

Announcements

INBRE Research Technology Core Voucher Opportunity

Due: May 1

<https://inbre.uams.edu/funding-opportunities/research-vouchers/>

As a reminder the voucher process allows faculty at the PUIs to gain access to the Core Facilities at the lead institutions for both research and teaching. Please contact the Core Facility Director or [Dr. Alan Tackett](#) at least two weeks prior to the due date to obtain a quote.

Tips for a successful application: have your samples ready for submission to the core because vouchers expire; involve multiple undergraduate students; write a concise description of the project; outline how the data obtained will enable publications involving undergraduate students and grant submissions.

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

NIGMS Co-Funding

NIGMS provides co-funding to support R01, R15, and R35 applications from investigators in IDeA states that receive meritorious scores, but fall outside an IC's pay line. If you believe your proposal may be eligible for co-funding, contact the IDeA co-funding coordinator at the appropriate NIH IC. For more information, visit the IDeA co-funding website:

<https://www.nigms.nih.gov/Research/DRCB/IDeA/Pages/IDeA-Co-funding.aspx>

NCURA Workshops

The National Council of University Research Administrators (NCURA) has upcoming workshops that may be of interest to individuals who are responsible for sponsored programs administration. Check out the NCURA website (<https://www.ncura.edu/travelingworkshops/UpcomingWorkshops.aspx>) for workshop topics and dates.

Applications Open for AAMC Grant Writers Coaching Group for NIH Awards

You can now submit applications to attend [The AAMC's Grant Writers Coaching Group for NIH Awards](#), which supports faculty that are underrepresented in academic medicine in improving critical writing skills to strengthen their grant proposals.

NIH's #COVID [website](#).

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Upcoming Meetings

NSF EPSCoR Workshop: Artificial Intelligence (AI) with No Boundary Thinking (NBT)
Clinton Library and Little Rock Marriott Hotel
April 3-4, 2022

For more information visit: <https://www.astate.edu/a/cnbt>

IDEA National Resource Summer Internships for Undergraduate Students in Proteomics
Program Dates: May 23-July 29, 2022

Arkansas INBRE Summer Mentored Research Program
Program Dates: May 23 – July 29, 2022

INBRE Obesity and Diabetes Research Workshop for Undergraduates

SAVE-THE-DATE: May 25, 2022, 9 AM – 2 PM

This workshop will help students understand the role of research in contributing to the development of evidence-based methods for prevention and treatments for obesity and diabetes. The workshop is free and limited to 30 students. It will be held in-person on the UAMS campus in the Active Learning Center. Registration is required.

[Registration Link](#)

2022 NISBRE Conference

Will be held virtually June 14-16, 2022. More details to come.

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Message from the PI



Earlier in March, we submitted the annual progress report for the Arkansas INBRE to NIH. Kudos to Caroline Miller Robinson for once again putting the report together. It takes a Herculean effort on her part. With the progress report behind us, I decided to take a look at one of the more important metrics used by NIH staff to assess the impact of INBRE programs, namely publications. Going back ten years to 2012, the NIH grant that supports the Arkansas has been cited in 316 peer-reviewed publications. During this time, Arkansas INBRE-supported investigators have been remarkably steady in their publication rate. The mean number of publications annually has been 31 with a standard deviation of 3. The highest number of publications, 35, was achieved in both 2014 and 2016; and the lowest number of publications, 28, occurred in both 2017 and 2020. Three months into calendar year 2022, there are 7 publications that acknowledge support from the Arkansas INBRE. At this rate, I am predicting another year with 30+ publications from Arkansas INBRE-supported investigators.

While taking a deeper dive into Arkansas INBRE-supported publications over the past ten years, I discovered that NIH uses a tool called iCITE Influence to measure the scientific impact of NIH-supported publications. Without going into detail, the tool allows calculation of a Relative Citation Ratio (RCR) for each paper. The RCR value is arrived at by adjusting citations that a paper receives based on the field and time with a median RCR value set at 1.0. Using RCR values, I was able to determine the five “most-impactful” publications that were supported by the Arkansas INBRE over the past ten years. The papers, their Arkansas INBRE-supported authors, and associated iCITE RCR:

- #1—A paper published in *Journal of Neuroscience* in 2013 that described a model to transform neurodevelopmental stages across mammalian species. Barbara Clancy, who at the time was a professor in the Department of Biology at the University of Central Arkansas, was the lead author. The iCITE RCR is 17.54.
- #2—A paper published in *NeuroToxicology* in 2007 that extrapolated brain development in lower mammalian species to humans. Barbara Clancy was the lead author. The iCITE RCR is 15.85.
- #3—A paper published in *Nature* in 2016 that examined DNA methylation in mammalian embryonic stem cells. Stephanie Byrum, Alan Tackett and Sam Mackintosh, who are faculty in the Department of Biochemistry and Molecular Biology at UAMS, were authors. The iCITE RCR is 13.1.
- #4—A paper published in *Journal of Agriculture and Food Chemistry* in 2010 that tested the reactivity of Folin-Ciocalteu reagent toward various compound classes. Grant Wangila and Richard Walker, professors in the Department of Chemistry and Physics at the University of Arkansas at Pine Bluff were the senior authors. The iCITE RCR is 9.94.
- #5—A paper published in *Neuroinformatics* in 2007 that described a method for translating neurodevelopment from laboratory species to humans. Barbara Clancy was the lead author. The iCITE RCR is 6.41.

Congratulations to Drs. Wangila, Walker, Byrum, Tackett, Mackintosh and especially Dr. Clancy for publishing such impactful work. I also want to extend congratulations to all the authors on the other 311 papers published with Arkansas INBRE support since 2012 and appreciation for remembering to acknowledge the grant that supports the Arkansas INBRE.

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Faculty Spotlight



Jeffrey M. Shaver, PhD

Associate Professor

University of Arkansas Fort Smith (UAFS)

I received my undergraduate degree in biology (BS) from Purdue University (West Lafayette, IN) in 2001. I then attended the University of Washington (Seattle, WA) and received my Ph.D. in 2008 with a focus on plant organelle genomes. Before joining the faculty at UAFS in 2017, I was a Course Program Specialist at the Charles A. Dana Center (University of Texas at Austin) from 2014-2017, a Senior Education Specialist for a startup company in Seattle from 2013-2014, a Science Education Specialist for Genome Sciences Education Outreach (University of

Washington) from 2012-2013, and a high school science teacher for two schools in the greater Seattle area from 2008-2012. Over the course of my teaching career, I have been a certified secondary science teacher in Indiana, Washington, and Texas, and earned my Principal Certification in Texas in 2017. While a high school science teacher in Seattle, I was also a summer visiting scientist at the Center for Infectious Disease Research from 2009-2011.

My interest in science and teaching was sparked by two of my inspirational high school teachers, Mr. Armstrong and Mr. Longenecker, at John Adams High School in South Bend, IN. To this day, Mr. Longenecker is still teaching a science research course that transformed my understanding of the scientific process. Mr. Longenecker has inspired countless students, but my water quality research project in his course propelled me into science and teaching. Additionally, my undergraduate research professor, Dr. Jeff Volenec (Professor of Agronomy, Purdue), and research scientist and mentor, Suzanne Cunningham (Crop Physiologist, Purdue) were instrumental in providing me the knowledge and skill to pursue my graduate work at the University of Washington. While at the University of Washington, there were so many people that contributed to my success and helped me through the ups and downs. Notable are my PhD research professor, Dr. Arnold Bendich (Professor Emeritus of Biology, UW), and research scientist and mentor, Dr. Delene Oldenburg (Plant Physiologist, UW). I will never forget my dissertation defense, with a lecture hall full of my family and friends, peers, and faculty, using a fishing rod as my pointer.

Since joining the faculty at UAFS in 2017, I have expanded my research interests to include the effect of environmental stresses on organelle DNA and soil microbiomes. With the support of the Arkansas INBRE program, my mentors, and my collaborators, I have requested near \$250,000 in grant funding, received around \$175,000 (about 70% of grant funds requested) in grant funding and mentored over 30 undergraduate and high school research students. From Arkansas INBRE, we have received a Summer Manuscript Support award, a Summer Research Grant award (mentor: Dr. Fiona Goggin, UA Fayetteville), a Collaborative Research Grant (mentor: Dr. J. Alejandro Rojas, UA Fayetteville; collaborators: Drs. Emily Bellis and Jake Qualls, Arkansas State, and Jay Randolph, Sebastian County Parks Administrator) and multiple Faculty Mini-sabbatical Training grants (including one to work with Dr. Argelia Lorence, Arkansas State), Core Facility Faculty and Student Voucher awards, and seminar speaker awards. Along with my faculty collaborators at UAFS, we have also received an Arkansas INBRE Shared Instrument award and a UAFS Chancellors Mini-Grant (collaborators: Dr. Souvik Banerjee, Dr. Sandhya Baviskar, Dr. Sayo Fakayode, and Roger Lightner).

I am grateful for the support of Arkansas INBRE and the opportunity to serve for multiple years on the Arkansas INBRE Steering Committee. Additionally, this past year I was elected to serve as the Vice President for the Arkansas Academy of Science, and I have been promoted from Associate Professor to Professor starting in the upcoming 2022-2023 academic year. Every year, I look forward to working with my research

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collaborators and students on interesting projects, and attending the Arkansas INBRE Conference and Arkansas Academy of Science Meeting every fall and spring semester, respectively.



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

My wife, Lizzie, and I first met at the Denver airport. I was traveling back to Austin, TX from a friend's wedding and Lizzie was traveling back to Austin after meeting her dad to watch some baseball games. We talked for quite a while before our flight was boarding and then realized that we were not only on the same flight but our seats were in the same row. The rest is history.

After graduating from Purdue in 2001, I was interviewing for a summer job as a science instructor at a camp in the Florida Keys and got the job based in part to my impression of Chris Farley's SNL character Matt Foley – Motivational Speaker. In my drama class in middle school, I also developed a character called Richard Cinnamon (based on Richard Simmons) and led other students in exercise routines.

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Development Research Project Program

Jerry Ware, PhD, Program Director



Lessons Learned from a Pandemic for the Arkansas INBRE

As we enter year 3 of the COVID world, we are optimistic that things are returning to a form of new normalcy. We read about newer variants and the potential for another wave of restrictions, but it does feel like this time most are ready to handle whatever comes our way. Thinking back to January and February of 2020, few were able to grasp the magnitude of such a world-wide pandemic or that a virus outbreak in China could quickly spread around the world. There will be many stories told and lessons learned from our personal and professional lives. However, reflecting back on the past 2 years and looking for positive nuggets, here are a few lessons learned that may have actually strengthened and highlighted the work of the Arkansas INBRE.

Lesson #1: *Biomedical research matters.* Literally, 11 months following the sequence determination of SARS-CoV-2, an mRNA vaccine was available to a large portion of the Western world. This was unprecedented but rarely appreciated that the origins of mRNA vaccines had been a decade long goal both in private pharmaceutical/biotech companies and from work supported by the National Institutes of Health.

Lesson #2. *Science faculty are important.* Educating the next generation to be critical thinkers and providing them with the tools to understand and interpret data became so evident. Our lives were in the middle of a constant conflict between public health and politics. So, a major thank you to every PUI faculty member educating the next generation.

Lesson 3#. *Improved networking.* Two years ago, the idea of a Zoom meeting would have found little support. Indeed, we were accustomed to face-to-face meetings, but the pandemic fast-forwarded mechanisms that allow us to connect in a virtual world. Our Grant Writing Workshop attendances saw dramatic increases because a 1-day driving trip to Little Rock was unnecessary. We now meet virtually most days and from almost anywhere. A major goal of the Arkansas INBRE is to grow and strengthen the state's capacity to conduct biomedical research. COVID may have actually contributed to this in an unexpected way by speeding us up to a "Jetson-like" video conferencing world (note: I'm dating myself, so if you don't know the Jetsons' – Google-it).

Of course, the Lesson list could be exhaustive, but a time to reflect, learn, be smarter today than yesterday is something we can strive for. It is estimated there are more than 4,000 coronavirus sequences in 14 bat families (Ruiz-Aravena et al, Nat Reviews Micro, 2021). Hopefully, they all remain with bats, but we know that is unlikely. So, the need is clear to expand our biomedical workforce and do everything we can to make critical thinkers of the next generation. It's our best response for the inevitable. This encompasses some of major goals of the Arkansas INBRE. The PUI dedicated faculty are the frontline workers to achieve these goals, and we recognize you and thank you.

Proposal Reviewers

The Research Development Grants for the Arkansas INBRE are due April 4. If you have interest in possibly being involved in an NIH-like study section format for reviewing, let us know (jware@uams.edu). The reviews will like take place in May following the completion of the Spring semester.

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Student Spotlight



**Oktawia DeYoung, PharmD, HCAFA
EBRx Pharmacy Specialist**

Adjunct Assistant Professor
Department of Pharmacy Practice
UAMS College of Pharmacy
2015 INBRE Summer Fellow

Oktawia participated in the laboratory of Dr. Alan Tackett during the summer of 2015 while enrolled at Henderson State University. The experience at the lab has reaffirmed her love of science and desire to continue graduate education—so much that she decided to enter into a doctoral program right away.

After enrolling in UAMS Pharmacy program in Fall 2015, Oktawia visited Dr. Tackett's lab often. She presented continuation of her INBRE research during 2016 UAMS Student Research Day and received a second place award for the poster and abstract presentation in Professional Student Division. Thanks to the extensive bench training and understanding of research principles she developed during INBRE, she was accepted into a Summer Research Fellowship program to work on a clinical trial of different vasopressors in the intensive care unit. This experience continued during most of her doctoral studies, resulting in several peer-published publications and a national platform presentation. In turn, these achievements led to interest in scientific literature review process and practices later in the curriculum. In the senior year of graduate studies, these interests were recognized by Center for Disease Control, which accepted Oktawia into their highly competitive internship program at National Center for Emerging and Zoonotic Infectious Diseases (NCEZID). Following completion of this internship in February 2019 and fulfilling graduation requirements in May 2019, Oktawia graduated with her Doctorate of Pharmacy and Honors distinction in every area: Academic Honors, Honors in Research and Honors in Experiential Education. She has also received an Award of Excellence in Clinical Communications in 2019.

Following graduation, Oktawia started a full-time position as a Pharmacy Specialist in Evidence-Based Prescription Program, which manages medication formularies for healthcare plans across the state of Arkansas. During initial outbreak of COVID, Oktawia has utilized her experience helping with institutional response and raised to the rank of Assistant Director of Emergency Operations Center, coordinating needs of drive-through testing area, screening stations and supply deliveries. In July 2020, she also became an adjunct Assistant Professor in UAMS College of Pharmacy and began teaching her first set of lectures in Pharmaceutics graduate course later that year. In the future, Oktawia plans to continue advocating for cost-effective medication solutions, addressing healthcare spending by development of programs fighting healthcare fraud as well as supporting digital transformation by program optimization and service in National Council for Prescription Drug Programs taskforces.

What you might not know about Oktawia...

I'm a great inventor of new methods of avoiding parallel parking. My most recent trick involves parking over a mile away from the destination and walking in the pouring rain in order to avoid having to show off my nonexistent parallel parking skills.

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Recent Publications

Macchi S, Jalihal A, Hooshmand N, Zubair M, Jenkins S, Alwan N, El-Sayed M, Ali N, Griffin RJ, Siraj N. *Enhanced photothermal heating and combination therapy of NIR dye via conversion to self-assembled ionic nanomaterials*. J Mater Chem B. 2022 Feb 2;10(5):806-816. doi: 10.1039/d1tb02280f. PMID: 35043823; PMCID: PMC8928910.

Yang F, Darsey JA, Ghosh A, Li HY, Yang MQ, Wang S. *Artificial Intelligence and Cancer Drug Development*. Recent Pat Anticancer Drug Discov. 2022;17(1):2-8. doi: 10.2174/1574892816666210728123758. PMID: 34323201.

Macchi S, Zubair M, Hill R, Alwan N, Khan Y, Ali N, Guisbiers G, Berry B, Siraj N. *Improved Photophysical Properties of Ionic Material-Based Combination Chemo/PDT Nanomedicine*. ACS Appl Bio Mater. 2021 Oct 18;4(10):7708-7718. doi: 10.1021/acsbm.1c00961. Epub 2021 Sep 24. PMID: 35006702; PMCID: PMC8900487.

Macchi S, Zubair M, Ali N, Guisbiers G, Siraj N. *Tunable Cytotoxicity and Selectivity of Phosphonium Ionic Liquid with Aniline Blue Dye*. J Nanosci Nanotechnol. 2021 Dec 1;21(12):6143-6150. doi: 10.1166/jnn.2021.19535. PMID: 34229815; PMCID: PMC8919709.

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