

# WSLH 2015 Annual Report

July 1, 2014-June 30, 2015



Wisconsin State  
Laboratory of Hygiene  
UNIVERSITY OF WISCONSIN-MADISON



# Wisconsin State Laboratory of Hygiene

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The Wisconsin State Laboratory of Hygiene (WSLH) has contributed to the enhancement of public health in Wisconsin ever since the laboratory was established at the University of Wisconsin in 1903.

For more than 112 years, the WSLH has fulfilled our statutory mission to support publicly funded programs within the Department of Health Services and the Department of Natural Resources.



The long history of the WSLH is filled with the application of basic laboratory sciences such as chemistry, microbiology, cytology and genetics. The former directors of the laboratory and the exceptional laboratory staff have kept the laboratory focused on public health while continually developing and evaluating new analytical methods in all areas of the laboratory.

The success of the laboratory can be attributed to the placement of the WSLH at the University of Wisconsin, where staff have been encouraged to collaborate with others both on and off campus, and to become involved in research, teaching and the development of future laboratory scientists.

This annual report highlights many areas where the WSLH staff has touched the lives of people in Wisconsin and around the world. The successful fulfillment of our mission would not have been possible without the ongoing support of the legislature, the WSLH Board, the University of Wisconsin, and the numerous partnerships and collaborations that have been established.

Every day is another opportunity to take the “Wisconsin Idea” to the borders of our state and beyond.

Charles Brokopp, DrPH  
*Director*

# Mapping the Future

With technology and healthcare both changing at an amazing pace, the path to ongoing success for a multifaceted reference laboratory like the WSLH can be murky.

This year a new flexible three-year (2015–2017) strategic map was implemented to provide direction and advance the mission and vision of the WSLH.

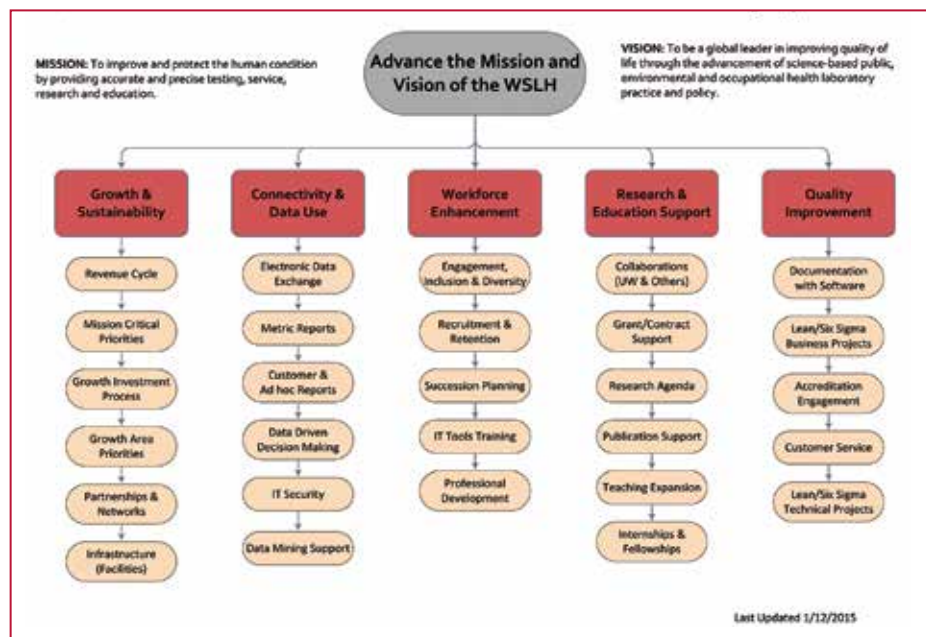
Strategy sessions were held with staff, supervisors, management and the WSLH board to develop and prioritize five map categories and 28 map objectives where more focus was needed. Staff workgroups were formed for each objective to be addressed in 2015–2016 in order to define action items, outcomes, timelines and metrics:

- **Growth & Sustainability:** Develop a tracking tool to aid in prioritizing mission critical and non-critical activities, and updating policies for making future investment decisions. Undergo an administrative process review of our new billing system and revenue cycle processes.
- **Connectivity & Data Use:** Expand recruitment and implementation of electronic data exchanges with customers. Expand upon laboratory

metrics to include business metrics and graphical trending. Implement a workgroup to organize, coordinate and provide training on newer query systems to provide ad hoc business reports that guide more data-driven decisions.

- **Workforce Enhancement:** Promote recruitment and retention strategies by increasing staff recognition and coaching/mentoring opportunities. Promote staff engagement, inclusion and diversity (EID) by increasing transparency and staff interaction to include a staff community calendar, more documented training opportunities for staff and supervisors, standardized performance coaching and evaluation, an internal photo directory, standardized staff meeting formats and an online suggestion box.

- **Research & Education Support:** Increase collaborations on and off campus by redefining our research agenda, promoting interactions among internal and external researchers, holding clinical and environmental summer science day presentations and updating our online Research Support Center.
- **Quality Improvement:** Implement a new documentation control system for standard operating procedures (SOPs), procedures and policies, performance evaluations, equipment inventory and training documentation. Prioritize business projects for Lean Six Sigma type process reviews, and implement a review of our billing and revenue processes. Provide presentations to non-laboratory support staff on accreditation practices and reviews as a holistic approach to quality practice.





# Ebola, MERS and Avian Flu – Global Diseases and Wisconsin

## The WSLH's Role in Biosafety and Biosecurity at UW–Madison

WSLH scientists play an active role in biosafety and biosecurity at the University of Wisconsin–Madison.

WSLH Communicable Disease Division Director Peter Shult, PhD, is a member of the UW–Madison Institutional Biosafety Committee and Deputy Director David Warshauer, PhD, is a member of the UW–Madison Select Agent Program Biosecurity Taskforce.

The WSLH also serves as the central receiving laboratory for select agent pathogens sent for use by other laboratories on campus.



**T**he last year has shown that infectious diseases don't care about borders and we in Wisconsin know that we can be affected by viruses circulating half a world away.

When news of an Ebola outbreak in West Africa started making headlines in spring 2014, the deadly virus still seemed like a distant reality. But after a traveler from Liberia showed up sick in a Dallas, Texas emergency room in September, that distance shrunk to right next door.

The traveler became the first person to die from Ebola in the United States. And the preparation and response work being done by the public health and healthcare systems both in Wisconsin and nationally became even more urgent.

Scientists in the WSLH Communicable Disease Division became certified to perform an Ebola test on patient specimens. Working with partners at the Wisconsin Department of Health Services, local health departments and

hospitals, the WSLH performed Ebola testing for monitored travelers (none were positive) and worked with hospital laboratories to ensure they were prepared to safely test specimens from suspected and confirmed Ebola patients.

As of January 2016, more than 11,000 people in West Africa died of Ebola as the outbreak slowly comes to an end in the affected countries.

While Ebola may have been the highest profile infectious disease, the WSLH also performed testing for ill patients who had traveled overseas to areas where Middle East Respiratory Syndrome (MERS) is circulating. And when a strain of avian influenza decimated poultry flocks in Wisconsin, the WSLH provided testing for ill poultry plant and farm workers exposed to the sick birds. (All MERS and avian flu tests for humans were negative).

Helping keep Wisconsinites safe and healthy in a global infectious disease world is one of the WSLH's core missions.

# Building a Better Flu Vaccine through Whole Genome Sequencing

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As the 2014–2015 flu season showed, determining exactly which strains of influenza virus to include in the annual flu vaccine can be tricky. And with influenza's high infection and death rate and its ability to mutate, these decisions can be life or death.

Genetic characterization of influenza viruses is important both for monitoring genetic drift (how the virus may be changing) and for selecting the virus strains to include in influenza vaccines. Next Generation whole genome sequencing (WGS) in state public health laboratories could potentially shave months off the process, which could go a long way in ensuring earlier virus characterization and improving vaccine effectiveness.

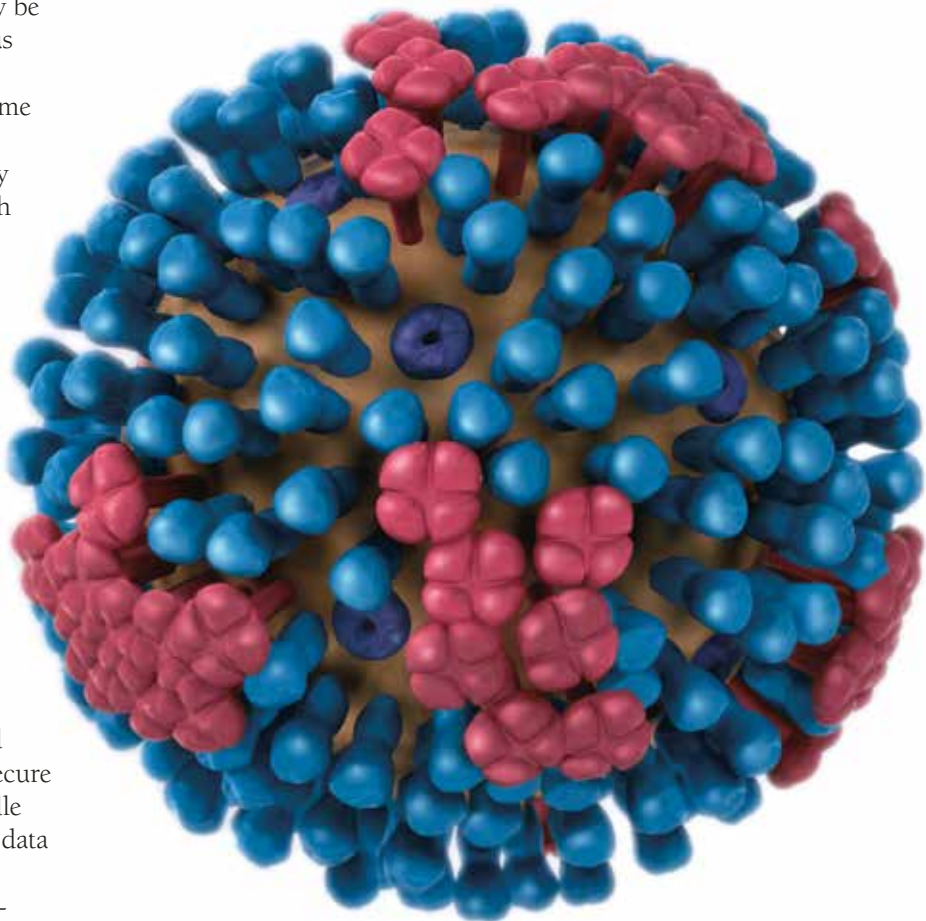
Looking for a way to speed up the process to know exactly what influenza viruses are circulating, the Centers for Disease Control and Prevention (CDC) is funding a three-year project at the WSLH to pilot WGS of influenza viruses submitted for surveillance from Wisconsin and 21 other states.

CDC staff trained WSLH virologists on the new genome sequencing technology and worked with WSLH IT staff to establish a secure data pipeline to CDC that can handle the tremendously large amounts of data that is generated from sequencing.

The WSLH is the first state pub-

lic health laboratory in the country to collaborate with the CDC on this cutting-edge technology. The CDC also designated the WSLH as one of three National Influenza Surveillance Reference Centers, building upon a decades-long federal-state partnership.

*The Wisconsin State Lab of Hygiene takes the Wisconsin Idea forward to the edges of the state and beyond every day.*





# Reaching Across Campus to Create the UW Collaborative Genomics Core

**DNA** — The familiar image of the double-helix, the 23 pairs of chromosomes, the nearly 3 billion base pairs that make up the human genome. These are the simple aspects of genetics we learn in grade school.

But the mysteries of life and sickness and death require a much more complex knowledge of the human genome to solve.

Hoping to provide answers, UW Cytogenetics and Molecular Genetics at the WSLH Director Jennifer Laffin, PhD, FACMG (UW associate professor of pediatrics) and Assistant Director Vanessa Horner, PhD, FACMG (UW assistant professor of pathology and laboratory medicine), joined forces with William Rehrauer, PhD, and colleagues from the University of Wisconsin Hospital and Clinics Laboratories as well as with colleagues from the UW Biotechnology Center to create the University of Wisconsin Collaborative Genomics Core (UWCGC).

The mission of the UWCGC is to provide clinical laboratory testing and clinical research support to:

- Develop, validate and integrate novel genomic technologies into the clinical services and research programs across the University of Wisconsin
- Support clinical trials and translational research efforts, particularly those requiring a CLIA-certified testing environment, across the University of Wisconsin
- Provide a state-of-the-art training environment essential to the rapidly evolving education of clinicians, students and investigators.

The UWCGC provides UW researchers and clinician partners a central source for the vital genetic testing that can help current patients today and the research that may help prevent people from becoming patients in the future.



*The UW Collaborative Genomics Core provides clinical and research testing using novel technologies and cutting-edge methodology.*

# One Test May Not Fit All in Cervical Cancer Screening

A poster presentation looking at whether it's better for women served by public health laboratories like the WSLH to have molecular-based human papillomavirus (HPV) testing as their primary cervical cancer

screening method vs. using a Pap test in combination with an HPV test won the Cytotechnologist Scientific Presentation Award at the 62nd Annual Meeting of the American Society of Cytopathology in November 2014. The presentation

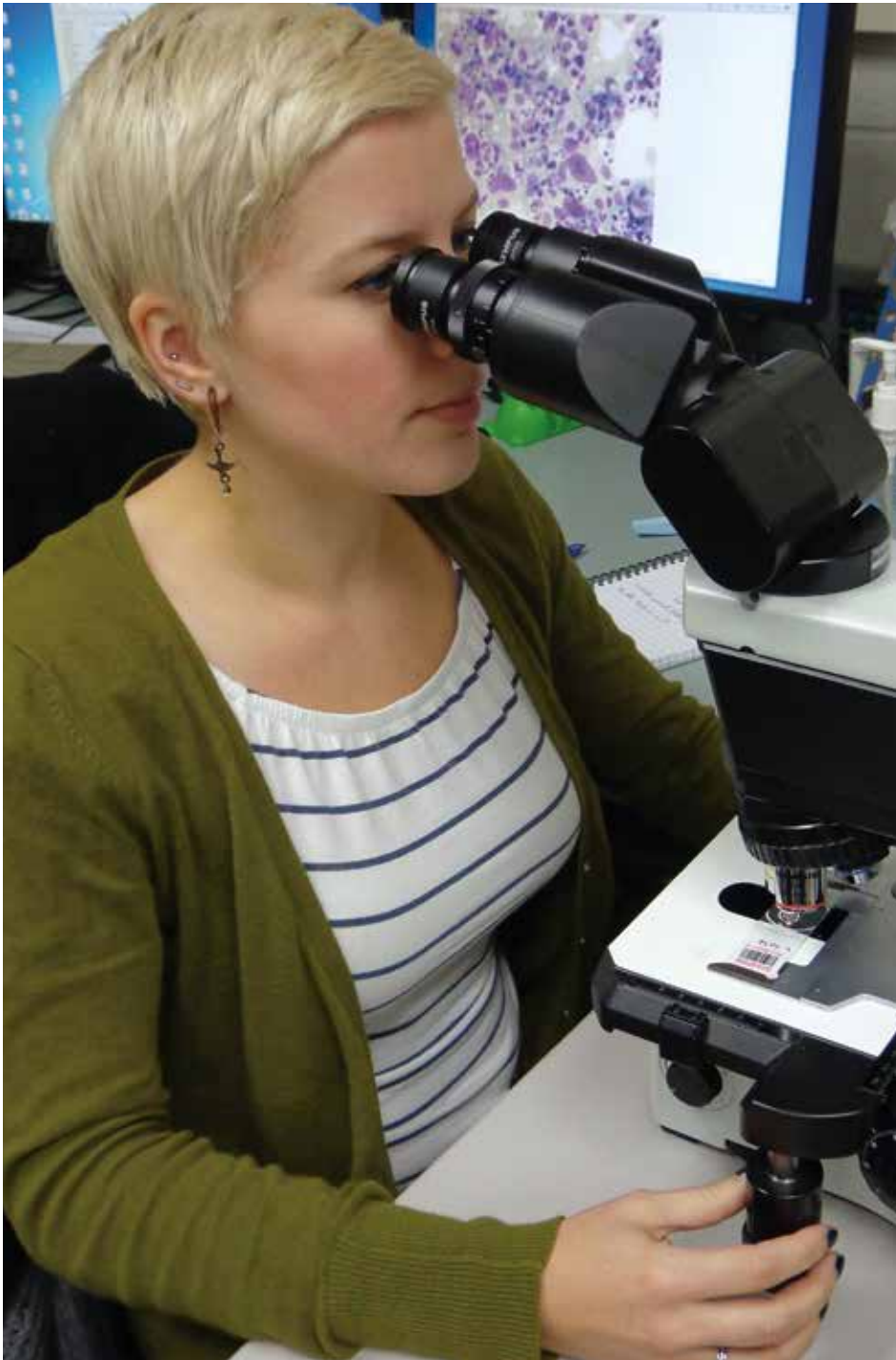
is now being developed into a paper that is expected to be published in early 2016.

WSLH Cytology Laboratory Manager Erin McCarthy was lead author on "Molecular Testing and Cervical Screening: Will One Test Fit All?". Changhong Ye, instructional program manager in the Cytotechnology Certificate program, and WSLH Medical Director and UW Professor of Pathology and Laboratory Medicine Dan Kurtycz, MD, were co-authors.

HPV is the primary cause of nearly all cervical cancers. Nationally, there is an increasing emphasis on using molecular HPV testing as the first-line test for cervical cancer screening. But because the women the WSLH Cytology Laboratory serves tend to be higher-risk for cervical cancer, McCarthy and her colleagues wanted to know if this change in testing algorithms would be helpful or harmful.

Their research found that more than half of the women determined to have high-grade cervical lesions by Pap tests performed at the WSLH ended up testing negative by molecular testing for the two most common forms of HPV responsible for cervical cancer. If only the molecular HPV tests had been used for these women, their pre-cancerous lesions would have been missed at this stage of testing.

McCarthy and her co-authors call into question the move toward molecular HPV testing for everyone and note that as cervical cancer screening practices evolve, it will be important to consider whether different populations of women may need different testing algorithms.



*WSLH Cytology Laboratory Manager  
Erin McCarthy*



# Air Pollution's Impact on Lung Transplant Patients

The old saying “you are what you eat” may be joined by a new variation—“you are what you breathe”—due to an innovative research collaboration between an engineer and a transplant surgeon.

James Schauer, PhD, PE, MBA, UW–Madison professor of civil and environmental engineering and director of the WSLH's air chemistry program, has teamed up with UW–Madison transplant surgeon and Assistant Professor Joshua Mezrich, MD, to investigate how air pollution impacts patients after a lung transplant—specifically whether particulate matter can somehow set off the body's immune system to attack the new lung.

Their work is an example of how Dr. Schauer believes environmental engineers and medical professionals can work together to better understand possible links between air pollution and health problems in people.

They have received a \$1.8 million grant from the National Institutes of Health to continue their research.

The analysis of air samples for this research is performed at the Wisconsin State Laboratory of Hygiene.



## Joint WSLH–UW Academic Appointments

Many WSLH senior scientists have joint appointments in academic departments at UW–Madison, as well as UW–Milwaukee and UW–Whitewater.

## University of Wisconsin–Madison

### School of Medicine and Public Health

Charles Brokopp, *Professor (CHS), Population Health Sciences*

Daniel Kurtycz, *Professor (CHS), Pathology and Laboratory Medicine*

Mei Baker, *Associate Professor (CHS), Pediatrics*

Jennifer Laffin, *Associate Professor (CHS), Pediatrics, and Affiliate Faculty, Pathology and Laboratory Medicine*

Greg Rice, *Associate Professor (CHS), Pediatrics*

Patrice Held, *Assistant Professor (CHS), Pediatrics, and Affiliate Faculty, Population Health Sciences*

Vanessa Horner, *Assistant Professor (CHS), Pathology and Laboratory Medicine*

Jessica Scott Schwoerer, *Assistant Professor (CHS), Pediatrics*

Curtis Hedman, *Affiliate Faculty, Population Health Sciences*

### College of Agricultural and Life Sciences

Sharon Long, *Professor, Soil Sciences*

Ronald Schell, *Professor, Medical Microbiology and Immunology*

Peter Shult, *Clinical Professor (Affiliate Faculty), Medical Microbiology and Immunology*

John Shalkham, *Clinical Assistant Professor, Genetics*

Michele Smith, *Clinical Assistant Professor, Genetics*

Erin McCarthy, *Clinical Instructor, Genetics*

Nancy Wade, *Clinical Instructor, Genetics*

Changhong Ye, *Clinical Instructor, Genetics*

### College of Engineering

James Schauer, *Professor, Civil and Environmental Engineering*

Martin Shafer, *Associate Scientist, Environmental Chemistry & Technology*

Sharon Long, *Affiliate Faculty, Civil and Environmental Engineering*

### Nelson Institute for Environmental Studies

Sharon Long, *Affiliate Faculty*

## University of Wisconsin–Milwaukee

### Zilber School of Public Health

Curtis Hedman, *Adjunct Faculty*

Daniel Kurtycz, *Adjunct Faculty*

## University of Wisconsin–Whitewater

### College of Business and Economics–Department of Occupational and Environmental Safety and Health

George Gruetzmacher, *Adjunct Faculty*



# Carbon Soot and the Taj Mahal



The iconic white marble of the Taj Mahal in Agra, India has been getting dirtier over the last few decades. In fact, the exterior must undergo a complete cleaning every five years or so to remove the substances darkening the marble. And what darkens the Taj Mahal is also breathed in by the people living in and visiting the area.

*Our work at the Taj Mahal illustrates the Wisconsin Idea in action: we apply our research and knowledge to real world problems.*

A years-long research study by scientists with WSLH/UW–Madison, Georgia Institute of Technology, Indian Institute of Technology–Kanpur and the Archeological Survey of India (Science Branch) has determined that carbon soot from air pollution is to blame.

The initial research findings were published in *Environmental Science and Technology*. The next step is to determine where the contamination is coming from and what to do about it.

The answers aren't just important for one of the most beautiful buildings in the world, but also for the many people living in the area since these types of contaminants can also cause negative health effects.



*A building across the courtyard from the Taj Mahal served as a sampling site for the research study. Here a machine collects air samples while two of the researchers look across to the Taj Mahal.*



Marble tiles similar to the marble used to build the Taj Mahal were placed on a building across the courtyard to collect the airborne particulate matter. A set of tiles was in place for three weeks and then replaced with a clean set. This continued for four months. The particulate matter deposited on the tiles was then tested at the WSLH.

# Helping Workers Stay Safe and Healthy



*Rotating Equipment Repair staff with their SHARP banner at their award ceremony in 2009. RER Plant Manager Anthony Emanuele is holding the banner on the left and RER Owner and President Kurt Weis is holding it on the right.*

**H**elping small business owners provide safer and healthier workplaces for their employees is the core mission of the WisCon onsite safety and health consultation program at the WSLH. Not only does the program help businesses meet their obligations and responsibilities under the federal Occupational Safety and Health Administration (OSHA) law, it may also help increase their financial bottom line.

The consultation program is free for small businesses. WisCon consultants conduct onsite facility visits to identify safety and health hazards and recommend control measures; conduct industrial hygiene monitoring for chemical, biological, radiological, and physical hazards; perform ergonomic evaluations; assess the employer's safety and health programs; present occupational health and safety-related training; and evaluate the employer's comprehensive safety and health management system.

In fiscal year 2015, WisCon consultants made nearly 600 onsite visits at Wisconsin businesses.

While some businesses contact WisCon for help after an OSHA inspection didn't go very well, many businesses already have strong health and safety programs in place and work with WisCon to make them even better.

That's the case for Rotating Equipment Repair (RER) in Sussex, WI.

RER provides high quality repairs, parts and field service to the high energy pump market. According to Plant Manager Anthony Emanuele, RER had been working with a safety consulting firm that suggested, based on RER's already excellent safety and health records, the company contact WisCon to become SHARP certified.

SHARP—OSHA's Safety and Health Achievement Recognition Program—honors small and medium employers that operate exemplary safety and health management systems, while also maintaining an injury and illness rate below the national average for their industry.

RER staff worked with WisCon consultants and earned SHARP certification in 2009.

For RER the benefits to working with WisCon are many.

"Internally, employees work more confidently knowing that everyone at RER are properly trained in safety and this results in more production hours and reduced downtime due to less accidents and injuries," Emanuele said. "Externally, our customers recognize the safety training we have in place that allows our field service engineers to work onsite. Some contracts require this training in order for RER to be onsite."

And as for bottom-line profits, working with WisCon has helped there too.

"There has definitely been a positive impact on RER's bottom-line profits by working with WisCon," Emanuele said. "With the proper safety training, we prevent downtime due to accidents and injuries and create better production time to meet our deadlines. The cost of injuries and worker's compensation are better controlled with the safety program in place."

# Going Green, Efficiently: Expanding Paperless, Electronic Data Exchanges with Customers

**A**ccurate and timely. That is how WSLH customers expect their service. With the exponential change in both molecular and computer technology over the last decade, laboratories have struggled to keep pace without jeopardizing these two principles.

Over the last few years, the WSLH has been methodically upgrading our older laboratory information management systems (LIMS) in order to take advantage of new computer interfaces with high volume clinical customers.

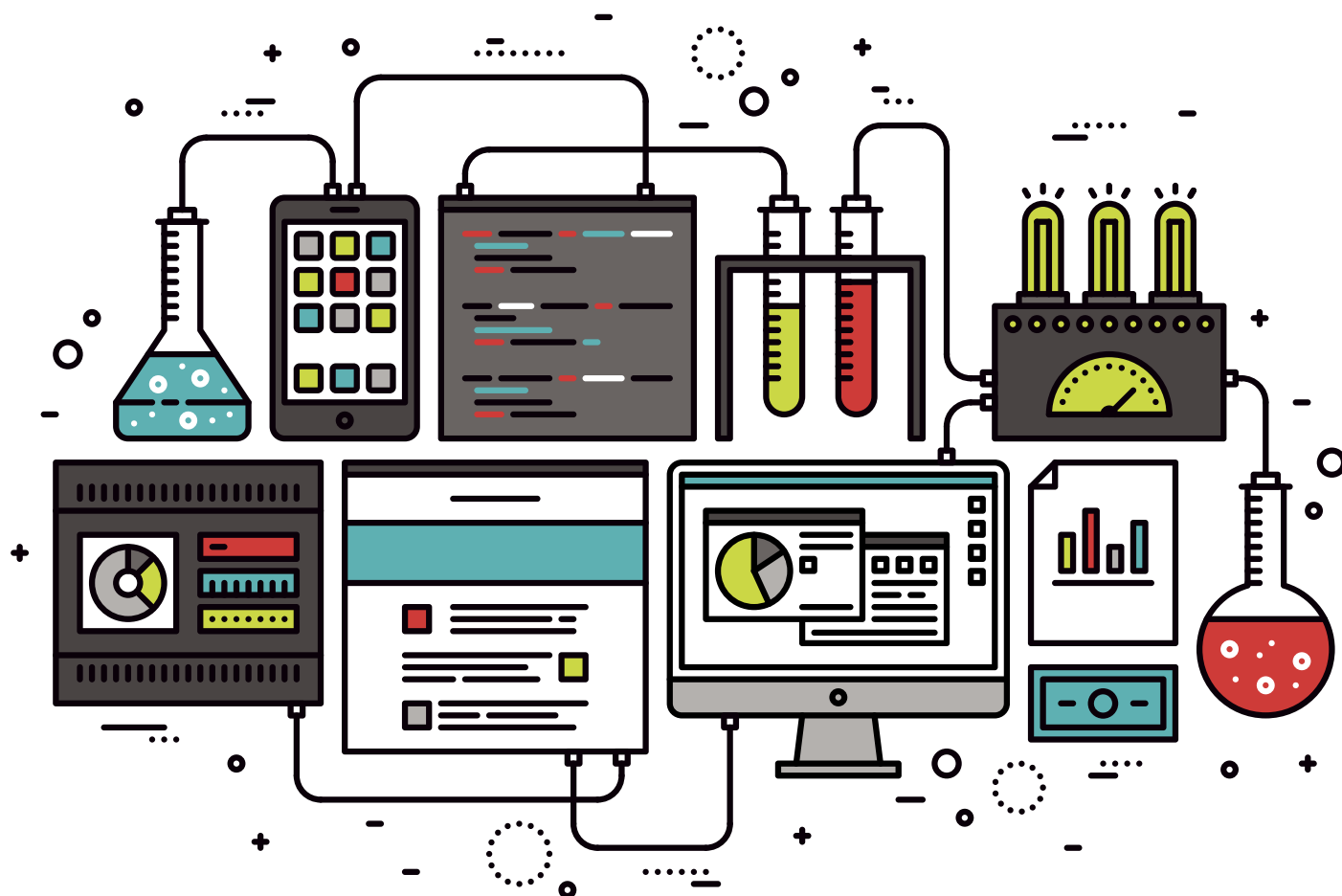
These interfaces take laboratory orders directly from the customer's electronic medical records (EMRs) and (securely over the internet) enter them into our LIMS without manual data

entry. This eliminates the potential for errors and missing information that comes with using paper requisitions as well as the potential for lost requisitions. Information for testing done on high complexity, high volume diagnostic instruments is sent by the LIMS to an automated instrument interface that returns the result to the LIMS, and then on to the customer's EMR once final verified.

In the last year, the WSLH has implemented orders/results interfaces with both of our main UW–Madison customers—University Health Services and UW Hospital and Clinics. In the coming years, the WSLH will be implementing these interfaces with all interested large

volume customers both in-state and out-of-state.

For lower volume customers who prefer to go paperless, the new LIMS also allows the use of a secure web portal for exchanging orders and results. While some manual data entry is still required using a web portal, the efficiencies gained by reducing missing and illegible information and by having all of a customer's information in one place make it worthwhile for smaller customers without many IT resources. We have implemented several web portal exchanges in the last year, and plan to expand to a large number of additional customers over the next few years.





# A year at the Wisconsin State Lab of Hygiene

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## July 2014

More than 30 participants and counselors from the UW–Madison Engineering Summer Program tour the Environmental Health Division labs to learn about our testing and hear a talk on WSLH water-related research.

### How the WSLH Helps the WI Dept. of Health Services Fulfill its Mission

- Analytical Services and Testing
- Technical Consultation and Laboratory Expertise
- Outbreak Response
- Emergency / Terrorism Response
- Laboratory Networks – WCLN, Local PH Lab Network
- DHS Program Support
- DHS Infrastructure Support
- Education and Training
- Electronic Laboratory Reporting (ELR) / Wisconsin Electronic Disease Surveillance System (WEDSS)
- Applied Research / Technology Evaluation
- Test Method Development

## August 2014

Chemical Emergency Response staff are the fastest in the nation testing 500 urine specimens in a CDC-sponsored exercise. The exercise scenario focused on a fictional nerve gas exposure event.



## September 2014

WisCon program staff teach an “OSHA Ten-Hour Course for Construction” for the Multicultural Entrepreneurship Institute (MEI), improving the safety of workers in the Milwaukee area.

## October 2014

As a result of WSLH PT’s attendance at the Association of Public Health Laboratories (APHL) annual meeting, all North Carolina public health labs switch to WSLH PT for their PT provider.



## November 2014

Newborn Screening Co-Directors Dr. Mei Baker and Dr. Patrice Held are lauded by APHL for their work. Baker received the Harry Hannon Laboratory Improvement Award and Held was named an Emerging Leader.



## December 2014

Communicable Disease Division staff are qualified by the CDC to perform PCR for Ebola virus.

## January 2015

The Wisconsin Clinical Laboratory Network presents an audio conference entitled “Bloodborne Parasites: A New Perspective on Some Old Nemesis” – a timely topic since Ebola symptoms are similar to those of bloodborne parasites. The WSLH sponsors eight WCLN training audio conferences annually.

# July 1, 2014 – June 30, 2015

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## February 2015

The Cytotechnology Certificate Program is 1 of 44 graduate and certificate programs included in the initial launch of UW–Madison's AdvanceYourCareer. wisc.edu web portal.

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## March 2015

Bureau of Labor Statistics/Occupational Safety and Health Statistics staff provide training to employers on new OSHA recordkeeping and reporting requirements which went into effect January 1, 2015.

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## April 2015

"Basics on Newborn Screening Specimen Collection and Submission" training webinar releases on WSLH website for nurses, midwives, phlebotomists and all health care workers who participate in the newborn screening process.



Ryan Pieters performs drug testing in the WSLH forensic toxicology laboratory.

## May 2015

Forensic Toxicology Section stars in a video produced by the UW–Madison Office of Classified Staff. The UW–Madison Classified Staff (now University Staff) Shared Governance Blog features videos from various corners of campus.

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## June 2015

Clinical Metals Unit receives 2,200 blood samples for lead and cadmium testing as part of a study with the UW Department of Ophthalmology and Visual Sciences. The samples were collected as part of the Beaver Dam Offspring Study (BOSS).

*Forward is not only the motto for the state of Wisconsin, but a single word that clearly describes our accomplishments in testing, research, education and consultation.*

## How the WSLH Helps the WI Dept. of Natural Resources Fulfill its Mission

- Response capabilities for spills
- Water testing to help ensure safe drinking water
- Technical training and consultation to agency scientists
- Research support for agency projects
- Enforcement case sample testing
- Beach and recreational water monitoring
- Fish contaminant monitoring for fish consumption protection
- Contaminated site clean-up monitoring
- Air contaminant testing

# WSLH Contributions to UW–Madison Teaching, Research and Outreach

As part of the UW–Madison, WSLH staff actively contribute to the UW–Madison’s mission of teaching, research and outreach. Here are some examples:

## Teaching

### Cytotechnology Certificate Program

In 1957 the WSLH created its School of Cytotechnology with a mission of training students to detect cancer at the cellular level. Graduates have gone on to work as cytotechnologists in laboratories worldwide, as well as pursue advanced medical education.

The program is now known as the UW–Madison Cytotechnology Certificate Program and is a partnership with the Department of Genetics within the College of Agricultural and Life Sciences.

For more than 50 years, the program has contributed to the WSLH’s clinical research and publications, and its faculty and staff hold leadership positions in national and international laboratory, medical and cytological organizations.

### UW System

WSLH scientists and professional staff teach courses in the UW–Madison College of Engineering, College of Agricultural and Life Sciences and School of Medicine and Public Health. Staff also teach courses at UW–Milwaukee and UW–Whitewater.



*Cytotechnology Certificate Program Director and Clinical Assistant Professor Michele Smith, MS, SCT(ASCP), left center, with students at a multi-head microscope.*

## Fellowships

The WSLH is a partner in the UW Clinical Genetics Center along with the UW Department of Pediatrics, the Waisman Center, UW Hospital and Clinics and the Wisconsin Division of Public Health.

The WSLH provides American Board of Medical Genetics and Genomics accredited fellowship opportunities in clinical biochemical genetics, clinical cytogenetics and clinical molecular genetics.

## Mentoring

WSLH scientists mentor and provide laboratory training opportunities to undergraduate and graduate students from UW–Madison, UW–La Crosse, UW–Milwaukee and Madison College.

## Research

In FY 2015, WSLH scientists and professional staff:

33 articles published in peer-reviewed journals

31 papers presented at scientific meetings

30 presentations made to other scientific and professional audiences

\$7 million+ in extramurally funded research grants and contracts received and/or shared by WSLH



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## Outreach

### Wisconsin Clinical Laboratory Network

For more than a decade the WSLH has coordinated a network of 130+ clinical laboratories in the state. The Wisconsin Clinical Laboratory Network (WCLN) helps ensure a timely and effective response to clinical laboratory and public health needs.

The WCLN mission encompasses emergency preparedness, disease surveillance, laboratory diagnostics, training and education, and communications.

Each year, the WSLH provides 8–10 training teleconferences, plus regional training meetings and wet workshops for several hundred Wisconsin hospital and clinical laboratorians.

### Other WSLH Outreach

WSLH scientists and staff also present training courses and presentations to a variety of audiences in the areas of occupational health, environmental health, chemical emergency response and infectious diseases.



*WCLN Coordinator Erin Bowles, MT (ASCP), teaches a gram stain wet workshop for clinical laboratorians.*



*State hazardous material team members practice protocols for collecting unknown samples for submission to the WSLH for testing. The box in the lower left of the photo is the standardized specimen collection kit developed by the WSLH and state HazMat teams.*

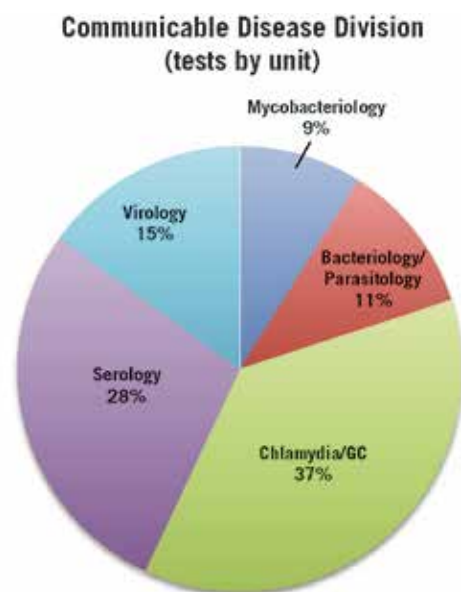
## Communicable Disease Division and WSLH Proficiency Testing

### Communicable Disease Division

The Communicable Disease Division (CDD) provides reference and specialized testing services in support of local, state, and national public health agencies and ensures access to laboratory expertise and capabilities in the disciplines of bacteriology, mycobacteriology, virology, parasitology, molecular microbiology, and serology.

CDD staff also coordinate a network of clinical laboratories in Wisconsin for emergency and public health response.

The Centers for Disease Control and Prevention (CDC) has designated the WSLH as a regional reference center for influenza testing and vaccine-preventable diseases. The testing CDD scientists perform enables us to provide detailed information to public health agencies about respiratory viruses circulating in communities, as well as identify emerging pathogens that could cause severe illness and/or outbreaks.



### WSLH Proficiency Testing–Laboratory Improvement Division

WSLH Proficiency Testing (WSLH PT) provides proficiency testing services to help more than 3,000 clinical laboratories in all 50 states and internationally provide quality patient care and meet their laboratory accreditation and quality assurance requirements.

WSLH PT offers more than 150 different products in bacteriology, blood bank, chemistry, coagulation, hematology, immunology, mycobacteriology, mycology, parasitology, point of care testing, urinalysis/microscopy, virology, and waived testing.

Proficiency testing (PT) is the practice of testing samples of unknown values sent from an external PT program. These samples are shipped to a laboratory at various times throughout the year. The samples are analyzed within a specified time frame by testing personnel who must treat them like a patient sample. Once the samples have

been tested, results are sent to the PT program for evaluation. The evaluated results are sent back to the laboratory in a report that both compares the results obtained with the actual results and rates the laboratory against other laboratories using identical or similar methodology.

Participation in PT allows a laboratory to identify procedural problems and take corrective action before patient results are affected.

Successful completion of proficiency testing can serve as a benchmark for quality.

### WSLH PT Customers (by location)

|                    |      |
|--------------------|------|
| Non-Wisconsin labs | 2253 |
| Wisconsin labs     | 709  |
| International labs | 173  |

# A GLANCE

## Environmental Health Division and Forensic Toxicology

### Environmental Health Division

The Environmental Health Division (EHD) serves as the testing laboratory for the Wisconsin Department of Natural Resources and other agencies.

Scientists test for many substances and organisms such as pathogenic microbes, pesticides, nutrients, metals, radionuclides, industrial chemicals, and air pollutants. Many types of samples are tested such as water, wastewater, groundwater, air, sediment, solid wastes, and clinical specimens.

Although most testing is done only for government agencies, a few tests of public health significance are available to Wisconsin residents.

EHD scientists also engage in research in Wisconsin and worldwide on the effects of environmental contamination on human health.



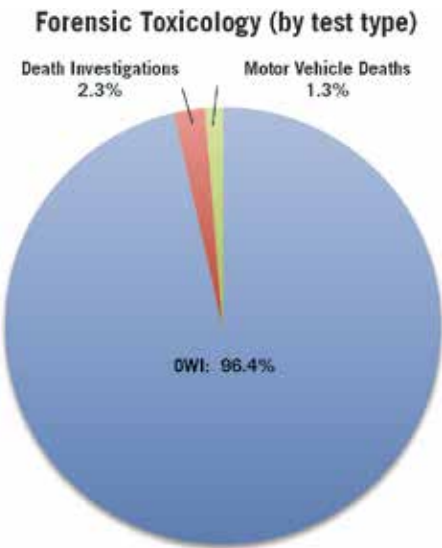
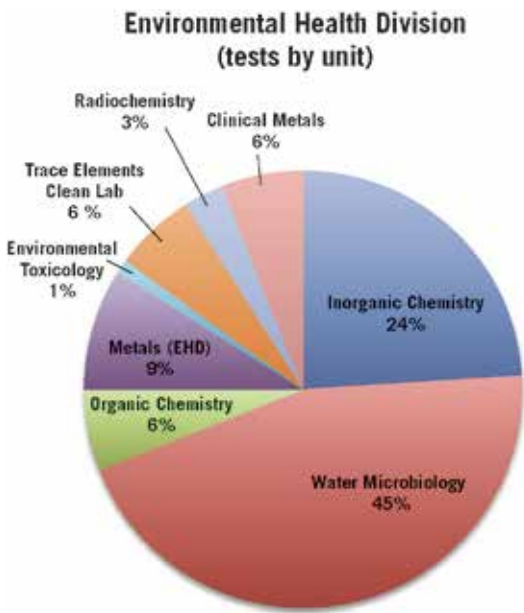
### Forensic Toxicology

The WSLH Forensic Toxicology section provides alcohol and drug testing, interpretation of test results, and court testimony to law enforcement agencies and coroners/medical examiners in Wisconsin.

Testing for law enforcement agencies is for traffic safety and other motor vehicle matters (boats, ATVs and snowmobiles) in support of Wisconsin's impaired driving (Operating While Intoxicated—OWI) laws.

Testing provided to coroners/medical examiners assists these county officials in routine death investigations.

Toxicology staff also provide training for law enforcement, members of the judicial system and coroners/medical examiners.





### Biochemical Genetics

The WSLH Biochemical Genetics Laboratory specializes in the diagnosis and monitoring of inborn errors of metabolism, including disorders such as propionic acidemia, phenylketonuria (PKU), maple syrup urine disease and many others.

Laboratory tests include amino acid analysis, amino acids dietary screening, quantitative organic acid analysis, free and total carnitine, and enzymology for biotinidase deficiency.

Most of the patients for whom our laboratory performs testing had their disorder identified in infancy, either through newborn screening or other testing.

Scientists at the WSLH Biochemical Genetics Laboratory and the metabolic specialist physicians who treat these patients will monitor their health and conditions throughout the patients' lifetimes, including transitioning into adulthood.



### Newborn Screening

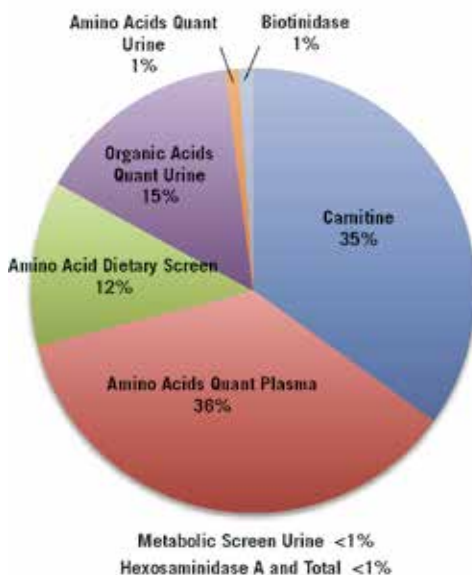
The Wisconsin Newborn Screening (NBS) Program is a collaborative partnership between the WSLH, the Wisconsin Department of Health Services, hospitals, midwives, physician consultants, genetic counselors and nutrition professionals from around the state. The WSLH NBS Laboratory screens the more than 66,000 babies born in Wisconsin annually for 44 rare, serious disorders that, left untreated, can lead to severe health issues and sometimes death. Nearly all these disorders are unrecognizable at birth by routine physical examination and require specialized testing to detect.

Babies also have their hearing and hearts tested at the hospital or home (if a home birth) as part of the newborn screening program.

### Newborn Screening Affected Infants Identified (66,405 total babies screened)

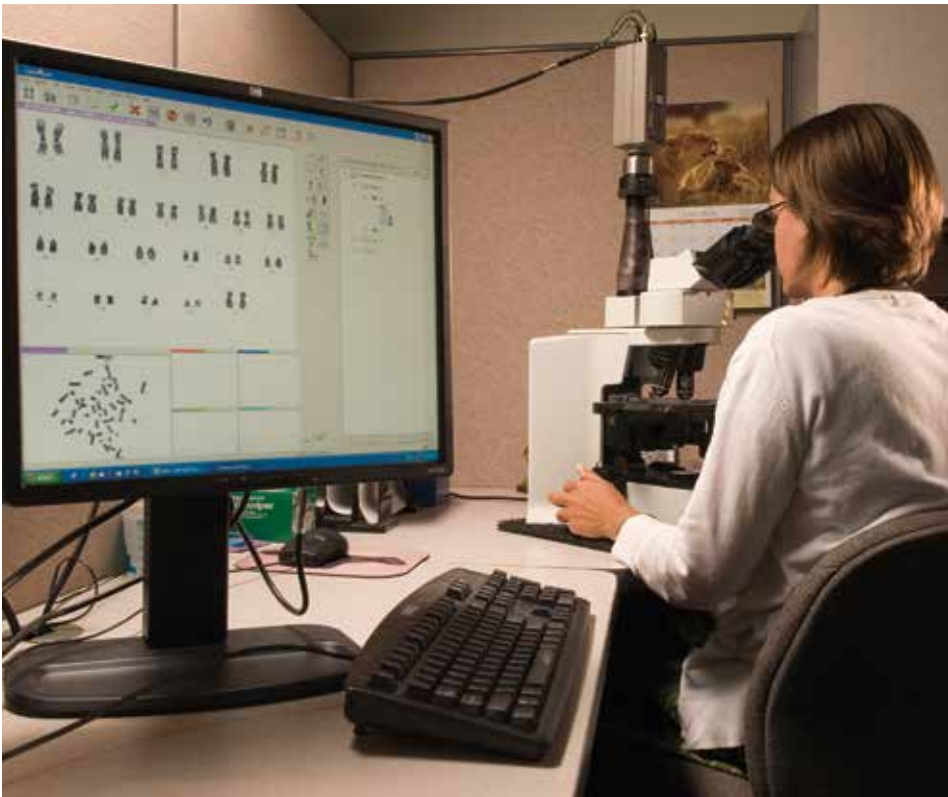
|                                  |    |
|----------------------------------|----|
| Amino Acid Disorders             | 8  |
| Fatty Acid Oxidation             | 10 |
| Organic Acidemia                 | 10 |
| Biotinidase Deficiency           | 0  |
| Galactosemia                     | 1  |
| Congenital Hypothyroidism        | 59 |
| Congenital Adrenal Hyperplasia   | 3  |
| Cystic Fibrosis                  | 20 |
| Hemoglobin Disorders             | 23 |
| Severe Combined Immunodeficiency | 1  |

### Biochemical Genetics (by test type)



# A GLANCE

## Disease Prevention Division

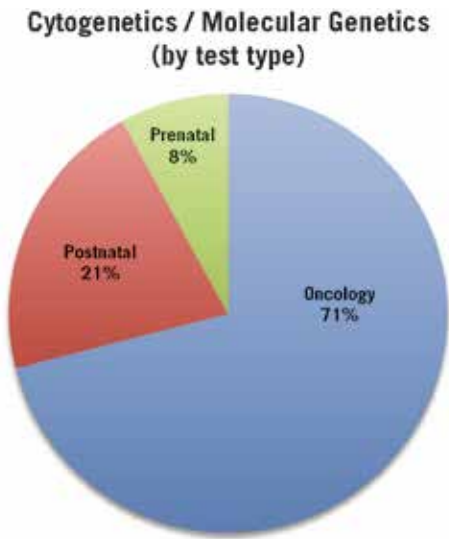


Cytogeneticist Maureen Sullivan examining chromosomes under the microscope.

### Cytogenetics / Molecular Genetics

Scientists in UW Cytogenetics Services/ Molecular Genetics at the WSLH look for genetic abnormalities in patient specimens using microscopic and molecular testing methods.

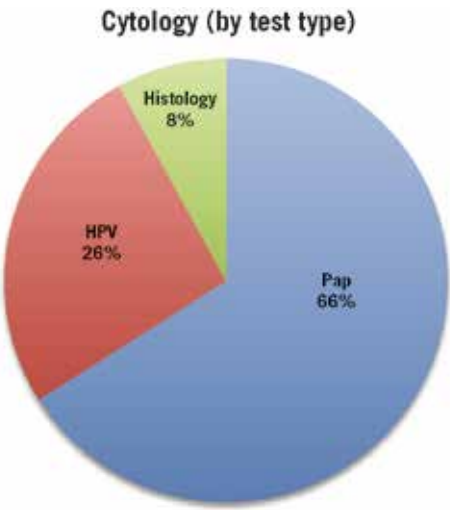
Genetic analysis is an important laboratory diagnostic procedure in the diagnosis and treatment of patients with cancer (oncological), in prenatal diagnosis, in determining possible causes of some cases of infertility or multiple miscarriages, and in the diagnosis of certain patients with developmental disabilities and/or multiple birth defects (postnatal).



### Cytology

The WSLH Cytology Laboratory was started in the 1940s after a WSLH medical technologist was sent to study with Dr. George Papanicolaou — the founder of clinical pathology and the creator of the Pap smear test to diagnose cervical cancer.

Today the WSLH Cytology Laboratory provides conventional and liquid-based cervical cancer screening (Pap tests), human papillomavirus (HPV) testing, and surgical biopsy testing (histology).





### Bureau of Labor Statistics / Occupational Safety and Health Statistics (BLS/OSH)

BLS/OSH holds a cooperative agreement with the U.S. Department of Labor's Bureau of Labor Statistics (BLS) to collect occupational injury, illness and fatality data for the State of Wisconsin.

BLS/OSH analysts conduct the Survey of Occupational Injuries and Illnesses (SOII) and the Census of Fatal Occupational Injuries (CFOI) annually.

Staff publish the data collected and disseminate educational materials through media outlets and safety conferences. They also fulfill specific data requests for public and private stakeholders.

Staff also provide OSHA recordkeeping training for employer representatives within the state.

### Bureau of Labor Statistics / Occupational Health Statistics

CFOI: 392 official source documents reviewed

SOII: 7,800 work injury cases coded

KEY:

CFOI: Census of Fatal Occupational Injuries

SOII: Survey of Occupational Injuries and Illnesses



# A GLANCE

## Occupational Health and Safety Division



### Wisconsin Occupational Health Laboratory (WOHL)

The Wisconsin Occupational Health Laboratory (WOHL) has been actively involved in industrial hygiene chemical analysis since the mid-1930s.

WOHL is a full-service industrial hygiene chemistry and environmental microbiology laboratory and has served as the central laboratory for OSHA's voluntary health and safety consultation program since 1977. In addition, WOHL provides laboratory services to a wide spectrum of public agencies and private sector clients.

WOHL supplies customers with an extensive list of analytical capabilities and industrial hygiene expertise.

**WI Occupational Health Laboratory (WOHL)**

Samples Tested = 47,555

Substances Reported = 211,250

### WisCon Onsite Safety and Health Consultation Program

The WisCon program, in conjunction with the U.S. Department of Labor, provides free safety and health consultations to small businesses in Wisconsin.

WisCon industrial hygienists, safety specialists, engineers and ergonomic specialists help business owners provide their employees with safe and healthy workplaces and meet their obligations and responsibilities under the federal Occupational Safety and Health Act (OSHA).

**WisCon Consultation Visits (by type)**

Safety = 405

Health = 175

Both = 4

*A healthy workforce is important to growing Wisconsin's economy. WSLH Occupational Health activities are another way UW–Madison contributes to the state's economic development.*

# WSLH Finances and Staffing–FY 15

## Revenues

|                                |              |     |
|--------------------------------|--------------|-----|
| State General Program Revenue  | \$10,783,100 | 25% |
| Driver Improvement Surcharge   | 1,892,000    | 5%  |
| State Agencies                 | 6,113,564    | 14% |
| Federal Agencies               | 4,856,435    | 11% |
| Research, Grant and Other      | 1,488,188    | 4%  |
| Laboratory services fees from: |              |     |
| Clinical                       | 10,412,489   | 25% |
| Environmental                  | 1,390,113    | 3%  |
| Occupational Health Services   | 1,995,407    | 5%  |
| Proficiency Testing            | 3,478,957    | 8%  |

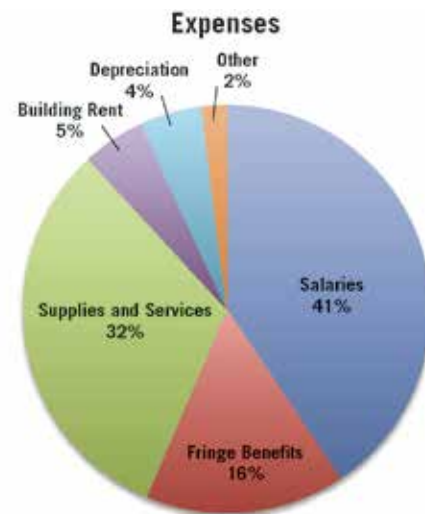
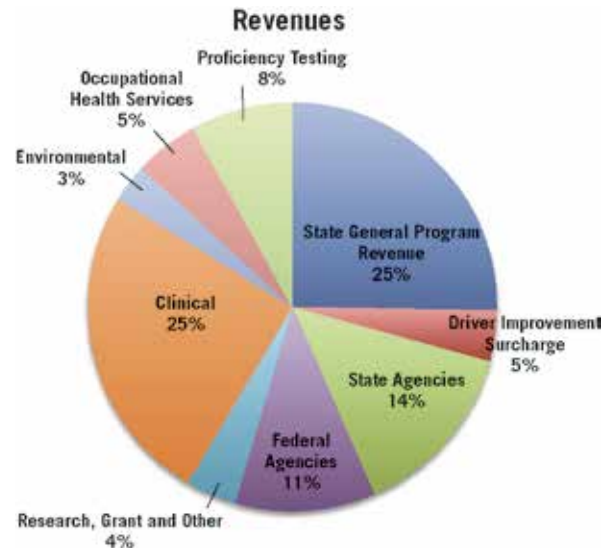
**Total Revenues** **42,410,253** **100%**

## Expenses

|                       |            |     |
|-----------------------|------------|-----|
| Salaries              | 18,169,710 | 41% |
| Fringe Benefits       | 7,146,578  | 16% |
| Supplies and Services | 14,091,346 | 32% |
| Building Rent         | 2,236,016  | 5%  |
| Depreciation          | 2,003,840  | 4%  |
| Other                 | 797,405    | 2%  |

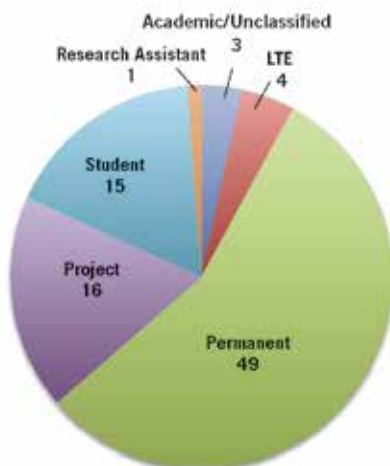
**Total Expenses** **44,444,895** **100%**

**Net Increase/(Decrease) in Equity** **(\$2,034,642)**

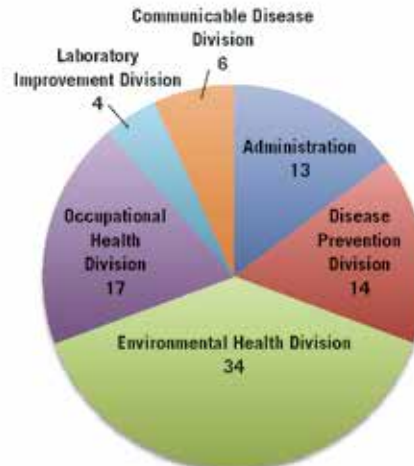


## WSLH Hires and Retirees by Division and Type

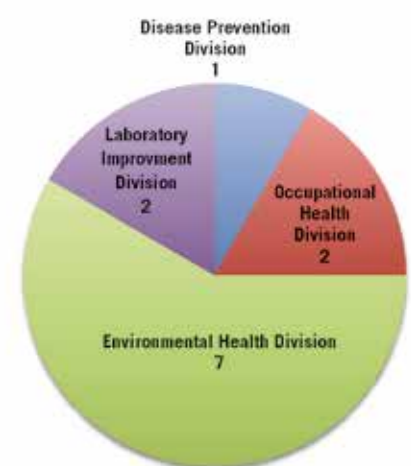
Employees Hired by Type (Total 88)



Employees Hired by Area (Total 88)



Employees Retired by Area (Total 12)



# WSLH Board of Directors

## Appointed by Governor of Wisconsin

| Member             | Representing                       |
|--------------------|------------------------------------|
| Robert Corliss, MD | Clinical Laboratory Physicians     |
| Carrie Lewis       | Public Member                      |
| Barry Irmen        | Medical Examiners/Coroners         |
| Jeffrey Kindrai    | Local Public Health Departments    |
| James Morrison     | Occupational Health                |
| Vacant             | Public Member                      |
| Vacant             | Environmental Testing Laboratories |

## Appointed by University of Wisconsin-Madison or Wisconsin State Agency

| Member           | Representing  |
|------------------|---|
| Darrell Bazzell  | Chancellor, UW–Madison  |
| Karen McKeown    | Secretary, Department of Health Services                            |
| Mark Aquino      | Secretary, Department of Natural Resources                          |
| Michelle Wachter | Secretary, Department of Agriculture, Trade and Consumer Protection |

## WSLH Key Staff Contacts

|   |                                |              |
|---|--------------------------------|--------------|
| <b>Charles Brokopp, DrPH</b><br>WSLH Director   | charles.brokopp@slh.wisc.edu   | 608-890-1569 |
| <b>Daniel Kurtycz, MD</b><br>Medical Director and Director, Disease Prevention Division                             | dkurtycz@wisc.edu              | 608-262-9461 |
| <b>David Webb, MS</b><br>WSLH Assistant Director and Director, Environmental Health Division                        | david.webb@slh.wisc.edu        | 608-224-6200 |
| <b>Steve Marshall, MS, MPH</b><br>WSLH Assistant Director and Director, Office of Research, Support and Development | steve.marshall@slh.wisc.edu    | 608-890-1093 |
| <b>Kristine Hansbery, MBA</b><br>Director, Laboratory Improvement Division  | kristine.hansbery@slh.wisc.edu | 608-224-4306 |
| <b>Peter Shult, PhD</b><br>Director, Communicable Disease Division  | peter.shult@slh.wisc.edu       | 608-262-5419 |
| <b>Steve Strebel</b><br>Director, Occupational Health Division  | steve.strebel@slh.wisc.edu     | 608-224-6216 |
| <b>Marie Ruetten, MBA</b><br>Financial Manager  | marie.ruetten@slh.wisc.edu     | 608-265-4511 |
| <b>Cynda DeMontigny</b><br>Human Resources Director   | cynda.demontigny@slh.wisc.edu  | 608-890-3008 |
| <b>Jan Klawitter, MA</b><br>Public Affairs Manager  | jan.klawitter@slh.wisc.edu     | 608-265-2529 |



**Clinical Laboratories and Administration**

465 Henry Mall  
Madison, WI 53706

**Environmental and Occupational Health Laboratories;  
WSLH Proficiency Testing**

2601 Agriculture Drive  
Madison, WI 53718

**Phone:**

|  |                |
|--|----------------|
| Clinical Laboratories                    | (800) 862-1013 |
| Environmental Laboratories               | (800) 442-4618 |
| Wisconsin Occupational Health Laboratory | (800) 446-0403 |
| WSLH Proficiency Testing                 | (800) 462-5261 |



**Wisconsin State  
Laboratory of Hygiene**  
UNIVERSITY OF WISCONSIN-MADISON

**[www.slh.wisc.edu](http://www.slh.wisc.edu)**