

ISSUE: 03

## COR<sup>2</sup>E

Who are we?  
Find out @ [core.uconn.edu](http://core.uconn.edu)

## FACILITIES

Advanced Light Microscopy Facility [ALMF]  
Biosupply  
Biophysics  
Digital Experience Group [DXG]  
Electrical/Electronics: Technology & Repair  
Flow Cytometry  
Mechanical/Glass: Design & Fabrication  
Microbial Analysis, Resources, and Services [MARS]  
Nuclear Magnetic Resonance [NMR]  
Proteomics & Metabolomics Facility [PMF]  
Statistical Consulting Services [SCS]

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## ADVANCED LIGHT MICROSCOPY FACILITY (ALMF)

ALMF has grown in multiple ways since our last newsletter in 2021. New Facility Scientist Emery Ng, Ph.D. (see "New People") was hired in 2022 to assist Facility Director Christopher O'Connell, Ph.D. in managing ALMF's ever expanding fleet of powerful microscopes. New equipment has been added too (see "New Instrumentation") that substantially improves the advanced microscopy options available at UConn. Contact Dr. O'Connell for more information on these new technologies.

## BIOSUPPLY

Xiaoyang Liu continues to support UConn Research by overseeing research supply services and stock room capabilities. If you need consumables or reagents for your next experiment, allow Xiaoyang to conveniently help you secure the best possible price from a list of leading vendors.

## BIOPHYSICS

Biophysics is recently under new direction! In 2022, former Biophysics Facility Director Heidi Erlandsen, Ph.D. embarked on a new adventure in her home country of Norway (good luck Heidi!) and we welcomed Emery Ng, Ph.D. into the COR<sup>2</sup>E team to help manage ITC, DSC, and our new MST instrument (See "New Instrumentation").

## DIGITAL EXPERIENCE GROUP (DXG)

Facility Director Joel Salisbury, M.F.A. and the DXG team continue their collaborative work in software, app, and product development through partnerships with PIs across multiple disciplines including the National Institute for Undersea Vehicle Technologies (NIUVT), the School of Fine Arts, UConn Extension, the Puerto Rican Studies Initiative, the School of Engineering, School of Nursing, and UConn Health. DXG recently merged with Squared Labs, UConn's top undergraduate student developer, designer, marketing, and illustrating team. Together, DXG and Squared Labs continue to offer unique and exciting support to UConn Research.

## **ELECTRICAL/ ELECTRONICS: TECHNOLOGY & REPAIR**

Facility Director John Pudelkiewicz continues to amaze us with his ability to repair everything from autoclaves (MCB) to desk computers (School of Pharmacy), ovens (EEB) to pipette pullers (PNB), and flash chromatography systems (Chem) to CO<sub>2</sub> incubators (Nutritional Sciences). Nothing seems to be too old or too difficult for John to successfully repair so before you replace that expensive broken equipment, be sure to schedule a repair consultation.

## **MECHANICAL/GLASS: DESIGN & FABRICATION**

Facility Director Mark Drobney and Senior Engineer Scott LaForest have recently completed some truly fascinating custom-designed machining projects including a wind tunnel for aerospace modeling (E.O. Smith HS), a cryogenic spray freeze drying vessel (School of Pharmacy), and clam shell furnace with pneumatic load cylinder (UConn C2E2). No matter the size or application, if you have a custom design and fabrication project be sure to contact Mark!

## **FLOW CYTOMETRY**

Flow Cytometry continues to support a large user base at UConn and recently, the Caron BSL2+ enclosure for the Aria Sorter became fully functional. This allows researchers to sort cells of human origin, cells with viral vectors, yeast, bacteria, and nanoparticles in a cell culture-grade environment. Flow also integrated a new workstation for post-acquisition analysis with several visualization options for modeling and graphing results. Sadly, we recently said goodbye to former Facility Director Wu He, Ph.D. [good luck Wu!], who moved onto a new opportunity in NYC. A hiring announcement for Dr. He's replacement will be made soon.

## **MICROBIAL ANALYSIS, RESOURCES, AND SERVICES (MARS)**

Facility Director Kendra Maas, Ph.D. and her team continue to impress us with their nationally recognized campus-wide COVID monitoring program [>75,000 qPCR samples in the past 3 years!], important research support in microbiome community characterization, bioinformatics expertise, and amazing data analysis workshops! MARS has recently incorporated several new liquid and magnetic bead handling robots to aid in large scale sample preparation and sequencing efforts. Contact Dr. Maas for more information on how to integrate microbial community analysis in your research!

## NUCLEAR MAGNETIC RESONANCE (NMR)

Facility Director Vitaliy Gorbatyuk, Ph.D., continues to provide top-notch NMR experimental and data analysis assistance to many users focused on NMR analysis of the smallest of compounds all the way to intact proteins. Contact Dr. Gorbatyuk to find out more about his instrumentation and training opportunities.

## STATISTICAL CONSULTING SERVICES (SCS)

Facility Director Timothy Moore, Ph.D. and his team have continued to integrate advanced statistical analysis into UConn Research projects. Several manuscripts were supported last year including a global meta-analysis of the effects of taxation on sugary drink consumption and sales and development of a model to predict malignancy after heart transplantation.

SCS also spearhead analysis efforts and hands-on workshops for “omics” and data analysis users of MARS and PMF laboratories. Contact Dr. Moore for more information on how to integrate advanced statistical analyses in your project!

## PROTEOMICS & METABOLOMICS FACILITY (PMF)

Facility Director Jeremy Balsbaugh, Ph.D. and Facility Scientist Jen Liddle, Ph.D., have recently been busier than ever! PMF celebrated its 5th birthday in late 2022 and recently served the 150th user laboratory since opening in 2017. They recently incorporated new peptide dissociation methods [see “New Instrumentation”], real-time searching capabilities for label-based quantitative proteomic experiments, and continue to offer hands-on workshop and training sessions for new users. Contact Dr. Balsbaugh for more information on how to incorporate advanced biological mass spectrometry in your research!

## **JEREMY L. BALSBAUGH, PH.D.**

ASSOCIATE DIRECTOR OF COR<sup>2</sup>E

Since our last newsletter, a new Associate Director position in the Center has been established to support our fearless Director Dan Schwartz. Jeremy Balsbaugh, current Director of the Proteomics & Metabolomics Facility, was appointed Associate Director in October 2022. He brings his experience in successful core management and aims to help Dr. Schwartz further COR<sup>2</sup>E efforts in supporting UConn Research and implement new opportunities for UConn faculty to benefit from the expertise and ever-expanding equipment and advanced instrumentation inventory available in COR<sup>2</sup>E.

## **CINDY DOHERTY**

COR<sup>2</sup>E PROGRAM SPECIALIST

Since our last newsletter, Cindy has joined the COR<sup>2</sup>E team and brings with her many years of experience working in industry, education, and non-profit organizations. Cindy helps the mission of COR<sup>2</sup>E by helping to manage internal billing through CIDER acting as fiscal officer for the Center, maintaining the COR<sup>2</sup>E website, managing Center employment, and conquering new Center administration challenges daily. Welcome Cindy!

## **EMERY NG, PH.D.**

FACILITY SCIENTIST IN ALMF & BIOPHYSICS

We had the pleasure of welcoming Emery to the COR<sup>2</sup>E team in June 2022. Emery brings their experience in light microscopy and biophysical protein characterization gained during their Ph.D. research in Prof. Nathan Alder's laboratory (MCB) here at UConn. Welcome Emery!

## **JOHANNA CATHELL, M.S., N.D.**

RESEARCH ASSISTANT IN MARS

Johanna recently came to support Facility Director Kendra Maas in the MARS facility with an eclectic background of laboratory experience that includes time spent in healthcare, private industry, and pharma. She will be performing the day-to-day DNA extraction, library preps, and assisting users with MARS equipment. Welcome Johanna!

## **BRIAN KELLEHER**

DXG SENIOR APPLICATION DEVELOPER

Hired in the Summer of 2021, Brian Kelleher [BK] is the DXG's senior application developer. With over 7 years of delivering software solutions to large audiences, he brings expertise in creating scalable wide-use products and small experimental technologies to both the DXG/UConn Research team. Most recently, BK has been working on specialized software developed for the OVPR. Welcome BK!

## **JOEL SALISBURY, M.F.A.**

FACILITY DIRECTOR OF DXG

DXG found its first full-time Director when Joel joined the COR<sup>2</sup>E team in Summer 2022! Joel brings expertise in User Experience, software development, and product design to the COR<sup>2</sup>E team and UConn Research. Welcome Joel!

NEW PEOPLE

## ALMF

Zeiss Lightsheet 7 Fluorescence Microscope: Capabilities include rapid volumetric imaging of intact, transparent organisms or cleared tissue. A new workstation with Arivis software allows new options for analysis and visualization of large, multi-dimensional datasets.

Leica Thunder Imager Widefield Fluorescence Microscope: Features include software-based "computational clearing" to remove out of focus light through background subtraction and deconvolution, an 8-slide holder to generate large overviews and define multiple acquisition areas, plus a second color camera capable of imaging histological dyes and stains. Contact Dr. O'Connell for more information.



Photo courtesy of Zeiss Microscopy



Photo courtesy of Leica Microsystems

## BIOPHYSICS

NanoTemper Monolith NT.115pico: Purchase of this new instrument was made possible through an NIH S10 Shared Instrumentation Grant awarded to previous Facility Director Heidi Erlandsen, Ph.D. The Monolith performs Microscale Thermophoresis (MST) to quantify biomolecular interaction affinities down to picomolar concentrations. Contact Dr. Ng for more information, training opportunities, and to gain user access.



Photo courtesy of NanoTemper Tech

## PMF

Orbitrap Eclipse Tribrid mass spectrometer and Ultimate 3000 RSLCnano UPLC: This powerful new instrument was funded by a successful High-End NIH S10 Shared Instrumentation Grant written by PMF Director Jeremy Balsbaugh, Ph.D. It includes enhanced sensitivity, scan speed, and multiple ways to identify and sequence proteins and peptides. New features include electron-transfer dissociation, real-time searching, and MS<sup>n</sup> capabilities. This new instrument is incredible!



Photos courtesy of Thermo Fisher Scientific

## **ADVANCED LIGHT MICROSCOPY FACILITY (ALMF)**

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