

MAINE RESEARCH SYMPOSIUM ON BIOMEDICAL SCIENCE AND ENGINEERING

University of Maine Orono Campus
Wells Conference Center, Barrows Hall – Hill Auditorium, and Hudson Museum
March 27 & 28, 2024

Wednesday, March 27, 2024

Track A – Oncology, Translational Medicine, Industry Panel Wells Conference Center – Room 2

**Session Time: 9:00 – 10:50; Session Topic: Oncology; Session Chair: Jens Rueter MD,
Chief Medical Officer at JAX**

9:00 – 9:10 Speaker: Jens Rueter MD, Chief Medical Officer at JAX
Presentation on: Genomics and Cancer Medicine, Speaker Introduction

9:10 – 9:30 Speakers: Eric Anderson PhD, Faculty Scientist at MaineHealth Institute for Research, **Susan Miesfeldt MD** at MaineHealth

Presentation on: Access to hereditary and targeted cancer care in Maine

9:30 – 9:50 Speaker: Susan Miesfeldt MD, at MaineHealth

Presentation on: Barriers to participation in cancer genomics research for rural and New Mainers

9:50 – 10:10 Speaker: Sarah Sinclair DO, at Northern Light Health Oncology

Presentation on: Oncology: The targeted agent and profiling utilization registry (TAPURTM) study

10:10 – 10:30 Speaker: Jordan Miner PhD Candidate in Biomedical Engineering, University of Maine Graduate School of Biomedical Science and Engineering

Presentation on: The Impact of a Potential Breast Cancer Therapeutic on Cellular Migration in 3D Spheroid Models

10:30 – 10:50 Speaker: [TBD]

Presentation on: [TBD]

10:50 – 11:05 Break

MAINE RESEARCH SYMPOSIUM ON BIOMEDICAL SCIENCE AND ENGINEERING

Session Time: 11:05 – 12:15; Session Topic: Translational Medicine; Session Chair: Rai Winslow PhD, Director of Life Science and Medical Research; Professor of Bioengineering at the Roux Institute

11:05 – 11:20 Speaker: Benjamin Harrison PhD, Associate Professor, Department of Biomedical Sciences at the University of New England

Presentation on: Targeting RNA-Protein Interactions for Treatment of Persistent Pain

11:20 – 11:35 Speaker: Jane Disney PhD, Associate Professor of Environmental Health at MDI Biological Laboratory

Presentation on: Healthy Water, Healthy Aging: What can animal models tell us about our drinking water?

11:35 – 11:50 Speaker: Jim Strickland MS, Senior Director of Research Partnerships and Translation at the Roux Institute

Presentation on: Translational Research

Discussion Time: 11:50 – 12:15; Discussion Moderator: Hermann Haller MD, President MDI Biological Laboratory

Podium discussion on: Qualifications in biomedicine – new job descriptions in biomedical research (workforce development in Maine)

12:15 – 1:30 Lunch

1:30 – 3:00 Panel Discussion on Workforce Development

Moderator: Catharine Maclaren PhD, VP Talent & Diversity at Northern Light Health

Panelists:

- **Beth Orcutt** PhD, Vice President for Research at Bigelow
- **Aileen Huang-Saad** PhD, Director of Life Sciences, Health and Engineering Programs at the Roux Institute
- **James Coffman** PhD, Associate Professor, Director Maine IDEA Network of Biomedical Research Excellence (INBRE)
- **Renee Kelly** Associate Vice President Office of Strategic Partnerships, Innovation, Resources and Engagement (inSPIRE) at UMaine
- **Meredith Theeman** PhD, Director Predoctoral & Postdoctoral Education at JAX

3:00 – 3:15 Break (End of this session)

MAINE RESEARCH SYMPOSIUM ON BIOMEDICAL SCIENCE
AND ENGINEERING

Student Poster Session and Reception 4:30 – 6:00

Hudson Museum

Banquet 6:00 – 8:00

6:00 – 6:30 Socializing/cash bar

6:30 – 8:00 Banquet dinner (*requires ticket purchased at
registration*)

Wells Conference Center

MAINE RESEARCH SYMPOSIUM ON BIOMEDICAL SCIENCE AND ENGINEERING

Wednesday, March 27, 2024

Track B – Microscopy, Cell Signaling, Kidney, Pathogens Wells Conference Center – Room 1

Session Time: 9:30 – 10:30; Session Topic: Microscopy; Session Chair: Frederic Bonnet PhD, Light Microcopy Facility Manager at MDI Biological Laboratory

9:30 – 9:45 Speaker: Brandon Aho PhD Candidate at UMaine

Presentation on: Super-Resolution Imaging Reveals Nanoscale Disruption of PIP2 Clustering by Cetylpyridinium Chloride in RBL-2H3 Mast Cells

9:45 – 10:00 Speaker: Frederic Bonnet PhD, Light Microcopy Facility Manager at MDI Biological Laboratory

Presentation on: Open access to a microscopy facility: A Closer Look at Microscopy at MDIBL

10:00 – 10:15 Speaker: Prayag Murawala PhD, Assistant Professor at MDI Biological Laboratory

Presentation on: AdvanceDisco and mesoSPIM microscopy: new horizons for whole mount imaging of tissue cleared samples

10:15 – 10:30 Speaker: Samuel Hess PhD, Professor of Physics at UMaine

Presentation on: Super-Resolution Microscopy

10:30 – 10:45 Break

Session Time: 10:45 – 12:00; Session Topic: Cell Signaling; Session Chair: Melissa Maginnis PhD, Associate Professor of Microbiology at UMaine

10:45 – 11:00 Speaker: Melissa Maginnis PhD, Associate Professor of Microbiology at UMaine

Presentation on: Viral disruption of cell signaling

11:00 – 11:15 Speaker: Cory Johnson Postdoctoral Researcher at MDI Biological Laboratory

Presentation on: Spatial control of the Septin Cytoskeleton by GPCR signaling

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11:15 – 11:30 Speaker: Dustin Updike PhD, Associate Professor at MDI Biological Laboratory

Presentation on: The cytoplasmic contribution to cellular potential

11:30 – 11:45 Speaker: James Godwin PhD, Assistant Professor at MDI Biological Laboratory

Presentation on: Using the salamander to guide new tissue regeneration and scar free healing strategies in mammals

11:45 – 12:00 Speaker: Robert Koza PhD, Faculty Scientist III Center for Molecular Medicine at MaineHealth Institute for Research

Presentation on: Investigation of thermogenesis using an acute cold-resistant Ucp1-knockout mouse model

12:00 – 1:00 Lunch

Session Time: 1:00 – 2:20; Session Topic: Kidney; Session Chair: Hermann Haller MD, President at MDI Biological Laboratory

1:00 – 1:20 Speaker: Iain Drummond PhD, Professor and Director Davis Center for Aging and Regeneration at MDI Biological Laboratory

Presentation on: Antagonistic Wnt pathways drive epithelial interconnections

1:20 – 1:40 Speaker: Ron Korstanje PhD, Associate Professor at JAX

Presentation on: Modifier genes for Alport Syndrome may be therapeutic targets for common types of kidney disease

1:40 – 2:05 Speakers: Benjamin King PhD, Associate Professor of Bioinformatics, **James Jarvis** MD, Director of Clinical Education at Eastern Maine Medical Center – Northern Light Health

Presentation on: The Maine Chronic Kidney Disease Genetics Pilot Study

2:05 – 2:20 Speaker: Olaleye Olajuyin PhD Candidate, Biomedical Science at UMaine

Presentation on: Inflammatory signaling in zebrafish kidney regeneration

2:20 – 2:35 Break

MAINE RESEARCH SYMPOSIUM ON BIOMEDICAL SCIENCE AND ENGINEERING

**Session Time: 2:35 – 3:50; Session Topic: Pathogens; Session Chair: Sue Ishaq PhD,
Assistant Professor of Animal and Veterinary Sciences at UMaine**

2:35 – 2:50 Speaker: Sue Ishaq PhD, Assistant Professor of Animal and Veterinary Sciences at UMaine

Presentation on: Biogeography of gut microbes producing anti-inflammatories from broccoli sprouts in the diet

2:50 – 3:05 Speaker: Adriana Rosato PhD, Faculty Scientist at MaineHealth Institute for Research

Presentation on: Antibiotic resistant bacterial infection

3:05 – 3:20 Speaker: Kyle Brennan Masters Student, Aquaculture in the School of Food and Agriculture at UMaine

Presentation on: The use of probiotics to mitigate mortality in Atlantic Sea scallop (*Placopecten magellanicus*) larvae when challenged with pathogenic *Vibrio* species

3:20 – 3:35 Speaker: Caitlin Howell PhD, Associate Professor Bioengineering at UMaine

Presentation on: Large-scale vascularized polymers enable continuous sensing of and responding to bacteria at interfaces

3:35 – 3:50 Speaker: Robert Wheeler PhD, Associate Professor of Microbiology at UMaine

Presentation on: Exfoliation provides a powerful window to understand the roots of yeast infections

Student Poster Session and Reception 4:30 – 6:00

Hudson Museum

Banquet 6:00 – 8:00

6:00 – 6:30 Socializing/cash bar

6:30 – 8:00 Banquet dinner (*requires ticket purchased at registration*)

Wells Conference Center

MAINE RESEARCH SYMPOSIUM ON BIOMEDICAL SCIENCE AND ENGINEERING

Thursday, March 28, 2024

Track A – Clinical Research, Rural Medicine, Public Health Wells Conference Center – Room 2

Session Time: 9:30 – 10:30; Session Topic: Clinical Research; Session Chair: James Jarvis MD, Director of Clinical Education at Eastern Maine Medical Center – Northern Light Health

9:30 – 9:45 Speaker: Clifford Singer MD, DFAPA, AGSF, Chief, Center for Geriatric Cognitive and Mental Health Director at Northern Light Health Acadia Hospital

Presentation on: The New Maine State Plan for Alzheimer’s Disease: Report on Translational Research Priorities

9:45 – 10:00 Speaker: Linda Chaudron MD, Vice President Medical Education at MaineHealth

Presentation on: Perinatal Depression Screening Research and its Impact on Patient Care

10:00 – 10:15 Speaker: James Jarvis MD, Director of Clinical Education and Emily Tolman PhD, Associate Vice President, Health Equity and Access at Eastern Maine Medical Center – Northern Light Health

Presentation on: Clinical Research Center: Opportunities for deidentified population Data: Overview of NIH all of us and Cerner real world data

10:15 – 10:30 Speaker: Samreen Fathima BDS, MPH, Research Project Manager – Clinical Research at Northern Light Health

Presentation on: Does (+) COVID testing results reduce antimicrobial prescribing in mild-moderate outpatient encounters

10:30 – 10:45 Break

Session Time: 10:45 – 2:35 (breaking for lunch from 11:45 – 1:15); Session Topic: Rural/Public Health; Session Chairs: David Harder PhD, Director Institute of Medicine at UMaine and Jeffrey Hecker PhD, Professor of Psychology at UMaine

10:45 – 11:00 Speaker: Jeffrey Hecker PhD, Professor of Psychology at UMaine

MAINE RESEARCH SYMPOSIUM ON BIOMEDICAL SCIENCE AND ENGINEERING

Presentation on: Bolstering the mental health workforce in rural Maine: The Rural Integrated Behavioral Health in Primary Care program at UMaine

11:00 – 11:30 Speakers: Polly Campbell RN BS BA, Director, Advanced Nursing Education Sexual Assault Nurse Examiner Program at the University of New England

Presentation on: Strategies that have bolstered the workforce in addressing sexual assault/violence in rural Maine (funded by HRSA)

11:30 – 11:45 Speaker: Katherine Ahrens PhD, Associate Research Professor at USM

Presentation on: Rural residence and maternal health

11:45 – 1:15 Lunch

1:15 – 1:45 Speaker: Neil Korsen MD MSc, Faculty Scientist at MaineHealth Institute for Research

Presentation on: The Maine Lung Cancer Coalition (MLCC): A Statewide Public Health Initiative to Improve Lung Cancer Outcomes and Reduce Disparities

1:45 – 2:15 Speaker: Rebecca Boulos MPH, PhD, Executive Director at Maine Public Health Association

Presentation on: Flavored Tobacco: A Social & Environmental Justice Issue?

2:15 – 2:35 Speaker: Tracy Jalbuena MD MA, Medical Director for Telehealth at MaineHealth

Presentation on: Telehealth: Current State and MaineHealth's Virtual Same Day Service

2:35 – 3:00 Break

Panel Time: 3:00 – 4:20; Panel Discussion; Panel Moderator: Hermann Haller MD, President MDI Biological Laboratory

Panel discussion on: Mentoring Clinical Researchers

Panelists: **Jens Rueter** MD, Chief Medical Officer at JAX, **James Jarvis** MD, Director of Clinical Education at Eastern Maine Medical Center – Northern Light Health, **Neil Korsen** MD MSc, Faculty Scientist at MaineHealth Institute for Research

Maine Research Symposium & MERGE Collaborative Reception 4:30 – 5:30
Wells Conference Center – Atrium

MAINE RESEARCH SYMPOSIUM ON BIOMEDICAL SCIENCE AND ENGINEERING

Thursday, March 28, 2024

Track B – AI Applications in Medicine, Engineering Approaches, Cellular Mechanisms Associated with Disease States, Age Related Disease States Barrows Hall – Hill Auditorium

Session Time: 9:00 – 10:45; Session Topic: AI Applications in Medicine; Session Chair: Ali Abedi PhD, Associate Vice President for Research; Professor of Electrical and Computer Engineering at UMaine

9:00 – 9:30 Speaker: Ali Abedi PhD, Associate Vice President for Research; Professor of Electrical and Computer Engineering at UMaine

Presentation on: Applications of Artificial Intelligence in Medical Diagnostics

9:30 – 10:00 Speaker: Rai Winslow PhD, Director of Life Science and Medical Research; Professor of Bioengineering at the Roux Institute

Presentation on: AI Applications in Health

10:00 – 10:15 Speaker: Candice Byers PhD, Research Scientist at the Roux Institute

Presentation on: Classifying Mutation Status Based on Collagen Morphologies in an iPSC-derived Model System for Age-Related Macular Degeneration

10:15 – 10:30 Speaker: Salimeh Yasaei Sekeh PhD, Assistant Professor of Computer Science at UMaine

Presentation on: [TBD]

10:30 – 10:45 Speaker: Vivek Kumar PhD, Associate Professor at JAX

Presentation on: Presentation on: Advanced Phenotyping of the Laboratory Mouse Using Machine Vision

10:45 – 11:00 Break

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Session Time: 11:00 – 12:00; Session Topic: Engineering Approaches; Session Chair: Andre Khalil PhD, Professor of Biomedical Engineering at UMaine

11:00 – 11:15 Speaker: Andre Khalil PhD, Professor of Biomedical Engineering at UMaine

Presentation on: Maine clinical case-control study of mammographic breast tissue subtypes

11:15 – 11:30 Speaker: Rosemary Smith PhD, Professor of Electrical and Computer Engineering at UMaine

Presentation on: Biomedical microdevices

11:30 – 12:00 Keynote Speaker: Giovanna Guidoboni PhD, Professor, Dean Maine College of Engineering and Computing at UMaine

Keynote address on: AI for health: Connecting knowledge and care

12:00 – 1:00 Lunch

Session Time: 1:00 – 2:30; Session Topic: Cellular Mechanisms Associated with Disease State; Session Chair: Robert Wheeler PhD, Associate Professor of Microbiology at UMaine

1:00 – 1:15 Speaker: Jared Talbot PhD, Assistant Professor of Developmental Biology at UMaine

Presentation on: Fast-twitch myofibril growth is proportionate with Mylpf dosage

1:15 – 1:30 Speaker: Ziru Li PhD, Faculty Scientist at UMaine

Presentation on: The Multifaceted Roles of Bone Marrow Adipocytes in Bone Homeostasis

1:30 – 1:45 Speaker: [TBD]

Presentation on: [TBD]

1:45 – 2:00 Speaker: Joe Nadeau PhD, Faculty Scientist at MaineHealth Institute for Research

Presentation on: Session proposal on new collaborations between MH and the Roux Ins, joint project on Genetic bases of genotypic variants.

MAINE RESEARCH SYMPOSIUM ON BIOMEDICAL SCIENCE AND ENGINEERING

2:00 – 2:15 Speaker: Suzanne Angeli PhD, Assistant Professor of Molecular and Biomedical Sciences at UMaine

Presentation on: Determining the effects of calcium on the mitochondrial unfolded protein response

2:15 – 2:30 Speaker: Zhao Xuan PhD, Assistant Professor of Neurobiology at UMaine

Presentation on: The active zone protein CLA-1 (Clarinet) bridges two subsynaptic domains to regulate synaptic autophagy

2:30 – 2:45 Break

Session Time: 2:45 – 4:30; Session Topic: Age Related Disease States; Session Chair: Lenard Kaye PhD, Professor of Social Work; Director of the Center on Aging at UMaine

2:45 – 3:00 Speaker: Lenard Kaye, PhD Professor of Social Work; Director of the Center on Aging at UMaine

Presentation on: The biology of older adult social isolation and loneliness

3:00 – 3:15 Speaker: Christine Lary PhD, Research Associate Professor at the Roux Institute

Presentation on: The common molecular underpinnings of Osteoporosis and Dementia

3:15 – 3:30 Speaker: Kiran Vanaja PhD, Assistant Research Professor of Bioengineering at the Roux Institute

Presentation on: The role of feedback loops in Insulin Resistance and Type-2 Diabetes

3:30 – 3:45 Speaker: Aaron Brown PhD, Faculty Scientist Center for Molecular Medicine at MaineHealth Institute for Research

Presentation on: Targeting brown fat for the treatment of obesity and diabetes

3:45 – 4:00 Speaker: Kathleen Becker PhD, Assistant Professor of Biomedical Sciences at the University of New England

Presentation on: Saphenous Nerve Transection Results in Sensory and Sympathetic Denervation of the Mouse Tibia

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4:00 – 4:15 Speaker: Eva Rose Balog PhD, Associate Professor at the University of New England

Presentation on: Novel Protein Biomaterials for Manipulating VEGFR1 Signaling and Studying Cell Phenotypes

4:15 – 4:30 Speaker: Gareth Howell PhD, Professor Diana Davis Spencer Foundation Chair for Glaucoma Research at JAX

Presentation on: Aging/Alzheimer's

Maine Research Symposium & MERGE Collaborative

Reception 4:30 – 5:30

Wells Conference Center – Atrium

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The MERGE Collaborative **Wells Conference Center – Room 1 (Break Out Session Room 3)**

8:30 – 9:15: Welcome Address – Kalli Varaklis, MD, MEd, Principal Investigator for the MERGE Collaborative

Dr. Varaklis will provide attendees with a brief overview of the MERGE Collaborative, report on outcomes from the first year of operation, and share the vision for the program for 2024 and beyond.

9:15 – 10:15: Keynote Speaker David Loxterkamp, MD: “Lessons from a Country Doctor”

David Loxterkamp is a family physician from Belfast, Maine, where he has lived since 1984. He was a founding member and medical director of Searsport Family Practice, which later became Seaport Community Health Center. This center participated in the National Demonstration Project (2006–2008) and the Maine Patient–Centered Medical Home Pilot (2010–present) and was certified as a Level III Patient–Centered Medical Home by the NCQA. The Seaport Community Health Center has welcomed students and residents to the practice for the past three decades.

David Loxterkamp is the author of “A Measure of My Days” (University Press of New England, 1997) and “What Matters in Medicine” (University of Michigan Press, 2013), and numerous articles in the medical and lay press.

10:30–12:00 Session Block

- **ROOM A – “Building Blocks of a Good Teacher: Precepting 101” – Session Moderator: Jim Jarvis, MD, Director of Clinical Education, Northern Light Health**
 - **“Everything I Need to Know about Medicine (and teaching it), I learned in Kindergarten”:** Dr. Jim Jarvis, Director of Clinical Education, Northern Light Health
 - Dr. Jarvis will share his experience as a preceptor of Family Medicine across the country. His talk will cover practical advice for teaching GME learners and how teaching can improve the quality of care for both patients and physicians.
 - Interactive Activity: Improving Precepting Skills

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- A team of preceptors from Northern Light Health will interact with participants to build communication skills to make teaching impactful and efficient.
- **ROOM B – “Scholarly Activity in a Rural Setting” – Session Moderator: Annie Derthick, Ph.D., Associate Program Director, CMMC Family Medicine Residency Program**
 - **Practice-based Research for the Rural Clinician – Neil Korsen, MD, Physician-scientist and former rural family physician**
 - This session will explore the ways rural clinicians can optimize the work they are already doing to develop a portfolio of scholarly activity. We will identify how to frame everyday questions and projects to turn them into a research project. We will review the infrastructure of the research process including IRB, peer-review, and dissemination pathways and help participants identify how these can be accessible in smaller systems that do not have “research departments.” The goal of this session is that participants will feel excited and more confident about starting a scholarly project when they return to their clinic.
 - **Community-Engaged Research – Abigail DeShiffart, Ryan Hibbs, Robert Krulee, and Tyler Nussinow**
 - A panel of the inaugural MERGE Interns will discuss their community-based research projects. Interns spent four weeks living in rural communities across the state learning about a variety of different health conditions from a local, population health perspective directly from the people and agencies engaged in the work. They will share how they used the Maine Shared Community Health Needs Assessment and local health data to generate a research question, how they collaborated with community stakeholders to discover the answer to that question and developed a policy brief for leaders in their communities. Please also take time to visit their posters displayed outside the session room during the lunch break.

12:00 PM – 1:00 PM Lunch

1:00 PM – 1:45 PM – Plenary Speaker Tonya Bailey-Curry, LCSW – “Diversity, Equity and Inclusion for our Rural Spaces”

- Tonya Bailey-Curry, LCSW, serves as the MERGE Collaborative’s DEI consultant and sits on the MERGE executive committee. Ms. Bailey-Curry’s

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experience in Diversity, Equity, and Inclusion leadership includes work with Bates College and Central Maine Medical Center. As a born and raised Mainer, Ms. Bailey-Curry will speak to the importance of DEI initiatives and how they can improve health outcomes in our rural spaces.

1:45 PM – 3:00 PM: Session Block

- **ROOM A: “Difficult Conversations with the iGen Learner”**
 - Kalli Varaklis, MD, DIO Maine Medical Center, PI for the MERGE Collaborative
 - Kristen Sciacca, MD Maine Medical Center
Research shows that each generation of learners brings different experiences and expectations to the classroom and informal learning spaces. “iGen” learners, or those born between 1995 and 2012, account for many of our new medical residents and inter-professional learners entering healthcare professions. The first part of this session will map out generational expectations and norms and show how they impact the learning environment. The second part will provide a framework for having difficult conversations with the iGen learner. This interactive experience will give participants the opportunity to use research-backed methods to deliver clear communication and instruction in a potentially emotional setting.

ROOM B: “Preserving the Future of Maine’s Rural Physician Workforce” – Session Moderator: Dr. Thomas Gearan, Program Director, Rural Internal Medicine Maine (RIMM) Track

- Panel Discussion:
 - Dr. Tom Gearan, Associate DIO Maine Medical Center
 - Dr. Ross Isacke, CMO, Franklin Memorial Hospital
 - Dr. Yusuf Ebrahim, RIMM Track Resident, Western Maine HealthThrough a panel discussion, experts will provide a current state of Maine’s rural physician workforce, local and state initiatives aimed to address the growing shortage of physicians and exciting new medical education models that will train more of our physicians in rural settings.

4:30 PM – 5:30 PM: Refreshments and Networking

Reception in Wells Conference Center Atrium

Please join us Thursday from 4:30 – 5:30 in Wells Conference Center Atrium for a light reception with the Maine Research Symposium and MERGE Collaborative!