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# **FINAL PROGRAM**

## National Molecular Microbiology Diagnostic Users Group Annual Fall Meeting (NMG)

**Auditorium**

**Peter Gilgan Research and Learning Centre**

**660 Bay Street, Toronto ON**

**The Hospital for Sick Children**

**Wednesday November 19, 2014**

8:00-9:00 am **Breakfast sponsored by altona Diagnostics**

8:00-9:00 am **Registration outside the 2nd Floor Gallery**

9:00-9:10 am **Welcome in the Auditorium**

Dr. Richard Hegele, Head, Department of Paediatric Laboratory Medicine, The Hospital for Sick Children

Introduction

Dr. Astrid Petrich, NMG Meeting Chair

9:10-9:40 am **Workshop sponsored by Bio Nuclear Diagnostics**

**Title: Simplexa Direct Assays – Eliminating Extraction**

**Speaker:** Dr. Michelle Tabb, PhD

Director of Research and Development

 Focus Diagnostics.

**Objectives:**

1. Discuss how to modify a PCR assay to accommodate mutations in a target region.

2. Describe the importance of RSV infection in patient populations other than children.

3. Discuss the importance of a moderate complexity test for detecting HSV in CSF in light of the challenge to differentiate other causes of infection in neonates.

9:40-10:40 am **Workshop sponsored by** **bioMérieux Canada Inc.**

 **Title: FilmArray technology – Why A Molecular Syndromic Panel?**

**Speaker:** Beth Amiott, Associate

Director Regulated Products
BioFire Diagnostics, LLC

**Objectives:**

1. Discuss the current medical context and the clinical difficulties encountered by the clinicians and the importance of an accurate diagnosis.

2. Review of the integrated technology used by the FilmArray

3. FilmArray publications review for Respiratory, GI and BCID and discussion

10:40-11:10 am **Coffee Break in Gallery sponsored by Phoenix Airmid biomedical**

10:40-11:10 am **Exhibits in the Gallery**

* **Abbott Molecular**
* **Alere Canada**
* **BD**
* **bioMérieux Canada Inc**
* **Bio Nuclear Diagnostics**
* **Cedarlane**
* **Hologic Canada**
* **Illumina**
* **Integrated DNA Technologies**
* **Inter Medico**
* **Luminex**
* **Phoenix Airmid Biomedical**
* **Pro-Lab Diagnostics**
* **Promega Corp.**
* **Qiagen**
* **Quidel Corp./Life Technologies**
* **Roche Diagnostics**
* **Somagen Diagnostics Inc**
* **Zeptometrix**

11:10-11:40 pm **Workshop sponsored by Integrated DNA Technologies**

**Title: Techniques for Improved Detection of Rare Targets in Biological Samples**

**Speaker:** Nick Downey, PhD

Scientific Application Specialist

  Integrated DNA Technologies

**Objectives:**

**1.** Discuss the difficulties in detecting rare DNA sequences using molecular diagnostic methods including NGS.

2. Describe two methods that improve detection of rare DNA targets: IDT xGen Lockdown Probes for capturing specific targets and RNase H–dependent PCR technology for sensitive, single-nucleotide discrimination of amplification products

11:40-12:10 pm **Workshop sponsored by Illumina**

 **Title: Sequencing in Microbiology and Infectious Disease: What’s Available Today?**

**Speaker:** Michael G Smith, PhD.

Sr. Sequencing Specialist, Illumina

 **Objectives:**

1.Introduce Next Generation Sequencing and Illumina

2. Provide an overview of clinical microbial applications

3. Discuss potential analysis methodologies

12:10-1:00 pm  **Lunch in the Gallery sponsored by Zeptometrix**

1:00-2:00 pm **Workshop sponsored by BD**

**Title: New Technologies for Detection of Enteric Pathogens - Algorithms, Applications, and Advantages of Molecular Diagnostics**

**Speaker:** Blake W. Buchan, PhD, D(ABMM)

Assistant Professor of Pathology,

Medical College of Wisconsin

Associate Director, Clinical Microbiology

Dynacare Laboratory

**Objectives:**

1. Identify 2 advantages of molecular assays compared to culture for identification of enteric pathogens

2. Discuss the strengths and weakness of large, highly multiplex panels

3. Recognize the relative cost and value of molecular diagnosis of enteritis to the patient and laboratory

2:00-2:30 pm **Workshop sponsored by altona Diagnostics**

**Title: Laboratory Workflow and the Efficiency of Automation**

**Speaker:**  Markus Hess, PhD

Chief Scientific Officer

altona Diagnostics GmbH

Hamburg, Germany

**Objectives:**

1. Examine the PCR parameters that can be modified to improve efficiency: liquid handling, DNA/RNA extraction and thermal cycling

2. Discuss how the RealStar Solution achieves “Extraction to Detection” in 3.5hrs

2:30-3:00 pm **Coffee Break in the Gallery**

2:30-3:00 pm **Exhibits in the Gallery**

3:00-4:00 pm **Workshop sponsored by Hologic Canada**

 **Title: Performance Characteristics of Automated Instruments and Second Generation Molecular Assays for the Diagnosis of Sexually Transmitted Infections.**

**Speakers:** Sam Ratnam PhD, Clinical Professor, Memorial Univ, St John’s, NL;  Adjunct Professor, McGill Univ, Montreal, QC

Max Chernesky Phd, Prof. emeritus, McMaster Univeristy, Hamilton, ON

 **Objectives:**

1. To compare sensitivity and specificity of four second generation NAATs to detect CT and NG from female urine and self-collected vaginal swabs.

2. To compare hands on time, time to results, maintenance and consumables on five automated instruments when testing urines and vaginal swabs by running 96 and 192 tests.

**4:00-4:30 pm Workshop sponsored by Quidel and Life Technologies**

**Title: Comparison of Quidel Lyra Influenza A+B and RSV+ hMPV to the Altona RealStar Influenza and RSV RT-PCR assays on the Applied Biosystems 7500 Fast Dx PCR System in a high volume laboratory setting**

**Speaker:** Tony Mazzulli, MD, FRCPC, FACP

Microbiologist-in-Chief

Department of Microbiology

Mount Sinai Hospital

Toronto, ON

**Objectives:**

1. Discussion of the respiratory viruses of primary concern and benefits of multiplex assays for these viruses

2. Performance comparison of Quidel Lyra respiratory assays with Altona and Focus Diagnostics

3. Benefits and workflow of the Quidel Lyra Flu A+B and RSV+ hMPV assays and experiences at Mount Sinai Hospital in their patient population

**4:30-5:00 pm Workshop sponsored by Quidel and Life Technologies**

**Title: Detection of HSV in Skin and Genital Lesions: Comparison of Culture vs AmpliVue® HSV 1+2**

**Speaker:** Christian Renaud MD MSc FRCPC
Medical Microbiologist & Pediatric Infectious Diseases
Virology Laboratory Medical Director
CHU Sainte-Justine

Montréal, QC

**Objectives:**

1. Importance of detecting genital herpes during pregnancy and prevention of neonatal infections

2. Performance and workflow compared to culture and an in-house PCR assay

3. Validation and implementation of a molecular HSV assay in the clinical microbiology laboratory



**Peter Gilgan Research and Learning Centre**

**The Hospital for Sick Children, Toronto ON**

**Thursday November 20, 2014**

8:00-9:00 am **Breakfast in the Gallery sponsored by Luminex Corp.**

8:00-9:00 am **Exhibits in the Gallery**

9:00-9:45 am **LiDS: Listeria detection and surveillance using Next Generation Sequencing Tools**

**Speaker:** Chrystal Berry, PhD
Biologist, Public Health Genomics Unit
National Microbiology Laboratory

**Objectives:**

1. Large-scale comparative genomic analysis of a diverse panel of *Listeria monocytogenes* strains from human- clinical cases, food products and the food processing environment
2. The identification of new *Listeria monocytogenes* genetic markers for incorporation into a rapid high-throughput detection assay that can be deployed within the food processing environment
3. The development and validation of rapid LAMP and RT-PCR assays for Listeria detection and discrimination into pathogenic and non-pathogenic subtypes.

9:45-10:30 am **Direct Detection of Pathogens in Patient Specimens by 16S rDNA PCR:  Perspectives from Three Laboratories.**

Speakers: Kathryn Bernard

Head, Special Bacteriology

National Microbiology Laboratory

Sara Christianson

Biologist, National Reference Centre for Mycobacteriology.

National Microbiology Laboratory

Julianne Kus

Clinical Microbiologist

Public Health Ontario

**Objectives:**
1. Advantages of testing directly from patient specimens by 16S rRNA gene and other targets
2. Technical issues and challenges associated with successful PCR and sequencing directly from patient specimens
3. Summarize results obtained when detection of pathogen was successful.

10:30-11:00 am  **Coffee Break and Exhibits**

11:00-11:45 am **Digital PCR - Refining Traditional PCR and its  Application to Development of an HIV-2 Quantitative RNA Assay**

**Speaker:** John Kim

###### Chief of National Laboratory

###### HIV Reference Services

**Objectives:**

1. Brief introduction to dPCR and how it differs from traditional PCR (including advantages of dPCR).
2. NLHRS development of an in-house HIV-2 quant (RNA) assay using d-PCR.
3. Future applications.

11:45-12:15 pm **Mathematical Microbiologists: Why we need to return to our square roots to uncover uncertainty (of measurement) in qPCR**

 **Speakers:** James Stuart MD

George Zahariadis MD

Clinical correlates from Marina Salvadori MD

 **Objectives:**

1. Identify why uncertainty of measurement is required for qPCR and how it is important clinically.

2. Outline why you may be understating your uncertainty if don't account for ratios and why a "black box" approach is not always appropriate..

3. Present methods for UOM for qPCR (Box, Delta, Fieller, Bootstrap)

4. Present for discussion: a) The need for universal standards, b) How actual patient samples may be advantageous in UOM

12:15-1:30 pm **Lunch in the Gallery**

12:30 1:30 pm **NMG AGM (All participants are invited to attend)**

Auditorium

1:30-2:00 pm **Results of the 2014 National Proficiency Test for 16SrRNA Gene Sequencing and/ or MALDI-TOF**

**Speaker:** Kathryn Bernard

Head, Special Bacteriology

National Microbiology Laboratory

**Objectives:**
1.  Describe need for an external proficiency test for 16S rRNA gene sequencing and MALDI-TOF instrumentation

2. Describe 4 bacteria selected for the panel associated with different degrees of complexity for accurate identification

3. Present results by 35 participant laboratories for each of the 4 test bacteria, striated down by method;  nuances regarding use of both identification method will be reviewed.

4. Discuss next steps for proficiency testing

2:00-3:30 pm **Trouble-shooting/Interesting Cases**

**Chair:** Linda Chui, PhD, ARMCCM

Alberta Provincial Laboratory

Edmonton, AB

3:30 pm **Official Close of Meeting**

**The NMG would like to thank all of our Industry Sponsors and acknowledge a generous Educational Grant towards the meeting from CACMID.**