



# DELAWARE LABORATOR

Winter 2007-2008



## NOROVIRUS TESTING AT DELAWARE PUBLIC HEALTH LABORATORY

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### INTRODUCTION

Noroviruses are a group of viruses and the major cause of outbreaks of nonbacterial gastroenteritis, often referred to as “stomach flu”. Noroviruses are small, round viruses belonging to the virus family *Caliciviridae*. Although they gained notoriety because of cruise ship outbreaks, noroviruses, previously known as Norwalk virus, were named for a land-based outbreak in Norwalk, Ohio, which occurred over 30 years ago. A study released in 2006 showed that 86 percent of specimens sent to the Centers for Disease Control and Prevention (CDC) for investigation of nonbacterial acute gastroenteritis (AGE) from 1996-2004 tested positive for norovirus by reverse transcriptase polymerase chain reaction (RT-PCR)<sup>1</sup>.

Norovirus infections can cause sudden onset of vomiting accompanied by watery diarrhea, nausea, abdominal cramps, fever, or headache, lasting anywhere from 12-60 hours. The incubation period is approximately 24-48 hours. Some people also exhibit low-grade fevers, chills, headaches, muscle aches and fatigue. There are no preventative treatments such as vaccines or antiviral medications for noroviruses<sup>2</sup>. Antibiotics are not recommended for the treatment of norovirus infection. The many different strains of norovirus make it difficult for a patient to develop long-lasting immunity; thus, noroviruses can recur throughout a person’s lifetime. Management of symptoms typically includes rehydration to replace fluids and/or electrolytes<sup>3</sup>. Symptoms may be more severe in people who are at higher risk for infections: young children, elderly, immune compromised people and/or people with long-term health conditions.

Noroviruses are highly contagious. Transmission may occur in several ways: person-to-person or through the fecal-oral route via fecally contaminated food or water<sup>4</sup>. Infection can occur with as few as 100 virus particles<sup>5</sup>. The low infectious dose facilitates transmission and creates risk for outbreaks in areas with large, contained populations: long-term care facilities, like nursing homes; daycare centers; schools; prisons; and cruise ships. The long-term care facilities are at an even greater risk because of their normally elderly and/or immune compromised residents. Outbreaks in these facilities can be devastating and have been known to be fatal in rare cases<sup>1</sup>.

In the mid 1990’s (1993-1997), the CDC reported minimum numbers of norovirus outbreaks (0.3 percent of total foodborne-disease outbreaks) in the surveillance of foodborne-diseases<sup>6</sup>. However, in 1998-2002, the reported norovirus outbreaks significantly increased to 9.9 percent of all foodborne-disease outbreaks.<sup>7</sup> The CDC now believes that at least 50 percent of all foodborne-disease outbreaks of gastroenteritis (“food poisoning”) can be attributed to noroviruses<sup>3</sup>. The recent emergence in norovirus activities has been attributed to a number of factors. First and foremost, the development of molecular methods and use of PCR as a detection method has been a major factor. The rapid implementation of diagnostic PCR methods in clinical and public health laboratories has allowed more samples to be tested and screened. In the report on foodborne-disease outbreaks from 1993-1997, 68.1 percent of all cases were officially ruled “unknown etiology”, and only 0.3 percent of the total foodborne-

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### Special Points of Interest

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diseases were confirmed norovirus as compared to 9.9 percent from 1998-2002. The question remains: Is the recent increase in norovirus activities due to the advances in diagnostic testing, or are noroviruses in fact an emerging problem? Other factors which may contribute to the emergence of noroviruses are: an increased percentage of household food expenditures spent on eating out; a higher percentage of the population traveling; importation of produce grown in countries where crops are irrigated with sewage-contaminated water; and techniques commonly used to reduce the contamination of food from animal origins are frequently ineffective against noroviruses<sup>8</sup>.

**PREVENTION**

In the absence of treatment options, infection prevention and control measures include hand washing after using the bathroom and before handling food items, wearing masks when cleaning contaminated areas, handling soiled linens as little as possible, flushing or discarding any vomit and/or stool in the toilet, and ensuring that the surrounding area is kept clean. These measures, together with cleaning all surfaces with germicidal product, (e.g., chlorine-based) will reduce the likelihood of infections and outbreaks<sup>10</sup>.

**DIAGNOSTIC METHODS**

Norovirus infections can be diagnosed by testing stool or emesis specimens using RT-PCR (reverse transcriptase polymerase chain reaction). Previous methodologies included: electron microscopy; radioimmunoassay (RIA) using the radioactive isotope of iodine; enzyme immunoassay (EIA); and western blot assay. Some of these analyses, specifically electron microscopy and the RIA, were extremely costly and required specialized training and equipment not available in most laboratories. RT-PCR was a suitable replacement for all previous tests due to its widespread availability and increased sensitivity and specificity to the virus<sup>11</sup>. According to the CDC, twenty-seven state public health laboratories currently have the capacity to test for noroviruses by RT-PCR<sup>3</sup>. In 2007,



DPHL used the RT-PCR method, tested 61 samples for the presence of norovirus nucleic acid, and identified 25 samples as containing the nucleic acids. Recent breakthroughs in the development of a cell culture method could allow researchers to get a better understanding of the pathogenesis of noroviruses and eventually lead to development of a vaccine<sup>12</sup>.

At DPHL, the RNA of the virus is first extracted from the specimen. Then, a complementary DNA strand is made using the RNA from the virus as a template, and PCR is performed to amplify the product. Gel electrophoresis of the PCR product and the detection of the 213-bp (base pair) amplicon (band characteristic of norovirus) using a fluorescent ethidium bromide dye are necessary to identify norovirus in the sample. Product that has been purified from this band is used for nucleotide sequencing.

Two new methods are currently being investigated at DPHL: Real time RT-PCR and multiplex RT-PCR. Real time PCR utilizes a fluorescent probe that gives off a light signal every time a copy of the target sequence is produced. This signal is read by an instrument and represented graphically on a computer. This method not only allows for the user to obtain data while the run is in progress, but it also allows for the quantification of the number of viral particles present when the sample is compared to known standards. The multiplex RT-PCR is a variation on the real time methodology. Instead of utilizing a single probe for the identification of the targeted sequence, multiple probes corresponding to several different targeted sequences are added, allowing the ability to detect the presence of several possible targets. In the case of norovirus, probes are designed to be genogroup specific which allows not only for real time, quantifiable data, but also differentiation of the virus into a specific genogroup based on the probe that registers.

**SPECIMEN SUBMISSION**

DPHL tests for norovirus during outbreaks and/or disease cluster situations, but not for individual cases. When multiple cases (more than 2) of enteric diseases are suspected in day care centers, nursing homes, restaurants or places of high risk, the facility or nursing director should notify the Bureau of Epidemiology of the Division of Public Health

(302-744-4541) to ensure that the event is appropriate for investigation. Foodborne illnesses may also be reported by families, schools, organizations, etc., to either the Foodborne Epidemiologist or the Office of Food Protection (OFP) (302-744-4546). OFP should be notified when restaurant or institution associated illness is suspected.

After approval by the Bureau of Epidemiology, a specimen for each patient should be submitted and norovirus testing requested. Specimen collection kits for collection of feces are available from the DPHL. Each specimen must be clearly labeled with the patient's name and date of birth and accompanied by a DPHL order form. Please follow all relevant Laboratory Specimen Collection Procedures (<http://www.dhss.delaware.gov/dph/lab/scp.html>). **Unlabeled specimens will not be tested.** The Bureau of Epidemiology will determine how many specimens to collect, from what units, etc. based on the nature of the cluster. Generally, specimens from 4 to 8 patients are recommended for testing. Once positive specimens are obtained from a cluster, testing of additional patients is considered unnecessary. Specimen collection for viral testing should begin as soon as an outbreak is suspected. Ideally, specimens should be collected during the acute phase of the illness while the stools are still liquid or semi-solid. While stool specimens are preferred, emesis specimens are also acceptable. Specimens should be kept refrigerated at 4°C until they can be tested (freezing can destroy virus particles).

**RESULT REPORTING**

Norovirus testing will be performed within 1-2 business days of receipt. The results will be reported for a positive norovirus test as "Nucleic Acid Detected" and for a negative norovirus test as "No Nucleic Acid Detected." The Bureau of Epidemiology and the submitting facility will be notified of the results via telephone, fax, or email, and the official report will be forwarded to Epidemiology and recorded on the Laboratory Information Management System (LIMS).

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## Laboratory Preparedness Advisory Committee Meeting November 15, 2007

*Debra Rutledge, Lab Manager, Marion Fowler, MT (ASCP), Microbiologist II and Tara Lydick, Chemical Terrorism Coordinator*

The November 15, 2007 Laboratory Preparedness Advisory Committee (LPAC) meeting took place at the Delaware Department of Agriculture (DDA). Several DDA staff gave a quick overview of the work performed by the department. Teresa Crenshaw from Agriculture Compliance discussed the proper registration and labeling of a product, contaminant testing for nitrates, mycotoxins and manure testing, Dave Pyne of Pesticides discussed the federal Environmental Protection Agency regulatory programs, and JoAnne Davis of Poultry and Animal Health shed light on the many tests run by the laboratory such as Brucellosis, Yonnes, Equine Infectious Anemia, pseudorabies, hatchery sanitation.

The morning session concentrated on the biological component of all types of public health preparedness. Steven Snow, the Association of Public Health Laboratories Emerging Infectious Disease Fellow assigned to the Delaware Public Health Laboratory

(DPHL), gave a presentation on Norovirus. Emily Outten gave a Powerpoint presentation on the Food Emergency Response Network and the influenza testing algorithm for 2007. Dr. Cynthia Flynn presented a slide show on *Klebsiella pneumoniae* carbapenem resistance. Tara Lydick announced the workshops for packaging and shipping, smallpox packaging and shipping and chain of custody that are available at DPHL in January of 2008. Marion Fowler discussed the two Bioterrorism (BT) wet workshops to be held on May 1 and May 2, 2008. Each workshop will consist of a morning session with reviews of the Laboratory Response Network (LRN), individual BT organisms, biosafety procedures and requirements for referral of an isolate that cannot be ruled out as a BT agent, as well as protocols for a presumptive or positive BT agent, etc. The afternoon session will be a wet workshop where attenuated or vaccine strains of the BT agents can be observed on various media or under a

microscope with the appropriate biochemicals or tests used according to the American Society for Microbiology (ASM) sentinel laboratory guidelines. More information to follow.

Debra Rutledge, clinical microbiology lab manager, gave a short history of the College of American Pathologist’s Laboratory Preparedness Survey (CAP LPS). The survey tests the ability of sentinel laboratories to rule out or refer possible bioterrorism agents. Previous surveys lacked relevance because the organisms sent did not closely mimic the BT organisms and the slides sent would be read by a pathologist, not a microbiologist. Therefore CDC, APHL and many of the state health laboratories collaborated to change the LPS so that it would properly challenge sentinel laboratories. CAP’s new LPS survey began in 2007. See page 5 for a more in-depth review of the 2007 LPS.

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On-site visits of all sentinel laboratories in Delaware were conducted by Marion Fowler in November and December of 2007. A review of the requirements for an advanced sentinel laboratory took place in each microbiology laboratory. Any discrepancies were noted and each laboratory is working to make the proper corrections. The packaging and shipping portion of the May 2007 LPS survey was also reviewed individually with each laboratory.

Dr. Leroy Hathcock provided a Public Health Preparedness Section (PHPS) update. So far this fiscal year, PHPS received 30 percent of the Public Health Emergency Preparedness Cooperative Agreement funds. The grant, which was significantly delayed in release, included a 15-20 percent overall reduction with Delaware's allocation at \$5.9 million. PHPS purchased a warehouse for the SNS (Strategic National Stockpile) In-state stockpile (which is being refurbished) and response equipment to be located in Dover. They also participated in two exercises, a Radiological Dirty Bomb tabletop in Georgetown and a Neighborhood Emergency Help Center activation exercise in which 2500 persons were vaccinated. PHPS reports that 3 ChemPAK units were deployed during the September 2007 NASCAR race in Dover and that a PHPS representative spends one day a week at the DIAC (Delaware Information Analysis Center) strengthening the working relationship.

In addition, PHPS received \$417K from the Health & Human Services Pandemic Flu Grant to use for medical surge capacity, primarily for mortuary supplies, fit testing of personal protective equipment (PPE), web based training for plans, and pediatric ventilators.

Next, the group discussed multi-resistant *Staphylococcus aureus* (MRSA) plans and testing at each facility. Two main testing methods are being used: culture (Chrome Agar) and PCR (GenExpert). Hospitals differed in when screening was occurring. All facilities agreed they are not currently screening hospital personnel.

After lunch, the group reconvened to discuss Chemical Terrorism and Environmental Preparedness. The first draft of the Environmental Collection Kits and Protocols for discussion was presented and is available for

review at <http://www.dhss.delaware.gov/dhss/dph/lab/files/samplingkit.pdf>. The kit is broken into three primary areas, solids collection, liquids collection, swab/swipe collection. The kit contains materials for liquids collection, solids collection, swab/swipe collection, documentation, and support supplies including a reorder sheet. Other items such as a disposable waterproof camera or digital camera and a multipurpose tool were recommended but not included due to cost. Other recommended items were: waterproof notebook/pad with sharpie(s); duck/chem tape (to hold protective sheeting); crime scene/construction tape (to segregate collection area within



scene); additional specimen collection containers for on scene control collections; directions to DPHL (including where to go at DPHL) and contact numbers; directions on how to use the kit; larger zip or evidentiary bag to include all specimens for submission (1 big bag with paperwork); bleach wipes & container; and a disclaimer stating that the protocol doesn't cover proper selection and use of PPE and risk assessment.

The restocking of the kits presents a cost issue that has not yet been resolved. The initial 12 kits will be provided to the responding team members of the Delaware Natural Resources & Environmental Control Emergency Response Branch, 31st Civil Support Team, DPH Environmental Health Evaluation Branch, United States Postal Service, DDA, Office of Drinking Water, DPH Investigative Response Team, and others as identified. The kits will be handed out as part of the collection training course to be held at DPHL on April 7 and 9, 2008. Additional training courses will be scheduled as needed. DPHL is negotiating with Delaware State Fire School to provide the collec-

tion, packaging, shipping, and documentation training; however there is no date set at this time for the transition.

Tara Lydick provided a brief update on the current and future capabilities of the Chemical Preparedness Program, including outreach areas and needs. The Chemical Preparedness Laboratory (CPL) has received, installed, and completed preliminary training on the high performance liquid chromatograph tandem mass spectrometer (LC/MS/MS or "tandem MS"). Two members of DPHL attended the Detection of Organophosphate Nerve Agent (OPNA) Metabolites in Urine by LC/MS/MS training at CDC in Atlanta, GA on November 27-29, 2007. They have 60 days upon their return to complete the method validation. This method also uses liquid derivatization evaporation techniques automated solid phase extraction (SPE) as part of the sample preparation. DPHL has purchased and installed a Gilson SPE215 unit and Zymark turbopap for this method and is validating the method for volatile organic compounds in blood by GC/MS.

With the addition and development of this powerful instrumentation, DPHL is asking partners to consider what other projects, needs, and analyses could be run or developed on these platforms. While this equipment is primarily used for Preparedness testing, DPHL fully backs the full use of equipment.

Lastly, the group discussed the need for proficiency testing of hand-held "field" equipment used to evaluate potentially hazardous materials (see discussion sheet, <http://www.dhss.delaware.gov/dhss/dph/lab/fieldinstrumprotesting.html>). Quarterly testing was determined to be most reasonable, beginning with an equipment and instrument type inventory. Procurement of materials for testing and development by the LPAC of a significant new program were issues raised. The FBI representative emphasized that DPHL's Level 2 status is unique in the State of Delaware. As a federal response partner, DPHL's Level 2 capabilities are more important than the development of a strong Level 3 PT program. Nevertheless, DPHL will keep this on our to-do list and seek out the necessary resources.

## Brucella Abortus RB51 and the 2007 Laboratory Preparedness Survey

Debra Rutledge, Lab Manager and Marion Fowler, MT (ASCP), Microbiologist II

Before a sentinel laboratory could participate in the LPS survey, the sentinel laboratory was required to sign a form indicating that their laboratory had the proper equipment (a certified working biosafety cabinet [BSC]) and trained competent personnel to perform testing on bioterrorism (BT) agents. Sentinel laboratories then were able to receive attenuated or vaccine strains of many of the BT agents along with mimic organisms. This year, the instructions for testing changed and the laboratories were required to use the ASM guidelines for the rule out or referral of possible BT agents to their state laboratory. Laboratories were also instructed to use BSL2 with BSL3 practices. Although the new format for the LPS had been disseminated to microbiology laboratory managers through CAP, LPAC meetings and e-mails, many of the staff who were assigned to set up and perform testing on the LPS organisms were unaware of the changes. For years laboratories were instructed to treat their proficiency testing surveys exactly the same as their patient cultures, so many laboratories failed to notice the new instructions. To complicate matters, the routine bacteriology CAP survey also was delivered at the same time.

An incident at a laboratory in the state of New York prompted officials from CDC and APHL to determine that a risk assessment for possible exposure to the vaccine strain named *Brucella abortus* RB51 (included in the October 2007 LPS) was necessary for all laboratories participating in the LPS. Each state public health laboratory contacted their sentinel laboratories who participated in the October 2007 CAP LPS. A "Questionnaire to Assess Biosafety Practices" was completed by each laboratory. A table "Risk assessment and post-exposure prophylaxis (PEP) for potential exposure to RB51" was emailed to all laboratories so that the possible exposures could be categorized as high, low or none. Recommendations for PEP were given. Each potentially exposed lab worker was referred to their hospital's health unit or infection control committee and CDC was available for questions. As of today, no laboratory worker contracted the *Brucella abortus* RB51.

The CAP LPS name has been changed to LPX, "Laboratory Preparedness Exercise".

In preparation for the 2008 LPX survey, DPHL suggests:

1. Before the next LPX survey arrives, review the definition of an advanced sentinel laboratory, the ASM sentinel laboratory guidelines for BT agents AND the Biosafety in Microbiological and Biomedical Laboratories biosafety level criteria (BSL). The LPX survey requires a BSL2 laboratory with BSL3 practices.
2. Remember, the ASM Sentinel Laboratory Guidelines MUST be followed to rule-out or refer organisms. Do not perform extra tests unless they can be completed in the BSC.
3. Send as many microbiologists as possible to the BT wet workshop to be held in March 2008.
4. All work must be done in a certified BSC. Commercial systems such as the Vitek and MicroScan cannot be used. Even if the initial set up and discard of plate/card occurs in the BSC, transportation of the plate or card to the machine could result in aerosol production if the specimen is dropped, bumped, etc.
5. All plates must be taped closed after initial processing, reading and after performing tests. Decontaminate outside of plates with 10 percent bleach or other disinfectant before removing them from the BSC to place in an incubator. Regular scotch tape and other methods are acceptable as long as air/CO2 is able to enter the agar plate.
6. All slides for staining must be air-dried and fixed in the BSC. If it is not possible to heat fix the slide in the BSC, methanol must be used.
7. Work in pairs. One person uses the BSC and the other person can document and be the gopher. At least one of the microbiologists must have attended the BT wet workshop for Delaware sentinel laboratories given by DPHL in 2007 or 2008.
8. Run Quality Control concurrently for all tests and staining performed. All test results on possible BT organisms must be performed by at least one person with a second person watching, thus ensuring that the organism is not mistakenly ruled out as a BT agent and preventing exposures. For example, oxidase and catalase, two very important tests, if misread, could lead the microbi-

ologist to incorrectly follow the flowchart.

9. Motility medium, not slide motility, should be used to avoid possible exposure and to avoid misreading brownian movement for actual motility. Motility medium with TTC (2,3,5 Triphenyltetrazolium Chloride) added also helps with visualization of growth.

10. All organisms, plates, tubes, etc. must be decontaminated before placing in the red biohazard boxes. If an autoclave is available, the outside of the closed bag/container must be decontaminated with 10 percent bleach or other disinfectant before transporting directly to the autoclave. If an autoclave is not available, disinfect with 10 percent bleach or other appropriate disinfectant all discards (bags/containers, plates, etc.) overnight in the BSC. After disinfection, remove and place in the red biohazard bags for disposal.

Although this incident was unfortunate, it brings to light the reason for this specialized survey. *Brucella abortus* RB51 is a cattle vaccine strain and is much less infectious than the *Brucella* or any other BT agent that could come across the bench at a sentinel laboratory. Therefore, by participating in this survey, sentinel laboratories are preparing for the possibility of BT agents. Many of the BT agents come from natural sources so a BT event is not needed to make this survey significant for clinical labs. Laboratory workers and the public will benefit greatly by learning how to properly handle these organisms. The ASM sentinel guidelines must be used to rule-out or refer a BT agent and complete the survey using proper biosafety procedures and equipment. Packaging and shipping abilities of the sentinel laboratories are tested once a year by DPHL. Facilities wishing to participate in additional packaging and shipping exercises may contact DPHL for a schedule.



## What's New in Newborn Screening?

Patricia M. Scott, Laboratory Manager

The laboratory testing program for Newborn Screening (NBS) at Delaware Public Health Laboratory is now eight years old. Like a typical 8-year old, we have been steadily growing, learning and changing. The addition of Cystic fibrosis testing in October of 2006 was the final step needed to report all of the core disorders recommended by the American College of Medical Genetics Report, *Toward a Uniform Testing Panel and System*, 2005. Expansion of MS/MS testing to include second specimens and the implementation of an updated software system added to a busy and productive year for the Delaware Newborn Screening laboratory staff.

### CYSTIC FIBROSIS

Validating and getting comfortable with the IRT/IRT methodology (Immunoreactive Tyrosin analysis on two separate specimens) proved to be more difficult than expected. The IRT method validation on the PerkinElmer Victor was not particularly troublesome itself, but deciding on the appropriate cut-off was. Finding some fluctuation in the IRT values from plate to plate and knowing that IRT is not a highly specific marker for Cystic fibrosis, we followed the trend of other states and set our cut-off to the highest percent of the plate, in our case, 3 percent.

A normal range was established using two months of initial specimens (2454 samples) and a borderline cut-off was set at 70 ng/mL, elevated at 100 ng/mL and clearly elevated at 120 ng/mL. The top 3 percent of every run would have repeat analysis for IRT (run in duplicate) on their second specimen, after which, one of these interpretations would be assigned: *Within Normal Limits, Inconclusive, Suspicious, or Presumptive Positive*.

Our system evolved over time, with some initial cautiousness in our interpretations. We compared our results to 11 specimens from New Jersey Health & Hygiene Laboratory with varying genetic profiles and IRT values. We sent 18 specimens to Wisconsin State Laboratory of Hygiene for DNA mutational analysis and eight babies to A. I. DuPont Hospital for sweat tests to gain a level of comfort with our testing.

From October 2006 – December 2007, we identified 2 cases of Cystic Fibrosis giving Delaware a preliminary incidence rate of 1:7,900 births, which falls below the national average of 1:3,721. A breakout by race shows very different prevalence rates - 1:2,500 Caucasians, 1:8,000 Hispanics, 1:15,300 African Americans, and 1:32,000 Asian Americans. A total of 27 sweat tests were requested during this period, but not all of them have been completed and/or reported back to the program office.

### MS/MS ON SECOND SPECIMENS

Only a few states have been reporting MS/MS (Tandem Mass Spectrometry) results routinely on second specimens, but more states are coming on board, especially those states that routinely collect two specimens on all babies (Arizona, Colorado, Maryland, Nevada, New Mexico, Oregon, Texas, Utah and Wyoming). It is well documented that the level of many analytes does change after birth-- Acylcarnitines tend to decrease and Amino Acids tend to rise. Because of this, separate reference ranges for second specimens must be considered and were implemented in Delaware when we began reporting results. Our range for initial specimens will also be applied to second specimens < 7 days old, and our range for second specimens will be applied to initial specimens > 14 days old. We have not found any significant positives yet, but will continue to gather data.

### UPDATED COMPUTER SYSTEM

Reporting for MS/MS analytes on second specimens could not have been implemented before October 2007 because it was not until October that we installed the Core MSDS data system to manage laboratory and follow-up data. The increased capabilities of the system and a new server with greater capacity will allow us to download the huge data files generated by the MS/MS and send the data through a much more complicated merge process. In addition to looking at age and specimen type to assign the correct range, we are looking at and coding for other demographic inputs, such as TPN (total parenteral nutrition). Amino Acid elevations are expected with TPN babies and

should not be sent out with an interpretation of *Presumptive Positive* as was done in the past. Diet management specimens now can be handled electronically with reporting of values on the final report.

The final report format went through a huge transformation with the conversion. Besides just looking nicer, it has separate formats for normal vs. not-normal reports. Any analyte with an out-of-range result will report the value(s) of all corresponding analytes along with the interpretation. At the request of our pediatricians, hearing results are now included in the reports, allowing the primary care physician a single consolidated report. There are many additional options in the new system that will allow us to customize comments on reports, create ad-hoc reports, and visualize the information in a more productive manner.

### FUTURE PLANS

Like an 8-year old let loose in the toy store, we are still looking for more. Our program is continuing to grow and the improvements that we have on our minds for the near future are exciting. We anticipate conversion sometime to a web-based system that will allow access by primary care physicians to newborn screening results from their office computer through a web-based connection.

We are also following the crowd of states that are using DNA as confirmatory testing for disorders like Cystic fibrosis, and hope to have that technology available by the end of the year. We will continue to watch for the next great technology and expand the capabilities in Delaware so that our babies are as well-served as babies born anywhere else in the country!



## Employee News

### A Fond Farewell

We wish **Tom Lin** and **Amir Saad, Ph.D** a fond farewell and best wishes upon their retirements, effective September 30, 2007 and February 29, 2008, respectively.

Tom initially joined the lab in 1995 as an analytical chemist. After 3 years of service in the Medical Examiner's office and DNREC, he returned to the lab in 2000. His work in the environmental chemistry section focused on organic and inorganic chemistry.

Amir began in the lab in February 1983 after working as a researcher in fermentation technology, a skill he later put to good use making award-winning wine and brewing excellent beer. Amir works in the environmental chemistry section where his expertise assures the safety of our drinking water.

You will both be sorely missed!

### We Welcome ...

New to the DPHL is **Jack Liou, Ph.D.** from Cornell University. Jack spent the last two years performing analytical (e.g. GC/MS, HPLC) and molecular (e.g. PCR cloning) techniques to better understand bio-transformation of pollutants and to identify active microorganisms in soil. Jack, a lab manager II, will become our bioterrorism coordinator and also help to coordinate the activities of our Infectious Disease and Chemistry laboratories. Jack's education and experience will be a real asset to the lab and we extend a warm welcome to him.

**Jennifer Cascarino** joined DPHL as a microbiologist II on October 15, 2007 in the Molecular Virology section. She is a recent graduate of University of Delaware with a Master's in food microbiology and we are pleased that she's joining us. Welcome Jennifer!

The Lab is pleased to introduce **Linda Popels**, who joined the DPH lab in November 2007 as an analytical chemist. Linda earned a Ph.D. in Oceanography from the University of Delaware and was previously employed in the Office of Drinking Water as an Environmental Health Specialist. Linda will be responsible for testing drinking water samples for volatile organic compounds by GC/MS.

### Other Employee News ....

Congratulations to **Charity Mabrey**, who came to DPHL in August 2007 as a laboratory technician III in the Environmental and Molecular Microbiology and Virology sections and was promoted in December to microbiologist II performing water bacteriology testing. Charity obtained a BA in Biological Sciences from the University of Delaware. She was a casual/seasonal Biological Aide at DNREC Mosquito Control Section and as a laboratory technician in quality assurance at Clariant Performance Plastics before coming to DPHL.

Congratulations to **Diane Hindman** and the **microbiology lab staff** for their contribution to ground breaking research into bacteria related to tuberculosis.

After noticing an unusually fast growing strain in the DPH lab, Diane sent the sample to the University of Texas for identification and susceptibility testing. The results indicated that the Delaware patient was infected with *Segniliparus*, a relatively new mycobacterium. The case report appeared in the October 2007 "Journal of Clinical Microbiology". Way to go, team!

### DELAWARE'S DIVISION OF PUBLIC HEALTH LABORATORY



Delaware Public Health Laboratory  
30 Sunnyside Road  
Smyrna, DE 19977  
302.223.1520  
Fax: 302.653.2877

**Built: 1990**

**Business Hours: 8 a.m. – 4:30 p.m.**

**Purpose:** The Division of Public Health Laboratory currently offers consultation and laboratory services to state agencies, Delaware Health and Social Services and Division of Public Health programs including:

- HIV surveillance and prevention
- Immunization
- Lead
- Epidemiology
- Newborn Screening
- STD prevention
- TB Elimination
- Drinking water
- Preparedness

Jaime "Gus" Rivera, MD, FAACP  
Director, Delaware's Division of Public Health

Jane P. Getchell, DrPH  
Director, Delaware Public Health Laboratory

Christina Pleasanton, MS  
Deputy Director, Delaware Public Health Laboratory

If you have questions regarding these articles or would like to receive a hard copy of this newsletter, contact the Delaware Public Health Laboratory at 302.223.1520. To receive this newsletter by email, contact [liz.moore@state.de.us](mailto:liz.moore@state.de.us).



"To Protect and Enhance the Health of the  
People of Delaware"