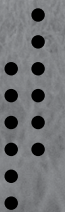


CLAS RESEARCH RESOURCE

October 2020





A MESSAGE FROM JOSHUA WEINER, ASSOCIATE DEAN FOR RESEARCH

Welcome to the October 2020 issue of CLAS Research Resource, our newsletter focusing exclusively on our college's research mission. Each month, it will provide you with updates on policies, upcoming grant opportunities and deadlines, research-relevant information on facilities and information technologies, and a roundup of our scholars' latest and greatest accomplishments.

New Research Advisory Board

I have two things I'd like personally to tell you about this month. The first is that I have formed a new **Research Advisory Board (RAB)**, as part of my efforts to increase the flow of information between CLAS scholars and the Dean's Office. The RAB includes three prominent research faculty from each of four main divisions of CLAS: the arts, humanities, social sciences, and natural and mathematical sciences. We will meet a few times each semester, during which I hope to learn from RAB members about issues that affect research, scholarship, and creative activity; get feedback on ideas for enhancing the research mission of CLAS; brainstorm ways to enhance interdisciplinary research; and, occasionally, to work through new policies or initiatives. The inaugural members of the RAB are:

Arts: Robert Bork (Art and Art History), Gregory Hand (Music), and Daniel Fine (Theatre Arts)

Humanities: Luis Martín-Estudillo (Spanish and Portuguese), Sarah Bond (History), and Ashley Howard (History/African American Studies)

Social Sciences: Marina Zaloznaya (Sociology and Criminology), Eric Tate (Geographical and Sustainability Sciences), and Christopher Veeh (Social Work)

Natural and Mathematical Sciences: Craig Kletzing (Physics and Astronomy), Michelle Voss (Psychological and Brain Sciences), and James Shepherd (Chemistry)

I am grateful to these scholars for agreeing to serve, and I look forward to our first meeting sometime later this month.

Mitigating COVID-related productivity loss

My second announcement is about a special one-time award mechanism we rolled out this month: **the 2020 Deans' Research Micro-Grants for Probationary Faculty**. In response to the continuing disruption of research due to the novel coronavirus pandemic, CLAS deans have pooled our unused personal research/travel funds to provide a small number of "micro-grants" of up to \$2,000 each to probationary tenure-track faculty (\$17,000 total funding; ~8-12 micro-grants will be awarded depending on requests). [Here are more details](#), from the DEO mailing of September 30. We see this one-time micro-grant initiative as a small gesture toward "putting our money where our mouth is," and one component of our plans to support probationary faculty during a disruptive time.

In addition, this semester, I am working with a group including fellow associate deans (both inside and outside of CLAS) and representatives of the OVPR and the Obermann Center for Advanced Studies to consider ways to mitigate the loss of productivity brought on by pandemic-related lab shutdowns, lack of travel, and loss of audiences. As always, I welcome any ideas and suggestions you may have—reach out anytime (joshua-weiner@uiowa.edu).

Meetings with DEOs

Finally, let me remind you that I am continuing to schedule meetings with every department's DEO along with a couple of their representative researchers, scholars, or artists. As I noted last month, I am using these meetings to learn how each department defines its research mission and what I can do to help them succeed. I am also touring each department's spaces to learn how facilities impact its research. DEOs, please be on the lookout for invitations from Allison Bierman for these meetings; we'll get to everyone as the academic year proceeds. If you'd like to get on the schedule ASAP, let Allison know (allison-bierman@uiowa.edu).

Thank you for all you do to move forward our college's research mission.



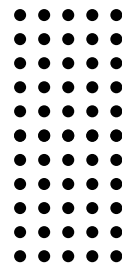
CLAS RESEARCH AND INFRASTRUCTURE UNITS:



[Associate Dean for Research](#)

[CLAS Technology Services](#)

[Space, Facilities, and
Equipment](#)



[Grant Support Office](#)

[Office of Sustainability and
the Environment](#)

CLAS PARTNERS WITH OVPR RESEARCH DEVELOPMENT OFFICE IN SUPPORTING EFFORTS TO SECURE EXTERNAL FUNDING



Building a research program – and securing external funding to support that program – can be a daunting task.

The good news is that the University of Iowa offers a variety of resources to support College of Liberal Arts and Sciences faculty and staff with these efforts. It can be challenging, however, to understand what is available and how to go about finding it.

In the CLAS [Grant Support Office](#), we view this as one of our primary responsibilities – assisting CLAS faculty in navigating the university's research infrastructure. Our staff are very knowledgeable about the various units that support research, including core facilities, compliance units, and interdisciplinary research centers. For this issue of the *CLAS Research Resource* newsletter, I am aiming the spotlight at the [Research Development Office \(RDO\)](#), a unit within the Office of the Vice President for Research.

The Research Development Office conducts activities aimed at catalyzing new ideas and collaborations, as well as increasing the competitiveness of proposals submitted by our faculty and staff. RDO Director Aaron Kline has years of experience developing research development programming. Prior to his role in the RDO, Aaron provided direct grant support to faculty in the social sciences. You may have attended an RDO event in the past, such as the [Research Service Fair](#), a vendor-style fair (offered virtually in Spring 2020 and 2021) that connects researchers to more than 70 units that support research, or the [Science on Tap](#) series, an informal forum for UI researchers to engage the campus and local community with the stellar research and scholarship taking place at UI. The Grant Support Office recently collaborated with the RDO to offer an informational session on *Analyzing the Research Funding Landscape*, and our offices will be co-hosting additional events this fall and upcoming spring. In addition to events, the RDO also provides access to additional resources, including [External Review](#)

[Services](#) and a [resource library](#) that houses examples of successful proposals and other materials.

Please don't hesitate to contact RDO staff members— Director [Aaron Kline](#), Research Support Coordinator [Cheryl Ridgeway](#), or Research Development Coordinator [Britt Ryan](#)—or your department's [grant support staff member\(s\)](#) if you would like to learn more. We hope to see you at one of these events soon!

Kristi Fitzpatrick
Director, [Grant Support Office](#)
College of Liberal Arts and Sciences
kristi-fitzpatrick@uiowa.edu
319-467-0296

Upcoming deadlines for grants and fellowships

Check out these upcoming Research Development Office events:

- **October 23 at 1:00 PM:** [Maximizing Pivot to Find Funding Collaborators](#)
- **October 30 at 10:00 AM:** [Identifying and Capturing Funding](#) (with CLAS GSO)
- **November 3 & 10 at 9:00 AM:** K Award Ecosystem (details forthcoming)
- **November (TBD):** NIH Review Panel Discussion and Q&A (with CLAS GSO)
- **Spring (TBD):** NSF Review Panel Discussion and Q&A (with CLAS GSO)
- **Spring (TBD):** NSF CAREER Bootcamp (with CLAS GSO and College of Engineering)
- **Spring (TBD):** Virtual Research Services Fair

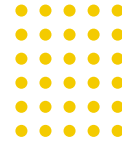
Sign up for the RDO's [mailing list](#) to stay informed regarding the various ways Aaron and his team can support your research efforts.

CLAS LINUX GROUP: YOUR IN-HOUSE, COMPREHENSIVE LINUX RESOURCE

The **CLAS Linux Group**, part of [CLAS Technology Services](#), consists of five Senior System Administrators and Director JJ Urich. The group's mission is to partner with the College of Liberal Arts and Sciences faculty and staff to fulfill their educational, research, and administrative needs by letting the faculty focus on their research, instead of administering servers or workstations.

Why Linux? Linux is the operating system of choice for many researchers on campus due to its low cost (free), its open source, support of programming languages, ability to customize, community support, and reliability.

The CLAS Linux Group offers a variety of services, including consultation services, compliance, managed Linux loads (server and desktop), network file services including backup and recovery, personal web hosting, Linux printing, data center hosting, hardware configuration, and software and license management.



The staff supports the basic network infrastructure and computing environment for the state-of-the-art Linux desktops, servers, clusters, and cloud computing resources used in educational and research facilities, classrooms, and offices throughout CLAS.

We look forward to working with you and your fellow faculty, staff, and students to help meet your individual teaching and research needs. We are your technology partners to help guide you on the lowest-cost and most economical design and compliance solutions, whether it is a server that needs to be purchased, an instance in the cloud, or renting a virtual machine from ITS.

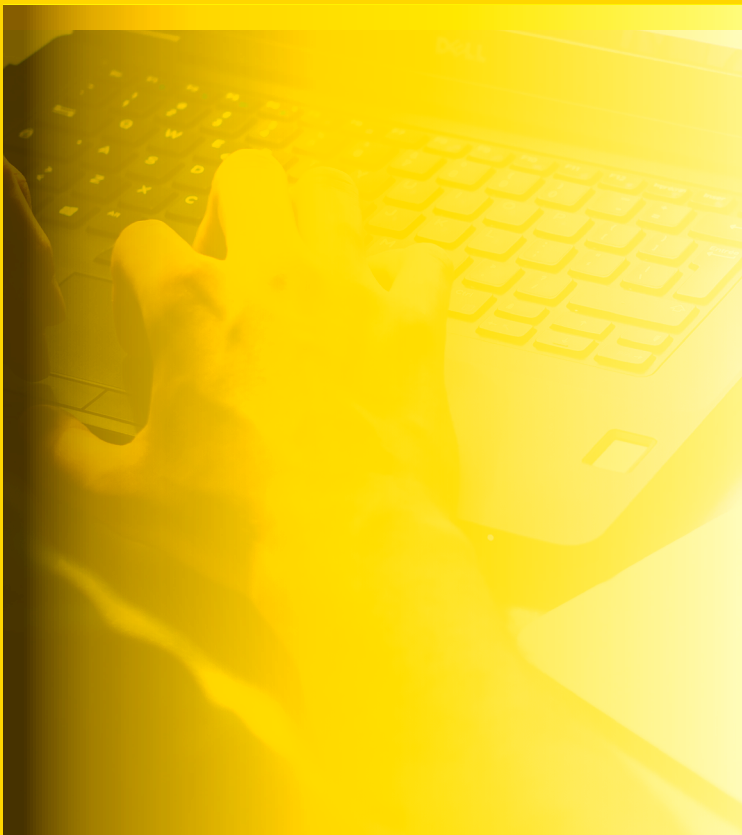
Please let me know how we can help you by sending an email to request@divms.uiowa.edu, or contact me directly using my email address below.

JJ Urich

Director of Research, Unix Systems and Infrastructure
CLAS Technology Services
319-321-3889

During 2019-20, the CLAS Linux Group:

- **Managed 687 devices for CLAS**
- **Managed 412 Linux servers**
- **Managed 227 Linux desktops**
- **Hosted 6 Linux cloud instances in AWS**
- **Managed 42 printers or other network devices**
- **Managed more than 2,000 Linux accounts**
- **Managed more than 1,000 Terabytes of local storage for CLAS researchers**
- **Responded to more than 800 requests for help**



MATFAB FACILITY



In collaboration with the Office of the Vice President for Research, the College of Liberal Arts and Sciences and the College of Engineering, a new shared instrumentation facility was established in Spring

2019, the Materials Analysis, Testing, and Fabrication (MATFab) facility in the Iowa Advanced Technology Laboratories (IATL).

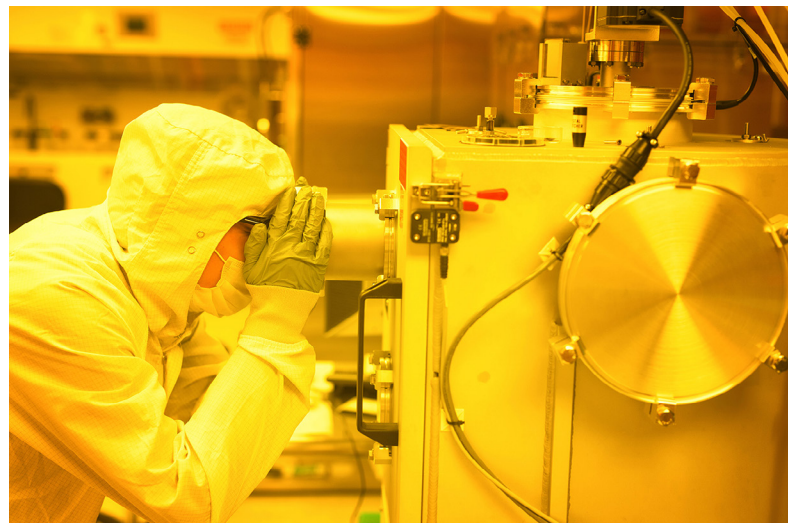
Under the direction of Christopher Cheatum, Professor of Chemistry, the MATFab facility brings under one roof the most modern and sophisticated equipment that faculty and staff in the physical sciences and engineering need to conduct cutting-edge research. The facility was created to consolidate equipment into one location in IATL and combines the former UI Microfabrication Facility (UIMF) with instrumentation from the Central Microscopy Research Facility (CMRF) into a new facility entirely focused on supporting fabrication and characterization needs in the physical sciences and engineering.

The facility includes instruments for materials characterization and fabrication. Characterization methods include several tools for elemental analysis of materials (ICP-emission spectroscopy, ICP-mass spectrometry, X-Ray fluorescence combustion analysis, and electron microprobe analysis), surface characterization instruments (X-ray photoelectron spectroscopy, Auger electron spectroscopy, BET surface area measurements) and imaging (Scanning electron microscopy and Raman microscopy). Fabrication capabilities include both photo lithography and electron-beam lithography, thin-film deposition (atomic layer deposition, electron beam deposition, or evaporative coating), plasma etching, and a variety of sample preparation tools. A complete list of available

equipment can be found here: <https://matfab.research.uiowa.edu/using-lab>. Equipment can be reserved using an online reservation system, and the facility is fully staffed with a skilled technical support team who maintain the instrumentation and support users in their work. If you have a project in mind and want to know if MATFab can help, please contact a staff person for more information.

Eugene Buck

CLAS Director of Facilities
319-335-2612



MATFab facility

FEATURED PROGRAM

FUNDING

National Science Foundation Major Research Instrumentation Program (MRI)

The Major Research Instrumentation (MRI) Program, a National Science Foundation funding mechanism, serves to increase access to multi-user scientific and engineering instrumentation for research and research training.

An MRI award supports the acquisition or development of a multi-user research instrument that is, in general, too costly and/or not appropriate for support through other NSF programs. The MRI program provides funding to acquire critical research instrumentation that advances fundamental science and engineering research.

Additionally, an MRI award is expected to enhance research training of students who will become the next generation of instrument users, designers, and builders.

Institutions are allowed to submit up to three MRI proposals in each cycle, and applicants are required to complete the [internal application](#) and review process. An MRI proposal must be selected by UI's internal reviewers in order to submit a full proposal to the NSF. An MRI proposal may request up to \$4,000,000 for either acquisition or development of a research instrument through one of two tracks:



*You, too, could have a beautiful,
space-age Orbitrap Mass
Spectrometer*

- **Track 1:** Track 1 MRI proposals are those that request funds from NSF greater than or equal to \$100,000 and less than \$1,000,000.
- **Track 2:** Track 2 MRI proposals are those that request funds from NSF greater than or equal to \$1 million up to and including \$4,000,000.

(**Please note:** The MRI program requires institutional match of 30% of the total budget. The Office of the Vice President for Research encourages Principal Investigators to apply to this program and is committed to working with colleges to identify funding to meet cost-sharing requirements.)

To learn more about the NSF's MRI program, please see the [Major Research Instrumentation Program Solicitation](#).

- **Internal submission deadline: Thursday, October 29, 2020**
- **NSF submission deadline: Tuesday, January 19, 2021 at 5 pm**
- **You may begin an internal application [here](#). Note: this page might require that you are logged in through self-service.**

Questions? Contact your department's [grant support staff member\(s\)](#).

NIH-funded investigators: A similar funding opportunity, the [S10 Instrumentation Program](#), will be featured in a future CLAS Research Resource newsletter.

Within the College of Liberal Arts and Sciences, the MRI program has funded several pieces of shared equipment in the Department of Chemistry, including a spectrometer with nitrogen-cooled cryoprobe and a variable-temperature, dual-wavelength, single-crystal X-ray diffractometer.

Most recently, Department of Chemistry Professors Elizabeth Stone and Jim Gloer partnered with the College of Engineering to fund an [Orbitrap mass spectrometer](#) through the MRI program. The equipment is being used to study vehicle emissions related to human health and sea-spray particles linked to climate.

PROVOST, OFFICE OF SUSTAINABILITY AND THE ENVIRONMENT AWARD RESEARCH GRANTS

Researchers in the environmental and sustainability sciences across the University of Iowa are brimming with innovative and promising ideas potentially worthy of significant external funding. However, taking a project from idea stage to being ready for a major grant proposal often requires seed funding that colleges, departments, and labs are hard-pressed to find.

The Office of the Provost and the Office of Sustainability and the Environment are helping to bridge that developmental funding gap and to enhance the competitiveness of UI researchers as they seek large interdisciplinary grants. The **Interdisciplinary, Scalable Solutions for a Sustainable Future (ISSSF)** project is funded by the Office of the Provost, Provost Investment Fund. A three-year project that began in 2019, ISSSF has an annual budget of \$100,000.

In addition to increasing the number of externally funded UI research projects, the ISSSF program is designed to:

- Promote the University of Iowa as an important destination for research and teaching in the environmental and sustainability sciences.
- Engage faculty, graduate students, and undergraduate students from across campus in research focused on sustainability.

Examples of how seed funding from the ISSSF program might be used include collecting data and conducting analyses needed to enhance the competitiveness of a subsequent proposal to an external funding agency, or building a team that produces and submits a proposal to an external funding agency.

- [Read about funded 2020-21 ISSSF-funded projects.](#)
- [Learn about ISSSF program funding criteria and obtain application information.](#)

If you have further questions, [contact me](#) or [Professor David Bennett](#) of the Department of Geographical and Sustainability Sciences.

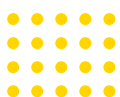
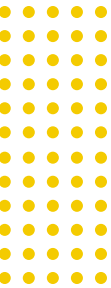


Stratis Giannakouros

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ISSSF-FUNDED PROJECTS



The projects below were funded through the [Interdisciplinary, Scalable Solutions for a Sustainable Future Project](#) for the 2020-21 academic year. ISSSF grants provide seed funding for the development of major external grant proposals in the environmental and sustainability sciences. The project is supported by the Office of the Provost, Provost Investment Fund and administered by the Office of Sustainability and the Environment.

Sustainable Food Systems and COVID-19: A Mixed-Methods Assessment of Innovations and Strategies

Principal Investigators: Dr. Carly Nichols Assistant Professor, Department of Geographical and Sustainability Science and Global Health Studies College of Liberal Arts and Science; Dr. Brandi Janssen Clinical Assistant Professor, Department of Occupational and Environmental Health Director, Iowa's Center for Agricultural Safety and Health (I-CASH)

Project Summary: In the wake of the COVID-19 pandemic and resultant social distancing restrictions, the food system has seen unprecedented shifts in consumer demand alongside supply chain bottlenecks that resulted in empty store shelves and consumer fear around the resiliency of the conventional food system (Stephens et al. 2020). The meat and vegetable/fruit supply chains have proven particularly vulnerable due to COVID-19 outbreaks in processing facilities and a lack of farmworker labor due to increased visa restrictions. At the same time, record unemployment claims and school closures have led to sudden economic stress and food insecurity for millions (Bauer 2020). The implications of these bottlenecks within the conventional food system and shifts in consumer demand will slowly become clear throughout the next year and beyond (Ker and Cardwell 2020). Amidst this unprecedented uncertainty, there is reinvigorated interest in local and regional foods as a reliable and sustainable alternative to the conventional food system (Blay-Palmer et al. 2020, Kolodinsky et al. 2020). Local and regional food systems confer multiple sustainability benefits in terms of shorter supply chains, increased local economic benefits, and an increased community accountability that reduces exploitative labor or environmental practices. However, the unique changing structure of demand (e.g. decreased institutional purchases, household buying surges, and increased economic vulnerability) alongside social distancing restrictions has presented novel challenges to local food systems' normal modus operandi. This offers a unique opportunity to better understand regional food system actors' responses to COVID-related challenges in order to gain knowledge about food system resilience that will inform both conventional and regional food systems and enhance social, ecological, and economic sustainability as well as crisis preparedness.

A hard rain's gonna fall: Responses of Iowa's bur oak to increased precipitation variability

Principal Investigator: Matthew Dannenberg (Geographical and Sustainability Sciences, GSS) Co-PIs: Susan Meerdink (GSS), Mary Skopec (Iowa Lakeside Laboratory), Adam Skibbe (GSS)

Project Summary: Anthropogenic CO₂ emissions have warmed the Earth by about 1°C, with further warming a virtual certainty over the next century. Warming accelerates the hydrologic cycle due to higher water vapor holding capacity of a warmer atmosphere, likely leading to increases in precipitation variability across the globe, as vividly seen in the extreme precipitation and flooding of the Midwest in spring 2019. How Earth's forests, including those in the Midwest, will respond to increasingly volatile precipitation remains largely unknown. Given that forests provide numerous ecosystem services to humanity, understanding how and why forests will respond to changes in the amount and timing of precipitation is a necessary step for sustainable forest management in the face of global change. Here, we propose to examine bur oak responses to a combination of drought and high precipitation variability using precipitation manipulation experiments at Iowa's Lakeside Laboratory. We will test the hypothesis that increased precipitation variability decreases photosynthetic capacity and growth, including quantification of the physical and physiological drivers of these responses.

Algal Blooms Detection and Forecasting through Smart an AI-Powered UAV System

Principal Investigator: Xun Zhou (UI Business Analytics) Co-PIs: Corey Markfort (UI Civil & Environmental Engineering) Ali Jannesari (ISU, Computer Science), Charles Stanier (UI Chemical & Biochemical Engineering)

Project Summary: Harmful algal blooms (HABs), those caused by toxin-producing blue-green algae (cyanobacteria), significantly reduce water quality as well as recreational and ecological value of lakes. HABs degrade fisheries, are a direct health concern for humans through drinking water and contact recreation, and can be lethal for pets, livestock, and waterfowl. HABs may form in large and smaller lakes, wetlands, and farm ponds. HAB events have increased in occurrence in recent years. Yet, little information is available on what factors trigger an outbreak or why a HAB may occur at one lake and not at another. To address these challenges, we propose to develop a novel solution that integrates the latest artificial intelligence (AI) techniques, UAV systems, and dynamical simulation models to jointly and smartly plan, sample, and predict HABs for more accurate and timely decision making.



MEET THE RESEARCHER: CHRISTOPHER-RASHEEM MCMILLAN

What is the focus of your work?

I am a creative researcher. I hybridise critical theory and creative practice, while applying a Practice as Research (PaR) framework to questions and concerns investigated in the humanities, such as race, gender, and social inequity. In other words: How does arts practice (choreography) complicate, probe, and deconstruct questions of power as they relate to race, class, and gender broadly? I am also interested in research questions that can be solved through choreography in its expanded conditions.

The body in motion, in study, and in life more generally, is at the center of the arts and humanities. What can one do without a body? This makes critical choreographic study a uniquely situated lens from which to engage all disciplines (probably, anyway).

Tell us about the broad impact it has/could have.

When bodies move through space and through time, it is a choreographic act. I could see this being specifically impactful for moving large groups of people through space and time safely (for instance, the Syrian Refugee Crises), or building an app that moves protesters safely through city streets. I have designed consumer flow layouts (how one moves through a retail store) to increase profit and efficiency for small local business.

Christopher-Rasheem McMillan is a choreographer and a scholar who is currently on a fellowship at the Yale Institute of Sacred Music. He holds appointments at Iowa as assistant professor of gender, women's and sexuality studies and assistant professor of dance theory and practice. He has an M.F.A. in experimental choreography from TrinityLaban (UK) and a Ph.D. from King's College, London (UK) in theology and religious studies.



What excites you about the environment in CLAS?

Research support, encouragement and refinement from senior colleagues, and the possibility of collaborating with other researchers. Professor Dan McGehee, of the National Advanced Driver Simulator and the College of Engineering, and I collaborated on a yearlong project that focused on choreographic code and automated cars, *Crash Dance: there-are-no-accidents* (2019). It premiered as the first collaboration between NADS, Department of Defense Nexus, and the College of Engineering. This kind of research happens at the University of Iowa.

What are your hobbies and pursuits outside of work?

There are no hobbies outside of work . . . I am not tenured.

Favorite things to do in IC?

Get invited to dinner parties so I don't have to cook at home (pre-COVID).

CLAS RESEARCH ROUNDUP



[Send us your research news](#)

[Brown, Schwalm receive UI Outstanding Faculty Mentor Award](#)

[Luis Martín-Estudillo receives inaugural Fellowships Open Book Award from NEH](#)

[University of Iowa Department of Dance partners with Hancher Auditorium for in-person instruction, community building](#)

[Society of Political Methodology gives Fred Boehmke the Excellence in Mentoring Award](#)

[Kelly Kadera and Sara Mitchell are helping female political scientists close the gender gap](#)

[Biology assistant professor Bin He lands early-career research grant from NIH](#)

[Professor Alberto Ortiz Díaz named 2020-21 Ford Foundation Postdoctoral Fellow](#)

[For Professor Lina-Maria Murillo, it's always Latinx/a/o Heritage Month](#)

[PhD student Krista Wahlstrom investigates amygdala's role in storage of spatial memories](#)



CDC FUNDS UI COMPUTATIONAL EPIDEMIOLOGY RESEARCHERS IN FIGHT AGAINST COVID-19

Faculty, staff, and students from four colleges collaborate on fighting hospital-borne transmission of COVID-19, E. coli, staph, and other dangerous pathogens

Hospitals should be a place of refuge for people in need of medical care. However, more than two million patients each year contract hospital-borne infections such as Clostridium difficile, E Coli., and now COVID-19.

A multidisciplinary group of University of Iowa researchers is studying how to protect hospital patients from these types of diseases, with funding from the federal Centers for Disease Control and Prevention. The project involves faculty, students, and staff from four University of Iowa colleges—computer scientists, physicians, epidemiologists, and biostatisticians.

The researchers comprise the University of Iowa [Computational Epidemiology Research Group](#)—commonly known as CompEpi—which recently received a \$3.3 million grant from the CDC to continue tracking the spread of healthcare-associated infections, or HAIs. One of six centers in the CDC’s [Modeling Infectious Diseases in the Healthcare Network](#), the UI group uses computational modeling and simulation to study HAI transmission in relation to hospital layout and hospital-based interventions.

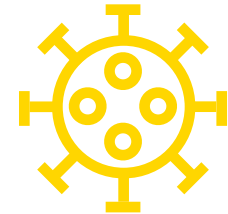
“The overarching theme of this project is to overcome existing barriers for modeling the spread of HAIs,” said Alberto Maria Segre, professor and chair of the Department of Computer Science and the Gerard P. Weeg Faculty Scholar in Informatics. “Simulations based on our models can be used to compare alternative interventions and provide effective and practical guidance for how to reduce the transmission of multidrug resistance organisms and other pathogens capable of causing HAIs.”

Multidrug-resistant organisms, including HAIs such as C. diff and Staphylococcus aureus, are resistant to antibiotics and pose a great risk for exposed patients. Segre and the UI CompEpi group use a fine-grained spatiotemporal modeling approach to evaluate the efficacy of potential HAI countermeasures.

In response to the COVID-19 pandemic, the CompEpi group has also received two supplemental grants from the CDC. These grants, which total \$850,000, will allow CompEpi to apply similar modeling techniques to COVID-19 transmission in healthcare facilities as part of a larger consortium of CDC-funded modeling centers.

Since the UI CompEpi group’s founding in 2009, collaborators have studied contact network epidemiology, healthcare-worker movement-tracking technology, technology-based hand-hygiene compliance monitoring, infection control, and disease monitoring. They’ve previously received funding from the CDC and the NIH.

—By Grace Culbertson



With funding from the Centers for Disease Control and Prevention, the University of Iowa Computational Epidemiology Research Group is helping hospital patients, workers, and visitors stay safe from COVID-19 and other diseases.

Researchers from four UI colleges collaborate on the advanced computer-modeling research, bringing together computer scientists, biostatisticians, physicians, and epidemiologists.