37th ASMS Fall Workshop
Characterization of Nucleic Acids and Their Modifications by LC-MS/MS
November 12 - 13, 2026
Boston Marriott Cambridge, MA

Thursday, November 12

8:00-8:05 **Welcome**

OPENING LECTURE

8:05 - 9:00 **01 Decoding the Chemical Language of RNA by Mass Spectrometry**
Patrick Limbach, *Brown University*

SAMPLE PREPARATION FOR NUCLEIC ACID ASSAYS BY LC-MS
Michael Bartlett, session chair

9:00 - 9:30 **02 Sequence-Specific RNases for Bottom-Up RNA LC-MS/MS: New Tools and Workflows**
Eric Wolf, *New England Biolabs*

9:30 - 10:00 **03 RNase MC1 and Cusativin: pH-Modulated Cleavages for end-to-end analysis of RNA Therapeutics**
Bala Addepalli, *Waters Corporation*

10:00 - 10:30 **04 Current and Emerging Extraction Methods for LC-MS Bioanalysis of Oligonucleotide Therapeutics**
Afrand Kamali, *Novo Nordisk*

10:30 – 11:00 Coffee Break

STRATEGIES FOR THE OPTIMIZATION OF THE CHROMATOGRAPHIC SEPARATION OF NUCLEIC ACIDS
Camila Ortega, session chair

11:00 - 11:30 **05 Fundamentals of Ion-Pair Reversed Phase Liquid Chromatography Mass Spectrometry**
Michael Bartlett, *University of Georgia*

11:30 - 12:00 **06 Resolving Sequence and Stereochemical Impurities in Therapeutic Oligonucleotides via Multi-Mode Separations**
Todd Maloney, *Eli Lilly*

12:00 - 12:30 **07 Advances in LC and MS Analysis of Oligonucleotides: Minimizing Non-Specific Adsorption**
Martin Gilar, *Waters Corporation*

12:30 – 1:30 Lunch, provided by ASMS

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DATA PROCESSING AND INTERPRETATION FOR LCMS DATA: RNASE*, Afrand Kamali, session chair*

1:30 - 2:00 **08 Scaling RNA Mass Spectrometry: Robust Identification and Label-Free Quantification with NucleicAcidSearchEngine**
Sam Wein, *University of Tuebingen*

2:00 - 2:30 **09 Finding and Quantifying RNA Modifications using Pytheas**
James Williamson, *The Scripps Research Institute*

2:30 - 3:00 **10 RAMM 2.0**
Patrick Limbach, *Brown University*

3:00 – 3:30 Coffee Break

OVERVIEW OF CURRENT VENDOR SOLUTIONS FOR LCMS SOFTWARE SOLUTIONS FOR NUCLEIC ACID ANALYSIS
Robert Ross, session chair

3:30 - 3:45 **11 Oligonucleotide Characterization Is More than Just the Sum of the Parts**
Steven Broome, *Protein Metrics*

3:45 - 4:00 **12 An Integrated Workflow for the Intact Characterization and Sequencing of Oligonucleotides and Their Impurities by High-Resolution LC-MS**
Thomas Walker, *Agilent*

4:00 - 4:15 **13 LC/MS RNA Mapping with CONFIRM Sequence – a Waters Connect Application**
Martin Gilar, *Waters Corporation*

4:15-4:30 **14 BioPharma Finder for Oligonucleotide and mRNA Analysis**
Keeley Murphy, *Thermo Fisher Scientific*

4:30-4:45 **15 Streamlining Oligonucleotide MS/MS Sequencing with ProMass 6 HR: High-Confidence Data Interpretation**
William McIntyre, *Novatia*

4:45-5:00 **16 Oligonucleotide Characterization with MassMatrix**
Michael Freitas, *Mass Matrix*

5:00-6:00 Happy Hour

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Friday, November 13

IDENTIFICATION BY FRAGMENTATION WITH MASS SPECTROMETRY*, Tao Wei, session chair*

9:00 - 9:30 **17 Effects of Covalent and Non-covalent Modifications on the Fragmentation of Oligonucleotide Precursor Ions**
Dan Fabris, *University of Connecticut*

9:30 - 10:00 **18 LC-MS/MS for the Quantitative Analysis of Nucleosides and Oligonucleotides**
Carolina Bras Costa, *Washington University*

10:00 - 10:30 **19 Linear Ion Trap fragmentation of RNA**
Robert Ross, *Thermo Fisher Scientific*

10:30 – 11:00 Coffee Break

STRATEGIES FOR OPTIMIZING LCMS ANALYSIS IN EARLY DRUG DEVELOPMENT FOR NUCLEIC ACID THERAPEUTICS
Todd Maloney, session chair

11:00 - 11:30 **20 Characterizing Single-Stranded Lipophilic siRNA Metabolites in Plasma**
Xien Yu Chua, *Alnylam Pharmaceuticals*

11:30 - 12:00 **21 Capillary Electrophoresis Mass Spectrometry for the Analysis of Oligonucleotide Mixtures**
Dan Fabris, *University of Connecticut*

12:00 - 12:30 **22 Characterization Strategies for Phosphorodiamidate Morpholino Oligomers Using Multidimensional LC and MS/MS**
Tao Wei, *GondolaBio*

12:30 – 1:30 Lunch, provided by ASMS

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QUALITY CONTROL STRATEGIES
Bala Addepalli, session chair

1:30 - 2:00 **23 Oligonucleotide Active Ingredient Sameness and Impurity Comparability Studies by Mass Spectrometry**
Kui Yang, *FDA*

2:00 - 2:30 **24 Leveraging Sample Preparation and Treatment Strategies to Enable Robust LC-MS Analysis of Nucleic Acids**
Camila Ortega, *Abzena*

2:30 - 3:00 **25 LC-MS Methods and Automated Data Processing for Ensuring Oligonucleotide Quality**
Mark Hail, *Novatia*

3:00 – 3:15 Coffee Break

LARGE RNA MODALITIES
Mark Hail, session chair

3:15 – 3:45 **26 Advancing Large RNA Analysis Through Charge Detection Mass Spectrometry**
Weijing Liu, *Thermo Fisher Scientific*

3:45 - 4:15 **27 Understanding Large RNA CQAs to Guide Development of Fit-for-Purpose Analytical Methods**
Camila Ortega, *Abzena*

4:15 – 4:45 **28 Characterization Method Development for sgRNA**
Michael Sutton, *Eli Lilly*

4:45 – 5:00 **Closing Remarks**