

# The LAByrinth

Indiana State Department of Health  
Laboratories Newsletter

## Brent Barrett Receives the American Society for Microbiology's Scherago-Rubin Award by Shelley Matheson



Brent Barrett, microbiologist at the Indiana State Department of Health (ISDH) Laboratories, was awarded the 2012 Scherago-Rubin Award by the American Society for Microbiology (ASM) in June. Brent was honored during the 112th General Meeting of the ASM in San Francisco, California. The ASM is the world's oldest and largest scientific society and strives to advance the microbiological sciences to improve health and well-being. Each year, the ASM recognizes an outstanding, bench-level clinical microbiologist. The award was established by the late Sally Jo Rubin, an active member of ASM's Clinical Microbiology Division, in honor of her grandfather, Professor Morris Scherago. "Mr. Barrett personifies the best of clinical microbiology," said his nominator, Judith Lovchik, Ph.D., Assistant Commissioner of Laboratory Services

at the ISDH and Diplomate of the American Board of Medical Microbiology (ABMM). "His intense focus on clinical microbiology has no parallel."

Mr. Barrett received his B.S. in microbiology from Purdue University in 1976 and his American Society for Clinical Pathology (ASCP) certification in 1980. He worked as a microbiologist at Community Hospital from 1976 to 1980 and has since worked full-time as a microbiologist for the ISDH Laboratories in Indianapolis. In addition, Mr. Barrett works part-time as a microbiologist at Mid America Clinical Laboratories. "With his leadership, this [ISDH] laboratory gained national recognition as one of the few public health laboratories that practices state of the art diagnostics and serves as a major source of information regarding epidemiology and continuing education," stated James Snyder, University of Louisville Hospital, and ABMM Diplomate.

In addition to being presented with this prestigious award, Mr. Barrett was presented in 2007 with the ProMED-mail Award for Excellence in Outbreak Reporting on the Internet. In 2006, he was named the South Central Association for Clinical Microbiology's (SCACM) Outstanding Contributor to Clinical Microbiology for his contributions.

Mr. Barrett is actively involved in Parasitology case studies and workshops for the ASM and the SCACM. He currently serves as Division C listserv co-moderator for ASM and is a member of the Clinical Microbiology Portal Committee. Mr. Barrett has been a member of SCACM since 1978 and has served the organization in several positions including President. As a highly requested speaker, he frequently presents enteric case studies for the ASM and SCACM.

"My wife, Patty, and I had a very enjoyable evening at the Cartoon Art Museum in San Francisco at the ASM General Meeting. I met all of the [award] laureates, and we all agreed, that it is not about us or the award but rather, being responsible, promoting, and advancing microbiology and assisting fellow microbiologists," said Mr. Barrett following the awards reception. Mr. Barrett's award was highlighted in the ISDH quarterly newsletter and the press release in June. Please join ISDH Laboratories in congratulating Mr. Barrett on his accomplishments.



## Indiana State Department of Health Laboratories

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Assistant Commissioner  
Laboratory Services

### Our Mission:

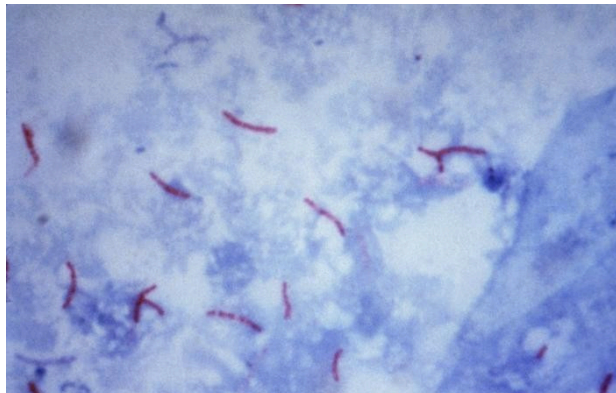
*The Indiana State Department of Health Laboratories partners with other public health agencies to provide timely and accurate information needed for surveillance and outbreak investigations to protect and improve Hoosier health.*

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## Indiana Dodges a Bullet: Multiple Drug Resistant TB Confirmed in Indiana

by Jessica Gentry, Supervisor of ISDH Serology & TB Laboratory



*M. tuberculosis after acid fast staining; courtesy of pathmicro.med.sc.edu*

On December 20, 2011, the ISDH Tuberculosis (TB) laboratory received a routine sputum specimen from Allen County Health Department (ACHD) for TB testing. The TB lab prepared an AFB (acid fast bacillus) stain, and reported smear positive results later that afternoon, with 1-2 AFB found per field. The lab immediately set up a nucleic acid extraction for the processed sample, and the next day, December 21, reported that the DNA marker for *M. tuberculosis* complex was detected. As with all new TB cases, the sample was immediately sent to the ISDH Molecular Lab for the detection of molecular drug resistance through pyrosequencing testing. On December 30, the Molecular Lab reported that the patient's sample had a mutation in the *rpoB* gene, indicating that the TB strain was most likely resistant to Rifampin. Meanwhile, an isolate from the patient was also set up for conventional drug susceptibility testing at the ISDH TB lab.

Rifampin resistance is commonly associated with multiple drug resistant TB (MDR-TB). With this in mind, the sample was immediately sent to the Centers for Disease Control (CDC) TB Lab for further susceptibility testing. On January 9, the CDC TB Lab reported its molecular drug resistance testing results, which suggested that the patient was most likely resistant to several antibiotics, including Rifampin, Isoniazid, Pyrazinamide, Amikacin, and Kanamycin, and possibly resistant to Ethambutol and Capreomycin. The next day, January 10, the ISDH Lab finalized its own culture susceptibility results, and confirmed antibiotic resistance to Rifampin, Isoniazid, Pyrazinamide, Ethambutol and Streptomycin. The final CDC susceptibility results confirmed that the patient was resistant to at least ten different antibiotics. The patient was only one antibiotic away from being XDR-TB, or extensively drug resistant TB.

The patient had appeared at ACHD on December 19, complaining of symptoms consistent with TB infection, including a long lasting cough, night sweats and weight loss. The patient had recently immigrated to the United States, and had screened negative for TB at that time. It is highly likely that the patient had been infected in his or her former country, but had been so early in the infection that he or she had tested negative initially. Had he or she not come to ACHD, the infection could have gotten much worse, making his or her recovery much more difficult. Luckily for the patient, he or she was able to be successfully treated with other, more rarely used and also very expensive antibiotics.

In Indiana, there are usually a handful of patients per year who are resistant to one antibiotic, and sometimes one who is resistant to two antibiotics, but this was the worst known case of antibiotic resistant tuberculosis in Indiana. Through the diligent work of TB Control, the local health department staff, physicians and especially ISDH Lab staff, this strain of TB was limited to this single patient and did not generate any secondary cases. This case was a textbook example of public health infrastructure functioning exactly as it was designed to.

## Methamphetamine Contamination – A Detective Story

by Robin Bruner, Director of ISDH Chemical Laboratory



*Preparing the GC/MS for Methamphetamine analysis.*

Methamphetamine abuse is a growing problem in Indiana and clandestine drug labs are found throughout the state. When a drug lab is seized, law enforcement agencies remove chemicals and drug making equipment from the site. The county health department condemns the property until it has been remediated and is no longer considered contaminated.

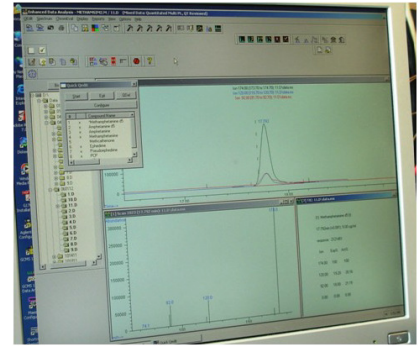
However, sometimes these labs go undetected and after the drug manufacturer vacates the property, residual contamination remains. Without proper cleaning, the risk of exposure to potentially dangerous chemicals is possible. This can be a serious health threat to the next resident of the property who moves in, unaware of the activities of the previous resident.

This danger was brought to life recently when an Indiana resident tested positive for Methamphetamine, but claimed not to have ever used the drug. The source of the resident's positive test was a mystery.

Further investigation showed that the resident had recently purchased a repossessed house and was refurbishing it.

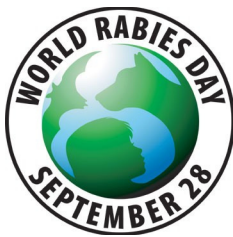
The ISDH Chemistry Laboratories had recently developed a method for the analysis of methamphetamine residue. The county health department went to the residence, took wipe samples and submitted them to the lab for analysis. All of the samples from the house tested positive for Methamphetamine. The results ranged from a low of 2.6 ug/100 cm<sup>2</sup> to a high of 9.0 ug/100 cm<sup>2</sup>. The maximum contamination allowed for habitation is set at less than 0.5 ug/100 cm<sup>2</sup>.

With the help of the ISDH Chemistry Laboratories, the county health department was able to solve the mystery and provide appropriate assistance to the resident.



## World Rabies Day: Awareness is the Best Defense against Rabies

by Mark Glazier



The world is again joining together on September 28<sup>th</sup> to raise awareness and understanding about the importance of rabies prevention. Rabies is the oldest and deadliest disease known to mankind and the Indiana State Department of Health Laboratory is supporting this rabies prevention initiative.

Led by the Alliance for Rabies Control and supported by numerous human and animal health organizations worldwide, World Rabies Day is a unique campaign that brings together hundreds of thousands of people across the world to reinforce the message that rabies is a preventable disease, yet kills 55,000 people needlessly each year, half of which are children under the age of 15<sup>1</sup>.

"Rabies is primarily a disease of children, who are particularly at risk from this terrible disease, due to their close contact with dogs, the major global source," said Dr. Debbie Briggs, Executive Director of the Alliance for Rabies Control. "Children are more likely to suffer multiple bites and scratches to the face and head, both of which carry a higher risk of contracting rabies. Children are often unaware of the danger that dogs transmit rabies and may not tell their parents when a bite, lick, or scratch has occurred from an infected animal," says Briggs.

Rabies is a viral disease that can be transmitted to animals and humans. The disease is transmitted mainly by bite, but exposure may also occur through contamination of broken skin or mucous membranes with saliva from an infected animal. Once neurological symptoms of the disease develop, rabies is fatal to both animals and humans. The good news is that rabies is easily preventable. "Vaccination prior to possible exposure is a crucial part of health management of domestic animals, and is the single most important factor in rabies prevention," said Peter Costa, Global Communications Coordinator for the Alliance for Rabies Control.

Rabies prevention starts with the animal owner. Protect yourself, your pet and your community by taking animals to be vaccinated. Avoid stray animals and wildlife. If you are bitten, wash bite wounds with soap and water and seek medical attention immediately. If your pet is bitten, consult your veterinarian immediately. Prompt and appropriate treatment after being bitten and before the disease develops can stop rabies infection and/or prevent the disease in humans and animals.

The World Rabies Day initiative also raises money towards local rabies prevention and control programs, with eight projects funded since 2008. "Through the World Rabies Day campaign, we continue to engage all the major stakeholders associated with rabies to take action," says Costa. "We invite everyone to join the team that is Making Rabies History!"

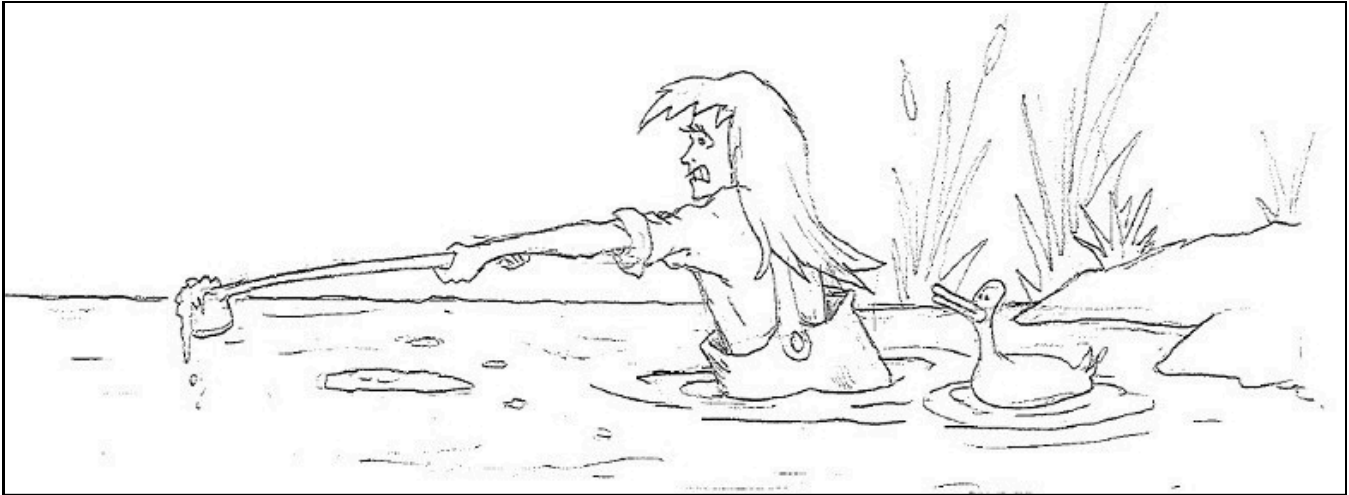
More information on World Rabies Day can be found at the official website, [www.worldrabiesday.org](http://www.worldrabiesday.org).

### References:

<sup>1</sup> WHO. Human and Animal Rabies, *Rabies: A neglected zoonotic disease*. Available at: <http://www.who.int/rabies/en/>.

## Algae Huntin'

by Mary Robinson, Supervisor of ISDH Water Laboratory



I found myself trundling down a back road in rural Indiana, aboard a rather large van, on a 100+ degree day, during the worst drought in the last century, covered in sweat and smelling slightly like dead fish. I wondered just what had brought me to this point in my life. We were huntin' algae, specifically blue green algae (otherwise known as cyanobacteria), which is known to produce toxins affecting the liver, nervous system and/or skin. During the drought, these organisms have exploded in population at many reservoirs. This particular foray was the result of the ISDH Environmental Water Microbiology Laboratory developing cyanobacterial identification and enumeration testing capabilities. Because I am an inquisitive person, I had to experience where the actual samples were collected. The Indiana Department of Environmental Management Office of Water Quality (IDEM OWQ) staff had graciously allowed me to participate in their sampling and testing processes.



*Would you go swimming in this pond?*

Let me briefly describe the sampling process: dressed in waders up to my armpits, dodging mounds of goose poo and an occasional dead fish on the beach, we used an apparatus made of a long PVC pipe with a plug to collect samples from three sites at each bathing beach. At some of the locations where algae growth is dense, the water takes on a green hue and mats of algae and even a dead fish or two float near the safe swimming boundary cord. The samples from the three sites are dumped into a bucket, poured into a mixing chamber, and dispensed into sample bottles for algae identification, toxin testing and chemical analyses. Additional data such as water temperature, dissolved oxygen levels, pH, total dissolved solids, etc. are also collected utilizing a meter with a very large probe. Samples are taken back to the IDEM OWQ laboratory and analyzed for algae enumeration/identification and toxin testing. This is accomplished by placing a drop of well mixed sample on a hemacytometer and counting under a microscope (usually at 400X). IDEM OWQ tests toxin concentration levels utilizing ELISA assays.

Swimming areas are placed on the High Count Alert until the cell counts fall below 100,000 cells/ml. Results of IDEM OWQ tests are posted every Friday during the testing season (June through August) on the IDEM algae website, [www.algae.in.gov](http://www.algae.in.gov).

Additional information on cyanobacteria can be found at:

<http://www.dec.ny.gov/chemical/81962.html>

<http://www.environment.fi/default.asp?node=16712&lan=en>

<http://www-cyanosite.bio.purdue.edu/>

<http://www.cdc.gov/hab/cyanobacteria/>

Thanks so much to IDEM OWQ staff; Corky Prast, Kristen Arnold, and Jim Stahl for their guidance.



*Obtaining sample of algae.*

## The LAByrinth

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