

2022



WEST
VIRGINIA
ACADEMY
OF SCIENCE
96th Annual
Meeting



FAIRMONT STATE
UNIVERSITY™

April 23, 2022
Hosted by Fairmont State
University



**West Virginia Academy of Science
96th Annual Meeting
April 23, 2022**

EVENT SPONSORS:



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Welcome to the WVAS Annual Meeting!

On behalf of the WVAS Executive Committee and Fairmont State University, we welcome you to the 2022 West Virginia Academy of Sciences Annual Meeting. We are excited to provide an in-person meeting this year and hope you have an engaging and rewarding experience as you immerse yourself in scientific discoveries and discussions.

We are delighted to host this event, and would like to thank our sponsors: First2 Network and W.E.L. Instrument Company. We are also grateful to our many volunteers in the First2 Club, Forensic Science Club, TriBeta Club, and ACS Club for their selfless service.

We truly hope you have a wonderful and productive meeting.

- Dr. Sara Sawyer
President, WVAS Executive Committee

96th annual West Virginia Academy of Science meeting Schedule of Events

**Registration – Falcon Center
8:00 – 10:00**

Opening Ceremony – Falcon Center Gym 2

8:45 – 9:00 Welcoming Remarks:

Dr. Dianna Phillips, Provost and Vice President for Academic Affairs, Fairmont State University

Introduce Organizing Staff: Kristy Henson and WVAS executive committee

9:00 – 9:50 KeyNote Speaker

The emergence of a ‘lightly’ built human skeleton in human prehistory

Dr. Habiba Chirchir, Associate Professor, Marshall University and Research Associate, National Museum of Natural History, Smithsonian Institution.

10:00 – 12:30 Oral Presentations Session 1 – Engineering Technology Building:

ET 305: Environmental Science and Ecology

ET 431: Health Sciences and Paleontology

ET 427: Science Education First2 Network Session Sponsor

12:00 – 1:30 Lunch - Falcon Center Dinning Hall (3rd floor for lunch ticket holders)

You can purchase lunch on the 2nd floor of the Falcon Center or purchase a buffet lunch on the 3rd floor.

12:30 – 1:30 WVAS Annual Business Meeting - Falcon Center 3rd Floor Private Dining Hall

1:30 – 3:30 Poster Presentations – Falcon Center Gym 2

3:45 – 4:30 Closing Ceremony and Remarks – Falcon Center Gym 2

Dr. Mirta Martin, President, Fairmont State University

Sarah Sawyer, Ph.D., West Virginia Academy of Science President

Awards

LIST OF ORAL PRESENTATIONS

10:00 AM – 12:00 PM

ET 305: Environmental Science and Ecology

- 10:00 AM #1. Taylor Whitson, Caitlin. De Vries, Zackary Graham, Zachary Loughman, West Liberty University, West Liberty, WV 26074. **Creating a baseline for bioaccumulation in crayfish in the central Appalachian coalfields.**
- 10:15 AM #2. Addie R. Shanor, Caitlin N. De Vries, Taylor R. Whitson, And Dr. Zachary J. Loughman, West Liberty University, West Liberty, WV 26074. **Epigeal Crayfishes of the Greenbrier River Drainage.**
- 10:30 AM #3. Justin Sanclemente, Nicoleena Storer, Brian Ringhiser, Dr. Zachary Loughman, West Liberty University: West liberty, WV. **Habitat Use and Niche Partitioning Study of *Nerodia sipedon* and *Regina septemvittata* in a Small Appalachian Stream in West Virginia.**
- 10:45 AM #4. Caitlin N. de Vries, Taylor R. Whitson, Dr. Zachary J. Loughman, West Liberty, West Virginia, 26074 USA. **Establishing water and crayfish community baselines for streams harboring the federally threatened Big Sandy Crayfish (*Cambarus callainus*).**
- 11:00 AM #5. Peyton R. Jackson, James E. Bogan, Orianna, Ellen S. Dierenfeld, and Zachary J. Loughman, West Liberty University, West Liberty, WV, 26074. **Assessing the Effect of Diet on Reproductive Output, Nutritional and Health Status in Eastern Indigo Snakes (*Drymarchon couperi*).**
- 11:15 AM #6. Alison Gemberling and Dr Zachary Loughman, West Liberty University, West Liberty, WV, 26074. **Analysis of the effects of UVB radiation on bone density and behavior of hatchling false water cobras, *Hydrodynastes gigas*.**
- 11:30 AM #7. Erin Allison, Emily Taylor, Zackary Graham, Melissa Amarello, Jeff Smith, and Zachary Loughman, West Liberty University, West Liberty, WV, 26074. **Improving Perceptions of Rattlesnakes with Conservation Message Framing**
- 11:45 AM #8. Ashley Vankirk and James Wood, West Liberty University, West Liberty, WV, 26074. **Does Water Velocity and Seasonality alter Herbivory Pressure on *Podostemum ceratophyllum* Michx.?**

ET 431: Health Sciences and Paleontology

Moderator:

- 10:00 AM #9. Samuel Tetteh-Quarshie, Timothy Long, and Cynthia B. Jones, Marshall University, Huntington, WV, 25701. **Exploring rheological properties of chitosan gel and antimicrobial activities of 5-FU against diabetic wound pathogens**
- 10:15 AM #10. David Martinez and Weidong Liao, Shepherd University, Shepherdstown, WV, 25443. **Developing a Web App to Track Hospital ICU Bed Availability using ReactJS**
- 10:30 AM #11. Julia M. dos Santos, Christopher Griffith, Andrea C Haney, Fairmont State University, Fairmont, WV 26554. **Bisphenols A and S exposure induces an increase in triglyceride and oxidative stress, and a decrease in physical fitness.**
- 10:45 AM #12. Stuart Cantlay, Christian Kaftanic and Joseph Horzempa, West Liberty University, West Liberty, WV, 26074. **PdpC, a Type Six Secretion System Substrate, is Required for Erythrocyte Invasion in *Francisella tularensis* LVS**
- 11:00 AM #13. Emily Huff and James Wood, West Liberty University, WV, 26074. **Analysis of *E. coli* trends in the Wheeling Creek watershed**
- 11:15 AM #14. Steven Klug, and James Wood, West Liberty University, West Liberty, WV, 26074. **Similarities in habitat and fossil assemblages of three Late Jurassic paleoenvironments and use in inferring presence of undiscovered dinosaur taxa.**
- 11:30 AM #15. E. Ray Garton and Frederick Grady, WV Geological & Economic Survey Museum, Morgantown, WV 26508. **Pleistocene Vertebrates from West Virginia.**

ET 427: Science Education First2 Network Session Sponsor

- 10:00 AM #16. Josh Revels, Erica Harvey, Beth Thompson, Deana White, Josh White, and Erika Klose, Fairmont State University, Fairmont, WV, 26554, **STEM resource compilations for West Virginia.**
- 10:15 AM #17. Betsy Ratcliff, C. Eugene Bennett Department of Chemistry Morgantown, WV 26506. **Particle Focus in Prep Chem**
- 10:30 AM #18. Kenan Hatipoglu, Sanish Rai, Yogendra M. Panta, West Virginia University Institute of Technology, Beckley, WV, 25801. **NSF S-STEM Program - Supporting Undergraduate Cohorts of Career-Ready Engineering and Science Scholars (SUCCESS) Project at WVU Tech – Year 1 updates.**
- 10:45 AM #19. Yogendra M. Panta, William Church, West Virginia University Institute of Technology, Beckley, WV, 25801. **Synchronizing the Teaching Resources of Energy Conservation Principle in Mechanical Engineering Courses**
- 11:00 AM #20. Michelle Richards-Babb, West Virginia University, Morgantown, WV 26506. **Who benefits when embedded students provide formative Feedback to instructors? Everyone!**
- 11:15 AM #21. Yogendra M. Panta, West Virginia University Institute of Technology, Beckley, WV, 25801. **Challenges, Successes and Lessons Learned in Implementing Hyflex Course Module during the COVID-19 Pandemic Era**
- 11:30 AM #22. Lindsey Cutright, M. Smith, Erica Harvey, Fairmont State University, Fairmont, WV, 26554. **Integrating co-requisite math for STEM student success and the impact of the COVID-19 pandemic**
- 11:45 AM #23. Ashlea Krasnansky, Erica Harvey, and Beth Thompson, Marshall University, Huntington, WV, 25755. **An Overview and Analysis of First2 Network Campus Clubs.**
- 12:00 PM #24. Deana White and Josh White, West Virginia Alliance for STEM and the Arts, Barboursville, WV, 25504. **STEAM Trek – The West Virginia Virtual STEM and the Arts Festival.**

12:00 – 1:30 Lunch: Falcon Center 3rd floor

12:30 – 1:30 WVAS Annual Business Meeting: Falcon Center 3rd floor Private Dining Hall

LIST OF POSTER PRESENTATIONS

1:30 – 3:30 Falcon Center Gym 2

- Poster # 1 Michael D Hambuchen, Travis Stevens, David L Findley, Daniel A Brazeau, Marshall University, Huntington, WV, 25755. **Liver damage in a mouse model of methamphetamine overdose.**
- Poster # 2 Patricia Best and Dr. Rachel Cook, Fairmont State University, Fairmont WV, 26554. **Analysis of SARS-CoV-2 Variant of Concern Mutations in West Virginia.**
- Poster # 3 Logan R. Nelson and Matthew L. Reid, West Virginia Wesleyan College, Buckhannon, WV, 26201. **Responses of belowground multitrophic interactions under warming climate conditions.**
- Poster # 4 Samantha O'Brien and Dr. Matthew Scanlon, Fairmont State University, Fairmont, WV, 26554. **Analysis of stomach acid extraction of lead from children's jewelry.**
- Poster # 5 Amanda Rodrigues, Brady Watters, John Quaranta, Leslie Hopkinson, West Virginia University, Morgantown, WV, 26506. **Evaluation of the use of AMD sludge as soil amendment.**
- Poster # 6 Elle Roberts & Joseph Horzempa, West Liberty University, West Liberty, WV, 26074. **Deletion of *FTL_0671* to determine the role of this gene in erythrocyte invasion by *Francisella tularensis*.**
- Poster # 7 Ethan Bevan, Jason Miller, Shepherd University, Shepherdstown, WV, 25414. **Facial Emotion Recognition using an Artificial Neural Network.**
- Poster # 8 Claire Kelly, Emily Young, Jordan Gibson, Siena McGovern, Emma Beatty, Kendall Souder, Justin Rice, Ryan J. Percifield, Donald A. Primerano, Nicole Garrison, and Deanna M. Schmitt, West Liberty University, West Liberty, WV, 26074. **Role of *FTL_0895* in *Francisella tularensis* Susceptibility to Resazurin.**
- Poster # 9 Michael Natsuti, Levi Junkins, Jason Miller, Shepherd University, Shepherdstown, WV, 25443. **Carbon Fiber Resin Composite Strength Relative to Orientation.**
- Poster # 10 Julia Purks, and Diana Barber, West Liberty University, West Liberty, WV, 26072. **Evaluating bat diversity and activity in developed and undeveloped locations of West Virginia's northern panhandle.**
- Poster # 11 Kaitlyn Cook, Tesfaye Belay, State College, Bluefield WV 24701. **Production of CD4+ T Cell Subsets in a Beta2-Adrenergic Receptor Knockout Stress Mouse Model during *Chlamydia muridarum* Genital Infection.**
- Poster # 12 Elio F. Delatore III, Elle Roberts, Stuart Cantlay, & Joseph Horzempa, West Liberty University, WV. **Deletion of *FTL_1199* to determine the role of this gene in erythrocyte invasion by *Francisella tularensis*.**

- Poster # 13 Jordan Gibson, Justin Rice, Emily Young, and Deanna M. Schmitt, West Liberty University, West Liberty, WV, 26074. **The Effect of Efflux Pumps and Oxidative Stress on *Neisseria gonorrhoeae* Susceptibility to Resazomycins.**
- Poster # 14 Lindsey Morais, Daron Weekley, and Holly Racine, West Liberty University, WV, 26074. **Analysis of differential morphology of the anterior fontanelle in an embryonic avian model of induced-thyrototoxicosis.**
- Poster # 15 Hunter Bouldin and Young B. Kim, Bluefield State College, Bluefield, WV. **Isolation of shogaol from Organic and Processed Ginger for Cancer Related Drug Discovery Research**
- Poster # 16 Jason Ake, Loyd Butcher, Jeremiah Dann, West Liberty University, West Liberty, WV, 25550. **Spatial dynamics of an invasive earthworm (*Amyntas* sp.) in West Liberty University's campus woods community.**
- Poster # 17 Qing Wang and Christine J. Wang, Shepherd University, Shepherdstown, WV 25443. **Mathematical Modeling and Analysis of Tumor Growth in response to a Mixed Chemotherapy and Immune Checkpoint Inhibition Therapy.**
- Poster # 18 Emma Beatty, Emily Young, Mackenzie Hall, Siena Mcgovern, Deanna Schmitt, and Claudia Ospina, West Liberty University, WV. **Screening for Antibacterial Activity of Chemical Extracts from Puerto Rican Plants.**
- Poster # 19 Mariah Cashbaugh & Joseph Horzempa, West Liberty University, West Liberty, WV, 26074. **The role of three putative transcriptional regulators of *Francisella tularensis* during replication within host cells.**
- Poster # 20 Theresa Evangelista & Joseph Horzempa, West Liberty University, West Liberty, WV, 26074. **Use of *Heliopsis* and *Epilobium* extract to test for reduced viability of *Francisella tularensis*.**
- Poster # 21 Jay Bow, Alyssa Pettry, Kristy Henson, Fairmont State University, Fairmont, WV 26554. **Osteological Analysis of Rediscovered Teaching Skeletons at Fairmont State University.**
- Poster # 22 Kristy Henson, School of Archaeology and Ancient History, University of Leicester, UK, College of Science and Technology, Fairmont State University, USA. **Biocultural conditions and prevalence of vitamin D deficiency in skeletal remains.**
- Poster # 23 Tom Schmieta, Jeffery Johnson, Elizabeth Walters, Heather Price, and James W. Walters, Bluefield State College, Bluefield, WV 24701. **Using a zebrafish PCR array to study the transcriptome response of genes mitigating reactive oxygen species in zebrafish (*Danio rerio*) larvae during dietary lipid absorption.**
- Poster # 24 Jesse Orell, Dakota Parnell, Chandler Russell, and James Walters, Bluefield, WV, 24701. **Validation of a Novel Microfluidic Platform by Imaging Diet Uptake in Zebrafish (*Danio rerio*) Larvae.**

- Poster # 25 Kirsten Bogunovich, Peri Gray, and Holly Racine, West Liberty University, WV, 26074. **Thyroxine Metabolism in an Avian Model of Induced Thyrotoxicosis.**
- Poster # 26 Autumn G. Dodson, Emily Young, Deanna M. Schmitt, and Claudia Ospina, West Liberty University, West Liberty, WV 26074. **Investigating the antimicrobial activity of a crude leaf extract derived from Piper species.**
- Poster # 27 Andrew Moseman, Samon Bhatta, and Jason Miller, Shepherd University, Shepherdstown, WV, 25443. **Machine Learning applied to an RNA Classification Problem.**
- Poster # 28 Tyler Hill and Holly Racine, West Liberty University, WV, 26074. **Identifying Positive Cases in an Avian Model of Induced-Thyrotoxicosis**
- Poster # 29 Dakota Parnell, Jesse Orell, Syed Monis Ali, Chandler Russell and James Walters, Bluefield State College, Bluefield, WV, 24701. **Characterizing Peristalsis during a High-Fat Meal compared to a Low-Fat Meal in Zebrafish larvae (*Danio rerio*).**
- Poster # 30 Levi Junkins and Weidong Liao, Shepherd University, Shepherdstown, WV, 25443. **Simulating Kessler Syndrome and the Space Debris Problem**
- Poster # 31 Rachelle Patterson, Stanley Czahoroski, Stuart Cantlay and Joseph Horzempa. West Liberty University, West Liberty, WV, 26074. **Characterization of two predicted lipid metabolism genes (FTL_1569 and FTL_1570) in the intracellular pathogen, *Francisella tularensis* LVS.**
- Poster # 32 Alex E. Banks, Emily Behrmann and Laura S. Robertson, Shepherd University, Shepherdstown, WV 25443. **Identification and characterization of fungi isolated from a cheese cave in the Eastern United States.**
- Poster # 33 Alicia Horn, Sara Roberson, PhD., Bluefield State College. **The role of Cxcl12b and axon projection in the zebrafish habenula.**
- Poster # 34 Hailey Cox, University of Charleston, 25304. **Effects of Acid Mine Drainage on Diversity of Macroinvertebrates at Morris Creek Watershed**
- Poster # 35 John Little, Nathaniel Workman, Zachary Spiggle, Davis Teigeler, Davian Hester, Weidong Liao, Shepherd University, Shepherdstown, WV, 25443. **Engineering Design and Path Planning Implementation for Autonomous Rover**
- Poster # 36 Kaine Diehl, West Liberty University, WV, 26074. **Prey and Predator Behavioral Interactions with a Primary Burrowing Crayfish (*Lacunicambarus thomai*)**
- Poster # 37 David Graebe and James Wood, West Liberty University, WV, 26074. **Quantifiable Water Chemistry Trends in Streams Degraded by Acid Mine Drainage**

- Poster # 38 Montana Fonner, Cassidy Gebhardt, Mycah Ritchea-Yoho, and James Wood, West Liberty University, WV, 26074. **In a Degraded Stream, Increased Salt Concentration is Correlated with Decreased EPT Diver**
- Poster # 39 Mychaela Antill, Adam Kolberg, Taylor Kennedy, Julia M. dos Santos, Fairmont State University, Fairmont, WV 26554. **The Impact of 12 Weeks of Training on Body Composition and Blood Pressure in NCAA football players Division II**
- Poster # 40 Jade Higgins and Dr. Kelley Flaherty, Fairmont State University, Fairmont, WV, 26554. **Analysis of nest re-use by secondary cavity nesters.**
- Poster # 41 Mycah Ritchea-Yoho, Gregory Pond and James Wood, West Liberty University, WV, 26074. **Evaluating macroinvertebrate communities to determine stream flow duration in small headwater streams**
- Poster # 42 Qing Wang, Amy Dewitt, Gross, Weidong Liao, Karen Adams, and Reza Mirdamadi, Shepherd University, Shepherdstown, WV 25443. **The NSF S-STEM Scholarship Program at Shepherd University.**
- Poster # 43 James Krochmal, Kaine Diehl, Zackary Graham, Dave Lieb, Zachary Loughman, West Liberty University: West Liberty, WV. **The rediscovery of the Spiny-cheek crayfish (*Faxonius limosus*) in the middle and upper Susquehanna River Basin in Pennsylvania.**
- Poster # 44 Alexis Ray and Tesfaye Belay, Bluefield State College. Bluefield, WV 24701. **Profile of CD8+ T-cells in a Stressed beta2- Adrenergic Receptor Knockout Mouse Model during *Chlamydia muridarum* Genital Infection.**
- Poster # 45 Nicoleena Storer, Justin Sanclemente, Brian Ringhiser, and Zachary Loughman, West Liberty University, West Liberty University, 26074. **The Microhabitat Preferences Based on Relative Density and Stream Assessment of *Regina septemvittata* in a small West Virginia Stream.**
- Poster # 46 Zachary W. Dillard, Katie Scott, and Zachary J. Loughman, West Liberty University, West Liberty, WV, 26074. **Investigation of crayfish abundance in proximity to bridges, with emphasis on the Threatened Big Sandy crayfish (*C. callainus*).**
- Poster # 47 Katie Scott and Zachary Dillard, West Liberty University, West Liberty, WV, 26074. **Specific microhabitat utilization, resource partitioning, and movement biology of *Cambarus callainus* Thoma 2014 (Decapoda: Cambaridae) in Tug Fork, WV, USA.**
- Poster # 48 Trevor Miller and Dr. Jamie Miller, Fairmont State University, Fairmont, W, 26554. **Analysis of the Effectiveness of Masks at Blocking Bacterial Particulates**
- Poster # 49 Myndi Tran, Kim Bjorgo-Thorne, Melanie Sal, Nathan White, Kaelin Withrow, and Haley Zinn, West Virginia Wesleyan College, Buckhannon WV, 26201. **Behavioral ecology of *Ixodes scapularis* and the implications for Lyme disease**

Poster # 50 Nathan White, Kaelin Withrow, Haley Zinn, Melanie Sal, and Kim Bjorgo-Thorne, West Virginia Wesleyan College, Buckhannon WV, 26201. **Distribution of ixodid ticks in North-Central West Virginia.**

Poster # 52 Caitlin Corcoran and Jason Miller, Shepherd University, Shepherdstown, WV, 25443. **Effect of Dropout on RNA Classification by CNN.**

Poster # 52 Alyssa Oppedisano, West Liberty University, West Liberty, WV, 26074. **Conservation and taxonomic assessment of an undescribed crayfish species in coastal Virginia.**

Poster # 53 Paula Saez-Raez, James Walters, Werner Geldenhuys and John Hollander, Bluefield State College, Bluefield, WV. **Respirometry Outcomes in a 7 Days Post-Fertilization Danio Rerio Fed Different Dietary Conditions.**

Poster # 54 Priscilla Richmond, Kristi A. Kiefer, Julia M. dos Santos, Fairmont State University, Fairmont, W, 26554. **The Relationship Between Performance and Body Composition of Acrobatics and Tumbling Athletes.**

Poster # 55 Taylor Kennedy, Mychaela Antill, Christopher Griffith, Julia M. dos Santos, Fairmont State University, Fairmont, W, 26554. **The Differences in Peak Anaerobic Muscular Power and Risk Factors Related to Cardiovascular Diseases between Athletes and Physical Active Subjects.**