

24th International Biodetection Technologies Conference 2016

Biothreat and Pathogen Detection

Held at the 2nd Annual Biodefense World Summit 2016

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27 - 28 June 2016

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The Knowledge Foundation's 24th International
Biodetection Technologies:
Biothreat and Pathogen Detection
June 27-28, 2016

Monday, June 27

7:00 am Registration and Morning Coffee

REGULATIONS, STANDARDIZATION AND CASE STUDIES

8:25 Chairperson's Opening Remarks
Matthew Lesho, Ph.D., Director, Government Business Development, Luminex Corporation

8:30 **KEYNOTE PRESENTATION: Establishing FDA-Argos for Regulation of Sequencing-Based Diagnostics for Infectious Diseases.....N/A**
Heike Sichtig, Ph.D., Principal Investigator/Team Lead, Microbiology Devices, Center for Devices (CDRH), US Food and Drug Administration

9:00 **A Mixed Microbial Pathogen Reference Material: Ground Truth for Assessing Sensitivity and Specificity of NGS-Based Pathogen Detection.....1**
Scott A. Jackson, Ph.D., Complex Microbial Systems Group Leader, Biosystems and Biomaterials Division, National Institute of Standards and Technology

9:30 **Biothreat Agent Sample Inactivation - A UK Perspective.....30**
Simon Weller, Scientist, CBR Division, Defense Science and Technology Laboratory, UK Ministry of Defense

10:00 Coffee Break in the Ballroom Foyer

ADVANCES IN NUCLEIC ACID TECHNOLOGIES & NEXT GENERATION SEQUENCING

10:30 **Next-Generation Sequencing-Based Precision Metagenomics for Rapid Biothreat Detection and Characterization.....N/A**
Nur Hasan, Ph.D., Adjunct Faculty, University of Maryland Institute of Advanced Computer Studies and the Center for Bioinformatics and Computational Biology, University of Maryland

11:00 **Enabling the Development of Genomics Expertise for Next-Generation Sequencing Novices.....46**
Momchilo (Momo) Vuyisich, Ph.D., Applied Genomics Team, Los Alamos National Lab

11:30 **Simultaneous Multiplexed Protein and Nucleic Acid Detection Improves Decision-Making for Biothreat and ID Applications.....59**
Amy Altman, Ph.D., Vice President, Biodefense and Protein Diagnostics, Luminex Corporation

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12:00 pm Enjoy Lunch on Your Own



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RAPID AND FUTURE TECHNOLOGIES FOR BIODETECTION

1:55 Chairperson's Opening Remarks

Crystal Jaing, Ph.D., Group Leader, Applied Genomics, Physical & Life Sciences, Lawrence Livermore National Laboratory

2:00 KEYNOTE PRESENTATION: Development and Challenges of Translating Viral Hemorrhagic Fever Research to Actionable Diagnostic Applications.....73

Timothy D. Minogue, Ph.D., Chief, Molecular Diagnostics Department, Division of Diagnostic Systems, U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID)

2:30 Sample Preparation Improvements for Real-Time Whole Genomic Sequencing Using Nanopore Technology.....87

Robert Cory Bernhards, Ph.D., Research Microbiologist, BioSciences Division, Edgewood Chemical Biological Center/Defense Threat Reduction Agency

3:00 Comprehensive and High-Throughput Pathogen Detection Using the Lawrence Livermore Microbial Detection Array.....99

Crystal Jaing, Ph.D., Group Leader, Applied Genomics, Physical & Life Sciences, Lawrence Livermore National Laboratory

3:30 Refreshment Break in the Exhibit Hall with Poster Viewing

4:15 Using Protein Structure and Microbial Genomes to Characterize Pathogen Antibiotic Resistance in Complex Metagenomic Samples.....112

Jonathan Allen, Ph.D., Informatics Scientist, Global Security Computing Applications Division, Lawrence Livermore National Laboratory

4:45 Rapid Phage Engineering as a Biodefense Platform for Bacterial Threats.....122

Matthew Lux, Ph.D., Research Biologist, BioSciences, US Army Edgewood Chemical Biological Center

5:15 Welcome Reception in the Exhibit Hall with Poster Viewing

6:15 End of Day



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Tuesday, June 28

8:00 am Morning Coffee

RAPID AND FUTURE TECHNOLOGIES FOR BIODETECTION (Cont.)

8:25 Chairperson's Opening Remarks

Harshini Mukundan, Ph.D., Principal Investigator and Team Leader, Chemistry, Los Alamos National Laboratory

8:30 High-Consequence Bacterial Pathogen Identification and Database Development with MALDI-TOF Mass Spectrometry.....N/A

Dobryan Tracz, Biologist, Bioforensics Assay Development and Diagnostics Section, National Microbiology Laboratory at the Canadian Science Centre for Human and Animal Health, Public Health Agency of Canada, Government of Canada

9:00 Nanotrap Hydrogel Microparticle Detection of Francisella Tularensis.....N/A

Monique van Hoek, Ph.D., Associate Professor, School of Systems Biology, George Mason University

9:30 Late Breaking Presentation

10:00 Coffee Break in the Exhibit Hall with Poster Viewing

10:45 Bioforensic and Biosurveillance Analysis System to Address Interoperability, Accuracy and Speed for Microbial Attribution.....129

Willy Valdivia-Granda, Ph.D., CEO, Orion Integrated Biosciences

11:15 A New Model for Quantifying Salmonella Levels in Poultry Carcass Treatment under Variable Thermal Conditions.....N/A

Pramod K. Pandey, Ph.D., Faculty/Specialist, Department of Population Health and Reproduction, School of Veterinary Medicine, University of California, Davis

11:45 Detection Method Assessment Tool for Chemical, Biological, and Radiological Agents.....151

Penny Norquist, Project Manager, The Food Protection and Defense Institute, University of Minnesota

12:15 pm Enjoy Lunch on Your Own



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PLENARY SESSION: TRANSLATION OF BIODETECTION TECHNOLOGIES TO FIELD READY APPLICATIONS

1:40 Chairperson's Opening Remarks

Tom Slezak, Ph.D., Distinguished Member of the Technical Staff, Pathogen Bioinformatics, Lawrence Livermore National Laboratory

1:45 KEYNOTE PRESENTATION: BioWatch: The Future of Biodetection.....160

Michael Walter, Ph.D., Detection Branch Chief & Program Manager, BioWatch, US Department of Homeland Security

2:30 Translation Challenges in POC Field Readiness: Strategies and Case Studies on Translation of New and Rapid Biodetection Technologies from Lab to Field and Clinic.....164

Alina Deshpande, Ph.D., Senior Scientist/Team Leader, Analytics Intelligence and Technology Division, Los Alamos National Laboratory

3:00 Bulk Acoustic Wave (BAW) Bio-Sensor Technology for Liquid Environments.....175

Florian Bell, Sensor System Integration, Qorvo

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4:15 miRNA Host Response During Ebola Virus Infection.....N/A

Janice Duy, Ph.D., NRC Postdoctoral Fellow, Molecular Diagnostics Department, U.S. Army Medical Research Institute of Infectious Diseases

4:45 Pathogen Biomarkers for Rapid Clinical Diagnosis in POC.....N/A

Harshini Mukundan, Ph.D., Principal Investigator and Team Leader, Chemistry, Los Alamos National Laboratory

5:15 End of Day and Workshop Registration

Additional Paper:

Smart-Phone Enabled Diagnostics for Pathogen Nucleic Acids.....186

*Robert Meagher, Ph.D., Biotechnology and Bioengineering Department
Sandia National Laboratories Livermore, CA*