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Picture courtesy of <http://www.happynewyear-2016.com/>

# Beyond the SCPE

A publication of the Missouri State Public Health Laboratory



## Our Vision

By: Bill Whitmar, Laboratory Director

"Are you an effective team?"  
The title of this piece comes from a more or less recent Tom Cruise film "Oblivion", where a cloned pair of humanoids is manning the desolate future Earth, are asked by their alien robot overlord, "Are you an effective team?". This theme came to my mind lately as I witness the staff of Central Services and Post Analytical Reporting Team (PART) aiding each other's unit and cross-training in those units. At other times there have been days where specimen loads are high and technical staff have devoted time to performing data entry in an effort to help the PART unit. Tuberculosis staff routinely support in Immunology. Administrative staff are helping units with budgeting and supply. Molecular staff is available to help in Virology. All of these examples point to an effective team in the Missouri State Public Health Laboratory. I point these out not for self-aggrandizing, but rather to put a spotlight on these occurrences where otherwise they might go unnoticed by the rest of the MSPHL staff and by those outside of the laboratory and also to pose a couple of questions. What are the elements of an effective team?



Bill Whitmar, MSPHL Laboratory Director

**Quality Individuals.** The individuals must have the ability to provide quality output with a minimum of input. Throughout a facility such as a laboratory, all staff are trained, competent and re-trained. The entire facility and staff are both internally and federally inspected. As our mission statement states: *The MSPHL is dedicated to promoting, protecting and partnering for health by delivering **QUALITY** public health laboratory services.*

**Collaboration.** Those individuals must then work together in a manner so as to maximize the output without compromising the integrity of the team's framework ---in other words they must work together effectively. Within the close confines of a laboratory, the choreography that is exhibited is extraordinary. Effective teamwork is absolutely necessary so as to process the work in an accurate and timely fashion.

**Selflessness.** The team members should exhibit a level of altruism so as to aid the team in a higher level of achievement than could otherwise be achieved by individual efforts alone.

We see this in the examples as outlined above. Optimally there should be a synergistic effect of a team which maximizes output and minimizes inputs. Team effectiveness can be measured by trending the outputs and inputs and therefore used to identify opportunities for improvements to the team. What measures can be used? Turnaround times/specimen load, staff turnover or staff satisfaction rates, etc. Is your team as effective as it can be? Examine the team or teams within your own entity. Identify ways to measure its effectiveness over time, perhaps there are ways to make your team more effective, or help another team become more effective. By doing these analyses the entire institution can become more effective as a whole.

Bill

## Missouri Newborn Screening Celebrates 50 Years

July 15, 2015 was a historic day for Missouri's newborn babies and the MSPHL as it was the 50-year anniversary of the passing of the first Newborn Screening (NBS) Law in Missouri. The law was seen as necessary to make NBS universal providing all babies an equal chance at being detected and saved, yet it still allowed for parents to opt-out in writing if they objected to the screening due to their religious beliefs. NBS rapidly became a law in every state and a vital public health service that saves or improves the lives of over 12,000 babies born each year in the United States alone.

*Today in Missouri approximately 78,000 newborns are screened for over 70 metabolic disorders per year*



The number of babies saved is growing annually along with the number of new screening disorders that states continue to add to their panels. Missouri was the first state to add screening for the Lysosomal Storage Disorders (LSDs) named Pompe, Gaucher, Fabry and MPSI. The Missouri NBS laboratory literally pioneered the screening of these four disorders for the rest of the country, and now two of these have been nationally recommended thanks to Missouri's data. After two and a half years of full population pilot testing, the MSPHL went LIVE with reporting these four LSDs on August

1, 2015. Over 100 Missouri babies with LSDs have been detected and helped through NBS since the pilot testing began in January 2013. This has been a wonderful thing to celebrate during our 50-Year Celebration.

## Acronyms



AFB - Acid Fast Bacillus  
 APHL - Association of Public Health Laboratories  
 CDC - Center for Disease Control and Prevention  
 CSF—Cerebral Spinal Fluid  
 CLIA - Clinical Laboratory Improvement Amendments  
 COOP - Continuity of Operations Program  
 DCPH—Division of community and public health  
 DHSS - Department of Health and Senior Services  
 DNR - Department of Natural Resources  
 DPS - Department of Public Safety  
 DRL -Division of regulation and licensure  
 EB - Environmental Bacteriology Unit  
 EiMF - Excellence in Missouri Foundation  
 EMAC—Emergency Management Assistance Compact  
 FBI—Federal Bureau of Investigation  
 FDA—Food and Drug Administration  
 ITSD—Information Technology Services Division  
 LIS—Laboratory Information System  
 LPES - Laboratory Preparedness, Education and Safety  
 LRN - Laboratory Response Network  
 LSD—Lysosome Storage Disorder  
 MGIT—Mycobacteria Growth Indicator Tube  
 MOLRN—Missouri Laboratory Response Network

MSDS—Material Safety Data Sheets  
 MSPHL - Missouri State Public Health Laboratory  
 NBS—Newborn Screening  
 OSHA—Occupational Safety and Health Administration  
 PART - Post analytical reporting team  
 PCR - Polymerase Chain Reaction  
 PHEP - Public Health Emergency Preparedness  
 PPE—Personal Protection Equipment  
 QI—Quality Improvement  
 rRT-PCR - Real time, reverse transcription polymerase chain reaction  
 SARS—Severe Acute Respiratory Syndrome  
 SDS—Safety Data Sheet  
 S.C.O.P.E. - Systematically Collaborating for Overall Performance Excellence  
 SEMA—State Emergency Management Agency  
 SPHL - State Public Health Laboratory  
 TRF—Time Resolved Fluorescence  
 USDA—United States Department of Agriculture  
 USPS - United States Postal Service  
 WHO - World Health Organization



## Director's Award for Team Quality Improvement

By: Lori Buchanan, Office of Public Information DHSS

The Ebola Preparedness and Response Team is the recipient of the Director's Award for Team Quality Improvement for the 1st Quarter, 2015. In late fall of 2014, the Ebola outbreak in Western Africa was resulting in a limited number of cases of Ebola patients in various locations in the United States. As the outbreak grew, the federal, state, and local public health agencies had to adapt quickly to ensure that a patient suffering from Ebola would not potentially result in an Ebola outbreak in the U.S.

The Centers for Disease Control and Prevention (CDC) established a program whereby travelers from a country currently involved in the outbreak were identified and monitored for twenty one days following leaving the impacted country. The Bureau of Communicable Disease Control and Prevention staff collaborated with Local Public Health Agencies (LPHAs) to quickly develop, implement, and maintain this process. Critical to this is the identification of health care facilities where, if a traveler develops symptoms, they will be taken for treatment through the collaboration of the LPHA, DHSS, and the treating hospital. A small number of hospitals throughout the nation had been designated by the CDC as Ebola treatment centers. However, none of the designated hospitals were in Missouri nor was there ability to test patients for Ebola in Missouri. The Missouri State Public Health Laboratory needed to be able to provide presumptive testing of Ebola samples prior to confirmation testing at the CDC.

After a possible "near miss" Ebola patient in Eastern Missouri, Missouri had to assure the prompt and managed entry of an ill traveler into a hospital facility. The Division of Community and Public Health (DCPH) reached out to the local health departments to provide guidance and resources for monitoring exposed citizens and educating the community on the Ebola virus. The problem of a lack of an objective onsite assessment of Missouri hospital preparedness was tackled cooperatively by the Division of Regulation and Licensure (DRL) and DCPH, along with our external stake holder, the Missouri Hospital Association. While DCPH developed contractor-led infection control training for facilities, DRL leadership initiated the development of an onsite assessment team to visit hospitals with a higher-likelihood of receiving potentially-infected patients. The onsite assessment team was implemented and eventually performed cooperative visits of four hospitals at various locations around Missouri to help assure the readiness of potential receiving facilities. Additional offsite expertise was provided by the Missouri State Public Health Lab staff, the Bureau of EMS, as well as phone consultation with scientists from the CDC.



*The Ebola Preparedness and Response Team received the Director's Award for Team Quality Improvement for the 1st Quarter, 2015. Team Members from DCPH, DRL and the Laboratory are pictured.*

## Night at the Labseum

By: Mike Massman, Deputy Director

It seems lately the Missouri State Public Health Laboratory (MSPHL) has been moonlighting as a curator of museum treasures in addition to being the state's public health laboratory. The MSPHL has always valued the past by preserving unique laboratory apparatus and keeping practices of historical significance as a reminder of just how far laboratory technology has brought us. However, over the past year the MSPHL has somewhat inadvertently expanded laboratory utility to possibly add a new 12<sup>th</sup> core function of public health laboratories—guardian of cultural heritage.

In August 2014, the MSPHL was contacted by a curator from the Missouri History Museum in St. Louis ( <http://www.mohistory.org/> ) with a unique request to evaluate a collection of material that had been bequeathed to the museum from the estate of an early 20<sup>th</sup> century physician. Among the artifacts of interest to public health, the collection contained a large set of microscopic slides that were fixed and labeled with various pathogens that were common to the time period. This list included maladies, such as; Malaria, Diphtheria, and Typhoid. The museum requested that MSPHL microbiologists evaluate the slides to help ensure there was no real biohazard risk associated with storing, handling, or displaying the collection.

The collection of slides was delivered by a Missouri History Museum curator and was inventoried and signed into MSPHL possession while donning special cotton gloves. Over the next several days, expert MSPHL microbiologist, Sarah Sharr, meticulously evaluated each slide utilizing standard precautions for handling biological hazards to determine the risk of any potential biological hazard.

After completion of the study, a risk assessment was provided that basically reported that the slides lacked microbial viability and the most probable risk would be that from potential normal

hazards associated with the breakage of handling the glass slides themselves. The collection was then relinquished back to the Missouri History Museum who conveyed their sincere gratitude for conducting this unusual laboratory service and for partnering for public health *and history* in Missouri.

In July 2015, the MSPHL received a call again. This time it was from the Missouri Office of Administration. Missouri facility management officials and state archivists were about to embark on removing a



*1915 Missouri State Capitol time capsule opened in MSPHL. Image courtesy of Missouri State Office of Administration.*

time capsule that was deposited in the corner of the Missouri State Capitol in July of 1915. This group of preservationists was looking for a secure and safe location to store and eventually open the sealed container. Due to concerns with unknown potential contents of the 100-year-old chamber, the request was for a temperature-controlled, secure location that allowed for continuous negative air pressure with the availability of biological safety cabinets, and the presence and appreciation of general safety practices. What better place for this type of infrastructure than a state public health laboratory.

The time capsule was removed from the state capitol and delivered, signed over, and stored at the MSPHL until exten-

*Other promising MSPHL projects of historical significance might include: Did leaded pottery really contribute to the fall of the Roman Empire? Were the Salem witchcraft trials a result of an endophyte toxin? Who is buried in Grant's tomb?*

sive arrangements could be made to safely open, log, and preserve the contents of the 100-year-old capsule. Upon a request of the conservators, access to the capsule during the process was granted only to several key MSPHL staff members by limiting access control to the designated room (1<sup>st</sup> floor training laboratory).

After about a week of storage and planning, the time capsule was successfully opened and secured by a team of state facility management staff, archivists, and MSPHL laboratorians. The process was streamed live from the MSPHL on a State of Missouri website. News releases were issued and stories were carried by numerous media outlets throughout the state, many of which depicted MSPHL involvement in the endeavor. The contents revealed various artifacts from 1915 including; original state capitol drawings, newspapers from the day, a holy bible, and other official state documents and books. The entire process was considered

a success by all and the MSPHL was recognized for partnering once again for public health and history.

A full video of opening the time capsule at the MSPHL and a story are located at: <http://www.mo.gov/timecapsule>. If these types of moonlighting activities continue at the MSPHL, a case could be made for adding a 12<sup>th</sup> core function of public health laboratories for providing support for projects of historical significance. A public health laboratory is indeed a place where on any given day or night science comes to life.



*Missouri state archivists prepare 1915 time capsule contents at the MSPHL for further preservation. Image courtesy of Missouri State Office of Administration.*

## EB Staff Tackles New Role in NARMS Grant

By: Leon Luebbering, Environmental Bacteriology

In 2012 the Environmental Bacteriology (EB) Unit became a member of the National Antimicrobial Resistance Monitoring System (NARMS) grant project. This project is a collaboration between CDC, FDA and USDA and thirteen state public health laboratories such as ours. It is a national public health surveillance program that monitors the susceptibility of enteric bacteria to antimicrobial agents of medical importance in order to help assess the impact of veterinary antimicrobial use on human health. In the past DHSS Environmental Health Specialists were tasked with the responsibility of collecting the samples and submitting to the EB MSPHL. This has recently changed with the grant requirements of doubling the amount of samples collected and tested. The huge increase in collection samples has led the EB staff into a new role as food sample collectors. Twice a month EB staff visit at least five stores and collect 40 fresh retail meat samples (ground beef, ground turkey, chicken and pork chops) from grocers in a 1 hour radius around the Jefferson City area. These samples are submitted to the EB Unit for testing for *Salmonella* and *Campylobacter*. Isolates are sent to the Center for Veterinary Medicine near Washington D.C. for antibiotic resistance testing. By monitoring the antibiotic resistance of pathogens that are in the food chain, the FDA and USDA will be able to make decisions related to the approval of safe and effective antimicrobial drugs for animals.



## Generations in the Laboratory

By: Mary T. Menges, Assistant Director

A phenomenon has occurred in workplaces around the world over the last decade and the MSPHL is no exception. Three distinct generations are working side by side in the workforce. For each generation there are particular experiences, expectations, beliefs and work styles. Understanding the uniqueness and gifts that these generational differences bring to the Laboratory allows our organization to benefit in the richness that each generation has to offer. These generations are commonly referred to as Baby Boomers, Generation X and Generation Y. An enormous amount of research has been compiled regarding each of these generations and the impact they have had or will have on the economy, society and the workplace. Just for fun, let us look at how some researchers describe each generation. Following is just the tip of the iceberg of the many articles written on each of these generations.

The Baby Boomers, those born between the years 1946 – 1964, have dominated the workplace for years. The Boomers have had a hold on the lion's share of the consumer market for decades. Arising out of the post-World War II era, Boomers expected the best out of life. As one author described it, Boomers were profoundly affected by the Vietnam War, civil rights riots, Kennedy and King assassinations, Watergate, the sexual revolution and Woodstock.

Characteristics ascribed to this generation are optimism, team orientation, disapproval of absolutes and structure, personal growth, health and wellness, and personal gratification. They have been seen as holding the positions of authority and management in most organizations. However, as they approach retirement age Boomers have been leaving the established workforce and moving into “encore” careers, leaving a huge

void in the traditional management structure to be filled by Generation X.

Generation X, those born between 1965 – 1980, are quickly filling the workplace void left by the exiting (retiring) Boomers. Gen X –ers, as they are sometimes referred, grew up with rapid change, societal, family and financial insecurity and great diversity. This generation grew up in homes where both parents worked, or due to the increased divorce rate, had only one parent. One term used to describe this generation was “latch-key” kids. They value a stable family and crave mentors. In his work on studying Generation X, G. O'Bannon commented that Gen X-ers are accustomed to receiving immediate feedback from their personal computers and video games and are influenced by AIDS, MTV and worldwide competition. In their work on generational differences, Karen Smola and Charlotte Sutton point out that Gen X-ers “bring to the workplace well-honed, practical approaches to problem solving. They are technically competent and very comfortable with diversity, change, multi-tasking and competition. Because they are the most diverse generation in American history, they believe similarities, rather than differences, should be emphasized.” Generation X wants higher salaries and flexible work arrangements. Characteristics ascribed to this generation are positive attitude, impatience, goal orientated, multi-tasking, self-reliance, flexible hours, informal work environment, “just a job” attitude, and techno-literate. Generation X is sandwiched in between the Boomers and the next BIG generation.

Generation Y, also referred to as the Millennials, is an enormously powerful group by sheer numbers. The Y generation, born between 1981 – 2000, is said to have the ability to transform and impact every life stage it enters. This generation was raised by parents who nurtured and supported their activities. Everyone got a medal; and family safety and security was valued. Generation Y was raised in a consumer economy and expect employers to accommodate their consumer expectations.

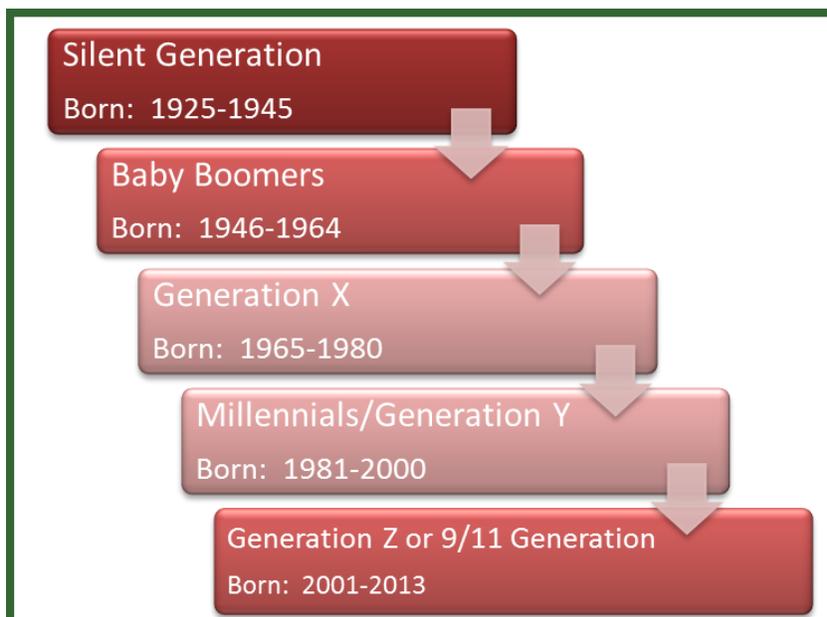
*Gen X-ers are currently the largest group in the MSPHL at 43 %. But coming up fast and furious in numbers are the Millennials (Gen Y) at 40%.*

“They don’t necessarily see that they should get more, but that an employer should give more to their employees.” Since Generation Y was brought up by an empowering parenting style, they are not afraid to express their opinion. This was the first generation to grow up with computers. The internet, cell phones, texting, instant messaging, blogs and multi player games are integral in their lives. Characteristics ascribed to this generation are confidence, sociability, morality, collective action, tenacity, technological savvy, multitasking, and need flexibility.

So this is what the generation gurus are telling us about our

generations. Now how does the MSPHL compare in numbers for each generational category? Baby Boomers make up 17% of the Laboratory employees. Gen X-ers are currently the largest group at 43%. But coming up fast and furious in numbers are the Millennials (Gen Y) at 40%. Much has been made of the generational differences in the workplace. However, the reality is that all three must work together to achieve the common goal of promoting, protecting and partnering for health by delivering quality public health laboratory services. Of interest is how the laboratory generations break out compared to the Department as a whole. Within DHSS permanent employees Baby Boomers represent 42%, Generation X makes up 42% and Generation Y totals 16%. Quite a different picture than the Laboratory!

Sure, we all laugh and joke about some Boomers avoidance of technology, Gen X-ers changing jobs on a regular schedule or the Gen Y impatience for advancement after they complete a task. But it all comes down to appreciating, understanding and supporting fellow colleagues no matter what decade they were born. And that is exactly what our Laboratory does best! We support each other and provide an environment to accomplish our valuable work. So the next time you have to explain to a Boomer how to use a smart phone, tell a Gen X-er to focus or explain patiently to a Gen Y-er that they are not eligible YET to be the Laboratory Director remember, it is this diversity that makes this laboratory a fun and joyful place to work!



## MSPHL Undergoes Re-organization

The MSPHL has gone through a small re-organization. Now that Laura Naught has become the MSPHL CLIA Director, she was previously the MSPHL Quality Systems officer, she will now oversee all of the clinical laboratory units while maintaining her Quality Systems duties. Mike Massman, Deputy Director will continue to directly oversee the Environmental Bacteriology and Breath Alcohol Units and will now directly oversee the CLIA Director and the LIMS Administrator.



## Chemistry and Environmental Bacteriology Units Increase FERN Grant Responsibilities

By: Alan Schaffer, Chemistry Unit Chief

During the spring of 2015, the Food Emergency Response Network (FERN) division of the United States Department of Agriculture's (USDA) Food Safety and Inspection Service (FSIS) was seeking to award up to 20 cooperative agreements targeting state, local, and tribal FERN labs to continue its program of providing capacity and capability for food threat and safety testing. The agreements will enhance the labs ability to analyze for microbiological, radiological and chemical threat agents utilizing FERN and other methods to improve laboratory capacities for food defense assignments and outbreak response. All cooperative agreements are on a one year funding cycle; however, USDA expected to renew the awards of successful laboratories, without competition, for a total of 5 years of funding contingent on continued Agency funding of the program. The Environmental Bacteriology and Chemistry Units had been funded for the previous five year cycle of the cooperative agreement program.

This cooperative agreement was highly competitive and the selection of laboratories for the program, as well as actual funding for each lab selected, was based on an evaluation of that laboratory's specific proposal, past performance in the program (if applicable), and other relevant criteria (geographical considerations, testing capability, testing capacity, laboratory accreditation, etc.). Furthermore, the program differed from previous years by increasing funding at laboratories that met the highest qualifications (Level 1/primary) while providing lesser funding to several other laboratories (Level 2/surge) to support continued testing and maintenance of capacity and capability. The Missouri State Public Health Laboratory (MSPHL) decided to submit a proposal for a Level 1 laboratory. During the previous grant cycle, the MSPHL had increased its capacities and capabilities to meet the qualifications for a Level 1 Laboratory. These new qualifications included:

- Ability to perform screening assays/FERN methods for microbiology food defense analytes.
- Ability to perform screening assays/FERN chemistry methods for chemical food defense analytes.
- Ability to perform screening assays/FERN radiochemistry methods for radiological food defense analytes.
- Select Agent Registration (SAR) preferred; if not SAR then MOU for cannot rule out with transfer protocol in place to SAR facility and/or LRN site.
- Current Biosafety Level 3 capable laboratory preferred.
- Ability to perform and participate in the FERN Triage Protocol
- Accredited to ISO 17025 or completion within 5 years preferred.
- Travel to Annual FSIS FERN CAP meeting for one person from each discipline and an administrative/management representative.



*Julie Buckley, Chemistry, performs analysis during a metals in food testing performed on the ICP-MS.*

- Level I Labs will be FERN Approved and apply for participation in at least two of the three disciplines (microbiology, chemistry, radiochemistry); all three disciplines was preferred.
- Lab has proper facilities to work with stated agents and agrees to accept unknown samples for testing.
- Participate in all FERN proficiency tests in each discipline.
- Participate in appropriate FERN training courses.
- Surveillance of samples for food defense targets. Surveillance activities will consist of regular, on-going testing of FSIS commodities from retail for food defense analytes with reporting of the results through the FERN website. The goal for each laboratory is to provide results from the testing of 250 samples per year.

**During the summer of 2015, the MSPHL was selected as a Level I FSIS FERN Laboratory. These projects include:**

- **Chemistry and Radiochemistry surveillance project**  
Surveillance of FSIS commodities obtained at retail. Ten samples will be tested monthly for food defense analytes. Every sample will be tested using two Food Emergency Response Network (FERN) chemistry methods and one FERN radiochemistry method.
- **Chemistry and Radiochemistry capacity and capability maintenance, enhancement, and expansion project**  
Maintain, expand and enhance our capacity and capability to test for food defense analytes.
- **Chemistry and Radiochemistry enhancement of Gas Chromatography/Mass Spectrometer assay project**  
The purpose of this project is to enhance the FERN's ability to respond to food-related emergencies by developing a hybrid method which contains the strengths of both FDA FERN CHE0006.00 and USDA CLG-TOXI.
- **Microbiology surveillance project**  
Surveillance of FSIS commodities obtained at retail. Every sample will be tested for at least one microbiology food defense analyte using a Food Emergency Response Network's (FERN) screening method for a total of at least 125 food samples in the grant year.
- **Microbiology capacity and capability maintenance, enhancement, and expansion project**  
Participate in FERN capacity and capability exercises, FERN training courses and maintain inventory of laboratory supplies and reagent essential for emergency preparedness and readiness response for food-related disease outbreaks.
- **Food Microbiology Proficiency Testing Project**  
The MSPHL will provide 50 CAP labs with a PT sample. We will prepare and ship samples of a USDA food commodity spiked with a food defense target and summarize the results.



*A gamma instrument with detector (insert) used for gamma in food testing.*

## The Genetic Screening Processor (GSP) for Newborn Screening

By: Darla Eiken, Newborn Screening

In 2007 the Missouri Newborn Screening (NBS) Laboratory was approached and interviewed by Perkin Elmer Life Sciences about participating in FDA trials for a new instrument called the Genetic Screening Processor, or GSP for short. Perkin Elmer's intent was to compare data for cystic fibrosis, congenital hypothyroidism, galactosemia and congenital adrenal hyperplasia that are run on the GSP to data from the then current Perkin Elmer platforms, which were called AutoDelfias. These comparisons, if successful, would eventually allow Perkin Elmer to obtain FDA clearance and subsequently market this new state-of-the-art equipment and the corresponding reagent test kits to all newborn screening sites in the U.S., while at the same time benefiting the NBS laboratory with consolidating testing instruments and freeing up space needed for future expansion.

The opportunity to evaluate this new generation instrument allowed the MSPHL to see for itself how well it performed and provide first hand feedback to Perkin Elmer on what improvements could be made. In addition, it allowed Missouri to be on the cutting edge by being the first to use a system that improves the efficiency, accuracy and speed of testing newborns for several disorders. Some of the AutoDelfia platforms had been in use for over 10 years. The software had become outdated and replacement parts were becoming more difficult to obtain. Maintaining these older instruments was becoming a challenge.



*One of the GSP instruments in the Newborn Screening Unit at the MSPHL.*

In 2008, Perkin Elmer Life Sciences made their decision and the MSPHL NBS laboratory was one of two sites in the United States chosen to perform their FDA trials/beta testing. These five FDA trials occurred between 2008 and 2010. By the end of 2010, all FDA submissions by Perkin Elmer had been approved and were ready to be marketed throughout the United States.

The GSP is a fully automated, high throughput batch analyzer for 96-well microtitration plates. It is intended for quantitative or qualitative in-vitro diagnostic measurements of genetic screening disorders in both neonatal and high throughput screening laboratories. The instrument is controlled from the User Interface, which is a touchscreen. The GSP instrument provides the ability to perform analysis of several analytes on one instrument platform that had previously required the NBS laboratory to use three different analytic platforms for testing.

The GSP provided numerous advantages over the former platforms, such as:

- Improved and advanced technology
- Allowed consolidation of some testing platforms freeing up space for other technologies
- Provides faster turnaround for results than former platforms
- Requires less hands-on time for technologists
- Continuous loading of samples throughout the day for more flexibility in the daily routine
- Utilizes Windows based software
- Enhanced quality control software with many superior features

- Onboard temperature controlled reagent storage compartments
- Bar-coding of all materials to improve traceability and ease of use with plates, reagents and data.

In 2009 the Newborn Screening Endocrine Laboratory team (Bonnie Ricks, Rachel Hardy, Lacey Vermette, Amy Hagenhoff, and Darla Eiken) became the recipients of the Director's Award for Meritorious Team Effort, for the third quarter. This was due to their extraordinary effort as a result of a perfect storm of need and opportunity. The need was to upgrade and consolidate testing instruments. The opportunity resulted from MSPHL being selected as one of the two states to evaluate a state-of-the-art instrument system for newborn screening. The NBS laboratory now has three GSP platforms to conduct screening for cystic fibrosis, congenital hypothyroidism, galactosemia and congenital adrenal hyperplasia. Biotinidase deficiency screening will be converted from a manual fluorometric method to the GSP in late summer of 2015, freeing up more space and changing the Biotinidase test from a 2-day test to a same-day test.



*Amy Hagenhoff loading samples to the GSP in the Newborn Screening Unit.*

## MSPHL Attains Publication in The Journal of Pediatrics

By: Patrick Hopkins, Newborn Screening Unit Chief

The story of Missouri's pioneering success with implementing newborn screening for Lysosomal Storage Disorders (LSDs), entitled, "**Lysosomal Storage Disorder Screening Implementation: Findings from the First Six Months of Full Population Pilot Testing in Missouri**", was published in The Journal of Pediatrics (JoP) in January of this year. The JoP is a highly distinguished journal where ultimately only ten percent of submitted manuscripts get selected for publication. The article has six co-authors, three from the NBS laboratory and three from the NBS follow-up program. The article primarily describes results from the new and unique screening assay the MSPHL chose to utilize, our algorithm for referring high risk newborns, and the outstanding results and success that we experienced in pioneering this state-of-the-art testing method, particularly for these diseases which had never before been screened for and treated in the full general population. One of the remarkable findings was that the incidence of some of the LSDs being screened was significantly higher than what had been previously published and recognized. This is not unusual for disorders that have not been screened before in the full newborn population, as some disorders are undiagnosed or under-diagnosed based on available morbidity and mortality data.

By publicizing our LSD pilot testing experience, Missouri not only gains recognition for its successful efforts, but other states that are considering adding LSD screening to their panels can be more informed about this additional testing method option that has now become available. It also provides for citation of the method in the Clinical and Laboratory Standards Institute (CLSI) guidelines that laboratories frequently depend upon.



The article can be found at [http://www.jpeds.com/article/S0022-3476\(14](http://www.jpeds.com/article/S0022-3476(14)

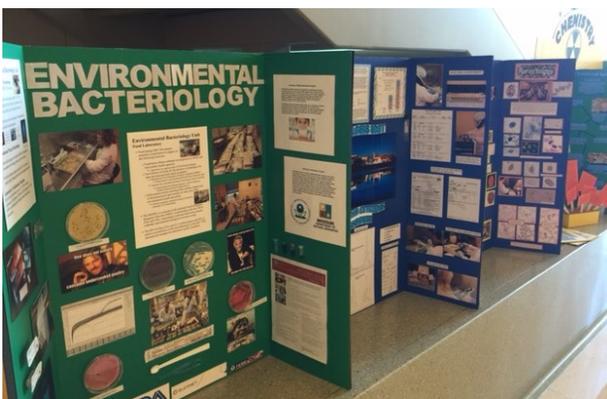
## SCOPE Initiative Team Feature Process Management Team

By: Steve Gladbach, Microbiology Unit Chief

The Process Management Team's (PMT) purpose is to promote an organizational focus for all employees and reduce the "Silo Effect". Organizational focus is a view of your job and responsibilities from the standpoint of an essential member of the MSPHL or an even larger organizational focus from the departmental level. The "Silo Effect" is the effect of coming in every single day and doing your job and doing it well, but only understanding or caring about that job and those immediately around you; those in your unit, for example. The PMT provides opportunities for the employees of the MSPHL to get a sense of belonging to the whole laboratory as an organization, not just as a member of a specific unit in that organization. In turn, this promotes an organizational focus for all employees; increases MSPHL camaraderie; and reduces the "silo effect".

In 2015 the PMT continued many existing programs such as the New Employee E-mail Announcement and Organizational Photo Chart update; the Job Shadow Program; and MSPHL week. The PMT also brought back Unit weeks. New this year, the PMT took over the themed and holiday activities. The PMT also started a semiannual "Friends and Family Lab Tour" and the Unit Story Board contest.

The **New Employee Announcement** ensures new employees are announced via e-mail including a picture. In addition, there is an organizational chart with everyone's names and pictures that is maintained on the network I drive as well as in the break room for all to see. This does well to increase awareness of fellow employees.



*Unit story boards created by units. Not only was it a friendly competition but they aid units in providing visuals for tours and other laboratory events.*

Specific **Unit Weeks** and **Tours** are occurring for the second time (they were first held in 2012). The idea is to spotlight a unit for an entire week and take the time to get to know what they do, who they are and what role they play in the overall MSPHL process. The week is designed by the unit and always includes several opportunities throughout the week for people to take a tour of the unit. Many also include interesting facts about the unit, games, prizes, employee biographies, etc. So far they have all been very entertaining and quite informative.

This year PMT took over the organization of the seasonal functions (most of which already existed) such as March 17, May 5, July 4<sup>th</sup>, Labor Day, Halloween, Thanksgiving, and Christmas snack days. The fellowship created by participation in these functions fit well into the PMT's goal so when there was a need for someone to take it over, it was logical that the PMT be the ones. The PMT goal is to try and have at least one function per quarter.

The **Family Lab Tour** days *technically* started in 2014 (Dec 30) however, there was a second one in July. Family members over the age of 17 were invited to sign up and get a tour of the facility and see what is done here. The second of those two semiannual affairs brought the **Story Board Competition** project. Each individual unit made a story board synopsis of the functions of their unit to be used for special occasions and tours so that outsiders could get a first-hand glance created by the employees of the unit. Family members who took the tour as well as a couple of people from the Office of Public Information judged the boards and voted for the one they thought was the most creative and the one that had the best



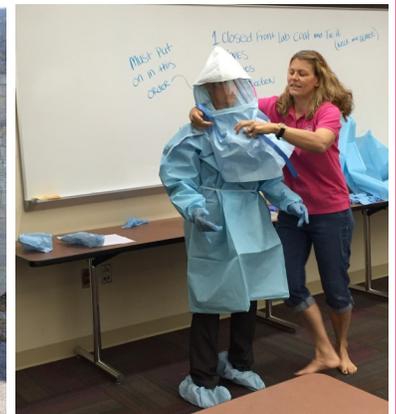
information.

There is also **MSPHL week**, a favorite of the members of the PMT. Again, this year MSPHL week started with a BBQ and lawn games. Additionally, there was live music, performed by *Lucky* (Matt Renner and Steve Gladbach of the Microbiology Unit). The week also had some friendly competitions with a PPE relay race and the ever popular Lab Coat Fashion show. All had lots of fun watching and participating in those competitions. The week always wraps up with an ice cream social and baked good give-a-ways and a movie. A good time was had by all! Hopefully, the MSPHL was made a little 'smaller' too!



*The Process Management Team from L-R, Jessica Connell, Sandy Jones, Steve Gladbach, Pat Olson and Monica Beddo. Not pictured, Dianne Veasman.*

### 2015 MSPHL Laboratory Week Activities September 14th –18th



## Employee Spotlight: Leon Luebbering

By: Mike Massman, Deputy Director

When *spotlight* and *Leon Luebbering* are mentioned in the same news headline one might think that it could be regarding some recent hunting adventure that went awry. However, that is not the case in this instance, as this is indeed a spotlight on Leon himself.

Leon Luebbering is a Laboratory Manager in the MSPHL Environmental Bacteriology (EB) Unit. Leon has been a fixture in the EB Unit for more than 22 years. He began his career as an Associate Public Health Laboratory Scientist in 1993 when he concentrated his efforts on drinking water and milk testing for microbiological contaminants in the EB Unit. During his career Leon has moved to a Senior Public Health Laboratory Scientist and currently serves the role of Assistant EB Unit Manager. Throughout his career, Leon has experienced many changes in methodology and weathered numerous significant outbreaks.

Leon has helped to lead the EB Unit into many new areas of testing methodologies and technological advancements.

This is especially true of the food testing expansions in the EB Unit over the years. Around the turn of the century, a gap was identified in emergency laboratory food testing capabilities in Missouri. Through becoming a member of the Food Emergency Response Network (FERN) in 2004, the EB Unit has advanced to become a designated Level I FERN testing laboratory this year. These advancements in emergency food testing expansion have also led to new routine food programs in EB such as multiple programs for monthly surveillance of food products for microbial contaminants and surveillance of food products for antibiotic resistance bacteria. Due to these expansions, Leon and the EB Unit are currently working through a federal program to become ISO 17025 accredited for their food testing programs.

Leon is also authorized by the FDA and Missouri Milk Board to function as Missouri's Milk Laboratory Evaluation Officer. This means that Leon travels to 30 milk laboratory production facilities around the state biennially to certify operations per FDA certification criteria. Leon has the responsibility to ensure that all criteria are met by these milk production operations--some with as many as 2000 employees. The unique aspect about this responsibility is that Leon is the only MSPHL scientist that can be authorized to conduct this certification because evaluation officers must have been proficient in the milk testing methodology prior to becoming authorized. Since milk testing at the MSPHL was phased out around 2004, Leon is the only person at the MSPHL remaining to provide this service for Missouri. In order to qualify additional scientists, the MSPHL would have to employ someone that has been proficient in the testing previously or send staff to another collaborative laboratory for several months to become proficient in the numerous methodologies. It is without a doubt that milk certification is a huge responsibility for Leon. Leon also maintains authorization as an EPA Laboratory Certification Officer in a similar drinking water laboratory evaluation program in which he functions as backup.

Leon has conducted numerous types of testing through the years for outbreaks of local and national significance. These include: numerous water testing responses due to water line breaks and



*Leon Luebbering testing food samples for Listeria as a part of a national candy apple outbreak, Christmas Day 2014.*

floods in the state—including the Floods of '93 and '95; E. coli in spinach; Salmonella in peanut butter, tomatoes, peppers, sausage, cereal, and African frogs; STEC in cheese; and recently, Listeria in candy apples on Christmas Day—of which he received a special commendation from the FDA. Leon has also worked closely with Saint Louis University to be the co-author of a study for an E. coli O157:H7 outbreak in deer sausage that was published in the Journal of Pediatrics. [http://www.jpeds.com/article/S0022-3476\(09\)00210-8/pdf](http://www.jpeds.com/article/S0022-3476(09)00210-8/pdf)

It is no coincidence that these programs and expansions in the food testing areas at the MSPHL have occurred during Leon's tenure in the EB Unit. Leon is a graduate of the University of Missouri with a degree in Food Science. Additionally, Leon was born, raised, and continues to reside, on a family dairy farm in St. Thomas, Missouri. Leon is married to Karen and has three children: Ethan 10, Noah 9, and Carmen 3 all of whom help together to raise crops, chickens, and support the Luebbering dairy farm. Leon is active in his local parish, school, youth sports and the Knights of Columbus. With the correlation to his education and close connection to his family experience and upbringing in the dairy industry, it is easy to see that it has prepared Leon to have the expertise and passion for his work at the MSPHL.

One of Leon's other passions is the outdoors. He is successful and an experienced authority in hunting and fishing of all types and is an advocate for wildlife preservation and conservation. A spotlight would only ever truly be in the face of Leon himself for the substantial impact he has made on the MSPHL during his 22 year career.



*Leon Luebbering with bull elk after a successful hunt in Colorado.*

## Ralph Horne Retires

Ralph Horne, the Virology Unit Chief retired on June 30th, 2015 after 32 years serving the Missouri State Public Health Laboratory. He began his career at the



*One of Ralph's award winning photos.*

laboratory as a Microbiologist I and became the Unit Chief in 2003. He had a passion for his job and was extremely knowledgeable. He was even known to wear a skunk costume when talking about rabies testing at trainings for local public health agencies. He is an avid photographer and even had a gallery showing of his work since retiring. We wish Ralph all the best in his future endeavors. Enjoy retirement!



## Lab Blab



### Staff happenings in the Laboratory

#### New Employees

**Monica Beddo**—Molecular, **Josh Berry**—Environmental Bacteriology, **Heather Bilyeu**—Newborn Screening, **Harrison Boyer**—Virology; **Brigid Cepauskas**—Microbiology; **Morghan Cuno**—PART, **Kent Cordray**—PART, **Holly Evers**—Central Services, **Matthew Fox**—Newborn Screening, **Susan Gaw**—Administration; **Alice Hartley**—Newborn screening, **Alexa Huebotter**—Chemistry; **Lindsey Jaegers**—Fiscal; **Sarah Jameson**—PART, **Cody Joens**—PART, **Ashley Keely**—

#### Promotions

**Keith Bock**—Laboratory Manager Newborn Screening, **Josh Featherston**—Laboratory Manager Molecular, **April Gallatin**—SOSA, Central Services, **Brian Matheny**—SOSA, PART, **Debra Meyers**—SOSA Administration; **Laura Naught**—CLIA Director, Administration **Randy Schillers**—Virology Unit Chief, **Amber Smith**—PHLS Chemistry, **Paige Welschmeyer**—Senior Scientist Newborn Screening, and **Amanda Williams**—SOSA, PART.

#### Conferences & Trainings

**Amber Smith** attended the FERN Training GCMS Course Minneapolis, MN  
**Fran Thompson** attended DA/FERN Gamma Spectrometry Winchester, MA  
**Mindy Rustemeyer, Steve Gladbach** and **Jessie Bauer** all attended the LRN National meeting in Atlanta, GA  
**Steve Gladbach, Leon Luebbering** and **Russ Drury** attended the APHL annual meeting in Indianapolis in May  
**Sarah Sharr** attended the SWACM (Southwestern Association of Clinical Microbiology) annual meeting in Shreveport, LA  
**Randy Schillers** attended the Influenza Virologic Surveillance Right Size Regional Workshop in Atlanta, GA  
**Josh Featherston** attended the LRN/BT Rapid Methods training course in Coralville, IA  
**Jesse Meller** attended the Illumina User Group Meeting in Chicago, IL  
**Brian Inman, Jackie Pfenenger** and **Amy Pierce** attended the Dangerous Goods Symposium for Instructors and Practitioners in St. Louis, Missouri.  
**Russ Drury** and **Amy Pierce** attended the ABSA International Annual Biological Safety Conference in Providence, RI

#### Other News

**Nicole Ayres**—attended New Examiner Orientation, Examiner Preparation and Senior Examiner Training for the Excellence in Missouri Foundation. She was the lead on a site visit for the Missouri Quality Award process.



**Monica Beddo (R)**, Molecular Unit, helped represent the Department of Health and Human Services (DHSS) as a laboratory representative at the Missouri State Fair in Sedalia, MO.

## Introducing Lab Employee of the Quarters

By: Roy Tu'ua, TB Unit Chief and S.C.O.P.E. Workforce Team Leader

### Quarter III Jessie Bauer, Molecular

It is befitting that Jessica Bauer was selected as laboratory EOQ for the third quarter in 2015 simply because she was also the recipient of the Department of Health and Senior Services Employee of the Month in 2014.

Jessica was nominated for her take charge attitude prior to becoming the Unit Chief of the Molecular Unit. Jessica has been instrumental in training employees in different areas of viral PCR testing during the same time when

new diseases such as Influenza H7N9, H3N2v, MERS-CoV, Chikungunya virus and more recently Ebola were emerging. Jessica developed the written protocols to identify these new diseases with little guidance from CDC, validated the test procedure, secured reagent contracts, provided competency assessments for employees after testing were validated and provided consultation to clients on how samples are submitted for optimal

results; all this with an unwavering quality of service to both internal and external partners.

Jessica is an epitome of employees working here at MSPHL. Dedicated, hardworking and always placing the well-being of Missouri citizens before their own whenever possible and with a positive and willing attitude.

Again, it is our pleasure to congratulate **JESSICA BAUER** for her outstanding service and commitment to excellence.



Congratulations Jessie!



### Quarter IV Tracy Klug, Newborn Screening

Tracy Klug was selected for her exemplary work in pioneering the validation and implementation process of screening newborns for Lysosomal Storage Disorders (LSD) at MSPHL. The new Missouri statute required the MSPHL to add five LSDs to the current testing panel of screening disorders (Krabbe, Pompe, Gaucher, Fabry, and Niemann-Pick). The statute also came with a very demanding timeline during a time with a highly strained State fiscal climate. Tracy began undertaking this by adopting a completely new and unproven, but promising new technology called Digital Microfluidics (DMF). The new technology allowed the MSPHL to

overcome the cost, time constraint and laboratory space required for the only alternative test method available, tandem mass spectrometry.

The full population validation process spanned over 2 ½ years detecting over 80 newborns with LSD conditions. Tracy's efforts were key in providing the MSPHL national recognition and resulted in Tracy co-authoring a publication in the Journal of Pediatrics. The MSPHL Newborn Screening Unit went live August 3, 2015 with screening and reporting of four LSDs on all newborns in Missouri.

In addition to validating the LSDs using the DMF method, Tracy was also dealt the very challenging task of

validating and piloting a new fluorometric test method for Krabbe Disease, making the MSPHL the first laboratory in the world to successfully use this screening method also. On April 1, 2015, Tracy began Missouri's full population pilot screening for Krabbe disease, running it parallel with New York for four months. On July 30, 2015, Missouri discontinued sending samples to New York for Krabbe testing and went solo with full population Krabbe testing for Missouri.

Again please join us in congratulating **TRACY KLUG** for her outstanding service and commitment to excellence.



Congratulations Tracy!!

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## Around Jefferson City, MO Downtown High Street



The holidays are my favorite time of year and Jefferson City is the perfect place to get you in the Christmas spirit. Not only is its beautiful downtown strung with white Christmas lights but there is a great Christmas parade, the Mayor’s Christmas tree, Living Windows and a visit to Santa, not to mention all the unique gifts you can pick up for your loved ones.

“The Beautiful Downtown Jefferson City, Missouri provides a central gathering place for entertainment, civic life and commerce and truly is the heart of our #JC MO community. The unique combination of preservation of history and place, progressive attitudes and local entrepreneurship, make Downtown Jefferson City a great place to see, shop, dine, drink, learn and LOVE.” (<http://www.downtownjeffersoncity.com>)

While we might seem like a smaller town, in 2013 Jefferson City was named the “Most Beautiful Small Town” by Rand McNally’s 2013 Best of the Road contest. Check out wonderful video highlighting our wonderful town.

[https://www.youtube.com/watch?feature=player\\_embedded&v=liTrMdQPFi4](https://www.youtube.com/watch?feature=player_embedded&v=liTrMdQPFi4)



MSPHL Staff go Blue  
to Celebrate The  
Kansas City Royals  
Winning the  
MLB World Series

