

# Medical Laboratory Sciences & Molecular Diagnostics Symposium



Explore programs and  
careers in Medical  
Laboratory Sciences and  
Molecular Diagnostics.

October 19-20, 2023  
**NMU Northern Center**

SPONSORED BY



**NORTHERN MICHIGAN UNIVERSITY**  
MARQUETTE, MICHIGAN



A very special thank you to Cleveland-Cliffs, Inc. for making the  
MLS & Molecular Diagnostics Symposium  
possible through their generous financial support.

# Northern Michigan University Campus Map

The Symposium is located in the NMU Northern Center, ballrooms III and IV. **Please park in lot 1 or 8.** Tickets will be issued if you park in any other lot.



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## KEYNOTE SPEAKER



**Dr. Robert McGinty** is an Associate Professor at the UNC Eshelman School of Pharmacy with appointments in the Department of Biochemistry and Biophysics and within the Division of Chemical Biology and Medicinal Chemistry. Dr. McGinty is also the associate director of Structural Biology in the Center for Integrative Chemical Biology and Drug Discovery and associate member of the UNC Lineberger Comprehensive Cancer Center.

Dr. McGinty received his undergraduate degree from Iowa State University and received his M.D. / Ph.D. as part of the Tri-Institutional program from Weill Cornell Medical College and from The Rockefeller University. He performed his postdoctoral research at Pennsylvania State University where he focused on structural studies investigating protein interactions with the nucleosome. Currently, the McGinty laboratory studies mechanisms governing epigenetic signaling at the nucleosome and chromatin levels for the purposes of leveraging structural studies toward the design of small molecules to disrupt chromatin signaling pathways for basic research and therapeutic goals.

Dr. McGinty has received numerous awards over his career including the NIGMS Maximizing Investigators' Research Award, Pew-Stewart Scholar in Cancer Research, Searle Scholar, Damon Runyon Dale F. Frey Breakthrough Scientist Award, and the Damon Runyon Post-doctoral Fellowship Award. Dr. McGinty has authored thirty peer-reviewed publications, with notable publications in *Cell*, *Science*, and *Nature*.

## PROGRAM



**MLS & Molecular Diagnostics Symposium**  
**Sponsored by Cleveland-Cliffs, Inc.**  
**October 19-20, 2023**

**Thursday, October 19, 2023**

**Location: Northern Center, Ballroom III and IV**

**8:00 - 8:45 a.m.** Registration and Breakfast

**8:45 - 9:00 a.m.** Opening Remarks - Dr. Joseph Lubig and Dr. Matt Jennings

**9:00 - 10:00 a.m.** Keynote Speaker, University of North Carolina - Robert McGinty, M.D., Ph.D.

**10:00 - 10:15 a.m.** Coffee/Water Break

### **Guest Presentations**

- **10:15 - 11:05 a.m.** University of Utah, School of Medicine - David Hillyard, M.D.
- **11:05 - 11:55 a.m.** MDHHS - Marty Soehnen, Ph.D. / Kimberly McCullor, Ph.D.
- **11:55 - 12:45 p.m.** University of Chicago - Carrie Fitzpatrick, Ph.D. / Megan Forrest, Ph.D.

**12:45 - 1:30 p.m.** Buffet Style Luncheon

### **Guest Presentations**

- **1:30 - 2:20 p.m.** NMU Faculty - Martin Renaldi, MT (ASCP), MPA
- **2:20 - 3:10 p.m.** Marshfield Clinical Health Systems - Carrie Raycher, HT (ASCP)
- **3:10 - 4:00 p.m.** NMU Faculty - Emily Matthys, MLS (ASCP), MS

**4:00 - 4:15 p.m.** Break

### **Guest Presentations**

- **4:15 - 5:05 p.m.** LSSU Student - Zabrina LeVasseur
- **5:05 - 5:55 p.m.** NMU Student - Kristian Choate
- **5:55 - 6:45 p.m.** NMU Alumni - Emily Harper

**6:45 - 8:00 p.m.** Poster Viewing/Welcome Reception with cash bar and heavy hors d'oeuvres

**Friday, October 20, 2023**

**Location: Northern Center, Ball Room III and IV**

**12:00 – 1:00 p.m.** Buffet Style Luncheon and Poster Viewing

**Guest Presentations**

- **1:00 - 1:50 p.m.** Eastern Michigan University - Lynne Shetron-Rama, Ph.D.
- **1:50 - 2:40 p.m.** NMU Faculty - Paul Mann, Ph.D., MLS (ASCP), MB
- **2:40 - 3:30 p.m.** LSSU Faculty - Martha A. Hutchins, Ph.D., MT (ASCP)
- **3:30 - 4:20 p.m.** UPHS Marquette - Dana Langsford, MT (ASCP)

**5:00 - 6:00 p.m.** Social hour with cash bar and hors d'oeuvres at the Ore Dock Brewing Company

**Free Registration!**  
Scan the QR code with your camera.



Or visit our website: <https://nmu.edu/clinicalsciences/2023-molecular-diagnostics-symposium>

Receive P.A.C.E credits by evaluating our speakers. A P.A.C.E program number is required by credits and will be provided following each presentation.

Scan the QR code with your camera to provide the evaluation.



Evaluation Link: [https://nmu.qualtrics.com/jfe/form/SV\\_eG1dQjN3xnnuC1w](https://nmu.qualtrics.com/jfe/form/SV_eG1dQjN3xnnuC1w)

Northern Michigan University has applied for approval as a provider of continuing education programs in the clinical laboratory sciences by the ASCLS P.A.C.E. ® Program.



Thursday, October 19 - Northern Center Ballroom IV

## PRESENTATIONS

- 9:00 – 10:00 a.m.

Rob McGinty, M.D., Ph.D.

UNC Eshelman School of Pharmacy

Associate Professor, Department of Biochemistry and Biophysics

Associate Professor, Division of Chemical Biology and Medicinal Chemistry

**Title:** “Molecular mechanisms of histone modification crosstalk in leukemia”

**Description:**

This presentation will discuss the H3K79 methyltransferase, DOT1L, and its role in MLL-rearranged leukemias. An emphasis will be placed on providing a structural understanding of DOT1L targeted therapies in MLL -rearranged leukemia, highlighting the pathway from scientific research to translational medicine.

**Objectives:**

- 1) Refresh knowledge of chromatin structure and role of histone modifications in health and disease.
- 2) Discuss pathophysiology of MLL-rearranged leukemias and DOT1L-targeted therapeutics.
- 3) Discuss use of macromolecular structures in guiding translational research.

**Level of Instruction:** ADVANCED: Highly technical; for those with at least five years of experience in a specialty area.

**P.A.C.E Contact Hours:** 1.0

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- 10:15 - 11:05 a.m.

David Hillyard M.D.,

Director Molecular Infectious Testing ARUP Laboratories

Professor Pathology, University of Utah School of Medicine

**Title:** “Next Generation Molecular Infectious Disease Testing”

**Description:** This workshop will highlight the importance of advanced rapid molecular infectious disease testing (MID). An emphasis will be on the use of emerging novel technologies for Next Generation MID



testing. Lastly, the potential impacts on patient care, laboratory operations and cost of Next Generation MID testing will be discussed.

**Objectives:**

- 1) Describe the critical need for advanced rapid, variable throughput and targeting, molecular infectious disease testing (MID).
- 2) Discuss emerging novel technologies for Next Generation MID testing.
- 3) Summarize the potential impacts on patient care, laboratory operations and cost of Next Generation MID testing.

**Level of Instruction:** ADVANCED: Highly technical; for those with at least five years of experience in a specialty area.

**P.A.C.E Contact Hours:** 1.0

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- 11:05 - 11:55 a.m.

Marty Soehnlen, Ph.D., MPH, PHLD(ABB) and Kimberly McCullor, Ph.D.,MS  
Michigan Department of Health and Human Services

**Title:** “Outbreaks gone wild – how laboratories respond in real world time”

**Description:** An overview of the processes involved in declaring an outbreak and how laboratory findings impact response efforts. Also discussed will be laboratory communication procedures during an outbreak or public health investigation. Lastly, the talk will cover the types of testing in recent outbreaks, with emphasis on the State of Michigan.

**Objectives:**

- 1) Explain the processes involved in declaring an outbreak and the situations that laboratory results may result in the escalation of the response efforts.
- 2) Describe the processes of how laboratories communicate during an outbreak or public health investigation.
- 3) Describe the types of testing in recent outbreaks, with emphasis on Michigan.

**Level of Instruction:** INTERMEDIATE: Refresher course; some basic knowledge required.

**P.A.C.E Contact Hours:** 1.0

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- 11:55 a.m - 12:45 p.m.

Carrie Fitzpatrick Ph.D. & Megan Forrest Ph.D.  
University of Chicago

**Title:** “MLS, MLT and beyond: Laboratory Careers in Healthcare”

**Description:** This presentation will emphasize the impact of molecular testing on patient care. Presenters will discuss the different pathways to developing a career in molecular diagnostics. Lastly, the growing need for laboratory medicine professionals will be highlighted.

**Objectives:**

- 1) Summarize the impact of molecular testing on patient care.
- 2) Identify the pathways to careers in molecular diagnostics.
- 3) Discuss the growing need for people in laboratory medicine.

**Level of Instruction:** INTERMEDIATE: Refresher course; some basic knowledge required.

**P.A.C.E Contact Hours:** 1.0

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- 1:30 – 2:20 p.m.

Marty Renaldi, MT (ASCP), MPA  
Assistant Professor, NMU

**Title:** “Clinical Laboratory Science; Fascinating is the Future”

**Description:** This presentation will identify the many roles of the clinical laboratorian with a focus on career opportunities available to students. The talk will also cover the educational pathway to prepare for a career in clinical laboratory sciences.

**Objectives:**

- 1) Describe, in general, the role of the Clinical Laboratory Scientist.
- 2) Explain, in general, the requirements for obtaining licensure as a Clinical Laboratory Scientist.
- 3) List at least 3 different industries where the licensed Clinical Laboratory Scientist can find employment.

**Level of Instruction:** BASIC: Entry level; no prior knowledge of subject necessary to attend this program.

**P.A.C.E Contact Hours:** 1.0

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- 2:20 – 3:10 p.m.

Carrie Raycher, HT (ASCP)  
Marshfield Clinic

**Title:** “Histology as a Career Choice”

**Description:** This presentation will summarize the history of the histology profession. It will provide a summary of Marshfield Clinic’s HT program followed by an outlook for the histology profession.

**Objectives:**

- 1) Recall the history of histology.
- 2) Summarize Marshfield Clinic’s HT program.
- 3) Cite the outlook for the histology profession.

**Level of Instruction:** BASIC: Entry level; no prior knowledge of subject necessary to attend this program.

**P.A.C.E Contact Hours:** 1.0

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- 3:10 – 4:00 p.m.

Emily Matthys, MLS (ASCP) MS  
Asst. Professor, NMU

**Title:** “Development of a Microbiology and Blood Bank Simulation Laboratory Course at NMU”

**Description:** To meet the needs of our MLT students, and stay aligned with accreditation standards, we created a ‘simulated’ microbiology & blood bank laboratory course at our university-based lab. In this session, we will describe the format of our sim lab, and outline activities/resources/tools that we incorporated into our curriculum.

**Objectives:**

- 1) Discuss the format and function of NMU’s laboratory simulation course.
- 2) Examine NMU Simulation Lab organizational tools.
- 3) Describe how to incorporate low cost activities/resources/tools into your school’s curriculum or simulated lab.

**Level of Instruction:** BASIC: Entry level; no prior knowledge of

subject necessary to attend this program.

**P.A.C.E Contact Hours:** 1.0

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- 4:15 – 5:05 p.m.

Zabrina Lavasseur - Student  
Lake Superior State University

**Title:** "Cortisol levels in athletes and non-athletes after exercise"

**Description:** This presentation will summarize the biological effects of cortisol. A focus will be on the effect of chronic, intense exercise on cortisol levels and on the immune system. Followed by an investigation of the effects of intense exercise on cortisol levels in athletes compared to nonathletes.

**Objectives:**

- 1) Describe the known effects of cortisol on the immune system.
- 2) Explain what previous research shows about the effect of chronic, intense exercise on cortisol levels and on the immune system.
- 3) Report the effects of intense exercise on cortisol levels in athletes compared to nonathletes.

**Level of Instruction:** INTERMEDIATE: Refresher course; some basic knowledge required.

**P.A.C.E Contact Hours:** 1.0

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- 5:05 – 5:55 p.m.

Kristian Choate – Student  
Northern Michigan University

**Title:** "A novel genetically encoded fluorescent sensor enables cellular and clinical measurements of D-2-hydroxyglutarate"

**Description:** This presentation will discuss the development and characterization of genetically encoded FRET probe used for detection of the oncometabolite, D-2-hydroxyglutarate (D-2-HG). The significance of the D2HGlo in characterization of glioma will be described with a focus on clinical utility.

**Objectives:**

- 1) Discuss the characterization of D2HGlo probe specificity and clinically relevant dynamic range.
- 2) Discuss the compartmentalization of D-2-HG in the cell and implications of the oncometabolite in cancer progression.
- 3) Identify and describe the clinical applications of D2HGlo.

**Level of Instruction:** ADVANCED: Highly technical; for those with at least five years of experience in a specialty area.

**P.A.C.E Contact Hours:** 1.0

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- 5:55 - 6:45 p.m.

Emily Harper  
Johns Hopkins University

**Title:** “Clinical Laboratory Science as a Launching Pad into Public Health Research”

**Description:** This presentation will explain how a Clinical Laboratory Science education provides opportunities for careers in public health. An overview of the public health threat Chagas disease creates in Bolivia will be discussed. Followed by an emphasis on the challenges of providing quality laboratory diagnostics in resource challenged countries.

**Objectives:**

- 1) Describe how Clinical Laboratory Science education has broad applications throughout public health and research.
- 2) Explain how Chagas disease is still a public health threat in Bolivia.
- 3) Describe the challenges to accessing quality laboratory diagnostics in low and middle income countries.

**Level of Instruction:** BASIC: Entry level; no prior knowledge of subject necessary to attend this program.

**P.A.C.E Contact Hours:** 1.0

Friday, October 20 - Northern Center Ballroom IV

## PRESENTATIONS

- 1:00 - 1:50 p.m.

Lynne Shetron-Rama PhD, MLS(ASCP)  
Eastern Michigan University

**Title:** “Molecular Diagnostic Testing in Cancer Treatment- A New Hope”

**Description:** This workshop will utilize a case of non-small cell carcinoma to highlight the utility of multi-gene NGS testing for targeted therapy. Topics include gene targets used for personalized pharmacogenetics, gene tests for targeted therapies for colorectal cancer, and the role the lab plays in patient outcomes.

**Objectives:**

- 1) Evaluating the case of non-small cell carcinoma explain the utility of multi-gene NGS testing for targeted therapy.
- 2) List the genes used for personalized pharmacogenetics and the role the lab plays in patient outcomes.
- 3) List gene tests for targeted therapies for colorectal cancer.

**Level of Instruction:** ADVANCED: Highly technical; for those with at least five years of experience in a specialty area.

**P.A.C.E Contact Hours:** 1.0

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- 1:50 – 2:40 p.m.

Paul Mann, Ph.D, MLS(ASCP), MB  
Northern Michigan University

**Title:** “Rapid Detection of R132H IDH1 Mutations in Glioma”

**Description:** This presentation will review recent primary research efforts to develop a rapid molecular assay to detect R132H IDH mutations in glioma. Topics will include Loop Mediated Isothermal Amplification and Recombinase Polymerase Amplification and their applications.

**Objectives:**

- 1) Describe peptide nucleic acid loop mediated isothermal amplification.

- 2) Describe recombinase polymerase amplification.
- 3) Explain the use of LAMP and RPA based assays to detect R132H IDH mutations.

**Level of Instruction:** ADVANCED: Highly technical; for those with at least five years of experience in a specialty area.

**P.A.C.E Contact Hours:** 1.0

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- 2:40 – 3:30 p.m.

Martha Hutchens, Ph.D., MT(ASCP)  
Lake Superior State University

**Title:** “Anti-Viral Strategies of the Immune System”

**Description:** This workshop will provide an overview of antiviral mechanisms. Topics covered will include host cell detection systems and mechanisms that inhibit viruses from initiating or completing their life cycles. Lastly, the methods by which virus-specific B- and T- lymphocytes are activated will be discussed.

**Objectives:**

- 1) List mechanisms by which a virus infection can be detected by the host cell.
- 2) List mechanisms by which viruses can be prevented from initiating or completing their life cycles.
- 3) Describe the processes by which virus-specific B- and T- lymphocytes are activated.

**Level of Instruction:** INTERMEDIATE: Refresher course; some basic knowledge required.

**P.A.C.E Contact Hours:** 1.0

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- 3:30 - 4:20 p.m.

Dana Langsford, MT (ASCP)

**Title:** “Things to Know About Donating Blood”

**Description:** An introduction to the blood donor screening process,

donor safety, and the importance of blood donations.

**Objectives:**

- 1) Identify criteria in protecting both the patient and donor.
- 2) Explain the different types of blood donation: Whole blood, apheresis, autologous, directed.
- 3) Discuss the importance of blood donation to the local community including the importance of donating with the local blood center and any associated challenges.

**Level of Instruction:** BASIC: Entry level; no prior knowledge of subject necessary to attend this program.

**P.A.C.E Contact Hours:** 1.0