



It's About Time!

Tennessee Department of Health Public Health Laboratories Newsletter

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Volume I, Issue I

Spring 2007

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Inside this issue:

Influenza and Public Health Preparedness	I
New Tandem Mass Spectrometry Manager	I
West Nile Testing Begins May I	I
It's All Good at the Knoxville Regional Laboratory	2
A Word of Thanks	2
Public Health Labs in Nashville and Knoxville Welcome New Employees	3
Dr. Bob Read named Director, Environmental Lab	3
Welcome Dr. Robyn Atkinson, New KRL Director	3
Effects of Heat on Newborn Screening Specimens	4
Chemical Terrorism Update	4
Molecular Biology News	5
MDR-Tuberculosis	6

Influenza and Public Health Preparedness Online Course

Laboratory Services, through a grant from the Association of Public Health Laboratories (APHL), has instituted a new, three part, online continuing education program called **Influenza and Public Health Preparedness**. Aimed at educating Tennessee clinical laboratorians, physicians and nurses in Physicians' Office Laboratories across Tennessee, **Influenza and Public Health Preparedness** is designed to help health care workers understand why public health is concerned about pandemic flu, what their role will be in the event of a pandemic, and how we can best work together to deal with a flu pandemic. This course is restricted to laboratorians and POL workers who live and work in Tennessee. If a new flu virus circulates in a population with little or no immunity, a pandemic (worldwide outbreak) may occur. Scientists and health professionals are concerned that the flu virus reported in birds (avian flu or H5N1), may develop into the next pandemic, causing serious illness and death in humans. A pan-

demuc may last for months to years and cause long-lasting and widespread outbreak of disease. Influenza is a serious viral illness occurring every winter in the United States and causes illness in 5% to 20% of the population. The symptoms can range from mild discomfort to severe disease requiring hospitalization. In 2006 alone, complications of flu were the cause of death in 36,000 people in the United States. Pandemics can cause

great upheaval and may result in greatly increased numbers of people seeking healthcare, limited to no transportation services, schools/daycare and business closures, employee absenteeism, and urgent shortages of fuel, food, and water. **It is crucial to plan ahead.** The Tennessee Department of Health's Influenza Pandemic Preparedness Plan provides a broad series of guidelines for action in the event of pandemic influenza. For more information about Influenza Pandemic Flu Plan go to <http://state.tn.us/health/CEDS/pandemic.htm>

Watch our web site for more educational opportunities at <http://health.state.tn.us/lab/index.htm>



Christine McKeever—

New Tandem Mass Spectrometry Manager

Christine McKeever has been named as the Tandem Mass Spectrometry Manager and will head the Newborn Screening Section of the TDH Laboratory Services. Chris has served as the Assistant Director of Microbiology since 2002 and has been in various positions at the lab since 1994. Chris is a licensed Medical Technologist and received her B.S. from Western Kentucky University and a M.S. from Cumberland University. Chris has overseen the development and improvements on the Tandem Mass screening since its initial start-up at the State Laboratory.

West Nile Testing Begins

The Virology Laboratory at the Tennessee Public Health Laboratory Services officially began testing birds and mosquito pools for West Nile Virus on May 1, 2007. AL collection buffer, already dispensed into plastic vials for bird throat swabs will be made available at all Regional Health Offices. For further information call Jerry Hindman at 615-262-6374 or Bill Reimels at 615-262-6450.



It's All Good News at Knoxville Regional Laboratory!

New Staffers Welcomed

With the additions of Ken Mitchell and Amelia Foust in November and Julie Oldham in January, the KRL Microbiology Section is now fully staffed and 10 strong. All KRL Microbiologists have FBI clearance and are in the process of building their Rabies titers. It is the goal of KRL Microbiology to become fully cross-trained.

Training in New Technologies

Gail Smelcer and Mike McWilliams received training in San Diego in February for the operation of the TIGRIS®, an automated Chlamydia/GC system. Amelia arrived at KRL with this expertise. The TIGRIS® is processing record numbers of samples with a little assistance to the delight of all. More in-house TIGRIS® training will take place in May. KRL escaped a potential deluge of peanut butter testing although inquiries were numerous. A jar from the recalled lot number was used in a training exercise by Bobby Price and Ken Mitchell. The resulting growth was not identified as Salmonella. Bobby will be participat-



ing in the "EPI-Ready" Team Training Workshop on Foodborne Illness Response Strategies" sponsored by the National Environmental Health Association and the CDC in Nashville in May.

Testing For Norovirus

Norovirus samples continue to come in, allowing staff to perfect their use of the Smart Cyler for PCR testing. Stephanie Estes has also recently demonstrated her proficiency in all phases of Bioterrorism testing.

Having mastered most other testing at KRL, Henry Davis will become the next fighter in the war on Bioterrorism at KRL. Vicki Lambert has been busy gearing up for her seasonal battle to assist in the diagnosis of arboviral disease among the children in East Tennessee. Twice a year, Vicki exchanges proficiency test panels with the Central lab using previous positive samples. Vicki has spent the month of March sharing the finer points of this sometimes tedious IFA procedure with Julie Oldham. Vicki also serves as KRL's Property and Procurement Officer. She is just one of the many employees who have taken on additional responsibilities with a smile and a "thirst for knowledge." Speaking of knowledge, the micro staff is making great strides in the pursuit of continuing education opportunities. We have found numer-

ous opportunities to connect to a variety of web-casts. We are also very fortunate that the UT School of Veterinary Medicine has been providing free seminars through its new Center for Agriculture and Food Security and Preparedness. We have also found another bonus to being located in a building with the East Tennessee Regional Office staff – free CPR training for all. So far 7 KRL employees have completed CPR for the professional rescuer.

Of course, none of the work at KRL would go as smoothly without the assistance of our remarkable support staff. Randy Rucker continues to take all changes in shipping rules and regulations in stride and he assures that all specimens leave KRL properly packaged. Marsha Mathis and Geri Johnston wrap up all of our other loose ends and will faithfully continue to send them out through the mail until the advent of STARLiMS, the new information system.



Hi there,

I would like to personally thank all of our fellow state lab employees, as well as our many other partners in public health, for lending KRL their eyes, ears and expertise over the last several months. You have given generously of your time and talents to ensure that we continue to be all that we were purposed to be in our efforts to produce quality lab results in a timely manner. In many ways we began again with the basics – show up, do good work, be safe and help others. We have enjoyed and profited from every visit, every call and every e-mail. (Hopefully, everyone has learned as much from our mistakes along the way as we have! Perhaps we have provided some humor also. While others were firming up their plans for fighting BT and CT we were puzzling over the connection between *Chlamydia trachomatis* and terrorism – one not clarified by a Google search) Today, we feel connected to and confident in our role in the big picture. (If we are ever unsure, be assured that we'll be calling you again!) We are excited about the future that you have helped empower us to embrace with a renewed "thirst for knowledge" and eagerness to do more. We all have much to celebrate each lab week and each day.

Many Thanks! Barbara Frei, Manager, KRL Microbiology



Welcome New Employees!

Name	Section	Date Started
Julie Oldham	Knoxville	01/10/07
Roxanne Barnes	Newborn Screening	02/15/07
Natasha Stapp	Special Microbiology	03/16/07
Michael Lehman	Molecular Biology	03/16/07
Kenneth Richardson	Immunology/Serology	03/16/07
Billy Hawkins	Procurement	03/22/07
Gloria Karns	Immunology/Serology	04/02/07
Timothy McCollum	Aquatic Biology	04/02/07
Stephanie Poindexter	Newborn Screening	04/16/07
Jonathan (Keith) Gaddes	Aquatic Biology	04/16/07
Julie Cothorn	Administrative Support	05/01/07
Dr. Robyn Atkinson	Knoxville Regional Laboratory	05/01/07



Go here to visit the official U.S. government web site for pandemic influenza

www.pandemicflu.gov/plan/states/planningResolutionTN.html

Dr. Bob Read Named Director, Environmental Laboratory



Dr. Bob Read, Director, Environmental Laboratory

Bob Read, Ph.D. has been officially named as the Director, Environmental Laboratory. Dr. Read has been employed by the TDH Lab Services since 1986 serving in various capacities. He has been filling the role of Acting Environmental Laboratory Director since May 2005. Dr. Read holds a bachelor's degree in Basic Medical Science and Ph.D. in Biochemistry from the University of South Alabama and a bachelor's degree in Chemistry from Peabody Col-

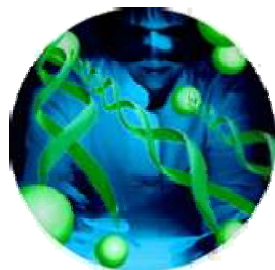
lege. His research and training has been in biochemistry and he has done specific research in lipids, non-specific phospholipid-transfer proteins and other protein effects. He will oversee the environmental chemistry testing as well as direct the EPA drinking water testing protocols. Dr. Read is married with two children.

*Public
Health is
Contagious...
Spread the
Word!*

Dr. Robyn Atkinson to Join Knoxville Regional Laboratory

Robyn M. Atkinson, Ph.D., will be joining the TDH Laboratory Services as the Director, Knoxville Regional Laboratory. Dr. Atkinson comes to us from her current position at Wadsworth Center, New York State Department of Health where she has been the Director, Clinical Bacteriology Laboratory. Dr. Atkinson is the recipient of a B.S. from Clemson University in Biochemistry and a Ph.D. in Pathology from the University of Tennessee, Health Sciences Center, Memphis. Following her graduate studies, she com-

pleted a post-doctoral study at St. Jude Children's Research Hospital in Memphis followed by a Clinical Fellowship in Public Health and Medical Microbiology at Washington University



School of Medicine in St. Louis, Missouri. Her main clinical interests are in outbreaks of infectious diseases and new molecular methods for detection of microbes. She has published articles on outbreaks, PCR methods for Group B Streptococci, infections in cystic fibrosis patients, and molecular markers for assessing vancomycin tolerance in pneumococci.



Welcome Dr. Atkinson!

Dr. Robyn Atkinson

*That's Right!
Keep it COOL!*



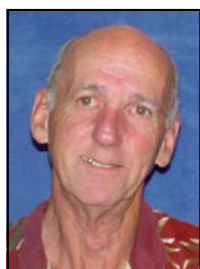
Effects of Heat on Newborn Screening Specimens

As we transition from the cooler months into warmer weather, we want to advise you that **heat and humidity can have a negative impact on newborn screening specimens** so much so that results can be affected. Heat can cause the blood specimen to firmly adhere to the filter paper to the extent that it becomes difficult to dissolve the blood for testing. Heat and humidity can also degrade substances or enzymes within the specimen such as Biotinidase or GALT (galactose), causing an abnormal results.

As a reminder, once specimens are collected, air dry at least 3 hours. Do not expose specimens to direct sunlight or any heat source in an effort to speed drying. Please mail specimens within 24 hours of collection. Do not put specimens to be mailed into a metal mail receptacle as temperatures in these mailboxes are extremely hot. Also do not leave specimens in a hot car prior to delivery at the post office.

Little control of heat or humidity exposure can be exercised once the specimen leaves your care. However, each facility

can examine protocols and implement practices to prevent heat and humidity exposure within your facility. Doing so may prevent false results and the need for recollection. If you have questions about this article, call the Newborn Screening Section at (615) 262-6352 for more information.



**David Whybrew, Manager,
Chemical Terrorism
Laboratory**

Chemical Terrorism Laboratory Update

By David Whybrew

The Tennessee Department of Health (TDH), Laboratory Services Environmental Laboratories operates a Chemical Terrorism (CT) Laboratory. This CT Laboratory is one of 37 Public Health labs in the United States designated as a Level 2 laboratory, under the Public Health Emergency Preparedness Cooperative Agreement. Chemists in these laboratories are trained to detect exposure to a number of toxic chemical agents, including of toxic metals, cyanide, nerve agents, and volatile organic compounds in human samples. The Laboratory also has Level 3 responsibilities requiring the Lab to receive, package, and ship blood and urine specimens collected from those populations suspected of being contaminated by a chemical agent as the result of a suspected chemical terrorist event. The Laboratory also has the responsibility of training healthcare professionals on collection, packaging and shipping of specimens statewide.

The Level 2 part of the funding requires the CT Laboratory to

be equipped and prepared to receive and screen biological specimens collected from populations suspected of being contaminated by a chemical terrorism agent. To meet this objective, the CT Laboratory is equipped with a Inductively Coupled Plasma/Dynamic Reaction Chamber/Mass Spectrometer (ICP/DRC/MS) coupled with a liquid chromatograph (LC) for performing trace metal analysis of analytes of toxicological and nutritional interest in urine and three analytes in blood. The Laboratory is also equipped with two gas chromatograph/mass spectrometers (GC/MS) for the analysis of blood for metabolites of other Weapons of Mass Destruction (WMD) agents, and an automated high throughput solid phase extraction (SPE) and sample purification system to aid CT staff with handling large numbers of specimens more efficiently, thus reducing sample preparation time. Future plans for preparedness include the acquisition of a liquid chromatograph tandem mass spectrometer (LC/MS/MS) for increasing

laboratory capabilities for analyzing blood and/or urine for more sophisticated agents. The CT Laboratory has been validated by the National Centers for Disease Control and Prevention (CDC) in clinical specimen collection, storage, and shipment. Validation studies have been completed and passed for toxic metals in urine, and the CT Laboratory will be able to participate in Proficiency Testing (PT) beginning this summer. Other tests are in the process of being validated by CDC, enabling the CT Laboratory to be eligible to participate other PTs. Two chemists are scheduled to attend training at CDC this summer for the addition of more testing capabilities for the CT Lab. **The primary purpose of the laboratory is to be able to identify those individuals who have been contaminated by an agent of WMD, or other toxic chemicals caused by a major accident.** Also of importance for testing is to reassure the worried-well. The TDH

(Continued on page 5)



Field exercise, collection of an environmental sample.

Molecular Biology News

By Amy Woron



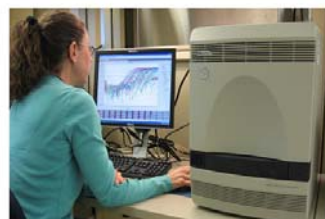
Amy Woron, Manager Molecular Biology Section

The Laboratory Services Molecular Biology department has expanded with the availability of new technologies for the detection and characterization of infectious diseases. In addition to performing Pulsed-Field Gel Electrophoresis, conventional PCR and real-time PCR, genetic sequencing of the 16s and D2 LSU rDNA genes has recently been added as a supplemental test to conventional culture identification.

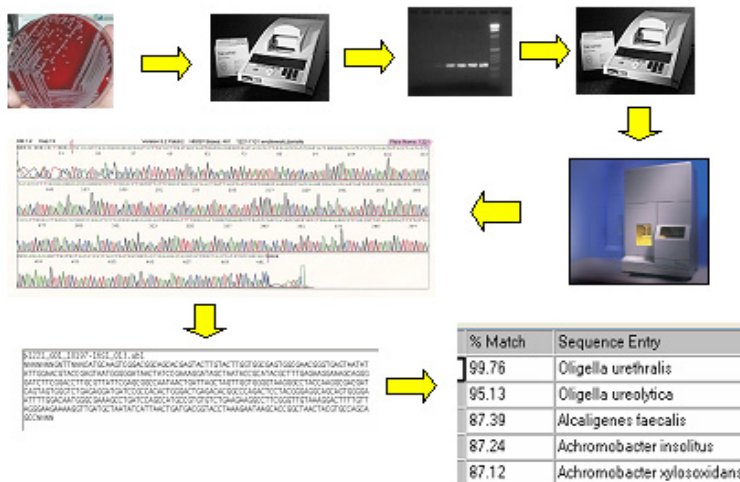
This test is offered to the Bacteriology and Special Bacteriology departments as additional information that aids in the identification of fastidious, biochemically inert or slow-growing organisms. Sequencing is currently being performed on a weekly basis by Microbiologist Christina Moore BS, MT (ASCP), pictured above. The highly conserved nature of the 16s and D2 LSU genes allows for universal primers and reaction conditions. One of the

limitations of this methodology lies within the conserved nature of these genes. Some groups of organisms (*E. coli* and *Shigella* sp. for example) are too closely related to be distinguishable in this region. Database comparisons with both the Applied BioSystems MicroSeq® library and NCBI GenBank help to ensure the most reliable and up to date sequencing results.

Sequencing



Real-time PCR data analysis – Christina Moore



Chemical Terrorism Laboratory Update (continued)

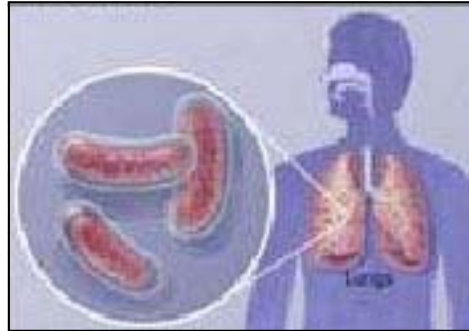
Environmental Laboratory has response teams consisting of at least two chemists who are on call 24/7. In the event of a suspected chemical terrorism event, or major toxic chemical accident within the borders of Tennessee, these teams are trained to receive and analyze environmental samples for the purpose of ruling out suspected chemical agents. The Environmental Chemistry Laboratory and the CT Laboratory work very closely with the National

Guard's 45th Civil Support Team, headquartered in Smyrna, Tennessee, which operates a mobile field laboratory for WMD. The Bioterrorism Laboratory and CT Laboratory have put together a field collection kit to be used by first responders when responding to a suspected terrorist event. These kits have been distributed to each Homeland Security District in the state, with additional kits available at each of the TDH Regional Labs.



Multidrug-Resistant Tuberculosis

(MDR TB)
Updated: April 2007



What is tuberculosis (TB)?

Tuberculosis (TB) is a disease caused by bacteria that are spread from person to person through the air. TB usually affects the lungs, but it can also affect other parts of the body, such as the brain, the kidneys, or the spine. In most cases, TB is treatable and curable; however, persons with TB can die if they do not get proper treatment.

What is multidrug-resistant tuberculosis (MDR TB)?

Multidrug-resistant TB (MDR TB) is TB that is resistant to at least two of the best anti-TB drugs, isoniazid and rifampin. These drugs are considered first-line drugs and are used to treat all persons with TB disease.

What is extensively drug resistant tuberculosis (XDR TB)? Extensively drug resistant TB (XDR TB) is a rare type of MDR TB. XDR TB is defined as TB which is resistant to isoniazid and rifampin, plus resistant to any fluoroquinolone and at least one of three injectable second-line drugs (i.e., amikacin, kanamycin, or capreomycin).

Because XDR TB is resistant to first-line and second-line drugs, patients are left with treatment options that are much less effective.

XDR TB is of special concern for persons with HIV infection or other conditions that can weaken the immune system. These persons are more likely to develop TB disease once they are infected, and also have a higher risk of death once they develop TB.

Courtesy of the Centers for Disease Control and Prevention



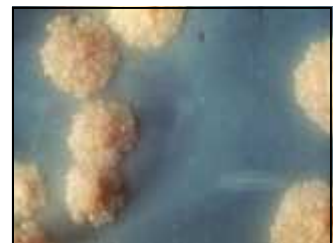
Pictured above is an electron scanning micrograph of TB bacteria.



Pictured above is TB clinic waiting room in India.



Pictured above is a lung tissue cross section stained to demonstrate the presence of Acid-



Pictured above are colonies of TB growing in culture.



New Lab Homepage!!

<http://health.state.tn.us/lab/index.htm>