

State of Idaho  
Bureau of Laboratories  
2220 Old Penitentiary Rd  
Boise, ID 83712-8249

Phone: 208-334-2235

Fax: 208-334-4067

E-mail: statelab@  
dhw.idaho.gov

# Idaho Bureau of Laboratories Clinical Forum

Volume 5, Issue 4

Winter 2012



IDAHO DEPARTMENT OF  
HEALTH & WELFARE

## Year in Review: Emergency Preparedness Section

Michael Stevenson, Ph.D.

The Idaho Bureau of Laboratories' (IBL) Emergency Preparedness (EP) Section provides testing for biological and chemical threat agents from clinical, food and environmental samples. Funded by the federal Public Health Emergency Preparedness Cooperative Agreement, the EP section is part of the nationwide Laboratory Response Network (LRN), which is monitored by the Centers for Disease Control and Prevention. The EP section comprises of both an LRN-Biological (LRN-B) and LRN-Chemical (LRN-C) Threat laboratory.

As an LRN reference laboratory, the LRN-B lab receives clinical specimens from Idaho sentinel laboratories and environmental samples from agencies such as HazMat and the FBI to confirm biological agent threats (e.g., *Bacillus anthracis*, *Brucella* species). Sentinel laboratories are typically clinical

laboratories in hospitals that refer specimens that may contain microbial agents or toxins to IBL. The LRN-B lab utilizes rapid molecular and conventional microbiological methods for confirmation of biological threat agents. As an LRN Level 2 laboratory, the LRN-C lab analyzes clinical specimens (blood and urine) for the presence of chemical threat agents (e.g., toxic metals, cyanide), utilizing GC-MS, ICP-MS, and LC-MS/MS instrumentation. These methods can be applied to matrices such as food and personal care products. The LRN-C lab also analyzes environmental samples to identify unknown chemicals via FT/IR, HAZCAT, GC/MS, and ICP/MS.

In 2012, the EP section received a number of samples for threat agent testing. The LRN-B lab confirmed one clinical sample containing

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## Rabies Year in Review

Ashley McCartney

2012 was a busy year for rabies testing at the Idaho Bureau of Laboratories (IBL). As the only laboratory in Idaho that tests for rabies, IBL can get testing requests year-round. Like many other zoonotic diseases, rabies exhibits seasonality, with rabies testing peaking during the warmer months. This peak correlates with increased bat activity.

To date, bats are the only natural reservoir of rabies in Idaho, although many other species that come into contact with bats or are involved in human biting accidents are tested every year. IBL has tested several other animals that had bat exposure or were involved in a biting accident this year; the majority of the non-chiropteran species were

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Clinical Forum  
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## 2012 Emergency Preparedness Statistics

### LRN-B Select Agent Rule-outs from Sentinel Laboratories

- 23 (more than half were suspected *Bacillus anthracis*; the remainder were suspected *Yersinia pestis*, *Francisella tularensis*, *Coccidioides*, and *Coxiella burnetii*)

### LRN-B threat letters

- 1 (submitted by FBI)

### Food testing

- 16 (13 from one restaurant for *Salmonella*)

### LRN-C private client tests

- 5 (FT/IR on 3 environmental samples and 2 clinical samples)

## Emergency Preparedness Year in Review

continued from page 1

*Francisella tularensis*, which causes tularemia (Rabbit Fever); the patient possibly was exposed to this agent from his job as a sheep shearer. In early November, a threat letter was brought in from the FBI for multi-agent screening, but no bacterial agents or toxins were found. Other notable samples sent to the lab include a formalin-preserved heart tissue block for testing of *Coxiella burnetii* (Q Fever) and a blood-swollen tick for *F. tularensis* testing; both were negative. Blood serum from a boy bitten by a whistle-pig (of the marmot family) was submitted for *Yersinia pestis* and *F. tularensis* testing (negative). Thirteen food ingredients from one restaurant were submitted for *Salmonella* testing; all were negative.

Several samples were submitted to the LRN-C lab for testing in 2012. Screening was performed on a patient's urine for exposure to toxic metals and on another patient's blood for volatile organic compounds; both were negative. A letter was submitted to the lab from law enforcement to test for the presence of any chemicals that might have caused a burning sensation on the hands of the person who opened the envelope; none were found. The LRN-C lab is currently participating in a year-long study through Boise State University to test firemen's blood samples for cyanide gas, a product formed in fires.

cal and chemical agent threats, the EP section participates in year-round proficiency tests (PTs) submitted by the CDC and the Food Emergency Response Network (FERN) to demonstrate proficiency in analytical methods. This year, the LRN-B lab participated in a PT involving concentrating several samples of 40 liters of water to milliliter volumes that would allow detection of biothreat agents and toxins. The LRN-C lab participated in a PT from FERN to detect arsenic in apple juice. The EP section also maintains a working relationship with first responders to facilitate communications during testing of threat samples collected in the field. For example, in March, the EP section set up a mock lab that contained attenuated, select agent exempt, *Y. pestis* samples for the local HazMat team and the 101<sup>st</sup> Civil Support Team to collect, analyze, and send to IBL for confirmation testing.

Visit IBL's website ([www.statelab.idaho.gov](http://www.statelab.idaho.gov)) for more information on the Laboratory Response Network, on testing provided by the Emergency Preparedness section, and for information on how to submit samples to the LRN-B and LRN-C laboratories. The EP section wishes to thank the almost 50 sentinel labs in Idaho for their participation in the LRN program and referring samples to IBL for the confirmation or rule-out of biothreat agents.

In addition to testing samples for biologi-

# Rabies Year in Review

continued from page 1

cats and dogs, but we also tested mice, squirrels, a muskrat, a sugar glider, a weasel, a mole, and a hamster. Fortunately, all of the non-bat species tested negative. The last non-bat, rabid animal detected by IBL was a skunk in 2004. Further subtyping of the rabies virus that infected the skunk was performed at CDC. The results indicated that the virus was a strain type commonly associated with bats, suggesting that a bat was most likely the cause of rabies infection in the skunk.

In 2012, the first rabid animal identified was a Silver-haired bat submitted on June 1<sup>st</sup>. The last rabid bat detected (as of 12/12/12) was identified on October 12<sup>th</sup>. During the intervening months, there were a total of 23 positives with 11 of those cases located in Ada County. From 2008 through 2011, IBL identified 5-11 rabid bats per year. Thus, 2012 was a notable increase from the preceding 4 years. A graph showing total and positive rabies samples is shown in Figure 1. Since we only test for rabies when there has been human exposure, there is no way to ascertain if this change is due to a natural fluctuation of infections, a reporting difference, or a true upward trend. It should be interesting to see what the 2013 season looks like.

Rabies testing is critically important because nearly all untreated human rabies infections are fatal. Prompt testing following a potential rabies exposure can eliminate the need for prophylaxis, which reduces risk, pain, suffering, and cost for the exposed person. Furthermore, it allows these limited

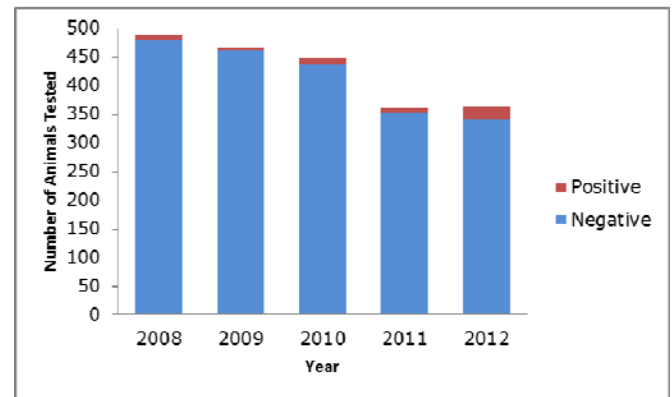


Figure 1: The number of positive rabies samples in 2012 was at least double those from recent years, while the total number tested did not increase.

and costly medications to be used more efficaciously. One noteworthy 2012 case involved a child who was bitten or scratched by a bat while she and a few other children were playing with it under a bridge in the Caldwell area in July. The bat was sent to IBL for testing, and it was rabid. The girl who was bitten (or scratched) promptly received the rabies vaccination series. Thorough investigation ruled out direct exposure for the other children in this incident. This incident demonstrates how IBL, state epidemiologists, and local health department staff work together to rapidly report, test, investigate, and recommend treatment for this very serious disease.

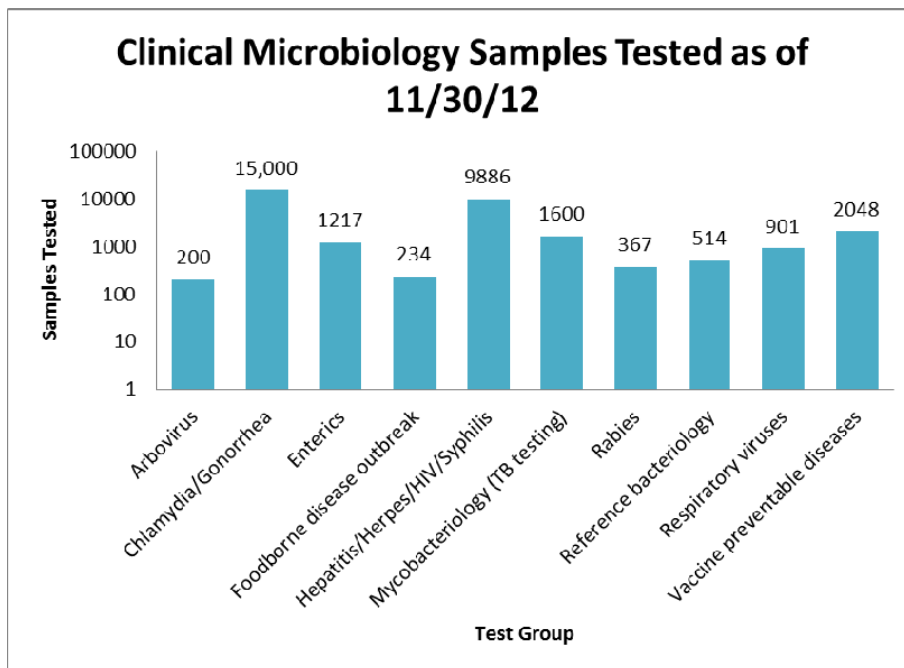


Figure 2: IBL's Clinical Microbiology section tested over 34,000 samples. Identification and confirmation of a sample may require one or multiple tests at IBL and vary in complexity.

### 2012 Tuberculosis Positives

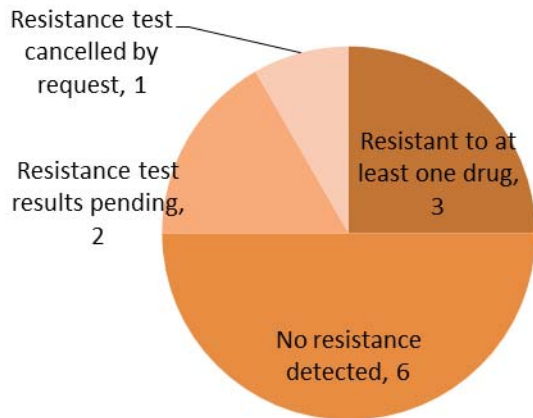


Figure 3: IBL confirmed 12 positive cases of tuberculosis in 2012. At least 25% of the isolates exhibited resistance to at least one antibiotic.

### 2012 IBL Trainings

- Improving Patient Care: Urine Dipstick Testing Training
  - 39 total participants, 3 locations
- Sentinel Laboratory Biothreat Preparedness Workshop
  - 18 participants
- Sentinel Laboratory Site Visits
  - 48 sentinel laboratories visited
- Sentinel Laboratory Preparedness Surveys
  - 28-29 laboratories participated in each (1-2012, 2-2012, and 3-2012)
  - 51 laboratorians participated (online photomicrograph survey, 4-2012)
- Packaging and Shipping Division 6.2 Materials Training
  - 27 total participants, 2 locations

### Reference Bacteriology

60 isolates were submitted to the Reference Bacteriology laboratory for identification and were determined by biochemical, serological, or sequencing methods.

Unusual isolates identified in 2012 include *Aggregatibacter aphrophilis*, *Bacillus amyloliquefaciens*, *Capnocytophaga canimorsus*, *Gallibacterium anatis*, *Gardnerella vaginalis* (one from an ear culture), *Legionella pneumophila* (Legionnaire’s disease), *Neisseria weaveri*, *Oerdkovia sp.*, *Paenibacillus xylinexedens*, and *Rothia mucilaginosa*.

### 2012/2013 Influenza as of 12/6/12

131 Samples Tested

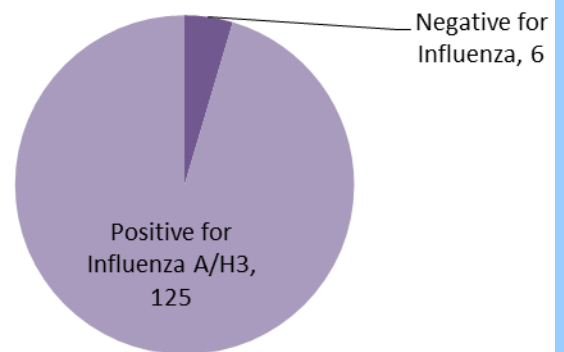


Figure 4: For the 2012/2013 Influenza season to date, all IBL tested positives have been the Influenza A/H3 subtype. Ten of these AH3 isolates were strain-typed by CDC and shown to match the Influenza A component in the 2012-13 vaccine. This suggests that the vaccine formulation may offer good protection this flu season.

### 2012 PFGE Testing

222 isolates tested

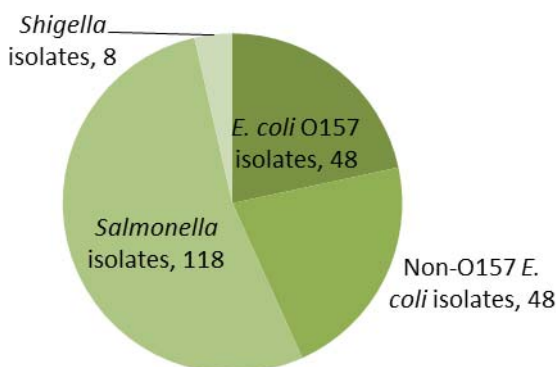


Figure 5: Pulsed field gel electrophoresis (PFGE) is used to identify foodborne outbreaks through matching DNA fingerprints. Some of the isolates tested at IBL were associated with statewide and nationwide outbreaks in 2012.

# Year in Review Word Find

answers on page 6

S S W B M L Q X X X M A W S H E P N P L M S I F S M D A N Q  
 T P A E V S D K W X A E R K H B E M W B X B T N Q U B K D F  
 H G I L Y P A S A O S O V R W D B O D A N V E F Z C Y Q W I  
 B F A M M S K B V T L S F T J C O W T V W D Q S Q B V C U U  
 C J B R Y O G H N I I K I F P G E Q L R E L L M N G A S W W  
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 Z C E M V Y Y R U L Q P A W L W A T L K U I O K R Y M X O T  
 E J U I W H V E E V A I P W N L Z O L O U L S R E I G Q R L  
 Y J R Q P S N Z A L S R N X Y L M J Z Y K V Y V B H V S R E  
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 A G Q J V J Z N C L A W J V G D S I P X L I O Z U X S U I A  
 A J I O N E J J I Y P O P Q Y I G J W C O R M U Z K Q C M B  
 P W Z T X E N C T H A E H K R Q N H V R M E Y L C Q V R E I  
 D J C Z K N A D P P Z N T S M E C A J G Y D T O M A J E R E  
 I N E E J B F U N X C Z I S J W R N L W R B V G F O V B A S  
 K K G I I O I I P O D W M D T G V A C I O A X T Z H X U L O  
 J Z N N T U W A S V W A U N E V O Y E Y S T J E Y P N T U G  
 C G E P G V L B K Q Q G I J E V H P Q H B W H N R L K C T P  
 Y A K W F L R Q A S R M H V P X E D M F S P Y A D N P H C U  
 P K C Z E F D C S H I K H K O X E W G X Y P K I S L F B H R  
 Y T T G C W B E C D O V X T U K G N H F C Z E G R T V K E N  
 A Q I N Y U Q Q G A M W N R T S D H P J Q G Q E Q G T R G P  
 M H A R S E N I C I W Z S T V T M R K D K I P K H B B W T Z  
 S R S B S A T F V A T F T T M Q B K E D H O P N H S J C J B  
 R A L U C E L O M J L S A Q F T D R E O W Y G B V Q X F H R

- ARSENIC
- CONVENTIONAL
- CYANIDE
- GALLIBACTERIUM ANATIS
- GARDNERELLA VAGINALIS
- INFLUENZA
- LEGIONELLA
- MOLECULAR
- OERDKOVIA
- PAENIBACILLUS XYLANEXEDENS
- PROPHYLAXIS
- RABIES
- SALMONELLA
- SHEEP SHEARER
- SHIGELLA
- SILVER HAired BAT
- TUBERCULOSIS
- TULAREMIA
- WEST NILE VIRUS
- WHISTLE PIG

To be added or  
 removed from the  
 Clinical Forum  
 email list

[statelab@dhw.idaho.gov](mailto:statelab@dhw.idaho.gov)

## Sharon Matthies, Data Coordinator

Sharon joined the IBL team on November 26, 2012. Following computer studies at Boise State University, her business/systems analysis work has been on two proprietary databases – one at a health insurance company and the other in the Child Welfare program within Idaho Department of Health and Welfare’s Family and Community Services division. She is also experienced in business and technical communications as well as project coordination. She’s looking forward to her first participation in an external user group at IBL.

Born on a Hopi reservation in Arizona, she spent over a year in Haiti as a toddler where she first became bilingual; her family then moved to Chicago. Now a longtime Boise resident, she lives with her partner and 3 cats in a home with a generous yard filled with organic vegetables, herbs, and perennials. She is a hobbyist photographer and has served on 6 local nonprofit boards.



# Solution to word find

- (Over,Down,Direction)
- ARSENIC (3,28,E)
- CONVENTIONAL (26,12,W)
- CYANIDE (9,16,SE)
- GALLIBACTERIUM ANATIS (8,15,E)
- GARDNERELLA VAGINALIS (2,3,SE)
- INFLUENZA (13,5,SW)
- LEGIONELLA (20,7,E)
- MOLECULAR (9,30,W)
- OERDKOVIA (20,30,NW)
- PAENIBACILLUS XYLANEXEDENS (1,25,NE)
- PROPHYLAXIS (2,14,NE)
- RABIES (30,15,S)
- SALMONELLA (2,1,SE)
- SHEEP SHEARER (26,29,NW)
- SHIGELLA (1,29,NE)
- SILVER HAired BAT (22,8,S)
- TUBERCULOSIS (28,22,N)
- TULAREMIA (29,23,N)
- WEST NILE VIRUS (13,1,SW)
- WHISTLE PIG (30,5,S)

## Upcoming Teleconferences

January 15, 2013; 12:30 pm Mountain Time

“Herpes Simplex Virus: Infections, Prevention, and Treatment”

January 22, 2013; 11:00 am Mountain Time

“A Culture of Safety for Diagnostic Laboratorians”

March 5, 2013; 11:00 am Mountain Time

“Test Method Verification in the Microbiology Laboratory”

March 26, 2013; 11:00 am Mountain Time

“2013 CLIA Update: How to Succeed at Your Next CLIA Inspection”

## Upcoming Webinar

February 19, 2013; 11:00 am Mountain Time

“Molecular Technology Made Smaller and Simpler for all to Use”

## Happy Holidays from IBL's Microbiology Staff!

Back row: Dr. Christopher Ball, Steve Gregoire, Kari Getz, Michael Stevenson, Robert Voermans

Middle row: Cara Rubel, Ashley McCartney, Rachel Beukelman, Joanna Lewis, Amanda Bruesch

Front row: Brian Deis, Justin Grant, Lisa Smith, Vonnita Barton

