

Announcements

Core Vouchers due September 1, 2020

For more information, please use the following link: <https://inbre.uams.edu/funding-opportunities/research-vouchers/>. To get an official quote from the Core Facility please contact Dr. [Alan Tackett](#) prior to applying.

Bioinformatics Core

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

Upcoming Meetings

Virtual INBRE Fall Conference

November 6-7, 2020, in Fayetteville, AR. More details to come.

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.

The Clinical Research Education in Genome Science (CREiGS) Short Course will be available in the Fall for doctoral students, postdoctoral scholars, and faculty. Course dates: August 31 - November 15. Application deadline: *August 15*. For more information: www.creigs.org.

The Southeast Regional XLerator Network (<https://xleratornetwork.com/programs/>) is offering the following programs:

Engaging Researchers and Innovators in Commercialization at HBCUs (EnRICH**).**

Program Dates: September 18 – November 20. Application deadline: *September 4*

LaunchIt

Program Dates: August 27 – November 5. Application deadline: *August 18*

FFMI fastPACE

Program Dates: September 25 – October 23. *Accepting participants as they apply - only 4 slots left!*

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Message from the PI



“May you live in interesting times” is a widely used quote that is perhaps erroneously considered to have originated as a Chinese curse. No matter its origin, the curse certainly seems relevant today. The COVID-19 pandemic continues and with the start of the Fall semester only a few weeks away, there is great uncertainty with regard to how Arkansas colleges and universities will operate. This uncertainty extends beyond how instruction will occur to how research is conducted.

By now, recipients of Arkansas INBRE developmental research grants and summer research grants have initiated their projects. However, I suspect that most awardees are facing challenges that are COVID-19 related. The good news is that the National Institutes of Health does provide some flexibilities to its grant recipients that the Arkansas INBRE leadership can extend to those of you who are currently funded with either developmental or summer research grants. The only request that I have is that you let us know early on if you are having difficulties with conduct of your research due to COVID-19 related issues. Either Jerry Ware, Tom Kelly, Caroline Miller-Robinson or myself can help you work through those issues in a way that the research can continue and that we remain compliant with the federal regulations that govern grant expenditures.

“Interesting times” can lead to innovation as we search for new ways “to get the job done” in the face of the disruptive challenges that the pandemic has brought to higher education. In the nineteen years that the Arkansas INBRE has been in existence, I’ve learned that Arkansas is blessed with highly innovative college and university faculty. As you re-connect with your students this year, let us know how the Arkansas INBRE can help if you have new ideas about engaging undergraduate students in biomedical research. Like the National Institutes of Health, we have some flexibility in how we invest our resources, as long as we continue to focus on the overall objective of growing biomedical research capacity in Arkansas.

Finally, I would like to give a “shout-out” to Elizabeth Pierce, Associate Professor and Chair of the Department of Information Science at UA Little Rock and Co-Director of the Arkansas INBRE Bioinformatics Core. Recently, Dr. Pierce organized a state-wide group that will be working on ways to increase the incorporation of big data analytics into undergraduate curriculum. My thanks to Dr. Pierce and everyone who has joined this effort.

Stay safe!

Faculty Spotlight



Steve Barger, PhD

University of Arkansas for Medical Sciences

Dr. Barger began mentoring students through the INBRE program at its inception, transitioning from its predecessor: BRIN (Biomedical Research Infrastructure Network), which began in 2001. He has hosted more than 15 students since that time. Along the way, he has also teamed up with faculty at Arkansas colleges and universities that have traditionally been less research-intensive than UAMS, assisting these faculty with equipment, space, and cell/animal models not available to them at their home institutions.

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Dr. Barger really appreciates the chance to interact with researchers across all levels of experience, including many who have expertise in areas that are complementary to his, such as organic chemistry, or experimental systems with which he is less familiar. He feels that providing undergraduates with what may be their first experience in state-of-the-art biomedical research is rejuvenating, often helping him recover memories of that exciting time in his life. It was at that stage he discovered how exciting it could be to follow one's own deep-rooted interests and probe their mysteries with a hypothesis and an experiment. Barger says, "truly, it hardly seems like work". To that end, he typically tries to work directly with the INBRE students he mentors. There are times when other obligations make that impossible, but in those cases, students will always have guidance from another experienced researcher, such as a postdoctoral fellow in his lab.

His research has been focused chiefly on Alzheimer's disease for his entire professional career. His main project is currently devoted to the ways in which Alzheimer's affects glucose regulation in the blood and in the brain. He began this project over five years ago, testing potential links between Alzheimer's and type-2 diabetes, primarily using a special line of mice that accumulates plaques in the brain similar to those seen in humans with the disease. After testing many aspects of their physiology, it has been concluded that while these mice do have problems controlling their blood glucose levels, it is for reasons quite different from the events transpiring in diabetes. Specifically, these mice have higher blood glucose levels simply because their brains are not taking up the sugar as fast as they should. A defect in a specific glucose transport enzyme in the brain appears to explain this deficit. A paper describing this work is due to come out in the *Neurobiology of Aging*, a scientific journal that covers a good deal of Alzheimer's research. Dr. Barger's lab is now screening novel, experimental drugs provided by another scientist at UAMS to determine if any can help correct this problem.

This recent project has been one of the most fulfilling aspects of his career. So many aspects of what has been uncovered seem to mesh with other evidence about the causes and modes of progression in Alzheimer's disease. Venturing into drug exploration and development gives Dr. Barger a sense of hope that they're discoveries might one day translate into therapies that can help alleviate the suffering from a disease that is, for the most part, untreatable at this time. The project has also given him an occasion to learn about new aspects of physiology and endocrinology, and in pursuing these ideas; he has met and worked with some extremely creative and insightful new colleagues.

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

One would likely find him engaged in something outdoors, including remote outings such as backpacking, canoeing, or adventure racing. Having hobbies that keep one physically fit seems to augment his stamina for work, and this sort of synergy between multiple facets of life has been one of his most rewarding discoveries to date.

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Development Research Project Program

Jerry Ware, PhD, Program Director



Collaborative Grants. A reminder that the Collaborative Grant due date is approaching, August 17, and we encourage applicants to follow the FOA guidelines posted on the Arkansas INBRE website. Questions concerning the FOA can be directed to myself (jware@uams.edu) or Dr. Tom Kelly (kellythomasj@uams.edu). After submission, we will be reaching out to many of you to help provide a thorough and expeditious review. Anticipate in early Fall, an FOA for equipment. Connecting with colleagues on a chosen piece of equipment used by multiple faculty and/or of use in classroom teaching, typically gives applicants the best chance for success.

Grant Writing Workshop. In June we hosted our first virtual (ZOOM) grant writing workshop. The Arkansas INBRE started grant-writing workshops in 2015, and until June 2020, most were hosted on the UAMS campus. The on-campus workshops typically averaged about 25 participants. Our June virtual meeting had at one point, 65 participants. So, we've learned virtual hosting reaches a broader audience and is a more efficient use of your time (no travel). This will likely be the presentation format going forward. We are open for ways to improve these workshops, so let us know what other topics would be helpful to you.

NIH AREA (R15) Grants. Many of you continue to plan and submit R15 applications to the NIH. We hope the past R15 workshops have been helpful and we are happy to continue these in a virtual environment. Beyond the grant-writing workshop, the R15 workshops have focused on topics specific to the R15 mechanism; namely, how to integrate student involvement and how the R15 mechanism benefits the PI's campus. Both are score driving criteria along with meritorious science. We have discussed organizing an R15 working group that might be willing to share their R15 experiences with an end-goal of sharing with everyone past mistakes and successes. I welcome your comments, thoughts, or interests in such a working group.

Closing COVID-19 Thoughts. Finally, the gorilla in the room is acknowledging COVID-19 as it continues to change our academic landscape. Unfortunately, as we plan for the Fall semester, there remain many uncertainties. I know each of you want to be interacting with excited undergraduates ready to get back in labs and have the on-campus experience that each of us remember. We are all in this together and we hope to all exit this together – the sooner the better. Never hesitate to reach out to INBRE leadership with questions or concerns or let us know how things are going. We are here to help anyway we can.

Student Spotlight



Enock Rwamuza

2015 Former INBRE Student

While participating in the program, Enock was an undergraduate student at University of Central Arkansas (UCA). After graduation from UCA, he worked as a Pharmacy Technician at US Compounding in Conway, AR for almost a year and then won a MasterCard Foundation scholarship to pursue an MSc in Global Health Policy. During the summer of 2015, Enock completed his research in Dr. Gunnar Boysen's lab at UAMS on "The Effects of Glucoraphanin and Phenethyl Isothiocyanate on Non-small Lung Cancer Proliferation and Cancer Cell Metabolism". Prior to participating in the INBRE program, his career goal was in Pharmacy. Enock says the summer he spent at UAMS had a major impact on his career. He was part of a hard-working team, which he still appreciates to this day. He feels it was one of the most challenging and rewarding

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experiences to date. Winning the best oral presenter at the 2015 INBRE Fall Conference was “like a cherry on top of a wonderful summer experience.” Working in Dr. Boysen’s lab that summer made a big impact in his career because Dr. Boysen is a Professor in Environmental and Occupational Health; and his lab is in the College of Public Health. Prior to this summer experience, Enock knew little about public health however, after working in the department and attending different meeting and events, he got to love the field of public health and by the end of the summer had decided he wanted to go into public/global health. During that time, he also developed a strong interest in cancer and his master’s thesis focused on understanding provider perspectives on breast cancer care provision in a low income country (i.e. Rwanda, his home country). Enock says this field attracted him because he realized he could have an impact in the lives of people on a larger (country or global) scale. This took him beyond his work in the lab to something he enjoys, working with communities. He felt this was a perfect fit for him.

Following his graduate studies, Enock returned to his home in Rwanda where he works at the University of Global Health Equity as a lecturer. This University was founded by Partners in Health and is reimagining how healthcare is delivered especially to the vulnerable people in low and middle-income countries. Enock is now training future global health leaders who will change the way healthcare is delivered by putting equity principles at the core of their work. He teaches courses on Health Financing, Health Policy and Political Economy. He has had one promotion since he started working at the university.

One exciting thing Enock wanted to share was that he completed his master’s at the University of Edinburgh. He says it was exciting to live in Europe and explore a very rich Scottish culture. His time there was a great learning experience as well as a wonderful adventure.

Recent Publications

1. **MacDonald L**, Jenkins J, Purvis G, Lee J, Franco AT. [The Thyroid Tumor Microenvironment: Potential Targets for Therapeutic Intervention and Prognostication](#). *Horm Cancer*. 2020 Jun 17; doi: 10.1007/s12672-020-00390-6. [Epub ahead of print] Review. PubMed PMID: 32548798.
2. Alnufaie R, Raj Kc H, Alsup N, Whitt J, Andrew Chambers S, Gilmore D, **Alam MA**. [Synthesis and Antimicrobial Studies of Coumarin-Substituted Pyrazole Derivatives as Potent Anti-*Staphylococcus aureus* Agents](#). *Molecules*. 2020 Jun 15;25(12). doi: 10.3390/molecules25122758. PubMed PMID: 32549248.
3. Kosovsky GY, Glazko VI, **Glazko GV**, Zybaylov BL, Glazko TT. [Leukocytosis and Expression of Bovine Leukemia Virus microRNAs in Cattle](#). *Front Vet Sci*. 2020;7:272. doi: 10.3389/fvets.2020.00272. eCollection 2020. PubMed PMID: 32582774; PubMed Central PMCID: PMC7296161.
4. Amaral R, **Fawley KP**, Němcová Y, Ševčíková T, Lukešová A, Fawley MW, Santos LMA, Eliáš M. [Toward Modern Classification of Eustigmatophytes, Including the Description of Neomonodaceae Fam. Nov. and Three New Genera¹](#). *J Phycol*. 2020 Jun;56(3):630-648. doi: 10.1111/jpy.12980. Epub 2020 Apr 27. PubMed PMID: 32068883.
5. **Pinson A**, Yarbrough AL, Bush JM, Cabanlong CV, Shoeib A, Jackson BK, Fukuda S, Gogoi J, Fantegrossi WE, McCain K, Prather PL, Fujiwara R, Radomska-Pandya A. [Metabolism, CB1 cannabinoid receptor binding and in vivo activity of synthetic cannabinoid 5F-AKB48: Implications for toxicity](#). *Pharmacol Biochem Behav*. 2020 May 13;195:172949. doi: 10.1016/j.pbb.2020.172949. [Epub ahead of print] PubMed PMID: 32413436; NIHMSID:NIHMS1598042.

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6. Storey AJ, Hardman RE, Byrum SD, Mackintosh SG, Edmondson RD, Wahls WP, **Tackett AJ**, Lewis JA. [Accurate and Sensitive Quantitation of the Dynamic Heat Shock Proteome Using Tandem Mass Tags](#). J Proteome Res. 2020 Mar 6;19(3):1183-1195. doi: 10.1021/acs.jproteome.9b00704. Epub 2020 Feb 19. PubMed PMID: 32027144; PubMed Central PMCID: PMC7241437.
7. **Zang H**, Nakanishi N. [Expression Analysis of Cnidarian-Specific Neuropeptides in a Sea Anemone Unveils an Apical-Organ-Associated Nerve Net That Disintegrates at Metamorphosis](#). Front Endocrinol (Lausanne). 2020;11:63. doi: 10.3389/fendo.2020.00063. eCollection 2020. PubMed PMID: 32140137; PubMed Central PMCID: PMC7042181.
8. Ramirez AM, Byrum SD, Beenken KE, Washam C, Edmondson RD, Mackintosh SG, Spencer HJ, **Tackett AJ**, Smeltzer MS. [Exploiting Correlations between Protein Abundance and the Functional Status of *saeRS* and *sarA* To Identify Virulence Factors of Potential Importance in the Pathogenesis of *Staphylococcus aureus* Osteomyelitis](#). ACS Infect Dis. 2020 Feb 14;6(2):237-249. doi: 10.1021/acsinfectdis.9b00291. Epub 2019 Nov 26. PubMed PMID: 31722523; PubMed Central PMCID: PMC7294808.
9. Gattrell L, Wilkins W, Rana P, **Farris M**. [Glucose effects on polyglutamine-induced proteotoxic stress in *Caenorhabditis elegans*](#). Biochem Biophys Res Commun. 2020 Feb 12;522(3):709-715. doi: 10.1016/j.bbrc.2019.11.159. Epub 2019 Nov 28. PubMed PMID: 31785809.
10. Afrose F, **Koeppe II RE**. [Comparing Interfacial Trp, Interfacial His and pH Dependence for the Anchoring of Tilted Transmembrane Helical Peptides](#). Biomolecules. 2020 Feb 11;10(2). doi: 10.3390/biom10020119.
11. Garcia AP, Hatvany JB, Murphy MA, Atchley DH, Gurley BJ, **Kamdern LK**. [Effect of Aromatase Inhibition \(Exemestane\) on Urine Concentration of Osteoprotegerin in Healthy Postmenopausal Women](#). J Clin Pharmacol. 2020 Feb;60(2):209-217. doi: 10.1002/jcph.1519. Epub 2019 Sep 18. PubMed PMID: 31535401.

#sharingnews

Congratulations to PUI faculty, Drs. **Laura MacDonald**, assistant professor at Hendrix College and Dr. Aime Franco (former associate professor in the Department of Physiology and Biophysics) Assistant Professor at the Children's Hospital in Philadelphia on a co-authored publication and collaboration on "The Thyroid Tumor Microenvironment: Potential Targets for Therapeutic Intervention and Prognostication" (NIHMS1604761) published in <https://pubmed.ncbi.nlm.nih.gov/32548798/>.

Congratulations to Dr. **Nathan Reyna**, Associate Professor at Ouachita Baptist University (OBU), Dr. **Robert Griffin**, Professor at UAMS, and Danielle Schaal, undergraduate student at OBU, co-Lead author on the publication in PLOS-ONE <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0234614>. The RNA sequencing was funded by an INBRE Core Voucher. All of the Bioinformatics was done at OBU.

Congratulations to **Anna Pinson** on being first author on 'Metabolism, CB1 cannabinoid receptor binding and in vivo activity of synthetic cannabinoid 5F-AKB48: Implications for toxicity' published in Elsevier <https://reader.elsevier.com/reader/sd/pii/S0091305720300137?token=F5FA718CEEF222F13BEA32E09E2F46989A2EC1C176FDF73511BCC664168B5E925FA14273D3FE79E3A578FEF050B2AEA3>. In the summer of 2018, Anna worked in the lab of Dr. Anna Radominska-Pandya at UAMS. In 2019 Anna participated in the summer program in the lab of Dr. Grover Miller's lab on a project that she is currently carrying out at Harding University with her mentor, Dr. Dennis Province. That project focuses on potential non-cytochrome P450 mediated oxidative defluorination of some drugs. Additionally, they are working on the kinetics of 5F-APINACA (another synthetic cannabinoid).

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Congratulations to **Hannah Zang**, a two time INBRE supported undergraduate researcher (2019 former INBRE fellow and Lyon College supported) was selected as a recipient for the 2020 Barry Goldwater Scholarship for her senior year at Lyon in the area of Life Sciences. The Goldwater Foundation selects sophomores and juniors who intend to pursue research careers in natural sciences, mathematics and engineering. Hannah's career goals are to conduct research in Neuroscience, specifically in the area of pain management in neurodegenerative and neurological diseases. Hannah's mentors are: Drs. Alexander Beeser and Cassia Oliveira, Lyon College and Nagayasu Nakanishi, U of A, Fayetteville.

Jon Ward was encouraged by Dr. Ben Bruner at Harding University to apply to the 2019 INBRE Summer Research Program. Jon worked in the lab of Dr. Rosalia Simmen's, on a project seeking to understand molecular phenotypes on non-diseased breast tissue in premenopausal women as a function of BMI. Jon says while working in the lab he gained valuable experience with molecular biology and experimental techniques. He feels the INBRE program gave him valuable experience talking about the lab's research during an oral presentation at the Central Arkansas Summer Undergraduate Research Symposium at UAMS and during a poster presentation at the INBRE Annual Fall Conference in Fayetteville. Jon has been a part of the editorial process as Dr. Simmen publishes her findings. Jon was scheduled to present at the 2020 Endocrine Society conference in San Francisco in March; however, the conference was cancelled due to COVID-19. Jon was accepted into the University of Tennessee Health Science Center College of Medicine and will begin as an M1 in August. As for now, he does not know what specialty he will pursue; however, he has a strong desire to work with underserved populations. His time with the INBRE program helped him understand the importance of biomedical research and he wants to participate in the scientific research process in some way throughout his career. He values his summer experience at UAMS because it showed him that participating in research at any level contributes to the scientific community and the wellbeing of humanity. Jon says "research happens in labs, clinics, and office cubicles". Learning about the research projects of other INBRE students showed him that valuable work is being done in all of those environments. On a more personal note, Jon wanted to share that the INBRE stipend went a long way to help him purchase an engagement ring! Jon and his wife were married in June. Congratulations Jon! They will soon begin medical school together at the University of Tennessee Health Science Center. Jon would like everyone to know that summer research can lead to so many opportunities, maybe even ones you might not expect!

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