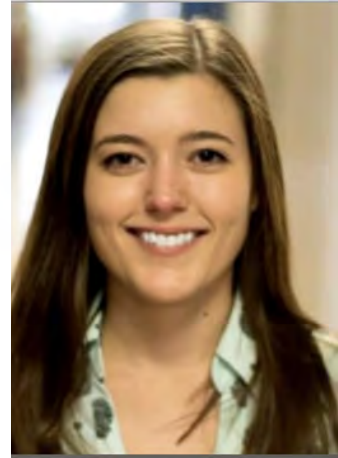




# Maine Medical Center Research Institute

A MaineHealth Member



## Research Training and Education Annual Report 2020-2021

Prepared by Liz Bergst, Christine Ellis, and Lucy Liaw



Research Training and Education Programs encompasses postdoctoral research training (non-clinical), PhD and MS training with our academic partners (University of Maine, University of Southern Maine, and Tufts University), undergraduate research internships during the academic year and an intensive undergraduate summer program, high school student and teacher programs, and other outreach events, such as classroom visits and career panels. This report describes the activities in each area accomplished in 2020-2021.



# High School Student and Teacher Programs

During the 2020-2021 academic year, many of the in-person outreach activities were curtailed due to the pandemic, but MMCRI was able to connect with some high school students virtually.

## Upward Bound

The federal Upward Bound program supports high school students from low-income and first-to-college backgrounds, in preparation for success in college.

We participated in a virtual career panel with Doris Juarez (STEM/Computer Science Academic Advisor, TRIO program at USM, pictured at right) and her group of Upward Bound high school juniors. Participants in the panel included Research Nurse Coordinator Anna Cloutier, Biostatistician Christine Lary, Faculty Scientist Aaron Brown, MMC OB/GYN Resident Nadi Kaonga, and Tufts Maine Track Medical Students Jacob MacDonald, Asha Mohamud, and James McCullum.



# Undergraduate College Student Programs

## Summer Student Research Program

Due to the pandemic, MMCRI was unable to run our Summer Student Research Program in 2020, but our 2020 selected students were able to defer participation, and the majority did join us for the program in 2021. It was an unusual year for us, as it was for many programs throughout the country. We were fortunate to be able to invite our students to join us for in-person research projects. Weekly lectures and professional development activities took place virtually, and we were even able to have one outdoor in-person social activity. Students presented their research findings during a virtual event at the end of the summer, a series of “Three Minute Thesis” presentations followed by a virtual poster session. Students and mentors showed flexibility and innovation in finding hybrid ways to move projects forward.

# Summer Student Research Program 2021

## Comments from Interns

“Through my clinical research experience, I now have a clearer understanding of the realities of different career paths that I would otherwise not have. I couldn’t recommend this MMCRI SSRP program more!”

“I really enjoyed presenting my work at the poster session and talking about my project with interested scientists.”

“I was able to have my own research project which taught me about planning, time management, and adapting in a research/laboratory setting. I also really enjoyed the social events (ice cream truck, BBQ, etc.) because it gave me the opportunity to talk with other scientists one on one that I normally wouldn’t have.”

“I really enjoyed the summer program because I learned so much about lab techniques, data analysis, microscopy, networking, and presenting. I feel as though I grew as a professional while being treated with respect.”

“I had a great chance to get research experience this summer. I learned multiple things that I was not aware of which helped in changing my thoughts about what I want to do in the future.”

“This summer was so important for me -- it solidified my goals to pursue medicine and become a doctor. It was my first opportunity working in a hospital, and I fell in love in the environment. I also made amazing connections with other participants in the program, researchers across MaineHealth, and especially the doctors that I worked so closely with.”

“Through the MMCRI SSRP internship I was able to build relationships with medical providers, researchers, and administrators. Everyone was so incredibly supportive and I truly felt like a valued team member. I was given responsibilities that told me my mentors had confidence in my skills to represent our department. This led to a research poster I helped create winning an award at a national conference. But truly the highlight was being able to meet and form connections with really inspiring people interested in your career and personal development.”

“I was able to work with faculty member in multiple different labs to be trained on equipment, which was fantastic. And I also was able to do independent work by the end of the internship.”

“I absolutely loved this program and can’t wait to come back as an academic year intern.”

”I think my favorite part was getting to hear Dr. Weiss and Dr. Woodberry’s advice throughout the entire process. I especially enjoyed hearing their input while putting the poster and presentation together and their advice for data analysis.”

## Comments from Mentors

“It is an amazing program that has so many positive benefits for the student, as well as the hosting lab. The SSRP program seems to bring in diverse students with strong backgrounds in their area of expertise. It has been a delight to host an SSRP student every year.”

“It’s important to bring interested college students into medical research.”

# Summer Student Research Program

## 2021 Participants

Student	Mentor	School
Henry Becker Twombly Scholarship	Robert Smith MD Vector Borne Disease Lab	George Washington University
Elizabeth Bernier	Kristen Woodberry PhD Center for Psychiatric Research	University of Southern Maine
Meghan Gerety Konkel Family Fund	Christine Lary PhD Center for Outcomes Research and Evaluation	University of Virginia
Ryan Hibbs	Sergey Ryzhov MD, PhD Center for Molecular Medicine	University of Southern Maine
Dawood Jimale	Ilka Pinz PhD Center for Molecular Medicine	University of Southern Maine
Dennis Kalloor	Rebecca Hutchinson MD Center for Outcomes Research and Evaluation	Northeastern University
Deepak Kandel	Igor Prudovsky PhD Center for Molecular Medicine	University of Southern Maine
Michelle Karam	Michaela Reagan PhD Center for Molecular Medicine	University of Southern Maine
Elizabeth Lucas Dana and Hilda Ray Willard Fund	Volkhard Lindner MD, PhD Center for Molecular Medicine	Rochester Institute of Technology
Bilan Mohamed	Katherine Motyl PhD Center for Molecular Medicine	University of Southern Maine
Ginger Paquette	Lucy Liaw PhD Center for Molecular Medicine	University of Southern Maine
Christian Potts Harold Berry Fund	Lucy Liaw PhD Center for Molecular Medicine	University of Maine, Orono
Madeline Prentiss Diane Cavanaugh Scholarship	Elizabeth Sieverling MD Department of Dermatology	Macalester College
Tawane Sheikh Chester H. and Margaret W. Pease Fund	Ilka Pinz PhD Center for Molecular Medicine	University of Southern Maine
Isabella Tomasetti Thomas Holden and John and Holly Benoit Fund	David Seder MD Pulmonary and Critical Care Medicine	Colby College

# Summer Student Research Program 2021 Participants



## Undergraduate College Student Internships

In addition to our summer program, we have academic interns who come during the academic year and through other mechanisms. A partnership with University of Southern Maine places USM students within MMCRI laboratories for ~15h/week research for the academic year. USM provides student stipends, partly through MEIF funds, to support interns. Students perform a mentored research project, and give a presentation at the end of the academic year.



Student	Academic Institution	Research Area
Ryan Hibbs	University of Southern Maine	Sawyer/Ryzhov Lab
Dawood Jimale	University of Southern Maine	Pinz Lab
Deepak Kandel	University of Southern Maine	Prudovsky Lab
Bilan Mohamed	University of Southern Maine	Motyl Lab
Ginger Paquette	University of Southern Maine	Liaw Lab
Annie Schulman	Colby College	Sawyer/Ryzhov Lab
Ben Simonds	Bowdoin College	Center for Psychiatric Research
Victoria Zucco	University of Southern Maine	Prudovsky Lab

# Undergraduate Programs



## Northeastern Roux Institute

MMCRI faculty members Anyonya Guntur and Ilka Pinz recently coordinated an experiential lab class for a Masters in Biotechnology course conducted by the Roux institute. The class was designed for students that are currently in jobs or will be taking up employment that will need molecular biology skills. The lab class consisted of three modules starting with the University of New England (Module 1) followed by MMCRI (Module 2) and finally culminating with IDEXX laboratories (Module 3). The classes helped the students form connections with the different faculty members and scientists in the Portland area. The class was held at the USM campus (Dr. Pinz coordinated lab space) because of COVID restrictions and was designed for the students to familiarize themselves to PCR amplifying a particular gene and using restriction digestion analysis.

## Masters Students

We initiated the Research Intensive Masters Program with the University of Southern Maine Dept Biological Sciences in 2019. Our faculty also serve as mentors for students in other Masters programs, including the Roux Institute at Northeastern. Masters students who trained at MMCRI in the past year are listed below.

Student	Location	Academic Program
Davide Barteselli	Brown Lab	Università degli Studi di Milano-Bicocca
Emma DayBranch	CORE	George Washington University, Milken Institute of Public Health
Samantha Dinsdale	CORE	University of New England
Mariah Farrell	Reagan Lab	USM Research Intensive Master's in Biology
Bethany Fortier	Liaw Lab	USM Research Intensive Master's in Biology
Avena Patel	CORE	Tufts University MPH Program
Peter Zazzali	CORE	Tufts University MD/MPH Program

# Graduate Programs

Maine Medical Center Research Institute partners with the University of Maine and Tufts University and their graduate schools in the biomedical sciences. This year, the Roux Institute at Northeastern established an experiential PhD track, with scholarship funds available from MaineHealth for employees who enroll in the PhD program. This year, our faculty served as primary mentors for 13 UMaine PhD students, 1 Tufts PhD student, and starting in fall 2021, 1 Northeastern Roux Institute PhD student. Congratulations to students Audrie Langlais, Madeleine Nowak, and Michayla Moore for securing a spot on our T32 training grant for the 2021-2022 academic year!

## PhD Students

Student	Location	Program
Samantha Costa	Rosen Lab	University of Maine
Victoria DeMambro	Rosen Lab	University of Maine
Ally Hinton	Lary/Lopez-Pintado	Roux Institute
Audrie Langlais	Motyl Lab	University of Maine
HangHang Liu	Rosen Lab	West China Hosp.
Linyi Liu	Rosen Lab	Sichuan Univ. China
Marissa McGilvrey	Liaw Lab	University of Maine
Michayla Moore	Vary/Sawyer Lab	University of Maine
Connor Murphy	Reagan Lab	University of Maine
Archana Nagarajan	Lary Group	Tufts University
Madeleine Nowak	Koza Lab	University of Maine
Shivangi Pande	Friesel Lab	University of Maine
Rebecca Peters	Motyl Lab	University of Maine
Matthew Siviski	Prudovsky Lab	University of Maine
Ashley Soucy	Liaw Lab	University of Maine
Katie Stieber	Liaw Lab	University of Maine
Chenhao Yang	Liaw Lab	University of Maine

## Medical Students and Clinical Trainees

Student	Location	Program
Bianca Bustamante	CORE	Univ. New England
Bailey Carter	Sawyer/Ryzhov Lab	TUSM
Tien Dang	Prudovsky Lab	Univ. New England
Nicole Del Signore	Rosen Lab	Univ. New England
Reagan Di Iorio	Reagan Lab	Univ. New England
Tristan Fong	Sawyer/Ryzhov Lab	TUSM
Benjamin Harris	Rosen Lab	Univ. New England
Sarah Hemphill	CORE	TUSM
Cathleen Huang	Liaw Lab	Univ. New England
Andrew Lee	Rosen Lab	Univ. New England
Melanie Mait	CORE	TUSM
Melissa Mariano	Rosen Lab	Univ. New England
Lauren McGuiness	Reagan Lab	Univ. New England
Nichole Moore	CORE	Univ. New England
Shannon Munro	Rosen Lab	Univ. New England
Joseph Pajka	CORE	TUSM

CORE = Center for Outcomes Research and Evaluation  
TUSM = Tufts University School of Medicine

# Postdoctoral Fellows

This past year, faculty at MMCRI mentored these postdoctoral fellows.

Postdoctoral fellow	Location
Andie Dodge	Reagan Lab
Eben Estell	Rosen Lab
Carolina Figueroa	Rosen Lab
Amanda Lessard	Sawyer/Ryzhov Lab
Rebecca Mountain	Motyl Lab
Olga Gisela Pachon Pena	Rosen Lab
Sergey Tsibulnikov	Sawyer/Ryzhov Lab
David Weiss	Woodberry Group

## Responsible Conduct of Research at MMCRI

### Comments from participants

“I will continue to evaluate my mentors and mentees based on a much broader definition of success than number of publications.”

“[I learned] the concept of plagiarism in journal articles and what to do in situations when this occurs.”

“No one is immune from bias against marginalized groups, including people in those groups, and we need to thoroughly consider whether our results are biased in any way, especially when it could impact the opportunities and livelihoods of real people.”

“[I learned] how important it is to really know your subject area, and to involve an expert if you do not.”

We provide quarterly discussion-based, interactive sessions - based on guidelines provided by the U.S. Department of Health & Human Services, Office of Research Integrity – as our Responsible Conduct of Research Program. This past year, all sessions were held virtually on Zoom, allowing for broader participation both within MMCRI, and also enhancing participation from other institutions. A total of five sessions were held, and we had a total of 160 unique participants across those five sessions.

Topic	Facilitators
Compliance considerations when working with state partners	Ross Hickey and Stacey Mondschein
Research study discussion - AlShebli et al. Nature Communications 2020	Elizabeth Campbell, Vicki Hayes, Liz Jacobs, Lucy Liaw, Susan Santangelo, and Liz Scharnetzki
Authorship, manuscript peer review, and publication	Volkhard Lindner, Rob Koza, Joe Nadeau and Anyonya Gunter
Research in critical care – presented by the COBRE in Acute Care Research	Rich Riker, David Seder, David Gagnon, Elizabeth Campbell, Frank Chessa
Research Misconduct	Elizabeth Campbell and Lucy Liaw


“I thought this situation really highlighted the importance of choosing appropriate reviewers for a paper. Technical experts did a fine job looking at the mechanics, but it seems no one looked at the conclusions from the 30,000 foot elevation.”

“I think being an undergraduate student, simply hearing from all of the researchers with their vast knowledge on creating a scientific platform that is honest and trustworthy was fascinating.”





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