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The National Molecular Subtyping Network
for Foodborne Disease Surveillance



PulseNetTM News

State & Local Public Health Laboratories
in the United States and PulseNet Canada



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10th ANNUAL PULSENET UPDATE MEETING - MIAMI, FL

Maria Calcaterra and David Wingfield, Florida Department of Health, Tampa, FL
Robin Krueger, USF Center for Biological Defense, Tampa, FL

The 10th Annual PulseNet Update Meeting was held in sunny Miami, FL April 3 through 6, 2006. This year's meeting was well-attended with 165 laboratorians and 130 epidemiologists participating from around the world. The conference got under way with open sessions on lab issues and BioNumerics. Attendees were provided the opportunity for hands-on training with software and received tips on running gels and optimizing images for analysis.

At the Monday night Opening Session, Dr. Peter Shih, interim Director of the Florida Department of Health's Miami Branch Lab, welcomed everyone to the city. The weather was sunny and gorgeous – a perfect opportunity for traveling PulseNet participants to enjoy a break from some cooler climates and experience South Florida at its best. Dr. Shih was followed by Dr. Bala Swaminathan, who reviewed PulseNet's first ten years. He spoke of the program's creation and its evolution through the early stages and brought us to current times and developments that have been the reward of a decade of hard work. The keynote speaker for the evening, Dr. Richard Raymond from USDA-FSIS, provided us with an informative look at food safety measures and recent developments in this arena including molecular technology.

The evening wrapped up with a hilarious game show hosted by the "Pulse-Nuts." The star was none other than 'The Godfather' of PulseNet, Bala Swaminathan, or "Swami". We discovered a lot of great trivia about Swami and got to see some snapshots of him from pre-CDC/PulseNet days. Following the Game Show fun was a reception sponsored by Bio-Rad that gave everyone a chance to see familiar faces and get to know others.

The meetings began Tuesday morning with a joint session of labs and epis. The meeting themes were introduced and Dr. Robert Brackett from FDA-CFSAN discussed the impact of PulseNet on food safety over the last 13 years. In addition, an update on NARMS and the outcome of two multi-state outbreaks were given. Kristy Kubota and Aimee Janusz discussed new protocols for Bioterrorism agents and Vibrio species, while Mary Ann Fair and Kara Cooper updated the attendees on changes to the current protocols. Dr. Amy Vogler of Northern Arizona University presented her work on VNTR mutation rates in *E. coli* O157:H7 – a precursor to the CDC's development of the *E. coli* O157:H7 MLVA assay. After the break, the presentations focused on recommendations for the use of second enzyme subtyping of isolates for the PulseNet Database and PFGE pattern interpretation.

On Tuesday evening, conference attendees met at the docks for a three-hour tour of Biscayne Bay on the Lady Catalina partially sponsored by Applied Maths. The tour gave everyone a chance to enjoy the mild south



Miami, FL - April, 2006

Florida weather and a spectacular sunset over downtown Miami. The highlight of the evening was the presentation of the "10 Years of PulseNet" scrapbook to Swami and the subsequent roast. Dr. Efrain Ribot from the CDC, Kai-Man Kam from PulseNet Asia Pacific, John Besser from Minnesota Department of Health, and Dr. Peter Gerner-Smidt from the CDC each took turns sharing stories of their experiences with Swami. All of the roasters were crowd pleasers, especially Kai-Man Kam, who serenaded Swami with a love song. Afterwards the PulseNet Dance Team took to the floor and danced the night away.

Dr. Linda Demma and Dr. Peter Gerner-Smidt kicked off the Wednesday morning combined session with a discussion of the role of molecular methods in outbreak detection and how the development of these methods has provided an added dimension to disease investigations. Dr. Patricia Fields continued the session with a crash course in *Salmonella* serotyping and nomenclature. She guided us through the often perplexing nature of *Salmonella* nomenclature, names versus

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10th Annual PulseNet Update Meeting - Miami, FL

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numbers in serotype designation and mucoid and rough colony types. Also, she discussed the relationship between PFGE and serotype and how PulseNet has helped resolve some old serotyping issues. Then, Dr. Eija Hyytia-Trees presented promising data from the MLVA development and validation project.

After the morning break, presenters from New York, Massachusetts and Pennsylvania demonstrated how their states use a variety of PulseNet tools to manage data and detect clusters. Next, the database managers from PulseNet Central instructed all attendees on communication, data submission and tools in BioNumerics. The group also took time to recognize the outstanding contributions of Susan Hunter and Mary Ann Fair to the development and success of PulseNet.

The afternoon session was dedicated to breakout sessions covering various topics such as PulseNet for the New User, QA/QC Issues, Equipment Issues, Protocols, Managing and Interpretation of PulseNet Data, and Funding Issues, Protocols, Managing and Interpretation of PulseNet Data, and Funding. Attendees took full advantage of the opportunity to query CDC staff and members from other states on how they address these issues. The brainstorming and information sharing during this session was a highlight of the meeting for many. Steven Dietrich from the Michigan lab has compiled all the notes and posted them on the WebBoard. The afternoon session concluded with a poster session sponsored by Applied Maths. After the poster session, many of the attendees headed over to South Beach to enjoy stroll on the beach and dinner at one of the many fine restaurants.

The program Thursday morning opened with a discussion of dendrogram interpretation by Paul Vauterin from Applied Maths. This was followed by a session on QA/QC with

presentations by Jennifer Kincaid from CDC and Denise Toney from the Virginia Division of Consolidated Laboratory Services. The members of PulseNet International updated us about ongoing research in their labs. Dr. Chien-Shun Chiou of CDC, Taiwan talked about the advances their labs have made in automating PFGE analysis since its inception in Taiwan in 2002 and reviewed a new MLVA scheme for *Shigella*. Dr. Kwai Lin Thong from the University of Malaya introduced us to the complicated lab network in Malaysia. They currently have a passive surveillance system in place which relies on notification by government and medical officials to identify foodborne illnesses. She believes that the burden of disease is underestimated due to these inadequate reporting methods. She expects that PulseNet will give a more accurate picture; however, not all the labs have PFGE capabilities and a lack of trained personnel is also a problem. Dr. Nelida Muñoz Perez of the Instituto Nacional de Salud Columbia presented a comparative study to identify *S. Typhi* and *S. Typhimurium* strains endemic to many Latin American countries.

In the afternoon, updates on retail food surveillance activities in New York and the FDA were given by Shauna Madson and Dianna Schoonmaker-Bopp, respectively. Studies linking bacterial isolates with food vectors were presented by Dr. Shaohua Zhao and Susan Van Duyne, and the importance of linking the NARMS and PulseNet databases to identify and to help connect widespread outbreaks was discussed by Kathryn Teates. The conference concluded with announcements of the PulseStar Award Winners and the location of the 11th Annual PulseNet Update Meeting, Providence, RI. We're all looking forward to another great meeting next year...but we'll probably leave the swim suits at home! 



Miami, FL - April, 2006

2006 UPDATE MEETING EVALUATION SUMMARY

Nancy Garrett, Centers for Disease Control and Prevention, Atlanta, GA

First, we thank everyone who completed and turned in the meeting evaluation form. The final number of registrants for the PulseNet Update Meeting this year was 165, with a record breaking one hundred and twenty-nine, or 78%, of the meeting's attendees submitting an evaluation form. This year's meeting was a great success. Comments and suggestions are as always greatly appreciated and will be taken into consideration when planning future Update Meetings.

The theme this year, "A Decade of PulseNet: Past, Present, and Future," was well-received. In fact 99% of the people that completed the evaluation found the theme appropriate for the meeting.

When asked which topics were of most interest to the attendees, some of the top responses were as follows: Next generation/MLVA; Tools for tracking outbreaks in BioNumerics; and Interpretation of dendrograms.

Many participants mentioned the benefits of having the Epidemiology Meeting at the same time and would like to continue this in the future with more combined sessions. Many thought that Miami was a nice place to hold the meeting, though some expressed disappointment about the quality of the hotel services and its location within the city. Most people seemed to thoroughly enjoy the social event aboard the Lady Catalina.

Attendees liked the format of Breakout Session 2 and would like for it to continue in future update meetings.

Approximately 62% of survey participants plan to attend the 2007 PulseNet Update Meeting in Rhode Island. We look forward to seeing those of you who can make it next year. Thanks to all who helped make this meeting possible, whether by attending, presenting, or planning. Your hard work is greatly appreciated. 

PLAGUE WORKSHOP HELD FOR PULSENET PARTICIPANTS

Kristy A. Kubota, MPH, Research Biologist, Centers for Disease Control and Prevention, Fort Collins, CO



PulseNet participants for the November training. (Left to Right) Debbie Sena Johnson, NM; Stephanie Kreis, AZ; Jenni Wagner, UT; Aimee Janusz, CDC; Wanda Manley, WY; Ann Woo-Ming, CO.

The Division of Vector-borne Infectious Diseases, Bacterial Zoonosis Branch, in Fort Collins, Colorado has started training laboratorians in *Yersinia pestis* PFGE typing for PulseNet. In August 2005, Kristy Kubota trained five laboratorians from the Los Angeles County Health Department LRN laboratory. This training included BSL-3 work with *Y. pestis* and an introduction to BioNumerics. Additionally, Kristy Kubota, Aimee Janusz and staff at CDC Fort Collins hosted a three-day PFGE workshop for PulseNet laboratories November 7 through 10, 2005. The focus of the training was to teach PulseNet laboratories *Y. pestis* PFGE typing for surveillance of naturally occurring plague. Participants included Wanda Manley from Wyoming, Ann Woo-Ming from Colorado, Debbie Sena Johnson from New Mexico, Stephanie Kries from Arizona, and Jenni Wagner from Utah. The workshop focused on general biosafety issues related to working with *Y. pestis* and PFGE plugs in the laboratory. Additional topics discussed included communication of clinical cases to PulseNet through the PulseNet WebBoard and other general topics related to PulseNet and vector-borne diseases. In addition to the wet lab, a BioNumerics session was also held for training in analysis of *Y. pestis* gels.



Los Angeles County LRN training, August 2005 (Left to right) Mark Frinder, Jeffrey Antig and Anton Mayr

The goal of the Bacterial Zoonosis Diseases Branch and PulseNet is to start PFGE surveillance for *Y. pestis* in 2006. Recently, a certification set has been developed and will be distributed this spring and summer. The scripts for *Y. pestis* have been included in the latest version of MasterScripts v 3.0 for PulseNet. For further information regarding our program, please contact Kristy Kubota at kek6@cdc.gov or (970) 266-3559. **CDC**



Los Angeles county LRN training. Lee Borenstein and Edgardo Basaca



ANNOUNCEMENT: 2007 PulseNet Update Meeting to be Held in Providence, RI

The 11th Annual PulseNet Update Meeting will be held April 17 through 20, 2007 at the Marriott Hotel in Providence, Rhode Island. The hotel happens to be located directly across the street from the Rhode Island Public Health Laboratory. APHL and CDC thank the Rhode Island Department of Health for its assistance in choosing the venue for our next meeting. We look forward to seeing all of the PulseNet participants at the meeting in Providence.

PULSESTAR AWARD WINNERS - YOU MIGHT BE A PULSENUT...

Shari Rolando, Association of Public Health Laboratories, Washington, DC



Alison Houston with her award



Each year, three PulseNet participants from local, county, or state public health laboratories are selected as PulseStar Award winners. The award consists of a plaque from CDC and a check in the amount of \$500.00 from APHL.

This year's winners are **Cathy Adams** from the San Diego County Public Health Laboratory, **Ann Woo-Ming** of the Colorado Department of Public Health and Environment, and **Alison Houston** from the University of Iowa Hygienic Laboratory.

Cathy was nominated for her ability to subtype a variety of foodborne and nosocomial organisms, for her work on a *Salmonella* Typhimurium outbreak in queso fresco cheese from Mexico, and for her collaborations with epidemiologists across the state.

Ann was nominated for her promptness and expertise in detecting clusters and reporting them to epidemiologists, her implementation of a database to track isolates subtyped by PFGE, her work on a *Campylobacter* outbreak in the prison system, and her recognition of the 2002 *E. coli* O157:H7 outbreak that led to a large beef recall.

Alison was nominated for completing her PFGE work in a timely manner along with her other duties in the lab, producing high-quality gel images and making suggestions for improving all aspects of foodborne disease surveillance, her work with an outbreak of *N. meningitidis* and other

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WASHINGTON STATE PUBLIC HEALTH LABORATORIES

The Washington State Public Health Laboratories (WA PHL) was established by the legislature in the early 1900's. The WA PHL has a mission to protect and improve the health of the people in Washington State. The laboratories are located in the city of Shoreline, north of central Seattle. Washington is the most north western state and has a population of just over 6 million. Two thirds of the state's population lives in the urban coastal region where the major cities are Olympia (state capital), Tacoma, Seattle and Everett. Washington is split by the Cascade Mountains, creating a more rural, arid area inland with Spokane, Pullman and the Tri Cities being the more populous locations. Historically, the WA PHL has been involved in the development of PFGE since the inception of PulseNet. This was due to the contribution of Dr. Romesh Gautam, the Molecular Epidemiologist at that time (now the Director of the WA PHL), who designed some of the rapid PFGE techniques that are still used today by all PulseNet laboratories.

In the past year, the WA PHL has had to rapidly adjust to the changes resulting from the unforeseen departures of PulseStar winner Ravi Pallipamu and another valued member of our PFGE laboratory, Anthony DeRubeis. The PFGE laboratory has now seen major a reshuffling in terms of staffing with five laboratorians now cross-trained in PFGE. Members of this team led by Kaye Eckmann are either fully certified in PFGE and BioNumerics analysis or are in training. This means the PFGE lab can now devote two staff to PFGE daily, allowing them to process all samples in real time and still be able to cover major outbreaks, provide surge capacity for other states, provide training and cover absences due to sickness and vacation without losing any efficiency in sample typing. The WA

PFGE lab routinely tests all *Salmonella*, *E. coli*, *Shigella*, *Campylobacter* and *Listeria* isolates in tandem with their enteric microbiology section. Washington has just seen another busy year with enteric disease. In 2005 almost 1,400 isolates were tested, consisting of 54% *Salmonella*, 12% *E.coli*, 12% *Shigella*, 1% *Campylobacter*, 0.5% *Listeria* and 20.5% non-enteric bacteria – a breakdown fairly typical of the last three years. The total number of isolates typed has decreased from over 2,000 in 2004, reflecting a necessity to conserve resources for the typing of enteric species and specific investigations into critical non-enteric outbreaks, such as *P. aeruginosa* or MRSA in prenatal wards.

The epidemiology section of the Washington Department of Health, headed by Dr. Kathryn MacDonald, is also located at the WA PHL. This is immensely beneficial to both the lab and epidemiologists as daily briefings ensure timely communication on the importance of incoming samples and identified clusters. With an increase in PFGE proficient staff, the WA PHL endeavors to monitor the WebBoard on a daily basis to ensure that it is aware of what is happening across the nation and improve skills at identifying outbreaks. The lab has experienced several large outbreaks in the past year at both local and multi-state levels. Food outbreaks included the *S. Typhimurium* outbreak associated with a national chain of ice cream retailers and, more locally, three *E. coli* O157:H7 outbreaks in the Northwest linked to a parsley farm. Other concerns included *E. coli* O157:H7 outbreaks from livestock in petting zoos at county fairs. The WA PHL has just concluded an investigation into an *E. coli* O157:H7 outbreak from unpasteurized milk where isolates from the milk and environmental samples were conclusively shown to match the clinical isolates exactly. One interesting note is that the



The WA PHL PFGE team from the right: Kaye Eckmann, Lito Badiable, Denny Russell, Jen Breezee, Dr David Boyle, Latha Thomas and Dr Seonghan Kim.

usual decrease in sample number traditionally experienced during the winter and spring months did not happen this year, keeping the lab very busy.

The WA PHL PFGE laboratory is the PulseNet area laboratory for the western states and is always ready to assist California, Oregon, Idaho, Nevada and Alaska labs with all PFGE-related issues. The lab is looking forward to hosting an area laboratory meeting later in the year to enhance skills and improve networking within the western PFGE community. The date for this has yet to be decided. Recently, lab staff from Reno, Nevada; San Diego, California; and Juno, Alaska visited Seattle for one week's basic training in PFGE laboratory design, methods and BioNumerics analysis. In addition, the WA PHL is always ready to provide surge capacity if needed, performing annual analysis for some of the member states, typically for *E. coli* O157:H7 and/or MRSA. In 2004 there was a *Vibrio parahaemolyticus* (VP) outbreak linked to shellfish in Alaska. Since Washington has a large oyster fishery, the WA PHL had ample experience in typing clinical and environmental isolates of VP, making this a very straightforward task.

We are very lucky to have a visiting international EID fellow from the Korean CDC, Dr. Seonghan Kim. He has worked in the WA PHL for the past year, focusing his energies into the screening of drug resistance mechanisms in *Salmonella*, *Shigella* and *E.coli* isolates from the PHL culture collection. He has identified at least one clinically significant ESBL integron not previously described in the US.



Cathy Adams receiving award from Swami



You Might Be A PulseNut...

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nosocomial isolates, and her efforts to bridge the gap between the lab and the epidemiologists located across town.

The efforts of all nine of this year's nominees qualified them as outstanding candidates for the PulseStar Award. APHL and CDC commend PulseNuts across the country for their continued efforts to make the network a success.

International awards were given this year to three participants: **Dr. Brent Gilpin**, for establishing PulseNet New Zealand (Aotearoa) and building a communication mechanism for the Asia Pacific network; **Dr. Susanna Lukinmaa**, for moving PulseNet Europe forward and organizing training courses and planning meetings for that network; and **Dr. Lai-King Ng**, for establishing a signed formal Memorandum of Understanding between the governments of Canada and the United States, allowing data to be shared between PulseNet USA and PulseNet Canada. **CDC**

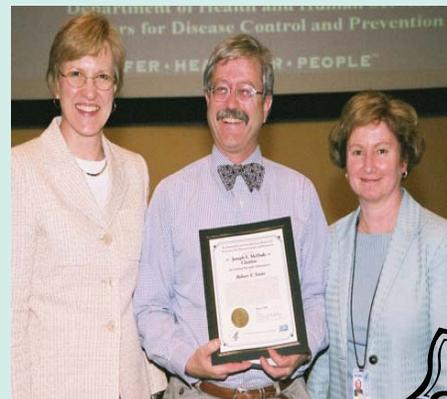


ANNOUNCEMENT: AWARDS

On May 1, 2006, at CDC's 2006 National Center for Infectious Disease (NCID) Recognition Awards Ceremony, the following PulseNet staff received awards for their excellent work and dedication to public health:

- **Shari Rolando** received the award for Partners in Public Health Improvement
- **Dr. Patricia Fields** received an award for Public Health Protection Research
- **Dr. Bala Swaminathan** was recognized as NCID's nominee for the William C. Watson Jr. Medal of Excellence
- **Dr. Robert Tauxe** received the Joseph E. McDade Citation for Lifetime Scientific Achievement Award.

Congratulations to **Shari Rolando** on her promotion to the position of Senior Manager for Food Safety at the Association of Public Health Laboratories (APHL).



ANNOUNCEMENTS:

- The Centers for Disease Control and Prevention announces the release of a new computer-based case study, "Gastroenteritis at a University in Texas." This is the third in the Foodborne Disease Outbreak Investigation case study series. The first case study in the series was "Botulism in Argentina" and the second was "E. coli O157:H7 Infection in Michigan." Based on real-life outbreak investigations, these self-instructional, interactive exercises teach epidemiologic skills in outbreak investigations and allow participants to apply and practice those skills. All three case studies can be downloaded for free or purchased on CD-ROM through the Epidemiologic Case Studies website at <http://www.cdc.gov/epicasestudies/>.
- The latest **Foodborne Pathogens and Disease** journal published a special issue in Spring 2006 (Volume 3, Number 1) dedicated to the National and International PulseNet Programs. CHECK IT OUT TODAY at www.liebertonline.com !!! All papers published in this issue are available for free downloading at the publisher's website.

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INSIDE



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Welcomes:

- **Phillip Curry** is a new member South Carolina Department of Health and Environmental Control. He started work as a Laboratory Technologist in December 2005. Phillip's background is in Molecular Biology with previous experience in PFGE gels at a USDA lab in North Carolina.
- **Tom Mitchell** joined the PFGE section of the Georgia Public Health Laboratory on March 2006. He graduated from the University of Georgia with a BS in Chemistry and has been part of the Bacteriology Unit at the Georgia Public Health Laboratory since 2002.
- **Dr. Celine Nadon** is the new Head of PulseNet Canada team at the National Microbiology Laboratory, Public Health

Agency of Canada in Winnipeg. Dr. Nadon obtained her M.Sc. from the University of Manitoba, Canada and Ph.D. from Cornell University, USA. Before she joined Canada laboratory in May 2006, she was a Post-doctoral Food Safety Fellow at USDA. She will provide support to PulseNet Canada members and conduct research projects.

- **Grant Williams** recently joined the PulseNet Central Team at CDC. He received his Bachelor of Science degree from the Georgia Institute of Technology in December of 2005. He is dedicating his time to the National *Salmonella* Database and PulseNet News.

- **Cathy Xavier** was trained in PFGE in April, 2006 for the Alaska Public Health Laboratory. We welcome her to the PulseNet USA team.

Farewells:

- **Mary Anctil** has left her position as a valuable member of the Alaska Public Health Laboratory in March 2006. She will be missed, and we wish her the best of luck in her future endeavors.

- The Centers for Disease Control and Prevention would like to congratulate **Amy Marie Camba** and say farewell, as she embarks on a new journey in dental school in Augusta, Georgia. Amy was an invaluable asset to the PulseNet Database Team, managing the *Salmonella* database. We wish her the best of luck in dental school!

- **Susan Hunter**, one of the founding members of PulseNet USA, has accepted a new position as the Scientific Workforce Development Liaison Manager at the Coordinating Center for Infectious diseases, CDC. Susan was instrumental in selecting and customizing PulseNet analysis software, establishing PulseNet databases, and organizing and conducting training in BioNumerics for national and international PulseNet participants. We wish Susan much success in her new assignment.

- **Dana Tamashiro** left her position as a valuable member of the Hawaii State Laboratory in March 2006. She will be missed and we wish her the best of luck in her future endeavors.

- **Ann Woo-Ming** left her position with the Colorado state lab in March 2006. She has relocated to Arkansas. Ann was a great asset to the Colorado laboratory and to the PulseNet network nationally. We wish her the best in her future endeavors.

- **Lee Witherspoon** left her position at the Massachusetts State Laboratory Institute on May 30, 2006. Lee was involved in bringing new protocols to the Massachusetts molecular laboratory and was instrumental in organizing many of the PulseNet regional meetings across the country. We wish Lee all the best as she builds her life on beautiful Cape Cod.

HOW WOULD YOU LIKE TO RECEIVE THE PULSENET NEWSLETTER?

Currently, subscribers to the PulseNet quarterly newsletter receive a hard copy in the mail. The newsletter is also available electronically on the WebBoard and on the PulseNet website (www.cdc.gov/pulsenet/news.htm). If you would like to stop receiving the hard-copy version and either receive the electronic version via e-mail or access it via the website or WebBoard, please send your request to the PFGE inbox at pfge@cdc.gov with the subject line: PulseNet Newsletter.

