! One thing that didn't change during

that time is the public health lab workforce issue, and now we need to do our part to spread the word about what a great career choice PHL science is!<sup>2</sup> I know Andrea is still talking about her experience here—**Can you think of anyone you can invite to your lab?**

Feel free to contact me at [amanda.cosser@dhhs.state.nh.us](mailto:amanda.cosser@dhhs.state.nh.us) if you have any questions about how the NH PHL has set up job shadowing experiences.

#### References

1. 2007 state public health workforce survey results. ASTHO. 7/15/15 (2008). <http://www.astho.org/Programs/Workforce-and-Leadership-Development/2007-State-Public-Health-Workforce-Survey-Results/>.
2. APHL position statement: Public health laboratory workforce shortage. APHL. 7/15/15 (2013). [http://www.aphl.org/policy/positions/Documents/WF\\_2013\\_Public\\_Health\\_Laboratory\\_Workforce\\_Shortage.pdf](http://www.aphl.org/policy/positions/Documents/WF_2013_Public_Health_Laboratory_Workforce_Shortage.pdf).

Members of the Association of Public Health Laboratories' Emerging Leader Program have been hard at work developing a new website for students and educators who are interested in learning more about the public health lab sciences. Please check out [www.thatssick.org](http://www.thatssick.org) for information describing what public health entails, interesting stories about public health lab investigations, and careers in the public health lab sciences. Plus—coming this winter!—experiments and resources for middle school educators who want to introduce their students to the field of public health lab science. Check [www.thatssick.org](http://www.thatssick.org) often for updates!

## NH PHL Hosts Open House Extravaganza!

Julie Nassif, MS

Analytical Chemistry Program Manager

On May 28, 2015, the NH PHL hosted an open house to showcase the capabilities and accomplishments of the PHL, highlighting their contribution to public health. This event was an opportunity for the NH PHL to share important information regarding analytical capability and technical resources with our partners in public health, environmental protection, public safety, the medical and academic communities, and state government.

Attendees of the open house had the opportunity to meet laboratory scientists, ask questions, and attend



laboratory tours focusing on molecular testing, water analysis, and food safety.

In addition to sharing the PHL's capabilities with our partners and emphasizing the relevance of testing to public health, the open house provided a good opportunity to acknowledge the dedication, technical skill, and accomplishments of the public health laboratory staff. The lab made some important new connections and had the opportunity to educate our public health partners on the relevance of what the lab does every day. The feedback from attendees was overwhelmingly positive.

Funding for this event was provided by the Association of Public Health Laboratories as part of the Meeting Community Environmental Health Needs Project.

**Be Well Informed:  
NH DES Releases Online Private  
Well Treatment Application**  
Pierce Rigrod, Supervisor, Drinking Water and  
Groundwater Bureau

The New Hampshire Department of Environmental Services (NH DES) created a new interactive web application for private well owners to help them make better-informed decisions about water treatment systems. The Be Well Informed application allows well owners to enter water test results from a lab report for common well water contaminants and obtain recommendations for appropriate water treatment options for contaminants that exceed health standards. The application provides information on potential health effects or other issues that may affect a home's appliances or fixtures.

While other similar online tools provide treatment information for one contaminant at a time, "Be

Well Informed" evaluates test results for multiple contaminants simultaneously, providing water treatment recommendations tailored to the user's overall water quality results. The application is a big step forward in terms of assisting private well users in selecting the right treatment technology and avoiding harmful exposure to arsenic and other common groundwater contaminants. In New Hampshire, one in five private wells exceeds the drinking water standard for arsenic; this application will be particularly useful for homeowners trying to determine whether they need to make changes to their systems in order to protect their families and how to go about doing so.

The application doesn't consider every known contaminant or water quality issue (such as odor or color issues) and water treatment can be a complicated problem, so private well users should consult with a qualified water treatment professional after reviewing the Be Well Informed treatment recommendations.

Contact Pierce Rigrod at [pierce.rigrod@des.nh.gov](mailto:pierce.rigrod@des.nh.gov) or (603) 271-0688 if you have questions or comments about the Be Well Informed web application or visit [www.des.nh.gov](http://www.des.nh.gov) and search "Be Well Informed." For more information about private well testing and treatment, visit [www.des.nh.gov](http://www.des.nh.gov), click on "Programs" in the left column, scroll down, and then click on "Private Well Testing Program."

Additionally, the Water Analysis Unit within the NH PHL offers comprehensive testing of private and public wells utilizing advanced laboratory methods. For more information on testing, please contact the NH PHL at (603) 271-3445.

**Mycobacteria Mixer**  
Miranda Gaudette, MLS (ASCP)  
Mycobacteria Unit

The NH PHL strives to ensure a culture of quality throughout all of the work that is done at the lab. This includes continuous evaluation of testing procedures for quality assurance and quality improvement. Recently, the Mycobacteria Unit performed a study in order to ensure quality results in drug susceptibility testing of mycobacteria cultures.

In a culture containing both *Mycobacterium tuberculosis* Complex (TB) and *Mycobacterium avium* Complex (MAC), performing antimicrobial sensitivity testing is challenging in that the two organisms have to be isolated and grown separately. This delay in

Mycobacteria are a group of bacteria that have fatty acids in their cell walls. The staining properties of these fatty acids are why mycobacteria are referred to as acid-fast bacilli. The high fat content makes them difficult to stain with the commonly used Gram stain. In addition, mycobacteria have a tendency to clump together. When they clump together it reduces the amount of nutrients that can be absorbed by the organisms, therefore, this group of bacteria grows more slowly. This clumping ability and the composition of their cell wall make it harder for the human immune system to penetrate and fight mycobacteria.

antimicrobial drug sensitivity testing can be frustrating for health care providers and patients alike. The longer TB is left untreated, the more damage it does to lung tissue.

The NH PHL Mycobacteria Unit has had five patients with TB and MAC co-infections since 2012 (see chart). Although both TB and MAC grow more slowly when compared with other bacteria, MAC grows faster than TB in culture. This is a problem if the MAC consumes all of the nutrients in the culture medium before the TB has a chance to grow. The implications of missing TB in a clinical sample would be serious because TB is a more significant public health threat than MAC due to the severe disease it causes and its ability to spread person to person. For this reason, the NH PHL Mycobacteria Unit conducted a study to determine if the slow-growing TB will grow in culture when the culture is co-infected with the faster growing MAC.

Table. Number of NH PHL patients with TB and/or MAC by year.

Year	TB	MAC	Co-infection
2012	6	41	2
2013	12	37	0
2014	6	36	2
2015*	2	6	1

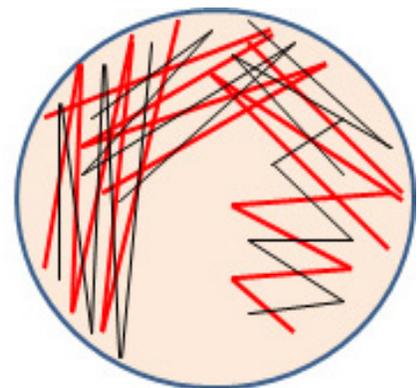
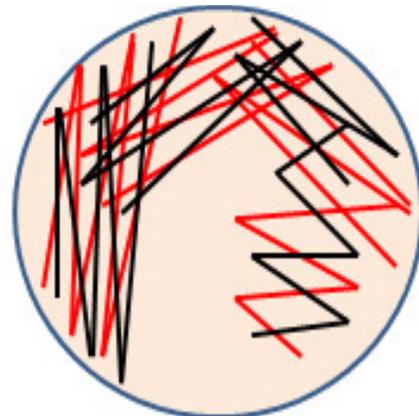
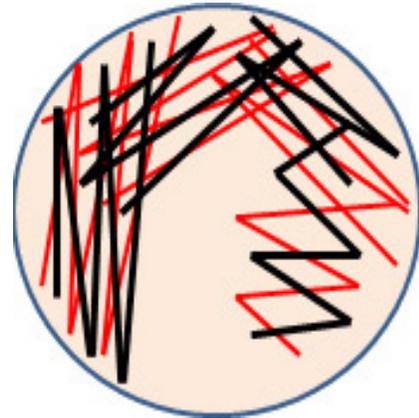
TB = *Mycobacterium tuberculosis* complex

MAC = *Mycobacterium avium* complex

\*January through October

To examine the growth of a sample containing both TB and MAC organisms, the NH PHL Mycobacteria Unit performed an informal study.

- A serial dilution was performed on a suspension of TB to create three suspensions of varying concentrations.
- Three Middlebrook® 7H10 media were inoculated with the low, medium, and high concentrations of TB.
- A suspension of MAC organisms was also inoculated onto each of the three plates and streaked for isolation. The three plates looked as follows:

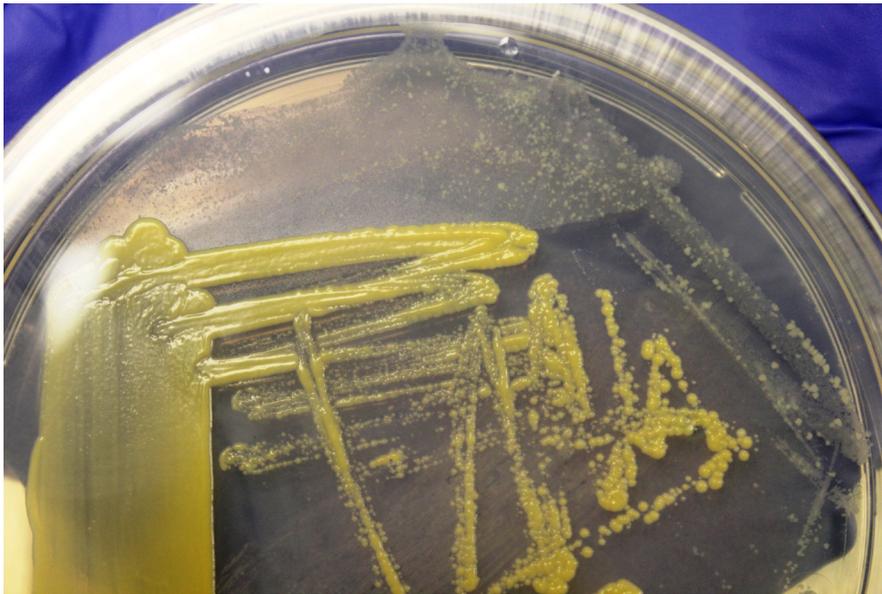


Key:

- High concentration TB
- Medium concentration TB
- Low concentration TB
- MAC

The plates were incubated for several weeks in order to determine whether the presence of the faster growing MAC would inhibit the growth of the slower growing TB by consuming the nutrients in the media before the TB was able to grow.

Results showed that all three concentrations of TB were able to grow in the presence of MAC. The TB did however take longer to grow when in the presence of MAC than when it was previously cultured alone. This is why mycobacterial cultures should be incubated for seven weeks, regardless of whether MAC or other non-tuberculosis mycobacteria are identified in the culture prior to that time. This allows any TB that may be present the opportunity to grow.



Middlebrook® 7H10 media plate with MAC and TB colonies  
MAC = yellow shiny colonies TB = off-white dry colonies  
Photo credit: Alma Vazquez

Treatment of MAC can be difficult because some MAC strains are resistant to antibiotics. About 20% of treated MAC infections will relapse within five years of treatment. TB may also exhibit resistance to antibiotics. Multidrug-Resistant *Mycobacterium tuberculosis* (MDR-TB) and Extensively Drug-Resistant *Mycobacterium tuberculosis* (XDR-TB) are usually seen in people from outside the U.S., in places where TB is endemic and not well controlled by public health systems. Non-tuberculous mycobacteria such as MAC are often resistant to the initial drugs used for TB treatment. Therefore, the mycobacteria in a mixed MAC and TB culture must be isolated from one another before drug sensitivity testing is performed. If a culture is mixed and MAC is resistant to some of the

drugs, it may cause an inaccurate report to be issued. The MAC drug resistance may be interpreted as MDR-TB.<sup>1</sup> Therefore, the mycobacteria in a mixed MAC and TB culture must be isolated from one another before drug sensitivity testing is performed.

According to Dr. Elizabeth Talbot, Associate Professor of Infectious Diseases at Dartmouth and Deputy State Epidemiologist for the NH Department of Health and Human Services, a doctor treating someone with a MAC/TB co-infection may choose to treat the MAC and TB infections at the same time. If the patient is having trouble tolerating the medications, they may prioritize treating the TB first. Typically the first choice antibiotics for pan-sensitive TB treatment

include isoniazid (INH), rifampin (RIF), ethambutol (EMB), and pyrazinamide (PZA). Azithromycin can also be added to treat the MAC co-infection. If the TB is drug resistant, a first line drug is combined with a fluoroquinolone and an injectable agent. If all first line drugs are ineffective against the TB, then second and third line drugs are given in their place.<sup>2</sup>

Treatment is individualized on a case by case basis according to disease severity, antimicrobial sensitivity testing, and patient tolerance to the medications, which can cause a variety of unpleasant side effects. These side effects vary with the specific antimicrobial agent used, but many of these drugs are toxic to the liver

and kidneys.

Mixed cultures of mycobacteria are difficult to isolate into pure cultures due to their different growth rates and morphologic characteristics. Health care providers should be mindful of the implications of MAC and TB mixed cultures when interpreting lab results and treating patients with this co-infection.

For questions, please contact Miranda Gaudette or Peggy Sweeney at (603)271-4785 or email Peggy at [mmsweeney@dhhs.state.nh.us](mailto:mmsweeney@dhhs.state.nh.us).

Ineffective treatment not only delays the patient's return to a healthy state, but also has an economic impact because the patient cannot return to work or school until they are no longer contagious. Family members must also be tested for infection.

**References**

1. Maiga, M. et al. Failure to Recognize Non-tuberculosis Mycobacteria Leads to Misdiagnosis of Chronic Pulmonary Tuberculosis. PLoS ONE May 2012 Volume 7 Issue 5 <http://www.plosone.org>
2. Francis J. Curry National Tuberculosis Center and California Department of Public Health, 2008: Drug-Resistant Tuberculosis: A Survival Guide for Clinicians, Second Edition.

**Next Generation Sequencing Instrument Purchased**  
**Christopher Benton, PhD**  
**Molecular Diagnostics Lab Supervisor**

The MDX laboratory is pleased to announce the arrival of the Illumina MiSeq, a Next Generation Sequencer. The MiSeq will enable us to perform whole genome sequencing on bacterial and viral isolates. Once training and certification has occurred, the MiSeq will be used in our ongoing participation in the PulseNet Pathogen Monitoring Program. For the time being, Next Generation Sequencing (NGS) will be used in conjunction with PFGE for certain outbreak-related bacterial isolates. Though that will be the primary function of this instrument, we also expect that the MiSeq will open new avenues to us such as research opportunities where we will be able to compare isolates from previous outbreaks with same or similar PFGE DNA fingerprints. Whole genome sequencing of these samples via the MiSeq will paint a much more detailed picture as to the relatedness of seemingly similar isolates. We will also have the ability to sequence viral isolates, which will enable comparisons to be drawn from strains within and between years.

**We Just Bought Some New Jeans (Oops!—Genes)**  
**Peggy Sweeney, MS**  
**Mycobacteriology/Clinical Microbiology Unit Supervisor**

No, we’re not talking about Levi® or Wrangler®. We are talking about the Cepheid GeneXpert®!

In October of 2015, the Mycobacteria Unit at the NH PHL welcomed aboard new instrumentation used to detect *Mycobacterium tuberculosis* complex from sputa specimens. Not only does it detect the presence of the organism, but it will also indicate whether

resistance to the antibiotic rifampin is detected.

This new nucleic acid amplification test (NAAT) has many advantages over the Hologic® amplified direct probe method used in the past. First, the testing time is cut in half from about four hours to two hours. Second, the amount of technician ‘hands-on’ time required to manipulate the sample is cut by more than half. Both of these advantages save time and money when performing the test. In addition to these benefits, the GeneXpert® provides the value of detecting rifampin resistance. This is a major improvement in that the results can be used as a guide by physicians, along with other clinical tests and patient symptoms, to provide the best treatment regimen.

The Cepheid GeneXpert® is approved for testing sputa specimens. This is ideal because the Centers for Disease Control and Prevention recommends nucleic acid amplification testing on at least one sputum specimen from patients suspected of having tuberculosis disease. With the GeneXpert® the NH PHL Mycobacteria Unit can, in most cases, provide results the same day the laboratory receives the specimen.

The NH PHL TB lab offers this test and many others for TB detection. A list of these services can be found on our testing requisition at [www.dhhs.nh.gov/dphs/lab/labrequisitions.htm](http://www.dhhs.nh.gov/dphs/lab/labrequisitions.htm). For further information, contact Miranda Gaudette or Peggy Sweeney at (603)271-4785 or email Peggy at [msweeney@dhhs.state.nh.us](mailto:msweeney@dhhs.state.nh.us).



## NH PHL Implements 4<sup>th</sup> Generation HIV Testing

Carol Loring, MS

Virology and STD Unit Supervisor

The NH PHL has adopted the new human immunodeficiency virus (HIV) testing algorithm for screening and confirmatory testing of HIV specimens recommended by the Centers for Disease Control and Prevention. This updated algorithm uses a new screening test, known as the 4th generation enzyme immunoassay, that detects both antigen (produced by the HIV virus) and antibody (produced by the body in response to the HIV virus) to HIV type 1 and antibody to HIV type 2. Reactive samples are then subjected to a test that is able to distinguish between HIV types 1 and 2.

“This is an important step forward for the Public Health Labs,” said NH PHL Director Dr. Christine Bean. “We are always looking to be as up-to-date as possible and to provide as much information to healthcare providers as we can. This testing algorithm enables detection of HIV earlier in the course of infection than older testing methods and also allows for distinction between HIV types, an important consideration for treatment decisions.”

The NH PHL provides HIV testing for underserved populations within the state of New Hampshire, including patients seen at community health centers and state prison infirmaries. Other healthcare providers within the state are also welcome to use the NH PHL to meet their testing needs.

For more information contact Carol Loring, Virology and STD Unit Supervisor, at (603) 271-2764 or [cloring@dhhs.state.nh.us](mailto:cloring@dhhs.state.nh.us).

## NH PHL Updates

### *Amanda Cosser - New Position Accepted*

Mandi Cosser recently accepted the Biomonitoring Program Manager position within the Analytical Chemistry Program. This exciting new position has been created with financial assistance from the CDC’s Division of Laboratory Sciences at the National Center for Environmental Health (RFA EH14140202). Mandi has been with us at the NH PHL since June 2006 when she was a lab helper in the Arbovirus Unit while finishing her BS in microbiology. She later worked in other areas of the Virology and Molecular Diagnostics Program, most recently as an influenza surveillance

microbiologist. While at the NH PHL, Mandi earned her Master of Public Health degree from the University of New Hampshire and attended many leadership and supervisory classes through the Association of Public Health Labs and the State of New Hampshire. She’s enthusiastic about applying her knowledge and acquired skills in her new position. Congratulations, Mandi!



### *Dr. Christopher Benton, PhD - Welcome*

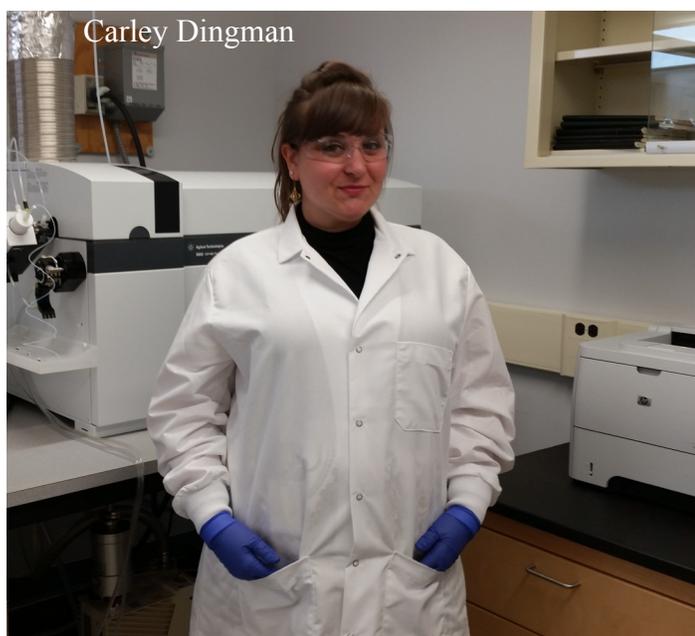
Chris is a New Hampshire native who returned to the NH PHL in May after completing a PhD in biochemistry with a cognate in College Teaching at the University of New Hampshire (UNH). Chris also has a MS in microbiology, a BS in biochemistry, and a BA in Spanish from UNH. In between completing his doctorate and returning to the NH PHL, Chris instructed at UNH, the University of New England, and Granite State College. He also just got married! Chris has joined the NH PHL as the new Molecular Diagnostics Unit Supervisor. When not at work, he occupies himself with running, fishing, fossil/rock hunting, and searching out new breweries. Welcome aboard, Chris!



Chris Benton

### *Carley Dingman - Welcome*

The NH PHL would like to welcome Carley Dingman to the lab. In June 2015, Carley accepted the Toxicologist I position in the Food Emergency Response Laboratory within the NH PHL Analytical Chemistry Program. Carley graduated from the University of New Hampshire with a BS in chemistry in December 2013. She will be applying her skills to food safety and surveillance. In her spare time, Carley enjoys gardening, baking, sewing bowties, hosting social events for friends and family, and roller derby. We're ecstatic to have Carley join our team!



### *Christine Frazier - Welcome*

The NH PHL welcomed Christine Frazier as a Laboratory Helper in the Water Analysis Unit on July 7, 2015. Christine has a BS in biology from UNH and has concentrated her professional career in chemistry, specifically in environmental testing. Christine is proud to say that the American Laboratory magazine published one of her technical papers entitled "US EPA Method 1664: Oil & Grease Solid-Phase Extraction as a Direct Equivalent to Liquid-Liquid Extraction."

As a Technical and Chemistry Sales Specialist she traveled the United States seeing many beautiful places. Christine took time off to raise two amazing daughters and is now happy to be back in a lab. Recently she and her daughters moved to Concord from Merrimack, NH. Christine's family has grown to include her significant other (Alexander), his two daughters, and a cute kitten. On her days off she is a Sous Chef for Caroline's Fine Food, a full service catering company in Bedford, NH.

Christine is planning a trip to Italy next summer, which has encouraged her to learn Italian. Next on her list is learning to play the harp. Welcome Christine, we're happy to have you!



### *Christine Stuart - Retirement*

After 20 years of employment at the NH PHL, Christine Stuart, Laboratory Scientist III of the Food Safety Microbiology/Rabies Unit retired on November 1, 2015. A surprise retirement party was held for her on October 21st at the Red Blazer Restaurant in Concord.

Christine obtained her BS degree from Colby Sawyer College and went on to complete her medical technology internship at Salem Hospital in Salem, Massachusetts. Shortly thereafter, she became certified as a Medical Technologist by the American Society of Clinical Pathology.

Before working at the NH PHL, Chris worked at the



New England Clinical Laboratories and also at Mary Hitchcock Hospital in Hanover, NH. She began working at the NH PHL in October 1995 as a Laboratory Scientist I. Chris enjoyed her time at the lab, recalling her years as “challenging, interesting, and rewarding.” She will miss her colleagues and the entire staff at the NH PHL.

As Chris moves forward in her retirement years, she plans on keeping busy by playing golf, traveling, and bicycling with her husband of 35 years, Phil, who will be retiring next July.

## NH PHL Offers New Molecular Assay for Respiratory Pathogens

Carol Loring, MS  
Virology and STD Unit Supervisor

The NH PHL is pleased to offer a new molecular diagnostics test for the detection of respiratory pathogens, the BioFire Film Array Respiratory Panel. This assay is able to detect the presence of 20 different respiratory pathogens in a single test. The PHL anticipates using this assay to aid in the epidemiological investigation of respiratory disease outbreaks, identification of the causative agent in patients with severe, unexplained respiratory disease, and in the diagnosis of patients at risk for emerging respiratory virus illnesses.

## We're Hiring!

The NH PHL is looking for some highly motivated, energetic individuals to join our team! We are actively recruiting for our exciting new Biomonitoring Program and are looking for well rounded candidates to complete our team. The Biomonitoring Program is hiring three lab-based positions (two Toxicologist II scientists and a Toxicologist IV scientist), and an epidemiologist (Program Specialist IV). More information can be found on the State of New Hampshire's job recruitment portal at <http://das.nh.gov/jobsearch/NonStateEmployees.aspx> or on the Association of Public Health Laboratories' Job Center website at [http://careers.aphl.org/c/search\\_results.cfm?vnet=0&max=25&str=26&site%5Fid=249](http://careers.aphl.org/c/search_results.cfm?vnet=0&max=25&str=26&site%5Fid=249). Feel free to contact Julie Nassif, Analytical Chemistry Program Manager at (603) 271-3233 or [julianne.nassif@dhhs.state.nh.us](mailto:julianne.nassif@dhhs.state.nh.us) with questions.

In the near future we will also be hiring a Laboratory Scientist in the Water Analysis Unit, a Laboratory Scientist in the Food Safety Microbiology Unit, and an influenza surveillance microbiologist in the Virology and Molecular Diagnostics Program, so check these websites often!

## New Hampshire Department of Health and Human Services

Nicholas Toumpas, Commissioner

Christine Bean, PhD, Director  
Public Health Laboratories



*To join communities and families in  
providing opportunities for citizens to  
achieve health and independence.*



New Hampshire Department of  
Health and Human Services  
Division of Public Health  
Services

Bureau of Laboratory Services  
Public Health Laboratories  
29 Hazen Drive, Concord, NH  
03301-6527

(800) 852-3345 TTY 711

[www.dhhs.nh.gov](http://www.dhhs.nh.gov)

*Please call (603) 271-4661 to  
reach the lab directly or email  
Jill Power at [jill.j.power@dhhs.  
state.nh.us](mailto:jill.j.power@dhhs.state.nh.us) with any newsletter-  
related questions.*

The NH PHL Newsletter Committee would like to thank those who contributed to this publication—not only do they have their everyday tasks to tend to, but they graciously agreed to write an article (or two!) and we sincerely appreciate their willingness to help.

*The NH PHL Newsletter Committee: Kim Beers, Amanda Cosser, Sheila Heath, Jill Power, Peggy Sweeney, and Sandie White*