



# Beyond the SCOPE

A publication of the Missouri State Public Health Laboratory



VOLUME 2, ISSUE 1

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## The other faces of the State Public Health Laboratory

By: Bill Whitmar, Laboratory Director

Oftentimes we find ourselves rooted within the comfortable confines of our organizational home and either do not see, or do not get the opportunity to get acquainted with those at the periphery of our eyesight. Sure, we converse with those brethren at the coffee pot who cohabitate on the same floor. But more often than not, there are others that we visit with less often, whose business we know little. For us in the Missouri State Public Health Laboratory, perhaps we know a bit less about our colleagues in the Poplar Bluff satellite office or in the Department of Agriculture Animal Health Laboratory located on the third floor of the main laboratory.

The Poplar Bluff facility houses a water laboratory and the Breath Alcohol Program. The four staff located there were at the forefront of our minds last year during the historic floods as they continued their public health service in spite of devastating effects in and around the area, including close to their own homes. In this newsletter you will find additional information on our friends from southeast Missouri.

In 2009 as a means to reduce state laboratory infrastructure costs, the Missouri Department of Agriculture Animal Health Laboratory was consolidated with the State Public Health Laboratory. The staffs of both facilities have performed a magnificent job of synchronizing efforts so as to make the consolidation a seamless, streamlined and efficient operation for the state of Missouri. As an added benefit, we have made steadfast friends in the process. In the Agriculture laboratories are performed a number of serologic and other tests aimed at determining the health of flocks and herds of



Bill Whitmar, Laboratory Director

livestock in the state of Missouri.

On the Quality Improvement front, the Show Me Challenge efforts continue. The Systematically Collaborating for Overall Performance Excellence, or S.C.O.P.E., teams are working enthusiastically on many exciting projects that will be rolled out in the coming months, many by the time you have read this article. With each of these projects you should be thinking that it is **you**, the staff of the MSPHL that have brought about these activities and changes. While it is the Show Me Challenge and the S.C.O.P.E. teams that are the vehicles for change, it is you and your input that drives the changes that are seen before you. Together, the staff and management, it is we that will keep these efforts alive, driving more transformations in the future, more recognition for you, breaking down the institutional barriers within the laboratory and making additional improvements to this institution that we have built.

Bill

# The Breath Alcohol Program (BAP)

By: Brian Lutmer, BAP Senior Scientist

Since 1977 it has been the responsibility of the Breath Alcohol Program (BAP) of the MSPHL to promulgate regulations concerning chemical tests for intoxication performed as mandated by various Missouri impaired driving statutes. These regulations concern not only breath alcohol testing but also include blood, urine and saliva tests for alcohol and drugs as well. Relocated in May 2006, the BAP shares laboratory space with the Environmental Bacteriology unit at the Southeast Branch Laboratory of the MSPHL in Poplar Bluff.

The BAP customer base includes state departments involved in law enforcement such as MoDOT and DPS, as well as city and county law enforcement agencies and state and city toxicologists. The BAP also serves Missouri's legal community, including the Department of Revenue, city and state prosecutors, judges and defense attorneys.

Endeavoring to improve customer service, the BAP continuously implements new and innovative services. In 2007, the BAP implemented electronic distribution for all alcohol and drug testing permits cutting turnaround time for permits by over 50%. In 2008, the BAP standardized the required training materials to receive a breath alcohol operator permit and produced a standardized training manual used by all law enforcement performing breath alcohol tests. The BAP also added a web page in 2009 where all of the prescribed maintenance records for breath alcohol instruments can be freely viewed and downloaded. Since its implementation, visits to the BAP website have increased to over 11,000 hits annually and formal records requests have dropped by over 80%. In fall 2011, a new annual blind proficiency testing protocol was implemented to increase quality control in Missouri's breath alcohol testing.

The BAP also works with a number of stakeholders to improve its own activities as well as to provide valuable information and research. To these ends BAP personnel are members of the Missouri Coalition for Roadway Safety, the Missouri Crime Lab Working Group, the International Association for Chemical Testing (IACT), and the American Academy of Forensic Sciences (AAFS). BAP personnel have also been directly involved in a number of research projects with the University of Central Missouri culminating in two reports and at least 3 peer-review publications to date. In April 2011 the BAP hosted IACT's 26<sup>th</sup> annual conference in St. Louis and BAP

personnel have made numerous presentations at previous IACT conferences. BAP personnel have also presented twice in the past two years at the annual conference of the AAFS. The BAP

constantly strives to maintain the highest standards for chemical tests for intoxication and is always seeking new ways to raise the bar. It is only by constant efforts to improve that we can be certain we are doing everything in our power to ensure our customers and the people of the great state of Missouri are being served to the best of our ability.

The BAP currently consists of Brian Lutmer, Senior Scientist and Program Manager, and Carol Day, Senior Office Support Assistant.

The BAP can be reached by phone at 573-840-9140, by fax at 573-840-9139 or via email at [breathalcohol@health.mo.gov](mailto:breathalcohol@health.mo.gov).



Carol Day (L) and Brian Lutmer (R) comprise the Breath Alcohol Unit.

## Core Responsibilities of the BAP Include:

- Custodian of Records for all maintenance reports, permits and applications as set forth in 19 CSR 25-30.
- Maintaining and updating 19 CSR 25-30, Rules for Determination of Blood Alcohol by Blood, Breath, Saliva, and Urine Analysis.
- Maintaining public records pertaining to breath and blood testing including permits and instrument maintenance reports.
- Providing research and scientific support for Missouri's breath alcohol testing officers, blood alcohol testing scientists and Missouri's legal community.
- Providing expert testimony regarding the interpretation of blood and breath alcohol test results as well as alcohol physiology and pharmacology
- Providing training and giving seminars and presentations related to alcohol physiology, pharmacology and chemical tests for alcohol.



An example of a BAC DataMaster which is an infrared electronic breath alcohol measuring instrument.

## Branch Laboratory Provides Testing Services in Southeast Missouri

Pat Shannon, Laboratory Manager II, Environmental Bacteriology Unit

Did you know there are actually two State Public Health Laboratories in Missouri? In addition to the main facility in Jefferson City, the MSPHL operates a branch laboratory in Poplar Bluff. Located 150 miles south of St. Louis the MSPHL Southeast Branch Laboratory provides drinking water testing services to more than 25 counties in the southeastern corner of the state.



James Christian (L) and Debbie King (R) at the branch laboratory in Poplar Bluff, Mo.

Situated in the lower level of the Department of Health and Senior Services (DHSS) Southeast District Health Office on James Boulevard the Southeast Branch Laboratory provides bacterial testing on nearly 10,000 public water supply samples and more than 1,000 private well water samples annually. Performing these services are two Environmental Bacteriology Unit staff, each with more than 10 years experience at the Southeast Branch Laboratory. James Christian, Public Health Laboratory Scientist, serves as the only technical analyst at the laboratory. In addition to performing all testing duties, James is responsible for sample log in, Laboratory quality control, reagent

preparation, glassware washing, autoclave operations, preparing and mailing sampling kits and maintenance of the laboratory's US EPA certification requirements.

Debbie King, Office Support Assistant (Keyboarding), serves as the Laboratory's support staff. Debbie's duties include client reception, sample receipt, data processing, results reporting, record filing and electronic data transfer of public water test results to DNR. Because 40% of the Branch Laboratory's sample volume is delivered as client walk-in samples, Debbie serves a vital role as the face of the MSPHL in Poplar Bluff. These two professionals ensure the MSPHL Southeast Branch Laboratory remains operational and continues to provide critical drinking water testing services for the citizens of southeastern Missouri.



James Christian, scientist, prepping water samples for analysis at the Poplar Bluff branch laboratory.

## Welcome to the Re-designed MSPHL Website!

By: Shondra Johnson, LIMS Administrator

This past year the MSPHL embarked on re-designing the website, [www.health.mo.gov/lab](http://www.health.mo.gov/lab), to be more content driven. The hope was to simplify and organize the website in a way that allows customers to easily find the necessary information related to the testing performed and other critical functions the MSPHL provides.

On the homepage, look for recent announcements under the Hot Topics section. You will also find an A-Z Index which provides links to all of the services that the MSPHL provides listed alphabetically. For a more condensed listing by topic, select the Services by Topic under the Related Links. In this section, the A-Z index is grouped by clinical, newborn screening, environmental and emergency preparedness and response topic areas.

Additional information about the MSPHL can be found in the Related Links on the homepage. To provide feedback on the website or the MSPHL's services, select the Feedback link located in the Related Links.

# MSPHL Employee Spotlight — Passion in Finding a Cure

By: Laura Naught, Quality Systems Officer



Roy Tu'ua (R) is the 2012 Chair of the Cole County Relay for Life.

The American Cancer Society's (ACS) Relay for Life event is one of the most recognized fundraisers for cancer patient care, assistance and research in the world. To those associated with the Relay for Life it has become known merely as the Relay. There are many moments that create the Relay experience during the 12-hour event that takes place throughout the evening and nighttime hours. Relay starts with the Survivors Lap – an inspirational time when survivors are invited to circle the track together and help everyone celebrate the victories achieved over cancer. After dark people are honored who have been touched by cancer and remember loved ones lost to the disease during the Luminaria Ceremony. Candles are lit inside bags filled with sand, each one bearing the name of a person touched by cancer. Last, there is a Fight Back Ceremony where personal commitments are made to save lives by taking up the fight against cancer. In between these very emotional events are music, games, food, fun, family and friends all there supporting and celebrating the cause.

Several MSPHL staff participates in local Relay for Life events for different reasons. Jessie Bauer, Molecular Unit, Relays "...because I know I can make a difference! Every dollar I raise supports research to find a cure as well as helps fund cancer prevention, detection, treatment and patient support programs. I Relay in memory of my family members and friends who have fought a courageous battle with cancer and lost, in celebration of those who have fought and won and in support of those currently waging their battle." Jessie has been part of the Osage/Maries County Relay for Life for twelve years. In 2009, she took over as the Team Captain for the Bank of Hope team and has been the Relay entertainment committee chair for the past two years. She spends the entire year planning fundraisers and organizes an annual garage sale to help support her Relay.

Roy Tu'ua, TB Unit Chief, has been involved with the Cole County Relay for Life event for several years but was introduced to Relay in college. Roy's reasons for why he Relays have evolved over the years. "I have Relayed for my friends who were stricken with cancer. Now, with the addition of my daughter, Jocelyn, I also Relay for her future. A future where there is a cure for cancer."



Survivors at the Cole County Relay for Life preparing to kickoff the event with the survivor lap. Purple is the designated color for a cancer survivor.

He has acted as the Entertainment Chair and has been a Relay Co-Chair. He is the 2012 Chair and has been busy making sure everything is in place before the Relay event this June. The Cole County Relay is one of the most successful and largest Relays in its eight state region and consistently raises over \$300,000 at each event. Needless to say, it takes a lot of work to put on such a great event.

to find a cure, but also to make people aware of the amazing things the local ACS office does for cancer patients.

Laura Naught, MSPHL Quality Systems Officer, has been involved in the Cole County Relay for Life Committee for a number of years holding various positions from Team Member, Team Captain and several committee and chair positions. Laura was the 2008 Relay Chair and has had the opportunity to co-chair the regional Relay University training program as well as speak at several events to share best practices. Though she has had to step back due to other commitments, she remains passionate about the Relay for Life and helps out in any way possible.

Each of these staff members is not only dedicated to their jobs at the MSPHL, but they are also dedicated to causes outside of work that take endless hours of dedication to coordinate fundraisers and plan the Relay itself. Though they each 'Relay' for a different reason they are all working towards the common goal of awareness, prevention, advanced cancer treatment and, ultimately, a cure. For more information about the Relay for Life please visit [www.Relayforlife.org](http://www.Relayforlife.org).



Tina Nutter (R), shown with a survivor at the annual Survivor BBQ, is the 2012 Cole County Relay For Life Co-Chair.

Tina Nutter, MSPHL PART staff, is also involved with the Cole County Relay for Life and has been for several years. She has been Chair of the Fight Back Ceremony, worked on the Survivor Committee and held the 2012 Co-Chair. She will certainly be ready to take the reins from Roy in June to become the 2013 Relay Chair. Her favorite part of the Relay experience is "Watching thousands of Cole County citizens from all different careers, cultures, interests, and ages coming together for at least one night each year with a common goal and having a blast being there!" She also Relays not only to raise money for research



Jessie Bauer, second from right, with some of her team members getting ready for the duct tape lap at the Osage/Maries County Relay.

# MSPHL Starts Journey to Achieving Performance Excellence

By: Laura Naught, Quality Systems Officer

In the September 2011, *Beyond the Scope* newsletter, Director Bill Whitmar discussed the MSPHL's participation in the Show Me Challenge self assessment through the Excellence in Missouri Foundation (EiMF). We are pleased to share with you those results and our future plans as we work toward achieving performance excellence. This self assessment evaluated the six categories of the Baldrige Criteria; Leadership, Strategic Planning, Customer Focus, Information and Analysis, Workforce Focus and Process Management. The MSPHL received a report that outlined our overall strengths and opportunities for improvements.

Six key themes were selected by the Self Assessment Team as the most important areas the MSPHL needs to maintain or improve. Key strengths to maintain include: 1) Laboratory leadership's focus on continuous improvement in all Laboratory systems and services and 2) the well-trained workforce which subsequently ensures vital laboratory accreditations and provides the availability of quality laboratory services. The report identified four opportunities for improvement that consisted of: 1) improving workforce recognition, satisfaction and engagement, 2) reducing the 'silo effect' in which units operate primarily independent of one another, 3) improving the aggregation of data about customers and internal processes and 4) improving upon and deploying of the Laboratory's Strategic Plan.

## Introducing the S.C.O.P.E. Initiative

The MSPHL introduced the S.C.O.P.E. Initiative at its first Annual Team Meeting (page 7) in fall 2011, as a way to address the findings of the Show Me Challenge and to outline Laboratory plans for achieving performance excellence. S.C.O.P.E. is the acronym for **Systematically Collaborating for Overall Performance Excellence** and the initiative's mission is to: **Maximize overall performance excellence by utilizing staff collaboration to set and achieve goals in order to better serve the MSPHL employees and the public.**

As a part of the S.C.O.P.E. Initiative, six Action Teams were created by utilizing Laboratory volunteers from all areas of the MSPHL. These commendable volunteers are working on implementing ideas to address the findings of the Show Me Challenge. These Action Teams are focusing on Leadership, Strategic Planning, Customer Focus, Workforce Focus, Process Management and Measures. These teams have already been hard at work.



Front row (L-R) Nicole Farnsworth, Julie Buckley, Laura Naught, Russ Drury, Brian Inman. Row 2, Dana Strobe, Nicole Ayres, Candice Hubbard, Theresa Driver, Michelle Rodemeyer. Row 3, Amy Pierce, Sandy Jones, Adam Perkins, Dianne Veasman. Row 4, Robyn Carrender, Shondra Johnson, Patrick Hopkins, Mindy Rustemeyer. Row 5, Roy Tu'u'a, Steve Gladbach, Pat Olson. Not pictured are: Sarah Tannehill, Ashley Mehmert, Heather Davenport, Steve Hynes, Fran Thompson and Sabrina Ivy.



- The Workforce Focus Team has sent out its first survey to all Laboratory staff to assess employee satisfaction and communication needs.
- The Strategic Planning Team has a great plan in place for helping Laboratory staff to utilize and understand the Strategic Plan.
- The Customer Focus Group is releasing its first customer survey available through this newsletter and on the MSPHL website [www.health.mo.gov/lab/](http://www.health.mo.gov/lab/) (See Customer Survey insert).
- Process Management is organizing laboratory tours and job shadowing for all staff so they can learn more about all laboratory processes.
- The Leadership Team is exploring ideas on how to best communicate important information with all staff.
- The Measures Team is working to identify outside data that can be used as benchmarks for critical laboratory indicators and compiling that data, along with internal statistics, into easy to understand graphs so that staff can see exactly where the MSPHL measures.

All the teams are also looking forward to Laboratory Professionals Week where there are lots of fun activities planned for the end of April. Although the journey has just begun, these Action Teams will continue to dedicate many hours addressing the findings of the Show Me Challenge Report. These Action Teams will work on developing implementation plans to help improve the MSPHL and push it towards the ultimate goal of achieving performance excellence.

**We want your feedback!!**

The MSPHL needs your help to achieve our goal of increasing quality service to our customers. Please click on the [Customer Survey Link](#) or go to our website [www.health.mo.gov/lab/](http://www.health.mo.gov/lab/) to take a short customer service survey. Completing the survey should take approximately 5 minutes. Your responses will be used to assess ways the MSPHL can better serve you. The MSPHL management appreciates your taking the time to complete this survey to help us improve our service.

## 2011 Annual Team Meeting



*Phil Schott (L), Immunology, was presented a certificate for 10 years of services to the laboratory by Bill Whitmar (R), Director, during the 2011 Annual Team Meeting.*

In October the Laboratory had its very first Annual Team Meeting for all Laboratory staff. Two sessions were held where staff learned about the findings of the Show Me Challenge, were introduced to the S.C.O.P.E. Initiative and learned all about the new Strategic Plan. The annual meeting wasn't all business, however. Years-of-service awards were presented to staff and Director Bill Whitmar acted as host of some 'Minute to Win it' games.



*Miranda Carter, Newborn Screening, attempts to stack and then unstack 35 cups in one minute or less as part of the 2011 Annual Team Meeting 'Minute to Win It' games.*

# Acronyms used in Newsletter

AAFS—American Academy of Forensic Science	ELRN—Environmental Laboratory Response Network	MODOT—Missouri Department of Transportation
ACS—American Cancer Society	EPA – Environmental Protection Agency	MOLRN – Missouri Laboratory Response Network
AFB – Acid-fast Bacilli	EROT – Emergency Response, Outreach and Training	MSPHL – Missouri State Public Health Laboratory
AIDS – Acquired Immune Deficiency Syndrome	ing	MTD – Mycobacterium Tuberculosis Direct
APHL – Association of Public Health Laboratories	FA – Fluorescent Antibody	NAA – Nucleic Acid Amplification
ASCLS—American Society for Clinical Laboratory Science	FDA—Food and Drug Administration	NBS – Newborn Screening
ASTPHLD– Assoc. of State and Territorial Public Health Laboratory Directors	FERN– Food Emergency Response Network	OB - Obstetric
BAP—Breath Alcohol Program	FBI – Federal Bureau of Investigation	PART—Post Analytical Reporting Team
CCHD – Clay County Health Department	FDA – Food and Drug Administration	PCR – Polymerase Chain Reaction
CDC – Center for Disease Control and Prevention	FSIS—Food Safety and Inspection Service	PFGE – Pulsed Field Gel Electrophoresis
CERT – Center for Emergency Response and Terrorism	GC-MS– Gas chromatography mass spectrometry	PHEP – Public Health Emergency Preparedness
CF—Cystic Fibrosis	GSP – Genetic Screening Processor	RNA – Ribonucleic Acid
CLIA – Clinical Laboratory Improvement Amendments	HHS—Health and Human Services	SCID – Severe Combined Immunodeficiency
CLSI – Clinical and Laboratory Standards Institute	HIV – Human Immunodeficiency Virus	S.C.O.P.E.—Systematically Collaborating for Overall Performance Excellence
COOP – Continuity of Operations	HL-Health Level	SEMA – State Emergency Management Agency
CMRA—Central Motorcycle Roadracing Association	IACT—International Association for Chemical Testing	SIDS – Sudden Infant Death Syndrome
CST – Civil Support Team	IgG – Immunoglobulin G	SOP—Standard Operating Procedure
DHSS – Department of Health and Senior Services	IgM – Immunoglobulin M	TB – Tuberculosis
DIS – Disease Investigation Specialists	IRB – Institutional Review Board	US—United States
DNA – Deoxyribonucleic Acid	IRT—Immuno-Reactive-Trypsinogen	USDA—United States Department of Agriculture
DNR—Department of Natural Resources	LED – Light Emitting Diode	UV – Ultraviolet
DPS—Department of Public Safety	LIMS-Laboratory Information Management System	WLA—Water Laboratory Alliance
DSR – Department Situation Room	LPHA – Local Public Health Agency	
EHR-Electronic Health Record	LRN – Laboratory Response Network	
EIA – Enzyme Immunoassay	LSD – Lysosomal Storage Disorders	
EiMF—Excellence in Missouri Foundation	MATEC– Midwest AIDS Training + Education Center	
	MMWR – Morbidity and Mortality Weekly Report	

## Did You Know?

### Did you know that April 23rd through the 27th is Medical Laboratory and Environmental Laboratory Professionals Week?

The MSPHL is excited to be celebrating Laboratory Professionals Week with several activities to honor our exceptional staff. The week long celebration is being coordinated by the SCOPE Initiative Process Management Team and they have been hard at work getting events in place. Events include a BBQ for all staff provided by laboratory management, a baby picture contest, pipette tip toss, a screening of the movie Contagion and the opportunity for staff to win some great prizes.



The SCOPE Initiative Workforce Development Team has also been hard at work filming a video for a Laboratory Week video contest. Thanks to some great volunteers the video looks wonderful and hope to have it up on the website soon for all to see.

# DNA Analyses to Enhance Newborn Screening for Cystic Fibrosis

By: Patrick Hopkins, Newborn Screening Unit Chief

The test which has been our greatest challenge in newborn screening (NBS) at the MSPHL for the last five years will soon advance to the cutting edge. The NBS Unit will be adding a second-tier DNA mutation assay this spring that will tremendously increase sensitivity and specificity for our cystic fibrosis screen.

## Cystic Fibrosis Screening Algorithm in Missouri (IRT/IRT)

Missouri has been screening every newborn for Cystic Fibrosis (CF) since January 2007, just before the move into the new laboratory facility. Due to space and time constraints MSPHL began using the IRT/IRT screening algorithm for CF screening. IRT stands for Immuno-Reactive-Trypsinogen, the biochemical analyte secreted from the pancreas and is elevated at birth in babies with CF. Other adverse physiological conditions can also provoke an elevation in the IRT but it has been proven that persistent IRT elevation, or two subsequent NBS with elevated IRT's, puts the infant at high risk for having CF.

Consequently, if the MSPHL detects an IRT elevation on a NBS, a repeat screen after one week of age is required. If the repeat screen also has an elevated IRT (hence IRT/IRT) the infant is referred to a CF center for a Sweat Chloride analysis (called "sweat testing") which has been the gold standard for confirming true CF.

## Facts about Cystic Fibrosis

- Cystic Fibrosis has an average prevalence in Missouri of 1 in 3,000. 1 in 25 Caucasians are carriers of the CF gene.
- Infants with CF need to be screened, diagnosed and on treatment within two months of age to prevent the onset of illness.
- Early detection and management of CF reduces hospitalizations and greatly improves growth and survival.
- One of the strongest benefits of screening newborns for CF is preventing malnutrition. Malnutrition and failure to thrive are usually the first symptoms to appear and set the stage for all other complications to follow close behind.
- Before newborn screening for CF, parents and physicians could spend many months trying to figure out a cause for the child's chronic illnesses. When they finally did, significant damage to the child had already begun. Since newborn screening for CF has been instituted in the U.S. some patients are well into their third decade of life and have remained healthy. Before newborn screening most of these patients would have died before reaching middle school age after many years of illnesses and extraordinary care.

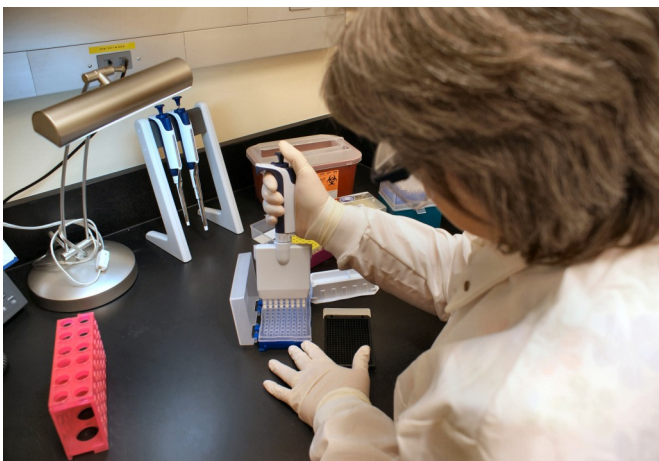
## Problems with the IRT/IRT algorithm

Although the IRT/IRT protocol was the only one available in the early years and is often the algorithm that many states (including Missouri) used to start their CF screening, this algorithm has its drawbacks. The IRT/IRT method has a high rate of false positives, and at the same time is known to have a few undetected cases of CF. It is a balancing act for states to choose an IRT cutoff level that does not completely overwhelm their follow-up with referred cases while frightening too many parents, yet does not miss true CF cases. This is complicated by the fact that the IRT analyte has one of the highest imprecision records of all NBS analyte markers.

Another issue is a problematic time-lag between the first abnormal IRT and obtaining the repeat screen, and consequently, diagnosis. Out of those babies that need repeat screens 4% fail to comply and need to be aggressively tracked and the parents convinced to do so. Missouri is one of only 12 states that still utilize the IRT/IRT screening process. The majority of states using IRT/IRT mandate universal repeat screening on all newborns by law. All those states' babies get a second NBS at one to two weeks of age, and laboratories are prepared for repeat screens for every newborn.

## Benefits of utilizing second tier DNA (aka the IRT/DNA algorithm)

The problems with the IRT/IRT algorithm are virtually eliminated by utilizing second tier DNA testing performed on the initial abnormal NBS samples.



Bonnie Ricks, Senior Scientist, Preps samples for cystic fibrosis testing.

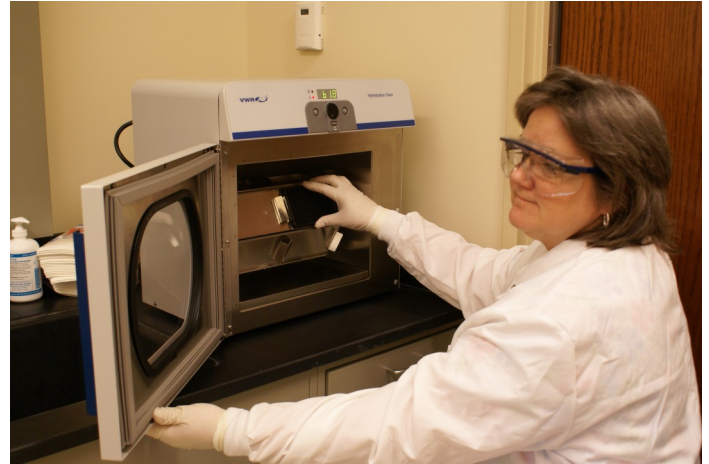


### ...enhancements in Cystic Fibrosis testing continued from page 9

With the second tier DNA test babies with initial screens displaying IRT elevations will be immediately assigned CF mutation testing to ascertain if the baby has one (carrier state) or two CF mutations (affected state) present. Even infants with one mutation are referred for sweat testing to rule out CF because there are some rare mutations that may not be detectable in the second tier DNA panel. Adding the second tier DNA step will allow the MSPHL to greatly increase sensitivity (reduce false negatives) by drastically lowering the IRT cutoff. At the same time it will tremendously increase specificity (reduce false positives) by ruling out those babies who have an elevated IRT but are not even carriers. Parental anxiety experienced from false positive screens will be reduced. The time from birth to diagnosis for CF will be considerably decreased, greatly benefitting babies affected by CF.

The vast majority of affected babies will have immediate CF confirmation directly from the NBS blood spot allowing intervention and treatment to be greatly expedited, usually before 10 days of age. In addition, every baby that is referred to the CF center will be at least a carrier of CF, which allows the parents the choice to receive counseling and testing to determine their future risk of having offspring with CF. Not every CF carrier will be detected. Only 8% of carriers have an elevated IRT on their NBS, but detecting carriers is not the major goal in screening.

The 2<sup>nd</sup> tier DNA assay that the NBS Unit will utilize is provided by Hologic Inc. and will have a 40 mutation panel of the most common alleles that are seen in the general population. It is a limited cycle multiplex PCR assay that utilizes a patented "Invader Technology". This allows use of fewer amplicons for detection thereby reducing



Bonnie Ricks, Senior Scientist, placing NBS samples in a hybridization oven for amplification of DNA.

contamination issues without decreasing sensitivity. As was stated earlier, if only one mutation is found on a child it does not mean definitively there are not two mutations present. The gene for CF is so large that over 1,800 possible mutations have been found, although most of these are harmless. In addition, there are many unique, or "family" mutations that are only seen in distinct families. That is why any infant with even one mutation will be referred for confirmatory sweat testing to rule out CF.

The 2<sup>nd</sup> tier DNA testing is projected to go live on June 1st, 2012 if validations are successfully completed and SOP's are approved. The Missouri NBS program, along with all the CF treatment centers in Missouri, are very excited to be adding this additional molecular test to greatly enhance our sensitivity and specificity with NBS for CF.

## MSPHL Participates in EPA Region 7 & 8 Full Scale Exercise (HSEEP)

By: Steve Hynes, EROT Director

In October 2011, the MSPHL participated in a weeklong, full-scale exercise that tested the MSPHL's response plan based on scenarios of chemical and biological origin. Procedures for sample collection, shipment, laboratory analysis and data reporting were all exercised. The MSPHL participated in four biological and chemical contamination scenarios and acted as the lead response laboratory coordinating all aspects of the Chemical Clinical scenario including sample distribution and results management. Many other entities participated as well including seven other Laboratory Response Network (LRN) laboratories, multiple additional laboratory networks such as CDC, EPA's Water Laboratory Alliance (WLA), the Environmental Response Laboratory Network (ELRN), Health and Human Services-Food and Drug Administration (HHS/FDA) and the United States Department of Agriculture-Food Safety and Inspection Service (USDA/FSIS) Food Emergency Response Network (FERN). The Chemical Clinical scenario involved the overwhelming of the MSPHL's capabilities, necessitating the utilization of the LRN Laboratory Referral Directory. The functionality of using this directory to identify capable laboratories that could assist and provide surge testing was exercised. The MSPHL was given high praise from the CDC, EPA and other states participating in the exercise for the laboratory's ability to successfully coordinate such a technical and large scale exercise involving multiple laboratories as well as national, state and local partners.

## Employee Spotlight: Nicole Ayres

By: Dana Strobe, Immunology Unit Chief



Nicole Ayres, Senior Public Health Laboratory Scientist, Immunology Unit.

Nicole Ayres has been employed in the Immunology Unit at the MSPHL for seven years. In 2011, she became a Senior Public Health Laboratory Scientist. Her responsibilities include overseeing the diagnostic testing of HIV and syphilis, performing quality assurance activities, maintaining and ordering testing supplies and executing supervisory tasks.

Nicole received a Bachelor of Science degree in Agriculture with an emphasis in Animal Science from Lincoln University, Jefferson City. Currently, Nicole is pursuing her Master's degree from Truman School of Public Affairs through the University of Missouri. She will receive a Master's Certificate in Public Health and a Master's degree in Public Affairs when she completes her coursework in December 2012.

Nicole resides in Jefferson City with her husband, Brad, and her step-son, Gabe. Nicole currently has five pets, which is an all-time low for her.

She has two dogs, one lizard and two degus living with her.

One of Nicole's favorite pastime activities is motorcycle road racing. Nicole races an SV650 and recently obtained her expert license for her super sport finish in the Daytona race of Champions in October 2011. Nicole is part of an endurance team composed of all females named GBaby Racing that races with the Central Motorcycle Roadracing Association (CMRA). The team helps raise awareness for and supports the Down Syndrome Guild of Greater Kansas City. Her first race this year at Roebling Road, is scheduled for March in Savannah, Georgia. Her love of motorcycles began at a young age. Her dad was also a racer, so maybe it's in her blood.



Nicole Ayres at the Daytona Race of Champions Daytona, Florida October 2011

Nicole's other pastimes include horseback riding, boating on the Osage River and having fun with her family and friends.

## Around the Laboratory



Over the past six months laboratory staff have participated in some exciting events. On the left is a picture of all the gifts given to two adopt-a-families that the laboratory sponsored over the holidays. The Holiday Committee (middle picture) worked hard all year coordinating fundraisers to raise money to help those in need.

As part of the department's wellness program, the Laboratory was lucky to be able to participate in a three month long Tai Chi class. The picture above shows some of the lab staff in motion. We had a great instructor, Stan Weyrauch (upper right), who was extremely patient with those of us who lacked coordination.

# Lab Blab

Staff happenings in the Laboratory

## New Employees

**Colleen Donahue**– Fiscal Unit, Accountant I

**Timothy Forck**- PART Unit, Office Support Assistant

**Sondra Hinman**– Chemistry Unit, Public Health Laboratory Scientist

**Denissa Winder**– PART Unit, Office Support Assistant

**Megan Jones**-PART Unit, Office Support Assistant



## Promotions

**Russ Drury**-Senior Public Health Laboratory Scientist, Microbiology Unit

**Roy Tu'ua**– Unit Chief , Tuberculosis Unit

## Conferences and Trainings

**Katy Morgan**, Microbiology; **Pat Shannon**, EB Unit Chief; **Steve Gladbach**, Microbiology Unit Chief, attended the 2011 North Central Regional PulseNet Meeting and CIFOR workshop in Sioux Falls, SD

**Steve Gladbach**, Microbiology Unit Chief, attending the International Conference on Emerging Infectious Diseases (ICEID) and Annual ELC grantee meeting in Atlanta, GA

**Dana Strope**, Immunology Unit Chief, attending the 2012 National STD Prevention Conference in Minneapolis, MN

**Laura Naught**, Quality Systems Officer, attended a LEAN forum sponsored by APHL in New Orleans, LA

**Brian Lutmer**, Breath Alcohol, attended the American Academy of Forensic Sciences Annual Meeting in Atlanta, GA where he presented a paper titled: *New Criteria for Accepting Breath Alcohol Test results using Exhalation Profile Data*

**Ashley Mehmert**, Environmental Bacteriology, attended FDA NARMS Retail Meat Study methods training in Laurel, MD

**Carlene Campbell**, **Tracy Klug** and **Miranda Carter**, Newborn Screening, received LSD training from Advanced Liquid Logic Corporation in December

**Bonnie Ricks** and **Rachel Hardy**, Newborn Screening, received training for Cystic Fibrosis DNA testing from the Hologic Corporation

**Darla Eiken**, Newborn Screening, received training on the Genetic Screening Processor (GSP) platforms from PerkinElmer, Inc.

**Patrick Hopkins**, Newborn Screening, attended the Newborn Screening and Genetic Testing Symposium in San Diego, CA.

**Sabrina Ivy**, Virology, attended Laboratory Methods for Detecting Rabies Virus training at the CDC in Atlanta, GA

## Retirements

Congratulations to **Bill Walden**. As he enters into retirement it is time for us to profess our thanks for the years of leadership and guidance he has provided to the Newborn Screening and Tuberculosis Units of the Missouri State Public Health Laboratory. Not many people can honestly say they really enjoy what they do. Those like Bill who can, have been at it for a long time. With over 40 years of combined public health service, Bill has certainly left an indelible mark within the laboratory. His career began by traveling the world with the U.S. Navy and later in life with the Army. His years of service include the Ellis Fischel Cancer Center, University of Missouri Hospital and Clinics, and the State of Kansas. Saving the best for last, he ended his career with the Missouri State Public Health Laboratory.

We will miss his professional expertise and his friendship, and wish only success and happiness in his future endeavors.

# 2012 MSPHL Training Schedule

## **Packaging and Shipping of Division 6.2 Infectious Substances:**

### **Packaging and Shipping of Division 6.2 Infectious Substances Registration Form**

- Wednesday, April 16<sup>th</sup> – Cape Girardeau, MO at St. Francis Medical Center (211 St. Francis Dr., Cape Girardeau, Mo 63703)
- Wednesday, May 16<sup>th</sup> – Springfield, MO at Smith-Glynn-Callaway Laboratory (3231 South National, Springfield, MO 65807)
- Thursday, June 7<sup>th</sup> – St. Louis, MO at St. Charles County Department of Health and the Environment (1650 Boone's Lick Rd., St. Charles, MO 63301)
- Tuesday, July 17<sup>th</sup> – Jefferson City, MO at the Missouri State Public Health Laboratory (101 N. Chestnut St., Jefferson City, MO 65101)
- Wednesday, August 1<sup>st</sup> – Kansas City, MO at Saint Luke's Northland Hospital, Medical Office Building (5844 N.W. Barry Rd., Kansas City, MO 64139)
- Wednesday, September 12<sup>th</sup> – Jefferson City, MO at the Missouri State Public Health Laboratory (101 N. Chestnut St., Jefferson City, MO 65101)
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## **Biosafety and Biosecurity: Minimizing the Risk in the Laboratory:**

**Registration for the Biosafety and Biosecurity Training is through the Association of Public Health Laboratories (APHL) – call for information (573) 522-1444**

- Thursday, April 26<sup>th</sup> – Kansas City, MO at Saint Luke's Northland Hospital in the Barry Medical Park North and South Conference Rooms (5844 Barry Rd., Kansas City, MO 64139)
- Tuesday, May 22<sup>nd</sup> - Jefferson City, MO at the Missouri State Public Health Laboratory (101 N. Chestnut St., Jefferson City, MO 65101)

### Editorial Board for *Beyond The Scope*

Steve Hynes, Shondra Johnson, Sandy Jones, Laura Naught, Mike Massman,  
Mary Menges, Amy Pierce and Bill Whitmar



The Missouri Governor's Mansion Jefferson City, MO

### **Missouri State Public Health Laboratory**

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**573-751-3334**

or

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