

Announcements

Funding Opportunity Announcements

Shared Equipment Awards

The purpose of the Shared Equipment Awards is to strengthen research capabilities and secondary science education at Arkansas INBRE network institutions (one award per institution). The maximum award amount is \$20,000. **Proposals are due November 2nd by 5 p.m.** For more information, please follow the link to the INBRE website: https://inbre.uams.edu/wp-content/uploads/sites/10/2020/09/Shared_Instrumentation_Award_FOA-Fall-2020.pdf.

Faculty Recruitment Awards

The Arkansas INBRE is committed to strengthening IDeA state biomedical research. The Arkansas INBRE will award \$100,000 to five different partner or affiliate Primarily Undergraduate Institutions (PUIs) during the current 5-year funding period (\$500,000 total) beginning May 2020. The current funding opportunity for a Faculty Recruitment Award will support recruitment of a faculty member to a PUI that has not received an award during the current funding period. **Proposals are due November 9th at 5 p.m.** More details are available on the INBRE website: <https://inbre.uams.edu/wp-content/uploads/sites/10/2020/09/Faculty-Recruitment-FOA-Fall-2020-cmr.pdf>.

Bioinformatics Core

The Bioinformatics Core is pleased to announce the **Fall 2020 Integrating Bioinformatics Education Series**. This series features speakers who share with faculty their subject matter expertise, skills training, or pedagogical insights as to how to incorporate data wrangling and data analysis into the life sciences curricula.

You can find the Fall 2020 schedule at <https://ualr.edu/bioinformatics/education-series/>.

All sessions will be hosted by Blackboard Collaborate using the following link: <https://us.bbcollab.com/quest/c372c2c86cae468ca1477cb39801cec3>.

In addition, the recorded sessions will be available on the AR INBRE Youtube Channel for later viewing: <https://www.youtube.com/channel/UCEPR4IU7HEhXMuyW6TrM6eg>.

For Bioinformatics Core support, please contact either Drs. [Galina Glazko, Ph.D.](#) (UAMS) or [Phil Williams](#) (UALR). The [Bioinformatics Core Support Request Form](#) is found on the [INBRE website](#).



After receiving positive feedback from those of you who used a new electronic system to submit annual reports to the Arkansas INBRE, we are happy to announce that we are moving to a cloud-based research project management software, [Piestar, Inc.](#) Currently, there are several INBRE programs using and/or like us, are in the process of adopting the Piestar software. These programs include the Idaho, Rhode Island, Montana, New Hampshire, and Alaska INBREs. The Piestar DPx software is designed to collect and visualize our data, and help us evaluate the program's impact, to maintain compliance and produce reports for our stakeholders. Most importantly, the Piestar DPx system will allow us to track all of our data in one platform. Currently, we are using, Excel, ACCESS and REDCap to collect various pieces of data. Eventually we hope to move all of our data collection into the one system. Initially, we will focus on collecting data for the annual Research Performance Progress Report (RPPR) that is required by NIH along with the Scientific Information Reporting System (SIRS) for our funding institute, NIGMS. Our plan is to have the annual reporting software up and going by mid-December 2020. Please watch for further updates along with training opportunities over the next few months.

Upcoming Meetings

Register today and take advantage of this free opportunity! [2020 NIH Virtual Seminar on Program Funding and Grants Administration](#) for research administrators, investigators, postdocs, students and grant writers to be held **Tuesday, October 27–Friday, October 30.** **For more information.**

The National Institute of General Medical Sciences (NIGMS) invites you, investigators and students in the INBRE network to attend its annual [Early Career Investigator Lecture](#), featuring [Michael D. L. Johnson](#). His talk “Microbes, Metals, Music, and Lessons in Disproving Your Hypothesis,” will take place on **Wednesday, October 14, 2020 at 1 p.m., via Zoom (registration is required)**. To register and for more information, visit the **ECI Lecture** webpage: <https://www.nigms.nih.gov/News/meetings/Pages/2020-nigms-directors-early-career-investigator-lecture.aspx>.

Virtual INBRE Fall Conference

November 6-7, 2020, in Fayetteville, AR. Conference Link: <https://inbre.uark.edu/>

Arkansas Academy of Science

Tentatively scheduled for April 9-10, 2021

Southeast Regional IDeA Conference

June 14-16, 2021 in San Juan, Puerto Rico

NISBRE Conference

Washington, DC, in 2022

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Message from the PI



Congratulations to Dr. Alan Tackett and his team! Recently, Alan received a 5-year, \$10.6 million grant from the National Institutes of Health (NIH) to establish and support the IDeA National Resource for Quantitative Proteomics. Alan serves as the Director of the Biotechnology Core for the Arkansas INBRE and he is also the Director of the COBRE-funded Center for Translational Pediatric Research. The grant is significant for two reasons: 1) it guarantees access to “cutting edge” proteomics to investigators in the 23 states and Puerto Rico, including Arkansas, that make up the IDeA program, and 2) it continues to support a collaborative endeavor between three institutions in two states that serves as model for optimizing expensive core facilities. So what led to awarding of this significant and potentially highly impactful grant? The story begins back in the early 2000’s when the UAMS College of Medicine and Department of

Biochemistry and Molecular Biology began investing in infrastructure, both instrumentation and personnel, to support proteomics research. In 2005, Alan was a key recruit to the UAMS faculty. Many of you know that Alan is a native Arkansan who earned a bachelor’s degree from Hendrix College and a doctorate degree from UAMS. What you may not know is that as an assistant professor, Alan received support through a COBRE grant awarded to Dr. Frank Millett at the University of Arkansas. In 2007, Alan became the Director of the UAMS Proteomics Core Facility. Fast forward to 2016. NIH released a program announcement for administrative supplements to INBRE, COBRE and CTR grants for the purpose of optimizing and consolidating core facilities and services. Alan and I together with Dr. Darrin Akins, Director of the Oklahoma INBRE, and Dr. Mike Kinter, Director of the Proteomics Core Facility at Oklahoma Medical Research Foundation (OMRF), proposed a collaborative partnership that leveraged the capabilities and services offered by the two core facilities. The supplement was funded. Over the next three years instrumentation and personnel were added, proteomics services were expanded, and 15 workshops were offered that were attended by 301 faculty and students from all 23 states and Puerto Rico. This work, done by Alan and other key personnel (especially Drs. Sam Mackintosh, Stephanie Byrum, and Rick Edmondson) in the UAMS Proteomics Core Facility laid groundwork that supported what ultimately was a successful proposal. Again, CONGRATULATIONS to all involved in the IDeA National Resource for Quantitative Proteomics!!! I hope as many of you in the Arkansas INBRE network as possible will take advantage of the services offered through this incredible core facility.

Faculty Spotlight



Andrea Duina, PhD

*Professor of Biology and Chair of the Biochemistry and Molecular Biology Program
Hendrix College*

Dr. Duina got his first taste of research at his *alma mater*, the University of Illinois at Urbana-Champaign, while working in the laboratory of *Tetrahymena* geneticist Dr. David Nanney. It was not until he embarked on graduate studies at Northwestern University in the laboratory of yeast geneticist Dr. Richard Gaber that he discovered his passion for genetics and molecular biology and decided that he wanted to pursue a career in research. Following graduate school, Dr. Duina received additional training in yeast genetics at Harvard Medical School as a postdoc in the laboratory of Dr. Fred Winston. Collectively, these formative experiences played key roles in developing Dr. Duina’s fascination with fundamental cellular processes – a driving force that continues to fuel his excitement for research to the present day.

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INBRE funding has been critical in jump-starting Dr. Duina's career as an independent investigator following his arrival at Hendrix College in 2004. Start-up funds followed by a summer research grant in 2005 that allowed him to carry out studies in the laboratory of Dr. Patricia Wight at UAMS propelled his research forward and placed him in a strong position to apply for subsequent independent funding opportunities. Moreover, the INBRE Research Technology Core, directed by Dr. Alan Tackett, recently supported experiments carried out in conjunction with the UAMS Proteomics core. Since 2006, the Duina lab has been fortunate to receive continuous funding from the NSF, and a recently awarded NSF grant will ensure further funding at least through 2023.

Dr. Duina's research focuses on the understanding of some of the key aspects that govern the process of gene expression using the budding yeast model system. A major focus of his research is on unraveling the mechanisms that control how FACT, a protein complex with important roles in regulating chromosomal processes, physically and functionally interacts with genes. One of the key functions of FACT in cells is to promote the integrity of chromosomes, and inhibition of its activity can result in a wide range of defects. Given FACT's important role in cells and the fact that it is highly conserved across evolution, Dr. Duina's research addresses topics relevant to all eukaryotes, including human cells.

Dr. Duina is as equally passionate about mentoring undergraduate student researchers as he is about his research. Hendrix students play critical roles in all of the projects that take place in the Duina lab, and through these experiences, they gain valuable skills in many facets of the scientific process. The ability to train and inspire young students at an early stage in their career is a continuing source of joy and pride for Dr. Duina, and something that he views as an honor.

Since 2016, Dr. Duina has also been a member of the External Advisory Committee for the Maine INBRE. In this capacity, Dr. Duina has the opportunity to integrate the experiences he has gained as a PI at an undergraduate institution and through his interactions with the Arkansas INBRE to contribute to the continued success of the Maine INBRE program. Dr. Duina's experience with the Maine INBRE program has further highlighted the incredible impact that the INBRE program as a whole can have on the states it funds, particularly in promoting undergraduate research. One of the most gratifying aspects of his work with the Maine INBRE program is to be in a position to make a concrete difference in the ability of young PIs at undergraduate institutions to succeed at securing independent funding for the continued success of their research labs.

Dr. Duina was just awarded a three-year grant starting August 1 for \$480,030 from the National Science Foundation. The title of the grant is "Investigations on yFACT-genome interactions and other chromatin processes".

What you might not know about Dr. Duina...

He plays the saxophone for a local band called the Five Six Band. The band mostly plays covers from the 70's, 80's, and 90's, and has performed live on several occasions in the past few years. Once the pandemic is over, make sure you check them out!

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Development Research Project Program

Jerry Ware, PhD, Program Director



Upcoming Proposal Submission Dates:

November 2nd, Shared Instrumentation Award

November 9th, Faculty Recruitment Award

[\(Find the Funding Opportunity Announcements and criteria for submission with this link\).](#)

RDG Spotlight: The Research Development Grants (RDGs) from the Arkansas INBRE are a 2.5-year award to support research and requiring a 50% effort to research over the calendar year. Currently, there are nine RDG awards within the Arkansas INBRE network. In this issue, we highlight two of the current awardees, Dr. Victoria “Tori” Dunlap, Associate Professor, UCA; and Dr. Sharon Hamilton, Assistant Professor, OBU.

Dr. Dunlap - Tori is a biochemist studying the shapes of intrinsically disordered proteins (IDPs) and how those shapes influence protein function in normal cells and in neurodegenerative disorders. Tori began her studies as an undergraduate at the University of Central Arkansas where she majored in chemistry and then earned her PhD in Biochemistry from the University of Kentucky before returning to UCA to teach and mentor undergraduate research. Having great mentors at both institutions, really influenced Tori’s desire to do research with undergraduate students, and is now the highlight of her work. Currently, Tori’s lab studies an IDP called PEP-19 that helps to regulate the calcium signaling protein calmodulin. Tori’s lab is investigating the possibility that aggregates of neurodegenerative proteins affect PEP-19’s shape in a way that influences its regulation of calmodulin, and, therefore, calcium signaling in neurodegenerative diseases.



When she is not teaching or mentoring undergraduate researchers in the lab, Tori can be found spending time with her husband and three children. Tori says, “*life as a professor tends to come in waves or seasons of intense work. Preparing for classes, writing grant proposals or manuscripts, working in the lab balanced with periods that allow for more time for family and extracurricular activities*”. Tori’s downtime is often spent crafting, baking, or binge-watching Netflix’s latest offerings. She also believes it is never too early to convince children that science is awesome, and was recently told by her six-year-old nephew that he “wants to be a scientist, just like Aunt Tori”.

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Dr. Hamilton - Sharon received degrees in Chemistry from Auburn University (BS) and Vanderbilt University (PhD). Following a postdoctoral fellowship at the Georgia Institute of Technology, she started her teaching career as a lecturer at Auburn University. While her research has always focused on polymer applications, her postdoc launched her interests in natural polymers. As an instructor, she collaborated with a faculty member in Polymer and Fiber Engineering to manipulate natural polymers into nanofibers.



Upon accepting a tenure-track job at Delta State University in Mississippi, Sharon applied for research funding through Mississippi INBRE to fund a project investigating the development of a degradable natural polymer nanofiber for use as a drug delivery vehicle in wound healing. For the next 3 years, Sharon was funded through the MS INBRE to further investigate natural polymer nanofiber drug delivery systems culminating in 40 poster and 17 oral presentations as well as a master's thesis for her graduate student. Her research at OBU has shifted towards the development of synthetic analogs for biopolymers found in the extracellular matrix. Her lab is exploring cellular responses to these materials including viability, proliferation, adhesion, morphology, spreading, and coagulation. In the coming year, the Hamilton lab will investigate the morphological and biological impact of proteins incorporated into their wound healing materials.

The excitement of coming to work at OBU is driven by “*developing new research projects, trying new techniques and covering new topics in teaching – all of which keep the work exciting.*” Beyond the OBU academic life, Sharon enjoys indoor activities such as, yarn craft, quilting and getting outdoors for kayaking and scuba diving.

Student Spotlight



Destiny Davis, PhD

2011 Former INBRE Student

My name is Destiny Davis and I participated in the INBRE Summer Research Program in 2011. During my undergraduate studies, I attended the University of Central Arkansas (UCA) where I obtained a Bachelor's degree in Biology. While in the INBRE program, Dr. Stephen Grace at the University of Arkansas at Little Rock was my mentor. During my summer project, I studied how tomato plants respond to high light stress by producing certain chemical compounds. Some of these compounds also have antioxidant properties and could be beneficial to human health. Specifically, I was trying to identify genes involved in the production of a particularly interesting metabolite that might be up-regulated by light. I recently graduated from UC Davis with a PhD in Plant Biology.

Before INBRE, I had no specific career goals. I knew I liked research from working in a lab at UCA, but I didn't have a clear idea of what research looked like on a larger scale and as a career. I was still in the data-gathering phase of deciding what career path I wanted to pursue. Fortunately for me, I had another year of college following INBRE to make those tough decisions.

After attending UCA, and I believe directly due to my experience as an INBRE fellow, I was accepted into the Plant Biology PhD program at UC Davis. I've presented my research at several national and international conferences throughout graduate school and it all started with INBRE. Without INBRE, I don't think I would have gone to graduate school and pursued plant biology research. The program empowered me to ask scientific questions and to find the answers for myself. With seminars, lab tours and presentation/writing

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opportunities, INBRE treated me as if I was already a professional researcher. I think the professional atmosphere of my INBRE experience helped me rise to the occasion and see myself as a budding scientist. I was also fortunate to have been matched with Dr. Grace. I learned so much about what it means to be a scientist by working in his lab. All in all, my work with Dr. Grace through the INBRE program gave me a peek into what a scientist's life might look like and then helped me gain the confidence to pursue a career a scientific research.

The week of September 7th was my first week at my new job as a post-doctoral scholar! I'm working at Lawrence Berkeley National Lab in Dr. Jenny Mortimer's research group. My new job as a researcher consists of designing, conducting and summarizing experiments. My project is to explore the interactions between plants and microbes in the soil, so I spend a lot of time looking at plant roots and microbe colonization.

In graduate school, I was very passionate about scientific literacy and science communication. I will always love research, but long-term I see myself in a career focused on sharing science with others rather than being the one creating the knowledge. Fortunately, there are many ways to share science: teaching, writing, documentary filmmaking, blogging, the list goes on and on. While I'm not sure exactly what job title I'm aiming for, I'd enjoy any career where I can tell science stories that delight, educate and empower people.

What is new and exciting about Dr. Davis...

I have so many new and exciting things! Within the last month I was hired as a post-doctoral scholar, published a research article on my algae work from my PhD, graduated with my PhD from UC Davis, turned 30 years old, and bought my first car!

Recent Publication

Hacisoftoglu RE, **Karakaya M**, Sallam AB. [Deep Learning Frameworks for Diabetic Retinopathy Detection with Smartphone-based Retinal Imaging Systems](#). Pattern Recognit Lett. 2020 Jul; 135:409-417. doi: 10.1016/j.patrec.2020.04.009. Epub 2020 May 13. PubMed PMID: 32704196; PubMed Central PMCID: PMC7377280.

#sharingnews

Congratulations to **Clement Agyemang** who graduated in May with his Bachelor's degree in Chemistry and Biochemistry from the University of Arkansas at Pine Bluff. Clement has accepted a teaching assistantship at the University of Mississippi and is teaching Biological Science Laboratory. He is also a full-time student pursuing a MD/PhD.

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