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# Idaho Bureau of Laboratories Clinical Forum

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Spring 2011



IDAHO DEPARTMENT OF  
HEALTH & WELFARE

## Salmonella Molecular Serotyping

Amanda Bruesch, MS

*Salmonella* serotyping, a key role of the public health laboratory, has long been performed using a complex set of more than 100 antisera. Detection of the O and H antigens expressed on the surface of the cell and the flagella requires several days, passage of the organism through phase reversal medium, and biochemical testing that can take even longer. Until now, there has been no other way to determine the serotype of *Salmonella* isolates and provide the laboratory data needed to support outbreak investigations. Molecular methods, however, are changing the way we think about serotyping. Not only has Pulsed Field Gel Electrophoresis (PFGE) provided useful data to help elucidate complex relationships between serotypes and case-patients involved in outbreaks, but it has also broken ground for acceptance of molecular

methods in the determination of serotype above and beyond the capabilities of the traditional antiserum based methods.

To advance this paradigm shift, CDC has been developing a high-throughput molecular method for determining *Salmonella* serotype. Rather than relying on detection of expression of antigens on the surface of the cells and flagella - molecular serotyping examines the genes that code for those antigens. The O and H antigens are coded for in three different areas of the *Salmonella* genome - the *rfa*, *fliC* and *fliB* genes. In many *Salmonella* isolates, the genes are not expressed or are difficult to induce in the lab, therefore the antigens can often go undetected which impedes determination of a full serotype. With molecular serotyping, if the gene is present,

(continued on page 2)

## IBL Influenza Viral Surveillance Update

Colleen Greenwalt

Healthcare providers and laboratories across Idaho have forwarded over 200 respiratory specimens to the Idaho Bureau of Laboratories (IBL) since October 1, 2010 for Influenza Viral Surveillance. Samples, which are typically rapid test positive or rapid test negative from patients exhibiting influenza-like illness, are tested and subtyped in the Virology Laboratory using

the CDC Influenza Virus Real-time RT-PCR Assay. The lab has confirmed influenza in 73% of specimens submitted, with 91% of those identified as Influenza A and 9% Influenza B. The predominant virus seen at IBL has been Influenza AH3, with 93% of all Influenza A viruses subtyping as this strain. Influenza AH1N1 has been detected in only 7%.

(continued on page 3)

Clinical Forum  
Editorial Staff

Dr. Christopher Ball  
Colleen Greenwalt  
Steve Gregoire  
Vivian Lockary  
Kari Getz

National Medical  
Laboratory  
Professionals  
Week is  
April 24-30

## Salmonella Molecular Serotyping

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even if it isn't expressed, it is still detected by molecular methods making a complete serotype more easily obtained.

The method development at CDC has been 13 years in the making - with multiple design changes and modifications following feedback from state labs participating in the external method validation. Idaho has been participating since 2007 and has completed serotyping on more than 300 isolates using this new method. The method uses PCR to amplify specific gene regions that code for the O and H antigens, followed by hybridization with fluorescently-labeled beads and detection using the Bioplex 200 system with Luminex technology. Using this approach serotyping that previously took several days or weeks to complete can be finished in a single day.

CDC has been sponsoring annual workshops to introduce this technology and methodology to state labs that have been reliant on antiserum based serotyping methods. It is CDC's goal for states to begin implementation in March 2011 with most labs running only the molecular method for the majority of their isolates by early 2012. While traditional methods will still be needed for some rare isolates until all of the possible O and H antigens are included in the molecular assay - traditional methods will become the exception not the rule.

IBL is very excited to begin the implementation process, and will begin as soon as reagents are released from CDC. It is our goal to decrease turn-around times on serotyping to improve outbreak detection and investigation as well as help our hospital lab partners get the results they need in as short of a time as possible.

## National Medical Laboratory Professionals Week

Originating in 1975 as National Medical Laboratory Week (NMLW), National Medical Laboratory Professionals Week (NMLPW) is celebrating and honoring clinical/medical laboratorians for the 36th year. Beginning in 2010 the theme for NMLPW was selected to be "Laboratory Professionals Get Results" to help brand the event with a theme that is action oriented and relays, very simply, the important role laboratorians play in patient care.



NMLPW campaign activities strive to reach the following objectives:

- To recognize the vital contributions to health care made by those professionals engaged in clinical laboratory science in the United States.
- To recognize the professional dedication of the practitioners of clinical laboratory science to the health care consumer.
- To educate the public, government and private sectors about the key role played by the clinical laboratory professional to the health care consumer.
- To enhance the image of clinical laboratory professionals in the public and private sectors.

For more NMLPW information and materials, go to:

<http://www.ascls.org/about/national.asp>

# IBL Influenza Viral Surveillance Update

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As a participant in national surveillance, IBL forwards viral isolates to CDC for further antigenic analysis. This season, CDC has antigenically characterized over 800 influenza viruses and most (>95%) have matched the strain components of the 2010-11 influenza vaccine for the Northern Hemisphere. All influenza types and subtypes have been identified at high levels in the U.S. this season and continue to circulate widely. A detailed national report can be seen at FluView, the weekly influenza surveillance report prepared by the CDC's Influenza Division at [www.cdc.gov/flu/weekly/](http://www.cdc.gov/flu/weekly/)

*To be added  
or removed  
from the  
Clinical  
Forum  
email  
list*

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

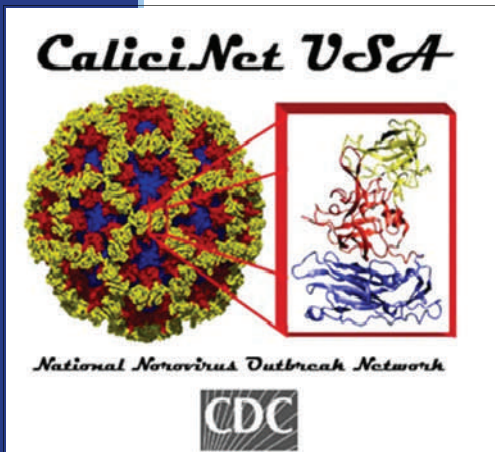
## Salmonella Serotypes Word Find

answers on last page

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

- AGONA
- ANATUM
- BRAENDERUP
- DUBLIN
- ENTERITIDIS
- HADAR
- HEIDELBERG
- INFANTIS
- JAVIANA
- MONTEVIDEO
- MUENCHEN
- NEWPORT
- ORANIENBURG
- PARATYPHI
- SAINTPAUL
- STANLEY
- TENNESSEE
- THOMPSON
- TYPHI
- TYPHIMURIUM

## IBL Selected as CaliciNet Outbreak Support Center



In 2009, we reported that the Idaho Bureau of Laboratories (IBL) was among the first labs to join CDC's national Norovirus outbreak network Calici-Net USA<sup>1</sup>. CaliciNet, a DNA sequence based subtyping network, is modeled after CDC's highly

successful PulseNet program for bacterial foodborne illness surveillance. Recently, Idaho was selected by CDC as one of five CaliciNet Outbreak Support Centers. As a CaliciNet Outbreak Support Center, IBL now performs norovirus sequencing for Alaska, Montana, and Wyoming outbreaks.

which include over 25 different genotypes, variants of the GII.4 genotype have been the predominant cause of norovirus outbreaks since 2002<sup>2</sup>. Since 2010, about 60% of all confirmed norovirus outbreaks in Idaho were attributed to the GII.4 New Orleans strain. In addition, Idaho has seen two GI outbreaks. These are much less common than the GII strains and are usually associated with waterborne sources. Genetic analysis of CaliciNet strains is a valuable tool in the identification of new and emerging norovirus strains. The eventual goal of CDC is to demonstrate some strain stability from year to year which may indicate vaccine development and implementation could reduce the burden of norovirus gastroenteritis on the US population.

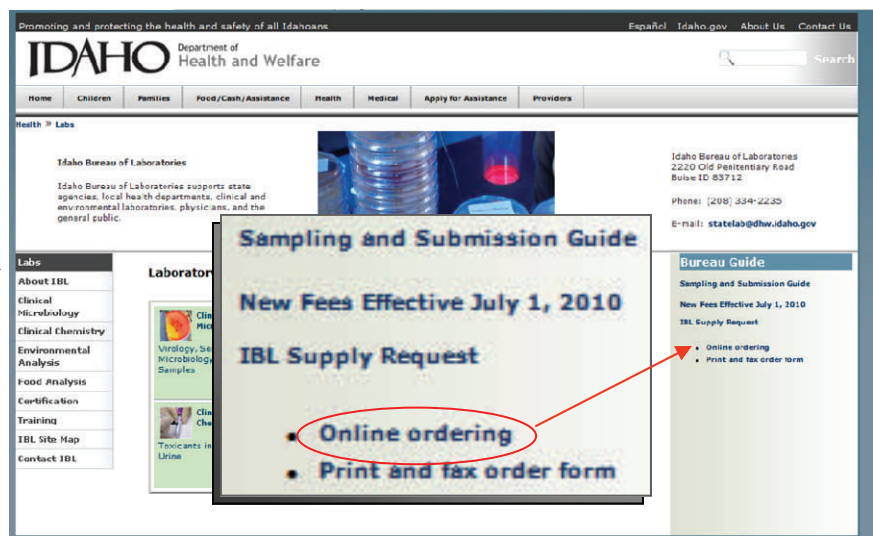
successful PulseNet program for bacterial foodborne illness surveillance. Recently, Idaho was selected by CDC as one of five CaliciNet Outbreak Support Centers. As a CaliciNet Outbreak Support Center, IBL now performs norovirus sequencing for Alaska, Montana, and Wyoming outbreaks.

CaliciNet sequence data from outbreaks allows scientists to determine whether regional or national outbreaks are of the same genotype. It also permits real time definition of the circulating strains of norovirus. Of the five recognized Norovirus genogroups (GI-GV),

<sup>1</sup>Ball, Christopher L. 2009. Idaho Bureau of Laboratories to Join CaliciNet in 2009. *Clinical Forum*, 2(1), 1.

<sup>2</sup>Centers for Disease Control and Prevention. 2010. Norovirus: Technical Fact Sheet, found at: <http://www.cdc.gov/ncidod/dvrd/revb/gastro/norovirus-factsheet.htm>

**NEW! ONLINE ORDERING FOR IBL SUPPLIES**



[www.statelab.idaho.gov](http://www.statelab.idaho.gov)



## Katey Anderson



Katey Anderson left Vital Statistics at the end of December to become the new Quality Assurance/Quality Control Manager at the Idaho Bureau of Laboratories (IBL). Katey began with Vital Statistics in March 2008 as a Senior Research Analyst and pursued a Masters in Biology while with Vital Statistics. The bulk of her free time is being spent on the final preparations for the defense of her M.S. degree.

An avid outdoors lover, Katey spends her summers camping, fishing, and riding her 23 year old Quarter Horse mare, Chancy (whom she has owned since she was 8 and Chancy was 3). To add a little zip to her and her husband's life, they wrangle the cumulative 215 pounds of DOG residing in their home. The two labs and one 'spunky mutt' keep life

interesting for the couple. In her short time at IBL Katey has experienced a great sense of energy and excitement about the direction the lab is going. She hopes to be able to contribute her positive energy, open mindset, quirky sense of humor, and passion for learning to this already great vibe. She will be working hard to help shape a QA/QC program that is functional, accurate, and actionable at all levels.

*Meet  
IBL's  
New  
Personnel*

## Cara Rubel

Cara Rubel came to work with IBL as a Principal Microbiologist on January 10, 2011 to provide support in the molecular, virology, and bacteriology areas. Cara graduated from the University of Idaho with a degree in Microbiology. She has previously worked as a microbiologist in the food industry, primarily testing meat products for pathogens.

Cara is married to Lee Rubel and is the mother of six-year-old twins, Ella and Ethan, and a five-year-old son, Evan. In her free time Cara enjoys activities such as skiing, hiking, running, yoga, and reading. Cara is very excited to be part of the IBL team.



## Packaging & Shipping Div. 6.2 Materials Course

- March 28<sup>th</sup> in Hayden, 8:30-4:30
- March 30<sup>th</sup> in Boise, 8:30-4:30
- April 1<sup>st</sup> in Pocatello, 8:30-4:30

## Bioterrorism Preparedness Workshop

- June 9<sup>th</sup> in Boise, 8 am — 5 pm

To register for either course, contact Vivian Lockary

[Lockaryv@dhw.idaho.gov](mailto:Lockaryv@dhw.idaho.gov)  
or  
208.334.2235 ext 258



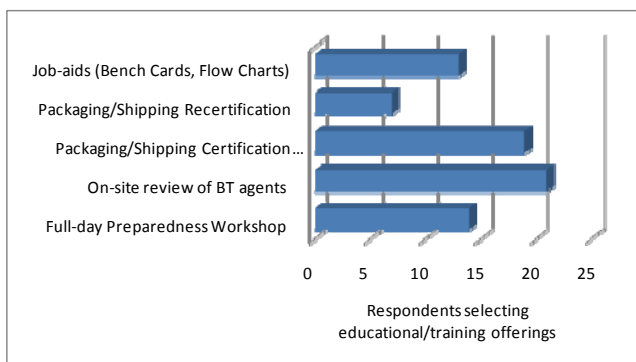
**Safety is NO Accident:  
Live Injury-Free**

National Public Health Week  
April 4-10, 2011 • www.nphw.org

## 2010 Needs Assessment Results

Last August, we asked our sentinel lab partners to respond to a Needs Assessment Survey so that we could better understand how to meet your needs and improve preparedness throughout Idaho. Twenty seven laboratorians responded to the survey and here is what the results revealed:

- Over 92% of respondents said that IBL’s Laboratory Preparedness Survey was useful in assessing their lab’s ability to recognize agents of bioterrorism and emerging microbial pathogens and 88% reported it useful in assessing their lab’s resources to perform testing related to potential BT agents.
- 72% rated regularly-scheduled state-wide conference calls with microbiology subject matter experts at IBL useful; 77% reported finding our newsletter useful.
- Educational/training offerings that would most benefit sentinel lab staff are rated below (n=27).



Your thoughtful responses prompted the creation of our exempt-strain Select Agent “road show”, designed to provide laboratorians throughout Idaho with the reassurance that they can indeed recognize these unique, uncommon agents without difficulty.

Keep your eyes open for April’s conference call!

## Teleconferences

New and Improved Approaches to the Diagnosis of *Clostridium difficile* Infections

April 6, 2011; 10:00 am Mountain Time

Identifying Nematodes and Bloodborne Trematodes of Medical Significance

April 12, 2011; 11:00 am Mountain Time

Molecular Detection and Typing of Enteroviruses and Parechoviruses

April 20, 2011; 11:00 am Mountain Time

Susceptibility Testing of Mycobacteria: Why, How, and What to Report

April 21, 2011; 11:00 am Mountain Time

Emerging and Resurging Infectious Disease Update: 2011

April 26, 2011; 11:00 am Mountain Time

Identifying Cestodes and Intestinal Trematodes of Medical Significance

May 3, 2011; 11:00 am Mountain Time

**SAVE THE DATE!**

**ASCLS-Idaho  
Spring Convention**

April 28-30, 2011

Boise

[www.asclsidaho.org](http://www.asclsidaho.org)

## Solution to Word Find

(Over,Down,Direction)

AGONA (25,8,S)

ANATUM (23,20,SE)

BRAENDERUP (13,20,N)

DUBLIN (21,19,E)

ENTERITIDIS (21,11,S)

HADAR (30,3,W)

HEIDELBERG (12,29,W)

INFANTIS (29,17,SW)

JAVIANA (1,27,N)

MONTEVIDEO (23,26,NW)

MUENCHEN (15,5,S)

NEWPORT (17,26,NW)

ORANIENBURG (16,2,SW)

PARATYPHI (16,29,E)

SAINTPAUL (2,28,NE)

STANLEY (21,7,NE)

TENNESSEE (6,1,SE)

THOMPSON (23,3,W)

TYPHI (26,1,SW)

TYPHIMURIUM (4,1,SE)