

Nebraska Public Health Laboratory Newsletter

A publication of the Nebraska Public Health Laboratory (NPHL) at the University of Nebraska Medical Center.

Winter

www.nphl.org

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2003

NPHL Newsletter Introduction

by Steven Hinrichs M.D., Director, NPHL

This issue of the Nebraska Public Health Laboratory Newsletter emphasizes one of the most important components of emergency response preparedness, the people who work in the laboratory. While technology plays a key role in the diagnostic capability of public health laboratories, as illustrated by the article on West Nile Virus and the description of the new STATPack™ system developed by UNO researchers, we recognize that it is the people who make the system function and perform. Public Health is about people serving people, to protect individual health and improve the collective health of the larger community. The Nebraska Public Health Laboratory community extends to all sections of the state and recognizes that laboratorians in community hospitals and doctor's offices are really at the front line of public health. Therefore, we are pleased to have a new section in the Newsletter that will introduce our readers to laboratorians throughout the state beginning with Ruth Uhrich, the Microbiology Supervisor at Great Plains Regional Medical Center in North Platte. Please join us in thanking Ruth for her dedicated service and contributions to the public health of Nebraskans and we look forward to knowing a little more about other Nebraskan laboratorians in the future.

West Nile Virus Testing Wrap-Up

by Steven Hinrichs M.D., Director, NPHL and
Josh Rowland, State Training Coordinator, NPHL

As we are nearing the end of West Nile Virus (WNV) testing here at the Nebraska Public Health Laboratory (NPHL), we can finally reflect on the large volume of testing that was performed. To date, the NPHL tested over 11,000 serum and cerebral spinal fluid specimens for the presence of WNV antibody. The IgM capture ELISA screening test used by NPHL resulted in over 2000 positive results.

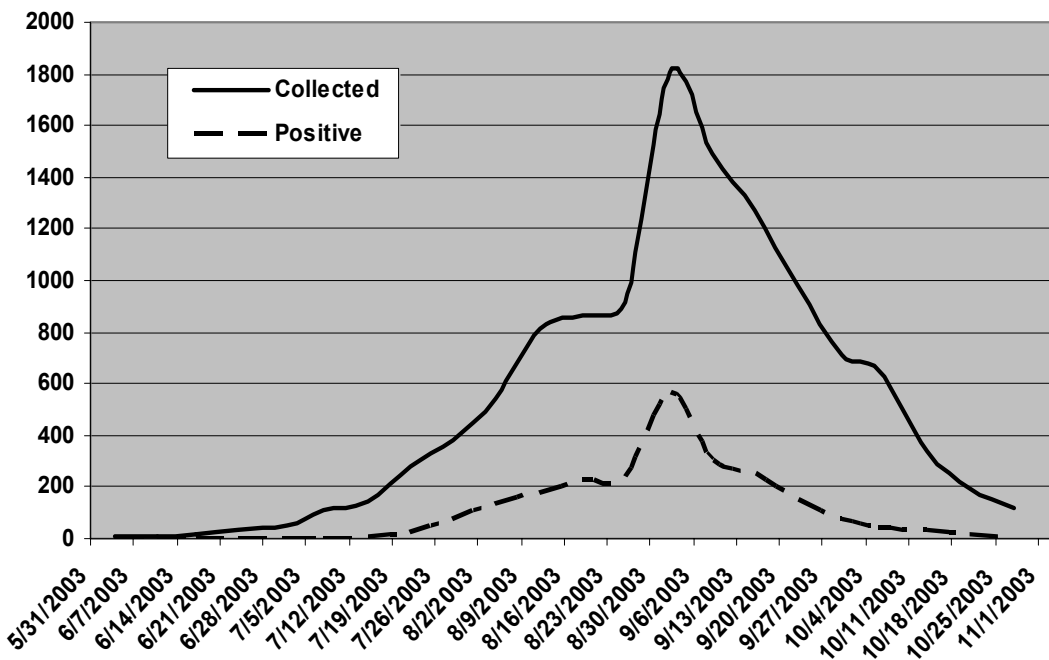
The first WNV sample collected for testing at NPHL was June 4, 2003. NPHL reported it's first positive on July 1, 2003. The following graph (**Figure 1**) depicts the volume of positive results per week determined by the NPHL during the WNV season.

The NPHL closely monitors the positive test result rate as a measure of proper test utilization. Our experience over time has shown that positive rates are heavily dependant on disease prevalence. We have also observed that over-utilization of a test will greatly decrease positivity rates. This over-utilization may be driven by patients seeking to know their immune status even if they are asymptomatic. In the absence of a disease outbreak a positive rate of 7% to 10% is typical. The graph illustrates that the positivity rate remained relatively constant throughout the

(Continued on page 2)

Figure 1

WNV Samples Collected and Reported as Positive, 2003



CONTACT INFORMATION

NPHL Client Services

(NEW) 866-290-1406

OR

402-559-2440

OR

www.nphl.org

Special Pathogens Section

402-559-3032

General Microbiology

402-552-2090

Training/Education

402-559-6070

(Continued from page 1, WNV Wrap-Up)

outbreak this season. An average positivity rate of 18% indicates that physicians appropriately selected the individuals for testing.

During the outbreak, the Nebraska Health and Human Services System (NHHSS) provided WNV testing for Nebraskans without charge until October 23, 2003. West Nile Antibody IgM serum screening continues to be offered at NPHL; however, there will be a \$50.00 charge for each test. Please contact NPHL Client Services if you wish to submit specimens.

Influenza 2003

by Tony Sambol, Assistant Director, NPHL

As the United States is now seeing an marked increase of influenza cases, the Nebraska Public Health Laboratory (NPHL) would like to remind laboratorians that all questions regarding influenza surveillance and testing should be directed to, the State Epidemiologist, Dr. Thomas Safranek (402-471-0550).

Upon Dr. Safranek's request, the NPHL will perform antigenic testing on a subset of isolates sent to the NPHL. This testing is performed by state public health laboratories, including the NPHL, to assist the Centers for Disease Control and Prevention (CDC) in characterizing the different influenza strains that are being seen in the United States.

Each year the NPHL submits approximately 30 isolates to the CDC for specific strain serotyping. So far this year we have submitted 10 Influenza A H3N2 isolates to the CDC. We will soon know whether the Influenza isolates submitted are of the Panama or Fujian strain.

Additional information about influenza is available on the Centers for Disease Control and Prevention's website. (www.cdc.gov/ncidod/diseases/flu/fluivirus.htm)

Lactoferrin Stool WBC Test

by Steven Hinrichs, MD and Amy Armbrust, CLS, NPHL

A new commercial test is available that detects the presence of white blood cells in the stool, a finding that is consistent with inflammatory diarrhea. Bacterial inflammatory diarrhea may be caused by Shigella, Salmonella, Campylobacter, and Clostridium difficile. Noninfectious inflammatory diarrhea may be seen in ulcerative colitis and Crohn's Disease.

The new test improves sensitivity and specificity over tests based on the cytological finding of WBC's in the stool. The new assay detects a glycoprotein component of neutrophilic granules called lactoferrin that is present in leukocytes and is released from fecal leukocytes. Detection is accomplished immunologically by a rapid latex agglutination method.

The new screening test will replace the current microscopic method that uses a gram stain of stool. The improved performance of the latex test over the microscopy test is due to the elimination of the variability in lysis of WBC's in the stool. The longer WBC's are exposed to elevated temperatures, the more lysis occurs with fewer intact cells remaining to be seen in cytological preps. Lactoferrin is less sensitive to conditions that support degradation.

Important note: Since lactoferrin is a component of breast milk, the test will be positive in breast fed children and should not be used to evaluate neonates receiving breast milk. However, the test uses a human lactoferrin specific antibody that

does not cross react with goat or bovine lactoferrin. Please contact Josh Rowland at jrowland@unmc.edu or 402-559-6070 if you have questions or are interested in setting up the procedure in your laboratory.

Preparing for the Possibility of SARS

by Tony Sambol, Assistant Director, NPHL

The Nebraska Public Health Laboratory (NPHL) has received inquiries regarding the handling, transportation and diagnostic testing of clinical (human) specimens for the Severe Acute Respiratory Syndrome (SARS) associated Coronavirus, also known as SARS-CoV.

The NPHL has worked closely with Dr. Anne Mardis and Dr. Thomas Safranek, State Medical Epidemiologists at the Nebraska Health and Human Services System (NHHSS), in the formulation and coordination of a state response plan. A portion of the response plan will entail a laboratory testing strategy or algorithm for NHHSS approved testing. The response plan will be based on guidelines from the Centers for Disease Control and Prevention (CDC), the Council of State and Territorial Epidemiologists (CSTE), and the Association of Public Health Laboratories (APHL). These organizations have put together guidance documentation outlining "alertness levels" for healthcare providers based on international, national, state and local SARS activity. These guidelines are being utilized by the state public health laboratories and state epidemiologists to formulate state-specific SARS response plans. On November 25, 2003, Richard Raymond, M.D., Nebraska's Chief Medical Officer sent out, through the Nebraska Health Alert Network, details regarding SARS surveillance, case reporting and laboratory testing. Please go to the homepage of www.nphl.org to view this document.

As part of CDC's Laboratory Response Network (LRN), the NPHL has ability to test respiratory specimens for the presence of SARS-CoV by DNA PCR testing. Additionally, the NPHL can perform SARS-CoV IgM and IgG antibody testing. All specimens should be collected using the recommended Standard Precautions (previously Universal Precautions), and handled in Biosafety Level 2 (BSL-2) laboratory conditions. Additional information about SARS can be found at the CDC's website (www.cdc.gov/ncidod/sars/).

Prior to collecting or ordering SARS testing, all suspect cases must be approved for SARS-CoV testing by NHHSS officials. Once the approval for SARS testing has been granted, specimens should be properly collected and sent to the NPHL for testing. All potential SARS related cases should be discussed with Dr. Anne Mardis or Dr. Tom Safranek by calling 402-471-2937.

If SARS testing is approved by an NHHSS official, transportation methods other than the usual means may be used to expedite shipment of the specimen. Please contact NPHL Client Services with packaging and shipping questions. For laboratory questions, please contact Tony Sambol at 402-559-3032.

REMINDER

Upcoming training/educational events as well as archived material can be found on nphl.org

1. Go to www.nphl.org
2. Click "TRAINING/EDUCATION" on the blue menu bar
3. You will find, in reverse chronological order, a list of upcoming topics
4. Scroll down to find a list of archived material

Update: *Salmonella* serotyping

by Beth Schweitzer, MT (ASCP), NPHL and Paul Fey Ph.D., Associate Director, NPHL

Since the establishment of the National *Salmonella* Surveillance System in 1962, serotyping of *Salmonella* has become a time-honored tradition within state public health laboratories. Serotyping, along with molecular methods such as pulsed-field gel electrophoresis (PFGE), has allowed epidemiologists to define epidemic patterns, to identify temporal trends in disease transmission, and to monitor control efforts. Currently, over 2400 serotypes have been defined within the two recognized *Salmonella* species: *S. enterica* and *S. bongori*.

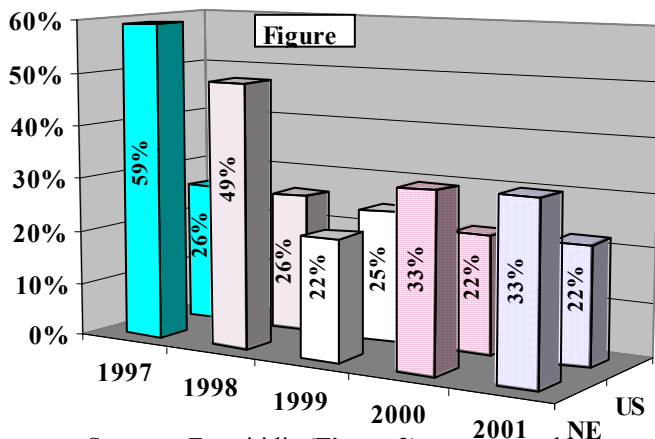
A total of 170 isolates were submitted to the Nebraska Public Health Laboratory in 2002. Forty two different serotypes were identified with serotypes Typhimurium, Heidelberg, Enteritidis, and Newport accounting for more than half (Table 1).

Top 9 serotypes seen in Nebraska, 2002	
Typhimurium 47	Saint Paul 8
Heidelberg 18	Muenchen 7
Enteritidis 11	Oriensburg 6
Newport 10	Larochelle 4
Kottbus 9	

The goal of the serotyping program in Nebraska is to enable the NPHL and the Nebraska Health and Human Services System to track and better understand current and historical changes in *Salmonella* serotypes. For instance, *Salmonella* serotyping, in combination with PFGE, has allowed the public health community to track the current national increase in prevalence of multi-drug resistant *S. Newport*. The following is a description and comparison of the total data from Nebraska from 1997 through 2001 as compared to the National *Salmonella* serotype information during the same period.

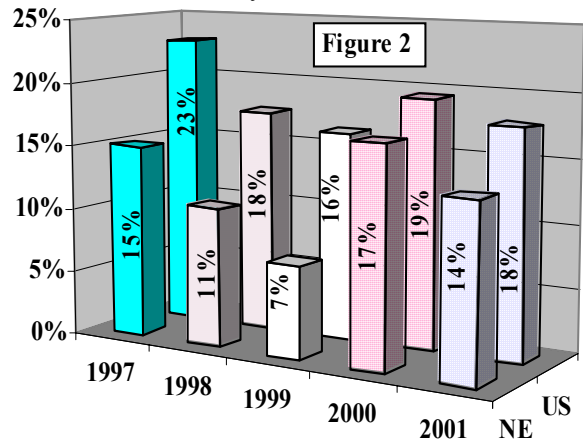
Serotype Trends in Nebraska and comparison to National Data:

Between 1997 and 2001, there were 762 *Salmonella* isolates submitted to the NPHL for serotyping. The most common serotype for each year was *S. serotype* Typhimurium (36%) followed by serotypes Enteritidis (15%), Heidelberg (5%) and Newport (5%). Nationally, *S. serotype* Typhimurium constituted 27% of all isolates over the same time period. The incidence of *S. Typhimurium* (Figure 1) from 1997 to 2001 decreased in Nebraska over this same time frame from a high of 59% in 1997 to 33% in 2001.

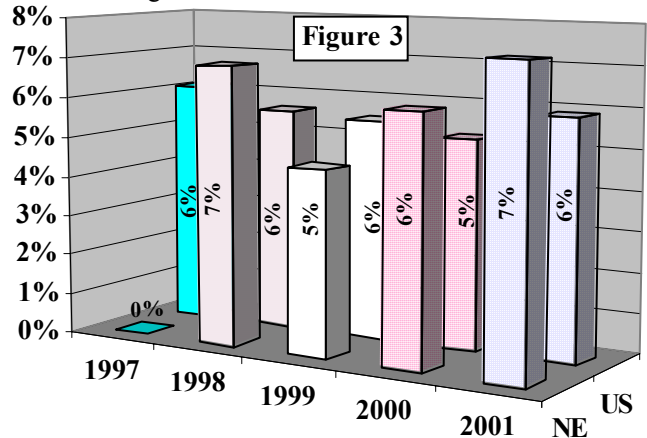


Serotype Enteritidis (Figure 2) was seen at higher rates in the United States than in Nebraska over the five year comparison. However, the incidence of *S. Enteritidis* rose to near the

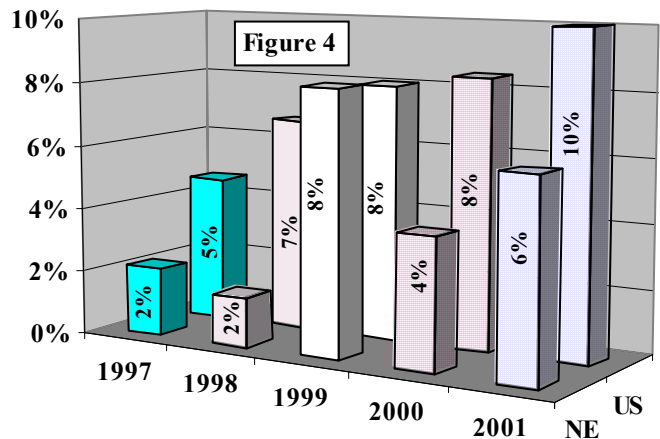
national incidence in both years 2000 and 2001.



Prior to 1998, some *Salmonella* serotypes including serotype Heidelberg were not being monitored in Nebraska. However, from 1998-2001, *S. Heidelberg* appeared to have a similar prevalence in Nebraska compared to the United States (Figure 3). *S. Heidelberg* isolated in Nebraska ranged from 5% to 7% for each year of analysis, compared with national data where the range was 5% to 6%.



S. Newport (Figure 4) was isolated more often in the United States than in Nebraska. Between 1997 and 2001, the number of *S. Newport* isolates increased in the United States from 5% to 10%. Overall, the *S. Newport* incidence has increased in Nebraska following the national trend.



The NPHL would like to thank all of the microbiology laboratories in Nebraska for submitting *Salmonella* isolates for serotyping and epidemiological analysis. For questions about this program, please call Beth Schweitzer at 402-559-6098.

Meet the Laboratorian

by Josh Rowland, State Training Coordinator, NPHL

This section of the Newsletter will feature one of the dozens of wonderful people that I have met during my recent "meet and greet" ventures around Nebraska. Over the last 6 months I have had the opportunity to visit 88 laboratory facilities in Nebraska and in turn met over 140 laboratorians.

The featured laboratorian in this issue of the Newsletter is Ruth Uhrich, the Microbiology Supervisor at Great Plains Regional Medical Center in North Platte. She provided these answers to my questions.

What got you interested in pursuing a career in laboratory science?



When I was a senior at North Platte High School, my guidance counselor suggested Medical Technology because I enjoyed math, science and the laboratory. He arranged for me to tour the Great Plains Regional Medical Center's laboratory, and from then on I was hooked!

Where did you attend medical technology school?

I attended the Medical Technology program at Clarkson Hospital

from 1981 to 1982.

How long have you worked in your present location?

I began work at Great Plains Regional Medical Center in North Platte in August 1982, right after graduation (back then, we didn't finish our training until July). That means I have been working here for more than 21 years.

What is the biggest challenge you face in your job today?

It is very difficult to keep up with the constant changes in the lab, especially in microbiology. It seems we go from one crisis to another. Antibiotic resistance to West Nile Virus to SARS to Influenza to Bioterrorism. It never stops.

What are the biggest changes you have seen in the laboratory since you started?

Our lab has gone through many changes, some good and some not so good. One of the best changes our laboratory, made a long time ago, was to become a 24/7 lab, including all holidays. Our lab is also very fortunate to have many new and modern pieces of equipment which help to keep up with the changes in laboratory medicine. Because we are in the process of becoming an official "level B" laboratory associated with NPHL, employee moral has improved as the recognition has given the laboratory more distinction. The hospital is in the process of undergoing a major remodel. As part of the remodel, the hospital has installed a pneumatic tube system to be used through out the institution. This will improve lab turn around times and help our staff become more efficient!

What would be your advice to a first-year medical technologist?

A medical technologist must be able to "go with the flow". Don't make the mistake of being resistant to change because it's inevitable. Enjoy the developments in technology as they become available. Continue with your education after you graduate, it will make you a better technologist and more marketable!

REMINDER

NPHL newsletter issues are archived on nphl.org with articles archived per issue and per article

1. Go to www.nphl.org
2. Click "NEWSLETTERS" on the blue menu bar
3. You will find, in reverse chronological order, a list of all of the newsletters
4. Click "Get Acrobat Reader" if you do not have the software needed to access the articles
5. Clickable links will take you to newsletters in their entirety or individual newsletter articles only

Self-Study Program Opportunity:

Bloodborne Pathogen Compliance-The New Needlestick Safety and Prevention Act

Program Description:

The new needlestick law, which became effective April 18, 2001, requires employers to evaluate, adapt, and implement safer sharps devices. This program will highlight the steps your facility must take to comply with the new requirements and will also provide a review of the Bloodborne Pathogen Standard. This self-study AudioNet Program can be utilized at anytime. Once registered, a participant will receive a PIN number which will allow them access to the program. The participant will dial a phone number to hear the audio portion of the program on the telephone and will view the presentation slides on the Internet. Continuing Education credit will be offered, based on 2 contact hours of instruction.

Registration:

\$35 per facility

Go to the TRAINING/EDUCATION page on www.nphl.org for more information.

Upcoming Teleconference Opportunity:

What's New in the 2004 NCCLS Standards for Antimicrobial Susceptibility Testing?

Wednesday, January 21, 2004 11:30 to 13:00

or

Thursday, January 22, 2004 14:00 to 15:30

Program Description:

Each January, NCCLS provides updated standards for antimicrobial susceptibility testing. It is important for clinical laboratories to incorporate the new recommendations into their routine practices in order to optimize detection and reporting of antimicrobial resistance. This teleconference will highlight the new recommendations found in the NCCLS M100-S14 tables which will become available in January 2004 and will replace the tables published in 2003.

Continuing Education credit will be offered, based on 1.5 contact hours of instruction.

Registration:

No charge

Registration deadline is January 14, 2004

Introducing STATPack™

SECURE TELECOMMUNICATIONS APPLICATION TERMINAL PACKAGE
by Ann Fruhling, PhD, UNO and Tony Sambol, Assistant Director, NPHL

The NPHL has been working with Dr. Ann Fruhling, Assistant Professor at the University of Nebraska at Omaha's College of Information Science and Technology, on a new project to help laboratories become more prepared for a bioterrorism event. The project which is funded by a Nebraska Research Initiative (NRI) grant aims to develop a laboratory-based Secure Telecommunications Application Terminal Package™, termed "STATPack™". The goal of the NRI program is to leverage Nebraska resources to develop new technologies that may have commercial potential.

STATPack™ is a secure, dedicated, HIPPA compliant web-based network system that will support telecommunications between clinical laboratories in Nebraska. In the initial phase of field implementation, the STATPack™ will be placed in regional hospital laboratories throughout Nebraska. This connectivity will allow for immediate communication and data transfer of urgent test related problems by transmitting images and text. This system will serve as means for providing immediate consultation with the NPHL, for example, a "unknown" organism growing from a culture that a laboratory may be processing, or a "suspicious" package delivered to the laboratory. The need for such a system became apparent during the anthrax scare in 2002 when laboratorians wanted immediate answers to questions concerning processing unusual organisms.

The STATPack™ system (**Figure 1**) consists of a computer terminal and a high resolution digital camera by which pictures of culture plates may be taken. These images and descriptive text messages may be sent to the NPHL for consultation. NPHL will receive a notice that a laboratory is requesting consultation via a pager and on the system. Should a message need to be communicated to the laboratories, the STATPack™ system allows the NPHL to send notices to laboratories including an audible computer alarm.

A future version of the STATPack™ is planned that will allow laboratories to capture microscopic images of Gram or Fluorescent Antibody (FA) stains and send these images to a consultant.

Objectives of the STATPack include:

- Provide a web-based means where the NPHL can interact and share current and timely information with rural health laboratories
- Provide a secure network for transmission of sensitive biosecurity information including health messages and images of laboratory specimens for "real-time" consultation that is HIPPA compliant.
- Provide a repository of laboratory specimen images
- Provide a repository of laboratory messages.
- Provide a user-friendly interface for clinical laboratorians and the NPHL staff.

The NPHL will utilize the STATPack™ system to increase statewide laboratory responsiveness in the identification of biological microorganisms that may be associated with bioterrorism.

For questions about the STATPack™, please contact Tony Sambol at 402-559-3032 or asambol@unmc.edu.

Using [nphl.org](http://www.nphl.org) to order supplies.

1. Go to www.nphl.org
2. Click "SUPPLY ORDERS" link on the red menu bar
3. Enter your name and NPHL account number and click "Log In"
4. Click "Place Orders" and enter volume of supplies wanted, click "Place Order"
5. To check status of orders already placed, click "View Orders"
6. Once you click "View Orders", you can check on your order status by clicking on the order numbers.
7. Once you click on an order number, you can view:
Products ordered, quantity ordered, quantity sent by NPHL, and back order status of your order
8. To change your account information, click "Update Account info" in the "logged in under box"

For more instruction on ordering supplies, call NPHL client services at 866-290-1406 or 402-559-2440.

Figure 1



Save the Date

When: April 14-16, 2004
What: "Back to the River"
Annual NSCLS Conference Joint meeting with CLMA and ASCP members
Where: Omaha Hilton
For more information please contact one of the conference organizers:
Roxanne Alter 402-559-8288
Sandra Jameson 402-955-5523
Beth Sargent 800-845-7355 ext. 6853

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**-New Toll Free NPHL Client Services Number-
866-290-1406**

If you would prefer to receive the NPHL newsletter by e-mail, please send your email address to Josh Rowland at jrowland@unmc.edu

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