

WV-INBRE NEWSLETTER

Volume 27

Winter 2023



2023 WV-INBRE Summer Research Symposium is a Success

More than 120 people, including undergraduate students, high school teachers and faculty members from West Virginia higher education institutions, attended the 21st WV-INBRE Annual Summer Research Symposium at the DoubleTree by Hilton Hotel in Huntington, WV on Tuesday July 25, 2023.



During the symposium, participants discussed their research and offered presentations. Sixty-four posters were set up in the hotel. Four undergraduate students and one high school science teacher delivered oral presentations.



The morning session of the symposium began with oral presentations by: Madelyn Morgan (West Liberty University), Lauren

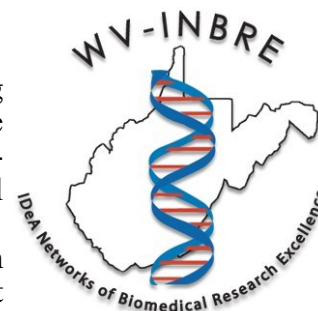
Roush (University of Charleston), Stephen Groves (West Virginia Wesleyan College), and Regan Meyer (pictured above), (Marshall University); Summer Research Program Interns, Seth Perry, High School Science Teacher at Hurricane High School; WV-INBRE/HSTA Summer Research Fellow.

The keynote speaker was Dr. Frank Berger, (pictured below), a Professor Emeritus



of Biological Sciences and Director of Research and Outreach within the Colorectal Cancer Prevention Network at the University of South Carolina. Dr. Berger's presentation was entitled: "From the Laboratory to the Community: A Career Path in Science". Dr. Berger's talk was highly inspirational, informative, and very well received by everybody in attendance. Topics addressed by the symposium's presenters included addiction, Alzheimer's disease, obesity, cancer, and diabetes.

(Continued on page 3)



Network Partners of the WV-INBRE

Lead Universities

Marshall University
West Virginia University

Predominantly Undergraduate Institutions (PUIs)

Bluefield State University
Concord University
Davis & Elkins College
Fairmont State University
Glennville State College
Shepherd University
University of Charleston
West Liberty University
West Virginia School of
Osteopathic Medicine
West Virginia State University
West Virginia Wesleyan College
Wheeling University

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Message from the WV-INBRE Principal Investigator



As we near the end of this Phase IV cycle of funding for the West Virginia INBRE program, I would like to thank everyone for all of their

hard work over the last four and a half years. We have continued to move WV-INBRE forward in spite of the COVID-19 pandemic which closed all colleges and universities in West Virginia in March 2020. Even when our institutions began to re-open, students often conducted much of their learning virtually and were generally not available to work on research projects. We had to cancel the 2020 summer research program and several other activities because of the pandemic. But we were back with in person activities by 2021 and haven't looked back! It is through the hard work of our faculty, staff and students that WV-INBRE has continued to grow and overcome the interruptions in our programs brought on by a virus that had major impact on everyone across the world. I thank you all for helping make WV-INBRE a successful program!

While there were many exciting accomplishments during the last few years, I am particularly pleased that we have continued to grow our relationship and common interest in natural product research with the Puerto Rico INBRE (PR-INBRE). Dr. Joseph Horzempa, Professor and Chair of Biomedical Sciences at West Liberty University (WLU), was appointed Director of the WV-INBRE Center for Natural Products Research initiative and is facilitating this interaction. In 2021, two Southeast Region INBRE Natural Products Research Virtual Symposia were held, and a third symposium was held July 12,

2023 with WV-INBRE and PR-INBRE as co-sponsors. The symposia in 2021 were introduced by Dr. Ming Lei, Director of the Division of Research Capacity Building, NIGMS, and included speakers from both WV-INBRE and PR-INBRE. From these symposia, three research collaborations have developed between the two INBRE's investigators and a fourth one is being formulated. Dr. Horzempa visited Puerto Rico in June 2022 to explore collaborations, and Dr. Jose Rodriguez Medina, PR-INBRE PI, visited West Virginia in April 2023 to meet some of the WV-INBRE investigators and work on the details of the first summer student exchange. For the summer of 2023, two students from WLU worked in the laboratory of Dr. Claudia Ospina, Interamerican University Bayamon Campus and two students from Dr. Ospina's laboratory worked at WLU for nine weeks. The program was very successful, and plans are proposed to expand this interaction in Phase V.

Speaking of summer research, for Y23, the Summer Research Program was conducted between May 30 and July 25, 2023 at Marshall University and West Virginia University. Summer interns included 27 undergraduate interns (ten at Marshall University and 17 at West Virginia University) along with four HSTA high school science teachers. American Heart Association Summer Research Program undergraduate students participated in our training sessions and presented their research at the Summer Research Symposium held at the DoubleTree Hotel in Huntington, West Virginia on July 25, 2023. The keynote speaker for the symposium was Dr. Frank Berger, Distinguished Professor Emeritus, Department of Biological Sciences, University of South Carolina. Dr. Berger is a former COBRE PI and a

member of the WV-INBRE External Advisory Committee. His COBRE focused on colorectal cancer and completed all three COBRE phases.

The interactions between WV-INBRE and the Health Sciences & Technology Academy (HSTA) program have gained attention from other INBRE programs. On October 12-13, 2022, representatives from two Southeast Region INBREs attended a meeting held on the campus of West Virginia University to learn more about how the relationship between WV-INBRE and HSTA developed and operates. Several members of the WV-INBRE and HSTA leadership served as hosts for this meeting and made open discussion presentations. Dr. Larry Cornett, Arkansas INBRE PI, and representatives from the University of Arkansas for Medical Sciences attended in person, while Dr. Jose Rodriguez-Medina, Puerto Rico INBRE PI, and Maribel Campos, Puerto Rico SEPA program, attended the meeting virtually.

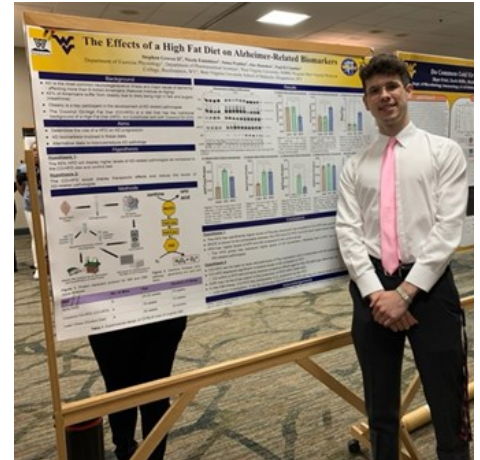
This year we had to prepare and submit to NIH the competing renewal application for WV-INBRE requesting five more years of funding. Through the efforts of the Administrative Core and our administrative staff, we were able to submit the renewal application on June 23, 2023, three days ahead of the deadline! The application was reviewed on November 2 and received an impact score of 26, which is very good and hopefully, will be in the funding range. NIGMS Council will meet in January 2024 and make a funding recommendation. If all goes well, we will begin Phase V on August 1, 2024.

Lastly, let me wish everyone a Happy Holiday Season! I hope that 2024 is your best year yet.

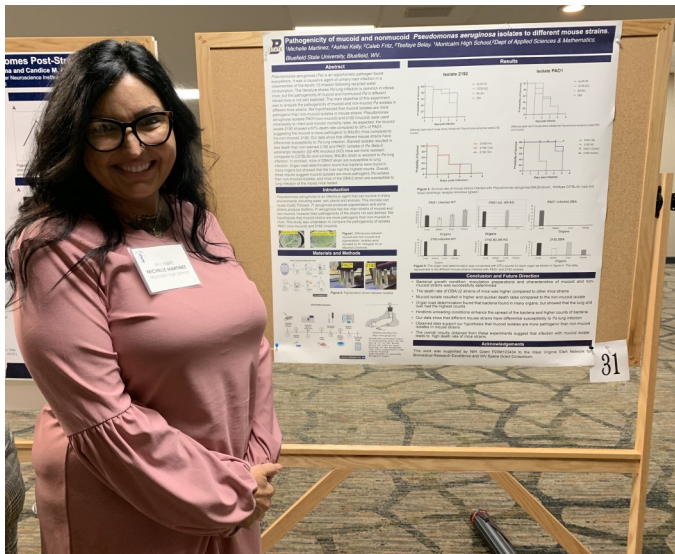
2023 WV-INBRE Summer Research Symposium (continued from front page)

The student presenters at the symposium included those who had performed research over the summer at Marshall University or West Virginia University as part of the WV-INBRE Summer Research Program and those funded by WV-INBRE who had performed research at their own institutions during the school year. Presenters at the symposium also included two students from

the Puerto Rico-INBRE, who participated in an exchange program with WV-INBRE and did their research during the summer at West Liberty University in West Liberty, West Virginia.



HSTA Participants Present at the 2023 INBRE Symposium



Michelle Martinez, Montcalm High School and a INBRE/HSTA High School Educator worked in Dr. Tesfaye's lab at Bluefield State College.



Kaci Cotton "Discovering Mechanisms Driving Drug Addiction Using Collaborative Cross (CC) and CC Founder Mice". Kaci worked with Dr. Price Dickson at Marshall University.

WV-INBRE Provides Biomedical Research Opportunities to HSTA Scholars and WV High School Science Educators

The partnership between WV-INBRE and the Health Sciences & Technology Academy (HSTA) program is focused on encouraging undergraduate students, who have demonstrated an interest in biomedical research through their participation in the HSTA program while in high school, to continue to develop this interest in biomedical research once they enroll at West Virginia University, Marshall University or one of the Partner Institutions (PIs).

During the 2023-2024 academic year, 8 HSTA scholars are participating in this program with 2 interns at Bluefield State College, 1 intern at West Liberty University, 2 interns at Marshall University, and 4 interns at West Virginia University. These students are: at West Liberty University,

Shania Davis with Dr. Joseph Horzempa; at Bluefield State College, Autumn Reynolds and Cydney Vineyard with Dr. Tesfaye Belay; at Marshall University, Jessica Crowder with Dr. Lydia Bogomolnaya, and Nevaeh Ellington with Dr. Emine Koc; and

at West Virginia University, Kiara Barron with Dr. Werner Geldenhuys, Kaci Brabbin with Dr. Paul Chantler, Marcella King with Dr. Bradley Webb, and Brent Roach with Dr. John Hollander. All interns will present their re-

search at the 22nd Annual WV-INBRE Summer Research Symposium in Morgantown WV on July 30, 2024.

Another component of this joint program is to provide opportunities for high school science educators to participate in biomedical research

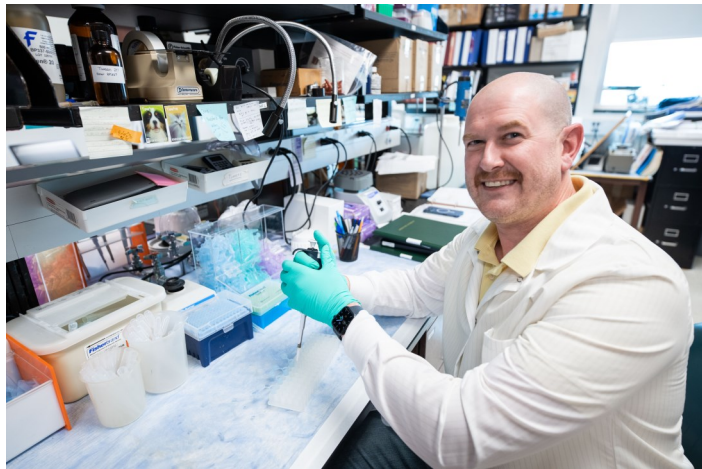
for up to nine weeks during the summer with a mentor at West Virginia University, Marshall University, or one of the WV-INBRE funded PUI laboratories. Participation is open to high school science

search experience back into their classrooms and inspire their students to pursue biomedical research opportunities once they enter college. Additionally, it is anticipated that the techniques they learn from the research will enhance the scientific teaching experience in the classroom.

For summer 2023, 4 high school science educators were awarded 7 to 9-week research internships. These fellows were: Zach Riffle from University High School with Dr. Meenal Elliott at West Virginia University; Seth Perry from Hurricane High School with Dr. Monica Valentovic at Marshall University; and both Ashleigh Freeman and Michelle Martinez from Montcalm High School with Dr. Tesfaye Belay at Bluefield State College. All fellows presented their research at the 21st Annual WV-INBRE Summer Research Symposium in Huntington WV on July 25, 2023. The application for Summer 2024 high school science educator fellows will open in January 2024.



Zach Riffle, from University High School, worked with Dr. Meenal Elliott at West Virginia University



Seth Perry, from Hurricane High School, worked with Dr. Monica Valentovic at Marshall University.

educators who teach in the state of West Virginia during the previous academic school year. The goal of this part of the program is to provide research opportunities to interested science teachers with the expectation they will take their re-

WV-INBRE Interns from Marshall University

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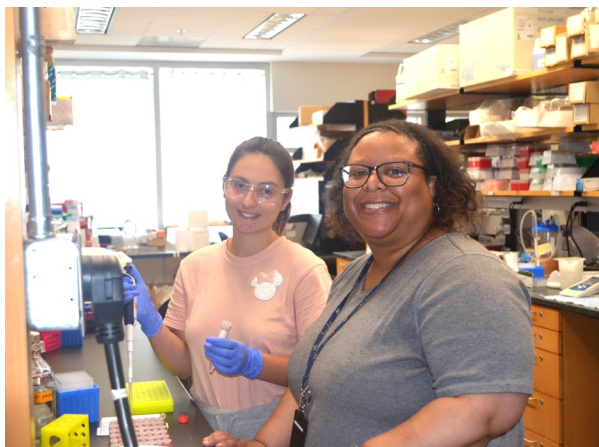
Front row: (L to R): Lakin Plott, West Liberty; Izabel Doyle, Shepherd; Lauren Roush, University of Charleston; Hailey Cox, University of Charleston; Emily Hissom, University of Charleston; Anna Umpleby, Alderson Broaddus
Back row: (L to R): Levone Stephens, Concord; Bree Moll, Wesleyan; Myra (Sage) McLaughlin, University of Charleston; Tammer Richmond, University of Charleston; Seth Perry, Hurricane High School Science Teacher

WV-INBRE Interns from West Virginia University



Front row: (L to R): Dayton Miller, Shepherd University; Madelyn Logan, West Liberty University; Taylor Smith, Davis & Elkins College; Skye Friel, Fairmont State University;
Middle row: (L to R): Chance berg, Fairmont State University; Kaef Rehman, West Virginia Wesleyan College; Bryer Ketterman, West Virginia Wesleyan College; Kaylee Nott, University of Charleston; Jenna Milliron, Glenville State University; Cyrena King, Davis & Elkins College; Stephen Groves, West Virginia Wesleyan College;
Back row: (L to R): Kyle Hawthorne, Davis & Elkins College; Isaac Hall, Fairmont State University; Nick Evans, West Virginia Wesleyan College; Joseph Durr, Alderson-Broadbudds University;
Not pictured: Evalina Martirosyan, West Liberty University.

WV-INBRE Participants Working In The Labs



Evelina Martirosyan, West Liberty University, is seen working with her mentor Dr. Candice Brown, in her lab at West Virginia University.



Chance Berg, Fairmont State University, is seen working on a project in Dr. Randy Nelson's lab at West Virginia University.



Zach Riffle, a HSTA High School Educator, is seen working on a project with Sky Friel, Fairmont State University, in Dr. Meenal Elliot's lab at West Virginia University.



Kaef Rehman, West Virginia Wesleyan College, is seen working with Paola Guzman-Torres, a student assistant in Dr. Paul Lockman's lab at West Virginia University.

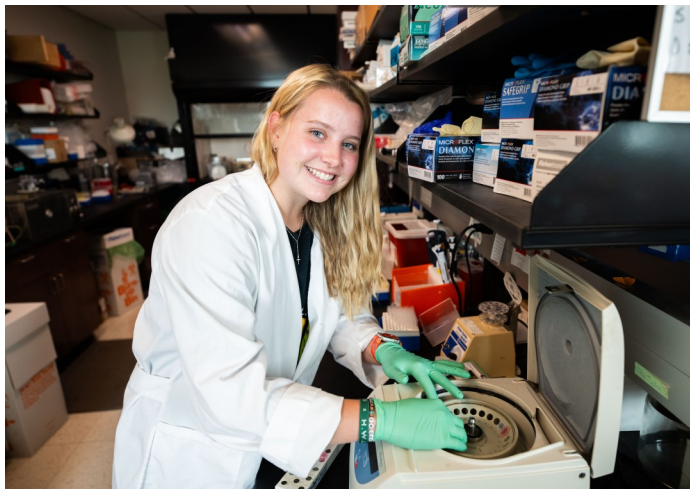
WV-INBRE Participants Working In The Labs *continued*



Levone Stephens, Concord University, is seen here working on a project in Dr. Nalini Santanam's lab at Marshall University.



Hailey Cox and Laura Roush, both from the University of Charleston, are seen working together on a project in Dr. Larry Grover's lab at Marshall University.



Anna Umpleby, Alderson Broaddus University, is seen working on a project in Dr. Gary Rankin's lab at Marshall University.



Tanner Richmond, University of Charleston, is seen working on a project in Dr. Jung Han Kim's lab at Marshall University.

2023 Southeast Regional IDeA Conference

The Southeast Regional IDeA Conference, hosted by South Carolina INBRE, was held September 15-17, 2023 in Columbia, South Carolina at the University of South Carolina Pastides Alumni Center and the Columbia Metropolitan Convention Center. The meeting was attended by almost 30 WV-INBRE faculty and students, along with COBRE and WVCTSI researchers from West Virginia University. Most of the undergraduate student attendees came from West Liberty University and Bluefield State College and all presented posters on their research projects.

The meeting began on Friday afternoon with a special meeting entitled “Engaging Diverse Perspectives”. This meeting with NIGMS officials was an open discussion of improving diverse perspectives in INBRE programs. WV-INBRE was represented by the WV-INBRE PI, Dr. Gary Rankin, Bluefield State University Beckley Campus President Dr. Ted Lewis and Dr. Tesfaye Belay from Bluefield State University. A workshop on accessing Cloud-based training modules and a research showcase were also held during the afternoon. The evening sessions began with a welcome by NIGMS Director Dr. Jon Lorsch followed by a presentation about the National Association of IDeA Principal Investigators (NAIPI) organization by NAIPI president Dr. Robert Seville, who is also the Wyoming INBRE PI.

Saturday began with a presentation by Dr. Krishan Arora, Networks and Development Program Branch Chief, NIGMS providing an overview of IDeA programs followed by concurrent scientific sessions for faculty and/or students which included topics such as high throughput technologies, cardiovascular disease and stroke, metagenomics, cancer, inflammation and infectious disease, community engaged research and AI and machine learning. A Program Evaluation and Admin-

istration of Research Leaders (PEARL) meeting was also held throughout the day. Following lunch, Dr. Russell Norris, professor of medicine at the Medical University of South Carolina, described his research program on Ehlers Danlos Syndrome, a group of inherited disorders that mostly affect the skin, joints, and blood vessels. The afternoon continued with a three-hour poster session and bioinformatics and data science sessions.

The meeting concluded Sunday morning with a presentation by Jessica Molesworth, Executive Director of the EPSCoR/IDeA Foundation on the status of congressional funding for biomedical research, a plenary talk on the NIGMS IDeA-CTR program by Dr. Sally Hodder, WVCTSI PI, and concurrent scientific sessions on obesity and metabolic disorders, microbiome, educational approaches to data science,



Dr. Andrew Nato, Marshall University, is seen here presenting a Bioinformatics Research Talk

and computational chemistry. Following the scientific sessions, the student winners of the poster session were announced and the meeting was adjourned. West Virginia students did very well in the poster competition with 12 students receiving recognition.

(Continued on next page)

2023 Southeast Regional IDeA Conference *Continued*

Here is a list of the student winners from West Virginia shown below by category:

Bacterial Pathogens

Elio F. Delatore III, (WLU) Honorable Mention

Public Health

Tyler Hill (WLU) 1st Place

Obesity and Metabolic Disorders

Jordon Livingston, (BSC) 3rd Place

Emma E. Cimino, (MU) Honorable Mention

Molecular and Cell Biology

Rachelle Patterson (WLU) 2nd Place

Microbiome in Health and Disease

Emma J. Beatty

West Liberty University 2nd Place

Inflammation and Infectious Disease

Emily Young (WLU) 1st Place

Kristen Rolan (BSU) 2nd Place

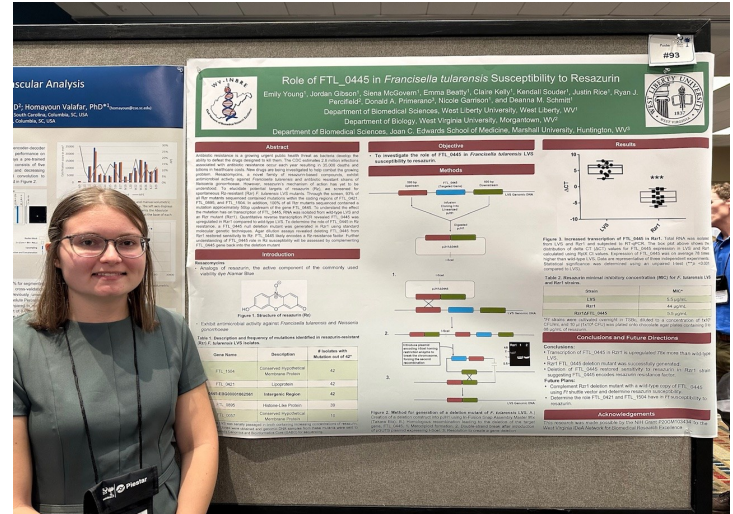
Rori Schreiber (WLU) Honorable Mention

Reagan Gray (WLU) Honorable Mention

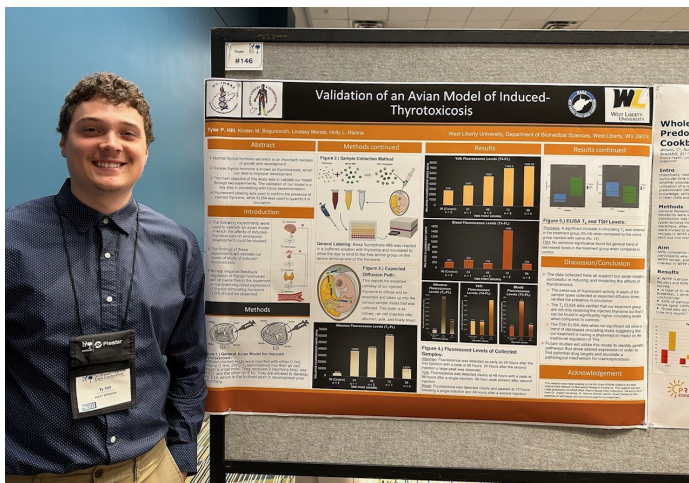
Cardiovascular Disease and Stroke

Jadyn Simon (MU) 3rd Place

Claire Combs (MU) Honorable Mention



Emily Young (shown above), a two-year INBRE summer intern from West Liberty University received first place for her poster titled “Role of FTL 0445 in *Francisella tularensis* Susceptibility to Resazurin”. Emily worked in Dr. Joseph Horzempa’s lab.



Tyler Hill (shown at the left) is a INBRE summer intern from West Liberty University. He received first place for his poster titled “Validation of an Avian Model of Induced-Thyrotoxicosis”. Tyler worked in Dr. Stuart Cantlay’s lab.

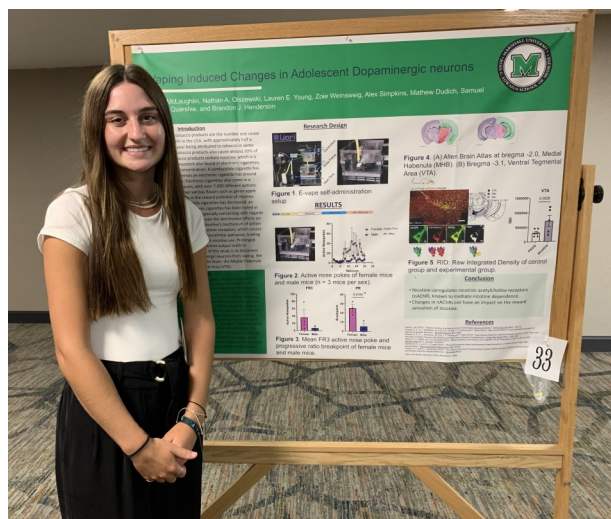
NIH leader to head research and graduate education efforts at WVU Health Sciences



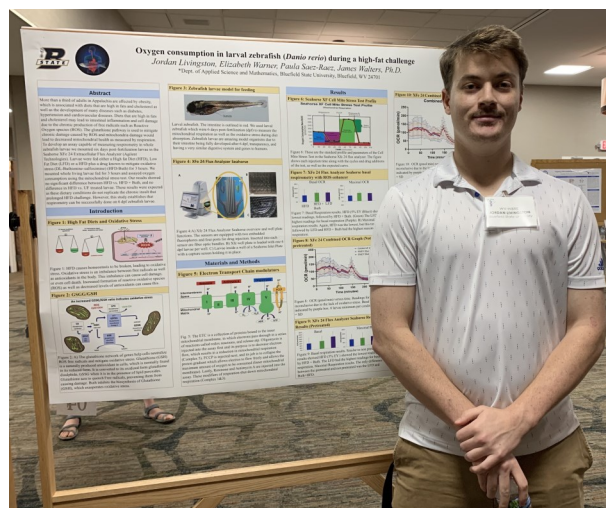
This past summer, the long-time director of graduate and research education within the Health Sciences at WVU, Dr. Laura Gibson, retired. Dr. Gibson was a wonderful partner and supporter of the WV-INBRE program and mission and we wish her a very happy and well-earned retirement. WVU recently hired Dr. Ming Lei to assume those duties. Dr. Lei joined WVU from the National Institute of General Medical Sciences (NIGMS) Division for Research Capacity Building to become senior associate vice president for research and graduate education at WVU Health Sciences. He also joined the faculty in WVU’s School of Medicine as vice dean for research and professor in the department of microbiology, immunology and cell biology. Prior to joining NIGMS, he also served in a leadership position within the National Cancer Institute. Participants in WV-INBRE should be well-familiar with Dr. Lei as he headed the Institutional Development Award (IDeA) Regional Entrepreneurship

Development Program and expanded opportunities for IDeA states to build capacity for clinical and translational research. We very much look forward to working with Dr. Lei to continue growing the mission of WV-INBRE. Coverage of the story can be found at <https://wvutoday.wvu.edu/stories/2023/07/19/nih-leader-to-head-research-and-graduate-education-efforts-at-wvu-health-sciences>.

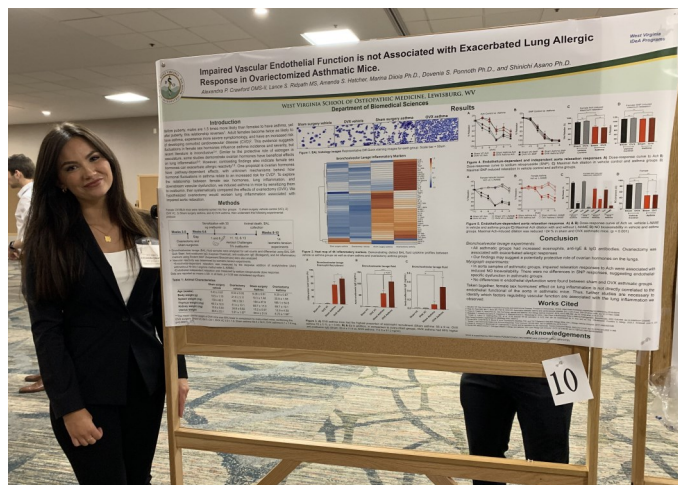
Summer Participants Presenting Posters At The 2023 WV-INBRE Symposium



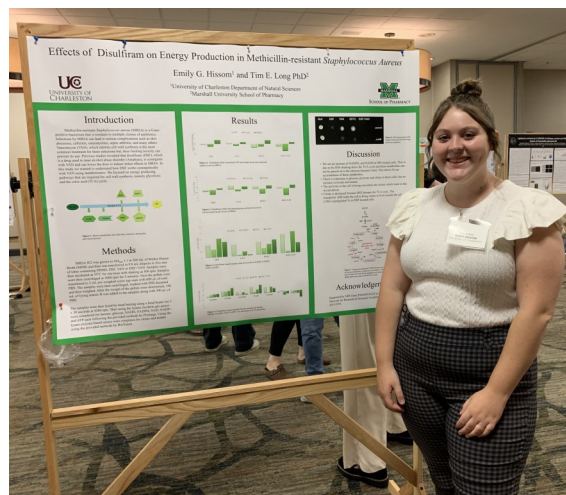
Myra McLaughlin, University of Charleston, presented her poster titled "Vaping Induced Changes in Adolescent Dopaminergic neurons". Myra worked in Dr. Brandon Henderson's lab at Marshall University.



Jordan Livingston, Bluefield State University, presented his poster titled "Oxygen consumption in larval zebrafish (*Danio rerio*) during a high-fat challenge". Jordan worked in Dr. James Walter's lab.

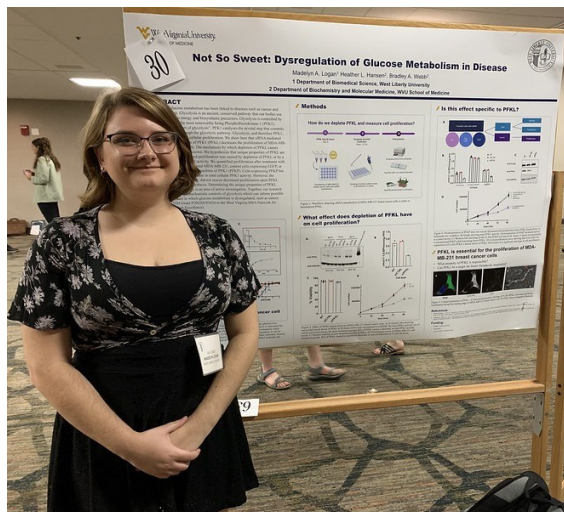


Alexandra P. Crawford, West Virginia School of Osteopathic Medicine, presented her poster titled "Impaired Vascular Endothelial Function is not Associated with Exacerbated Lung Allergic Response in Ovariectomized Asthmatic Mice". Alexandra worked with Dr. Asano Shinichi's lab.

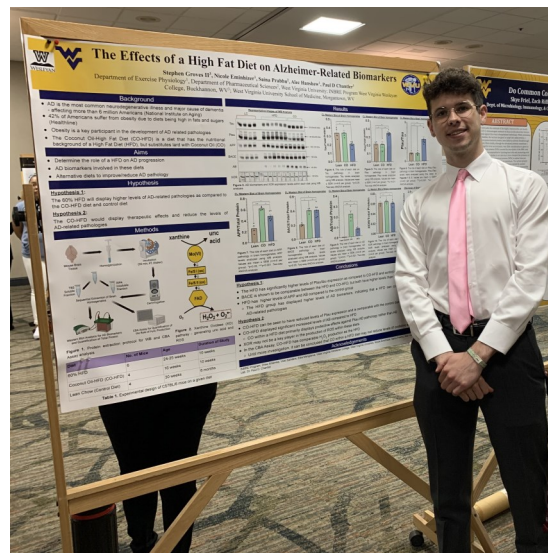


Emily Hissom, University of Charleston, presented her poster titled "Effects of Disulfiram on Energy Production in Methicillin-resistant *Staphylococcus Aureus*". Emily worked in Dr. Tim Long's lab at Marshall University.

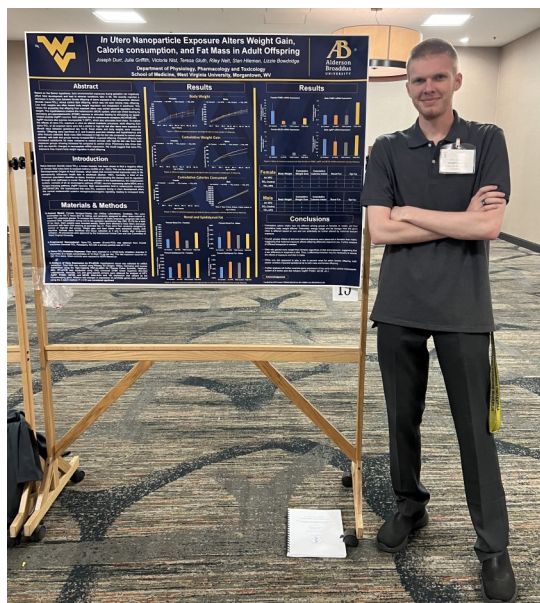
Summer Participants Presenting Posters At The 2023 WV-INBRE Symposium *Continued*



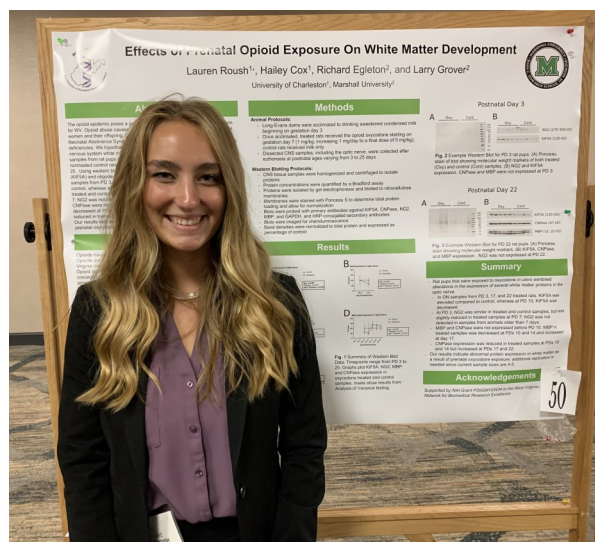
Madelyn Logan, West Liberty University, presented her poster titled “Not So Sweet: Dysregulation of Glucose Metabolism in Disease”. Madelyn worked in Dr. Bradley Webb’s lab at West Virginia University.



Stephen Groves II, West Virginia Wesleyan College, presented his poster titled “The Effects of a High Fat Diet on Alzheimer-Related Biomarkers”. Stephen worked in Dr. Paul Chantler’s lab at West Virginia University.

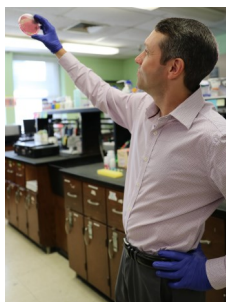


Joseph Durr, Alderson Broaddus University, presented his poster titled “In Utero Nanoparticle Exposure Alters Weight Gain, Calorie Consumption, and Fat Mass in Adult Offspring”. Joseph worked in the lab with Dr. Lizzie Bowdridge at West Virginia University.



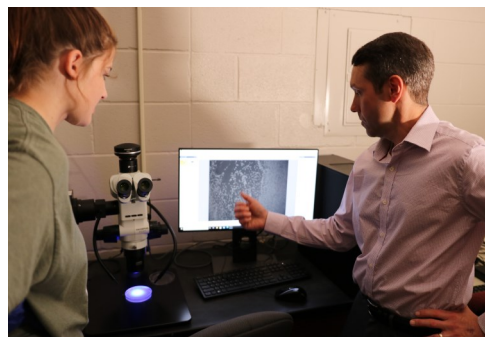
Lauren Roush, University of Charleston, presented her poster titled “Effects of Prenatal Opioid Exposure On White Matter Development”. Lauren worked with Dr. Larry Grover at Marshall University.

HIGHLIGHT: Dr. Joseph Horzempa from West Liberty University



Joseph Horzempa, PhD, pictured to the left, is a Professor and Chair of the Department of Biomedical Sciences at West Liberty University. Dr. Horzempa

also serves as one of the Program Directors for the MA/MS in Biology. Prior to his career at West Liberty University, he was a post-doctoral researcher at the University of Pittsburgh School of Medicine from 2006-2011. He received his Doctorate in Biology from Duquesne University in 2006, and his BS and MS in Biology from California University of PA in 2000 and 2002 respectively. Dr. Horzempa's research has been funded by WV-INBRE throughout his career at West Liberty University and has helped this investigator and his students find success in the mountain state.



In addition to running a successful research laboratory, Dr. Horzempa is a passionate teacher of microbiology, cell biology, microbial pathogenesis, and several other courses at West Liberty University. His students enjoy attending his classes because Dr. Horzempa has a way of making science fun. For instance, he often performs song parodies that help to communicate a biological concept or fundamental

knowledge. Because of Dr. Horzempa's zest for teaching, and due to the success of his research efforts, he was named the 2017 West Virginia Professor of the Year by the Faculty Merit Foundation. His successes also resulted into his induction in the Hall of Fame of his hometown, Monaca, PA.

Perhaps Dr. Horzempa's most noteworthy triumph is the success of his students. Students under his mentorship have received several fellowships, grants, and recognitions from academic societies. These accomplishments are evidence of the outstanding effort of his students and the quality of their research. Alumni of the "Horzempa Lab" have gone on to graduate school to pursue a PhD or Master's degree, medical school, physician assistant programs, or to enter a career in the field of biomedical science.

Over the years, Dr. Horzempa's laboratory focused on the discovery of novel antimicrobials from natural products. The findings that were generated from his lab culminated in the filing of two patent applications (one patent was granted, the other is pending). Horzempa now serves as the director of the WV-INBRE Center for Natural Products Research (CNPR). Through a collaboration with the Puerto Rico INBRE, the CNPR supported a student research exchange this past summer in which two Puerto Rico student researchers (Maria Milanés-

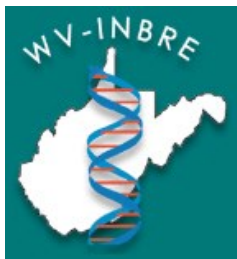
Russi and Patricia Hiciano-de la Cruz) worked under the mentorship of Dr. Horzempa at West Liberty University. Two West Liberty students (Reagan Gray and Kaitlyn Baily) studied under the mentorship of Dr. Claudia Ospina at the Inter American University of Puerto Rico, Bayamón.

Dr. Horzempa's laboratory also investigates erythrocyte invasion by *Francisella tularensis* – a pathogenic bacterium capable of being used for bioterrorism. To support his research on *F. tularensis*, Dr. Horzempa was awarded funding by the National Institutes of Health, National Heart Lung and Blood Institute (R15) in 2019, and this grant was renewed in 2023 for up to four more years.

Dr. Horzempa attributes the success of his lab to the opportunities that were made available by WV-INBRE to him and his students, pictured below, and is looking forward to the future scientific research at West Liberty and throughout the state.



ANNOUNCEMENTS



2024 SUMMER RESEARCH PROGRAM

Participation is open to all students who are enrolled full-time at the Primarily Undergraduate Institutions participating in the WV-INBRE Network who will have not graduated by August 2024.



Research Opportunities:

- Addiction
- Cancer Biology
- Cardiovascular Disease, Obesity and Diabetes
- Molecular Mechanisms of Pathogenesis
- Neuroscience and Developmental Biology
- Toxicology and Environmental Health Sciences

Evaluation Criteria:

- Academic record, particularly in science courses
- Laboratory experience
- Stated interest in biomedical research and career goals, and why would like to participate in the program
- Recommendations of two faculty members at the applicant's institution and others, if relevant



Application Process:

- Completed application form (http://www.wv-inbre.net/summerprogram/2024_Research/)
- Transcripts from all institutions of higher learning attended
- Two letters of recommendation



- ♦ \$6,000 stipend
- ♦ Conduct research in state-of-the-art facilities at Marshall University or West Virginia University
- ♦ Present results of the research project at the WV-INBRE Summer Research Symposium

♦ Dates of Summer Internship are May 28th through July 30th

♦ **Applications and supporting documents must be received on or by February 5, 2024**

♦ Contact Dr. Grover for more information or questions at grover@marshall.edu