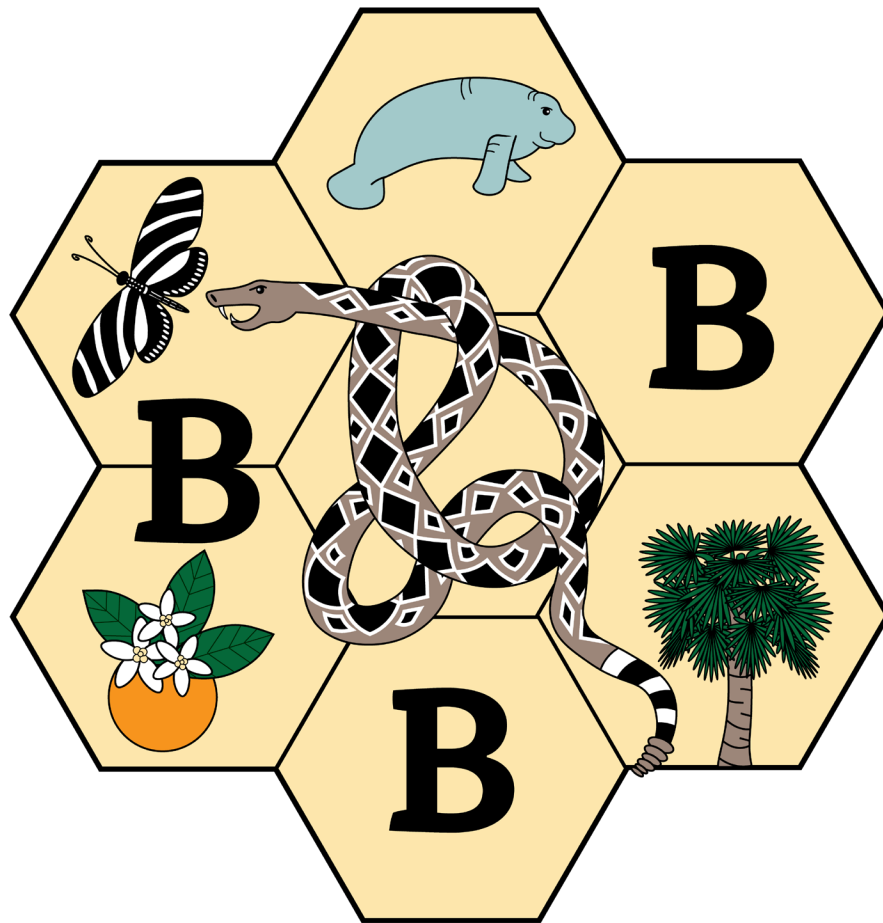


Beta Beta Beta

BIOLOGICAL HONOR SOCIETY



2026 NATIONAL CONVENTION

Hosted by the Sigma Tau Chapter

Florida State University

Tallahassee, Florida
May 27th – 31st, 2026

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WELCOME FROM THE NATIONAL PRESIDENT



Dear TriBeta Members,

It is my honor to welcome you to the 2026 TriBeta National Convention, graciously hosted by the Sigma Tau Chapter at Florida State University (FSU). As President of TriBeta, I am proud to welcome you on behalf of the National Executive Committee as we gather to continue the proud legacy of our 104-year-old society.

This year's convention theme, Discover. Present. Connect., reflects the very spirit of TriBeta and the important role each of you play in advancing biological scholarship, research, and scientific collaboration.

TriBeta has always been committed to three core goals:

1. To promote the scholarship of biological knowledge;
2. To promote the dissemination of biological knowledge;
3. To encourage biological research.

These principles remain the foundation of our society and the purpose behind our time together this week. As you share your research, remember that scientific discovery is not only about results, but also about curiosity, persistence, collaboration, and communication. Your work contributes to a larger scientific conversation that helps shape our collective understanding of the biological world.

You have worked diligently at your home institutions, presented your findings at regional conferences, and now arrive here to share your discoveries on a national stage. Take pride in what you have accomplished. Your presentations will inspire new questions, spark curiosity in others, and encourage future exploration in the biological sciences.

Most importantly, remember that you are the foremost experts on your research. This is your opportunity to share your discoveries, exchange ideas, and contribute meaningfully to the scientific community. Embrace the experience, enjoy the conversations, and celebrate the knowledge and skills you have developed through your work.

As you present, please also take time to acknowledge those who supported you along the way, including fellow students, faculty mentors, family members, and organizations that provided financial support through scholarships, grants, and research opportunities. Scientific achievement is rarely accomplished alone, and your success reflects the encouragement and collaboration of many individuals who helped make this milestone possible.

We extend our sincere gratitude to the many individuals who volunteered their time and energy to make this National Convention possible. Special thanks go to our chapter advisors, district directors,

and members of the National Executive Committee for their continued dedication to TriBeta and undergraduate research.

We are especially grateful to Iris Daly, Executive Director of the National Office, and Connie Terry, whose tireless effort and commitment help ensure the success of this convention and the daily operations of TriBeta throughout the year. Their work, alongside several teams at Florida State University and our host chapter, Sigma Tau, helped coordinate every aspect of this meeting, from programming and lodging to meals, transportation, and field trip experiences.

We extend special appreciation to Debi Fadool, James Fadool, Marty Compagno, Saptarsi Mitra, Olivia Longo, Bridger Menlove, Rimil Roy, Tara Fuchs, Giorgio Belperio, Jacob Dilliplane, and Austin Werner. We are also thankful to all the FSU Biological Science faculty that are helping with judging, the FSU Biological Science Graduate Student Organizations that are helping with driving, and our neighboring facilities - High Field Magnetic Laboratory and St. Teresa Coastal and Marine Laboratory that are providing special experiences for the attendees. Thank you all for bringing us together in science and hospitality.

Lastly, please take care of yourselves and one another throughout the convention. Stay aware of your surroundings, make good decisions, and look out for your fellow attendees. We hope this convention will be not only a rewarding academic experience, but also one filled with lasting memories, meaningful conversations, and new friendships.

Thank you for being part of TriBeta and for contributing to the future of biological science. We are proud of your accomplishments and excited to celebrate them with you this week.

With Warm Regards,

A handwritten signature in black ink, appearing to read 'Carmony Hartwig', with a long horizontal flourish extending to the right.

Dr. Carmony Hartwig

TriBeta National President

HELPFUL INFORMATION

DOWNLOAD PROGRAM PDF

A limited number of printed programs will be available at the convention, so we encourage attendees to access the digital program by scanning the QR code below. The online version will always contain the most up-to-date abstract listings and presentation schedules, including any late additions or updates. If you are already scheduled to present, your assigned poster number or presentation time will remain unchanged.



WI-FI ACCESS

All attendees may connect their devices to the Florida State University guest wireless network using the instructions below:

- Connect to the “FSUGuest” wireless network
- Open your web browser and follow the on-screen registration prompts
- Enter your name and an active email address to create guest access
- A confirmation email or temporary access credentials may be provided during registration
- Once registration is complete, select “Connect” or “Login” to access the network

CAMPUS MAP & RESIDENCE HALL INFORMATION

DeGraff Hall East, 808 W. Tennessee Street,
Florida State University
Tallahassee, Florida 32306



Convention activities will take place at multiple locations across the FSU campus, including the Student Union, College of Medicine, King Life Sciences Building, and nearby residence halls.

Attendees are encouraged to scan the associated QR code to access the interactive FSU campus map for building locations, parking information, and walking directions throughout the convention. In addition, look for local BBB Sigma Tau Chapter members that will be wearing “Garnet and Gold”, and who will be on sight to help escort groups across campus in time for the start of events.

NEED ASSISTANCE?

Helpful contact information during the convention:

- **FSU Police Department – Emergency:** 850-644-1234
- **Convention Housing Assistance (24/7):** Information available at check-in
- **Convention Registration & General Assistance:** Available at the main registration desk throughout the event

There are safety polls that contain blue light phones that are dispersed across campus for use in emergency situations.

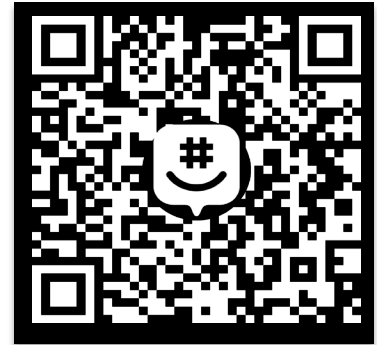
SHUTTLE & TRANSPORTATION INFORMATION

Transportation details, airport shuttle information, and departure schedules will be available through the convention website and registration materials. Please review transportation updates regularly for the latest information regarding shuttle routes and pickup times.

SOCIAL MEDIA

You can also monitor updates in the program using the Convention GroupMe to stay in touch. Use the QR code inside your GroupMe Application to Join and stay in touch during the conference.

We would love to see your convention experience! Be sure to tag TriBeta and Florida State University in your photos and posts throughout the week. Share your memories, presentations, field trips, and networking moments using the official convention hashtag:



@TriBetaBBB



@TriBetaBBB



#TriBeta2026

SILENT AUCTION

Back by popular demand, the TriBeta Silent Auction returns for the 2026 National Convention in support of undergraduate research and student opportunities. Convention attendees are invited to browse and bid on a variety of unique science theme, handmade, artistic items throughout the meeting.

Donations are welcome and may include books, fossils, framed prints, laboratory or field items, live plants, handcrafted pieces, and other creative contributions.

Additional details and item drop-off information will be available at the registration desk.

Auction items
Beach House Weekend Rental at Alligator Point
Craftsmanship from Puerto Rico, Artesania Puertorriquenia
Bacteriophage pen/plant holder
DNA pencil holder
Handmade beaded animal keychain
Landscape painting
Earrings
Books, jewelry, artwork, shells, nature items...

CONVENTION SCHEDULE

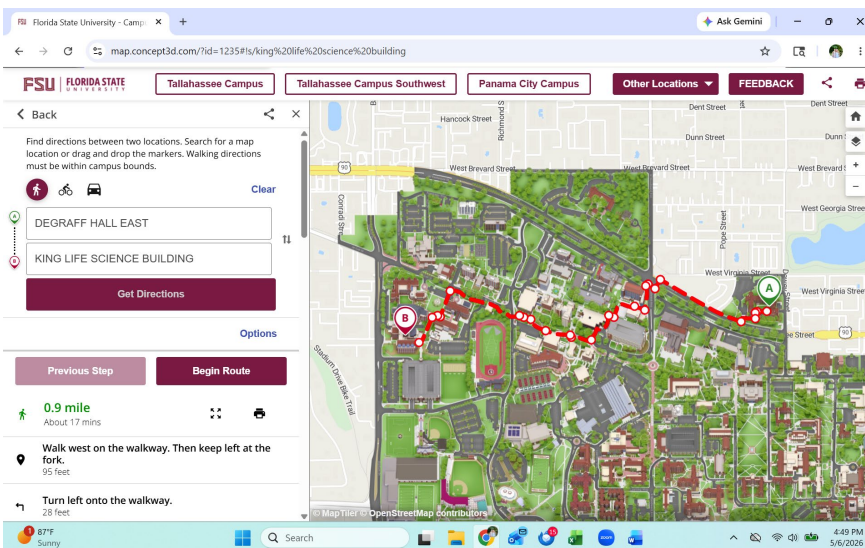
TIME	ACTIVITY	LOCATION
Tuesday, 05/26/2026		
Arrival of Executive Committee Check in at the DeGraff Hall EAST , <i>available 3-5pm</i>		
5:00 pm	Van Shuttle Loading	<i>DeGraff Hall East, meet in Lobby</i>
	Or can walk (West Call Street, 1.2 miles)	
5:15 pm	Van Shuttle DEPARTURE	
5:30 pm	Dinner for Executive Committee	Huntsman Restaurant
Wednesday, 05/27/2026		
Arrival of Registrants, Shuttle service available from Tallahassee Airport (<i>Shuttle from Panama City and Jacksonville Terminals by Faculty Advisors</i>)		
Lunch	Suwannee Cafeteria	<i>Available 12:00 – 2:30 pm</i>
Dinner	Seminole Cafeteria	<i>Available 5:00 – 7:00 pm</i>
12:00 to 7 pm	Dormitory Check in	DeGraff Hall East
7:00 pm	Roll Call and Welcome	King Life Sciences Building, <i>Main auditorium 1024</i>
9:00 pm	Dessert Social	King Life Sciences Building, <i>External Auditorium</i>
Thursday, 05/28/2026		
Breakfast	Seminole Cafeteria	<i>Available starting 7:30 am</i>
9:00 am – 12:00 pm	Oral Presentations	FSU College of Medicine, <i>Rooms 1301, 1302, 1303</i>
Lunch	Seminole Cafeteria	<i>Available 12:00 – 2:30 pm</i>
1:30 – 4:00 pm	Poster Presentations	FSU College of Medicine Atrium
2:30 – 4:30 pm	Tabled presentations and silent auction	King Life Sciences Building Atrium
3:00 – 4:00 pm	Afternoon Refreshments	King Terrace Garden Roof, 3rd Floor
4:30 – 5:00 pm	Scholarship Presentations	King Life Science Building, <i>Main auditorium 1024</i>
Dinner	Seminole Cafeteria	<i>Available 5:30 – 7:30 pm</i>
7:00 pm	Keynote Address, Professor Gregory Erikson <i>Ice Dinosaurs: The Lost World of the Paleo Arctic</i>	King Life Science Building, <i>Main Auditorium 1024</i>
9:00 pm	Dessert Social	King Life Science Building, <i>Exterior Auditorium</i>
<i>Available 7:00 – 10:00 pm</i>	Silent Auction	King Life Science Building, <i>Atrium</i>
Friday, 05/29/2026		
Breakfast	Seminole Cafeteria	<i>Available starting 7:30 am</i>
8:15 am	Morning Field Trip Loading Van Shuttles	King Life Science Parking Lot, <i>by Palm Tree Container Garden</i>
8:45 am	Morning Field Trip Van Shuttles DEPARTURE	
12:00 pm	Morning Field Trip RETURN	King Life Science Parking Lot, <i>by the Palm Tree Container Garden</i>
Lunch	Seminole Cafeteria	<i>Available 12:00 – 2:30 pm</i>
<i>Available 12:00 – 6:00 pm</i>	Silent Auction	King Life Science Building Atrium
1:15 pm	Afternoon Field Trip Loading Van Shuttles	King Life Science Parking Lot, <i>by Palm Tree Container Garden</i>
1:30 pm	Afternoon Field Trip Van Shuttles DEPARTURE	

5:00 pm	Afternoon Field Trip RETURN	DeGraff Hall East
5:00 – 6:00 pm	BREAK	
6:00 pm	START Walking to Turnbull Conference Center (0.7 miles)	
6:30 pm	Evening Awards Ceremony	Turnbull Conference Center, 1 st Floor Ballroom
	Silent Auction	<i>Finalize and pick up materials!</i>
Saturday, 05/30/2026		
Airport Terminal Departures		<i>Available starting at 6:30 am</i>
Breakfast	King Life Science Atrium	<i>Available starting at 6:30 am</i>
7:40 am	All Day Field Trip Loading Van Shuttles	King Life Science Parking Lot, by Palm Tree Container Garden
8:00 am	All Day Field Trip Van Shuttles DEPARTURE	
8:30 am	Half Day Field Trip Loading Van Shuttles	King Life Science Parking Lot, by Palm Tree Container Garden
9:00 am	Half Day Field Trip Van Shuttles DEPARTURE	
Breakfast	Seminole Cafeteria	<i>Available starting at 10:00 am</i>
Saturday Dormitory Checkout (Laundry and Keys!)		By 11:00 am
Lunch	Seminole Cafeteria	<i>Available 12:00 – 2:30 pm</i>
1:30 pm	Half Day Field Trip RETURN	DeGraff Hall EAST
6:00 pm	All Day Field Trip RETURN	DeGraff Hall EAST
Dinner	Seminole Cafeteria	<i>Available 5:30 – 7:00 pm</i>
Sunday, 5/31/2026		
Airport Terminal Departures		<i>Available starting at 6:30 am</i>
Breakfast	Seminole Cafeteria	<i>Available starting at 10:00 am</i>
Sunday Dormitory Check Out (Laundry and Keys!)		By 11:00 am
So Long!!!		

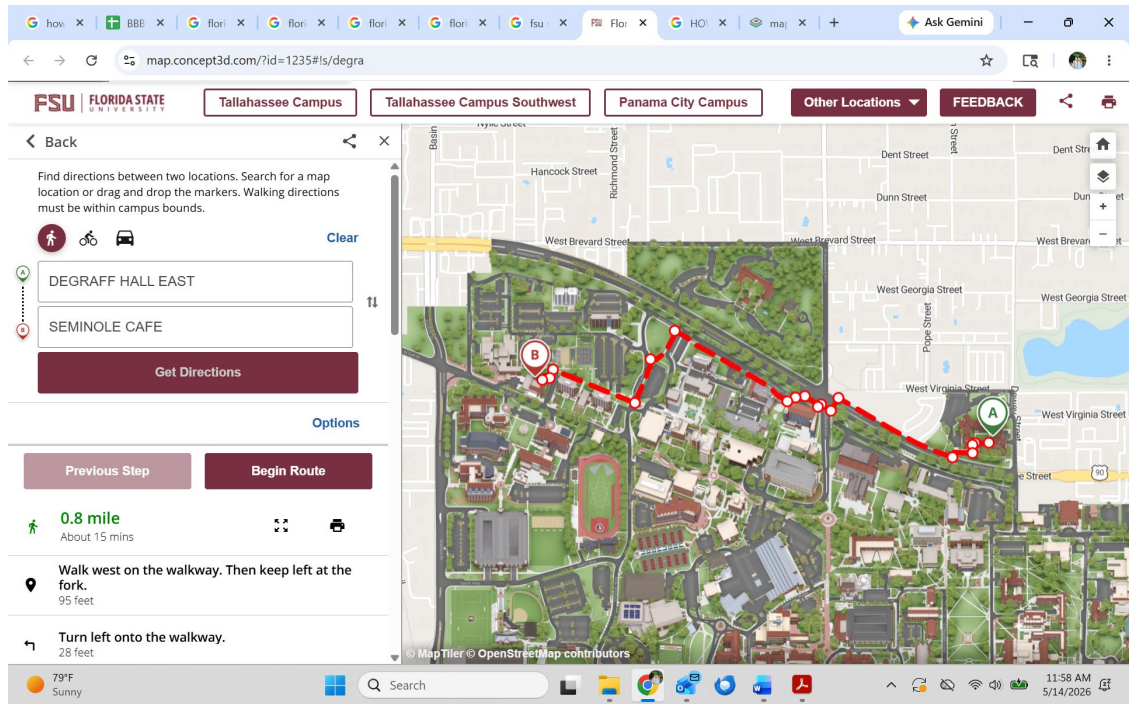
FSU CAMPUS MAP (<https://map.concept3d.com/?id=1235#!s/>)

You are on a large campus so plan ahead for where you need to be!!! Use this interactive map to plan your walking distances. Follow local Sigma Tau Chapter members to help you out. They will be the ones in Garnet and Gold. If you are totally lost – everyone is really friendly – ask a NOLE!

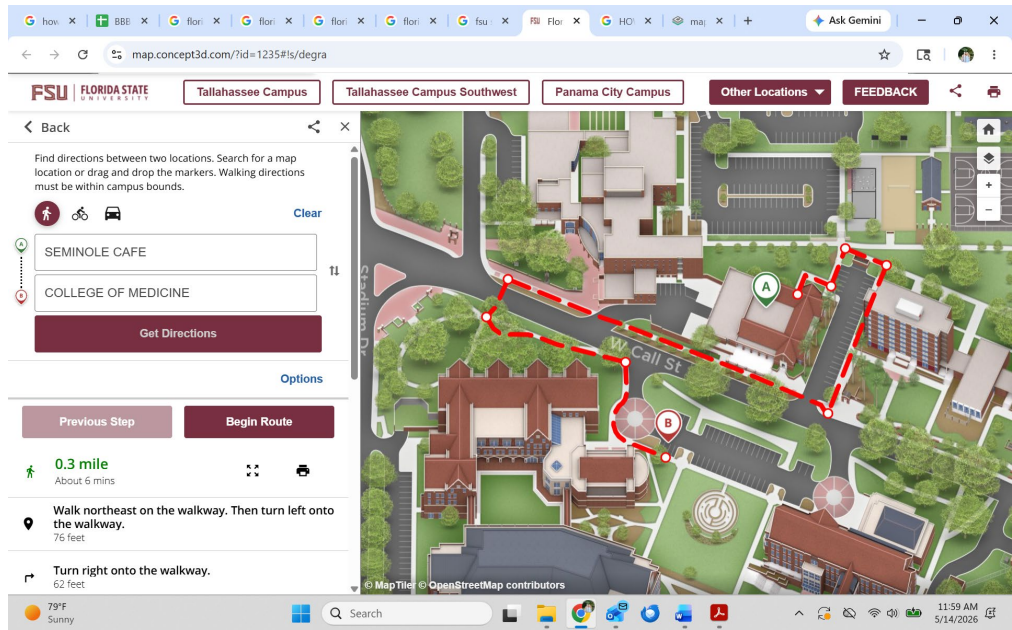
HOW DO I WALK FROM THE DORMITORY TO THE KING BIOLOGY BUILDING FOR THE OPENING NIGHT EVENTS or FOR FIELD TRIP PICK UP?



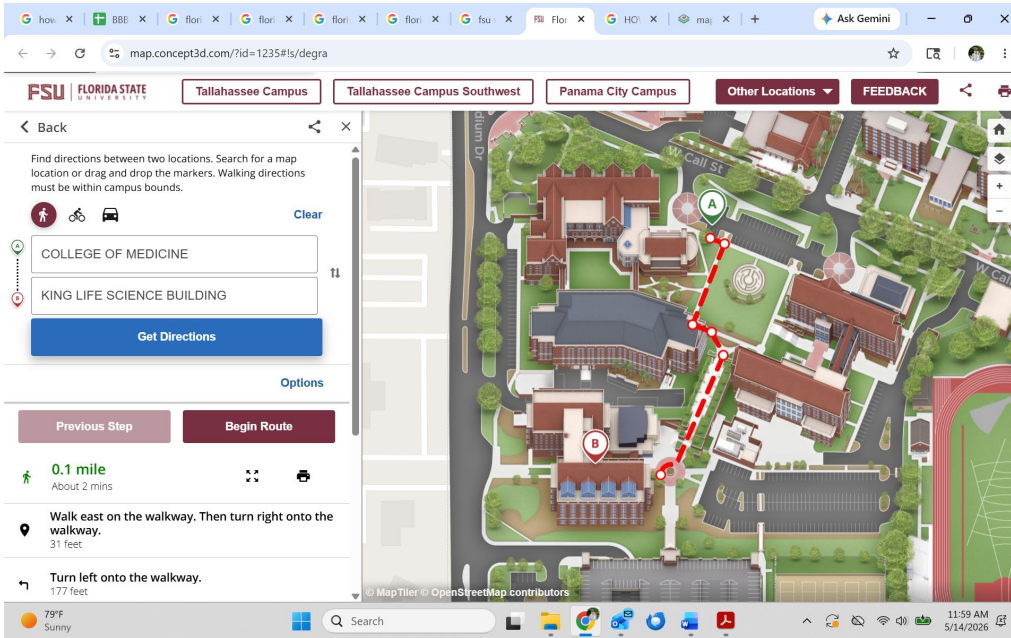
HOW DO I FIND THE DINING HALL FROM THE DORMITORY?



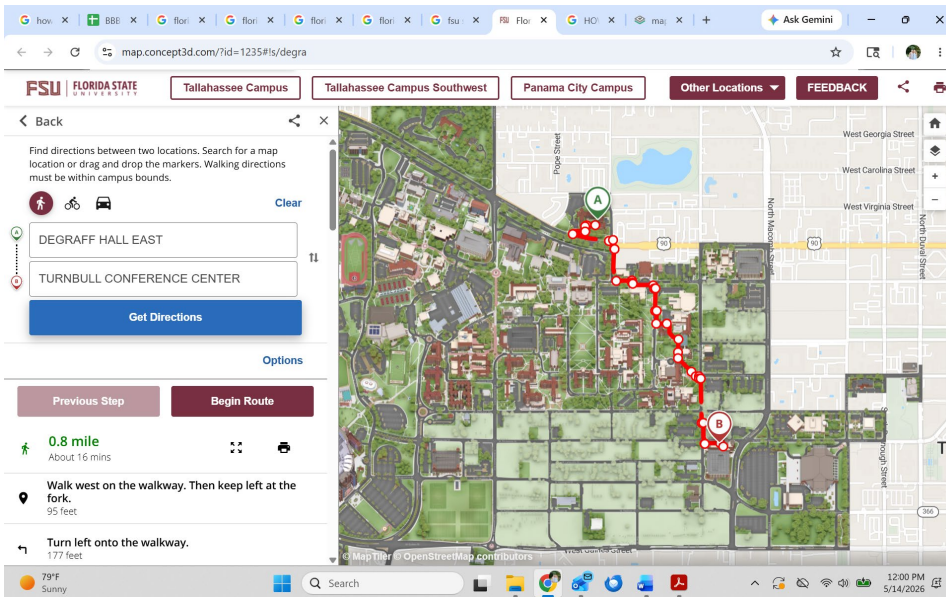
HOW DO I GET FROM THE DINING HALL TO THE ORAL PRESENTATIONS or THE POSTER PRESENTATIONS AT THE COLLEGE OF MEDICINE?



HOW DO I GET FROM THE ORAL PRESENTATIONS TO THE TABLED EVENTS IN THE BIOLOGY BUILDING?

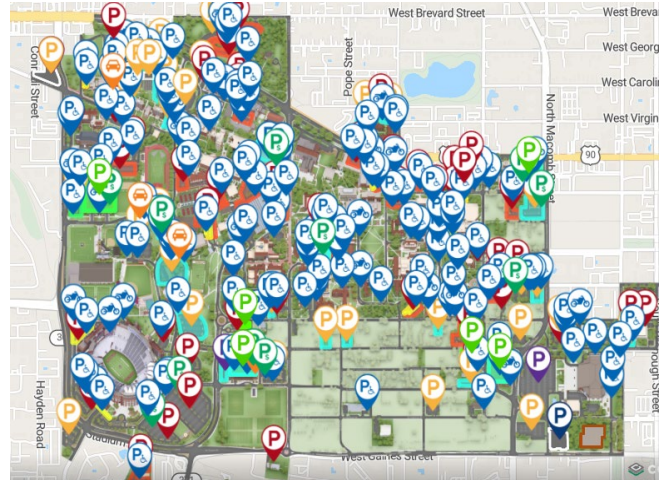


I AM ALL DRESSED UP FOR THE AWARDS BANQUET! HOW DO I GET TO THE TURNBULL FROM MY DORMITORY? (This is the longest walk so start at least 25-30 minutes early)

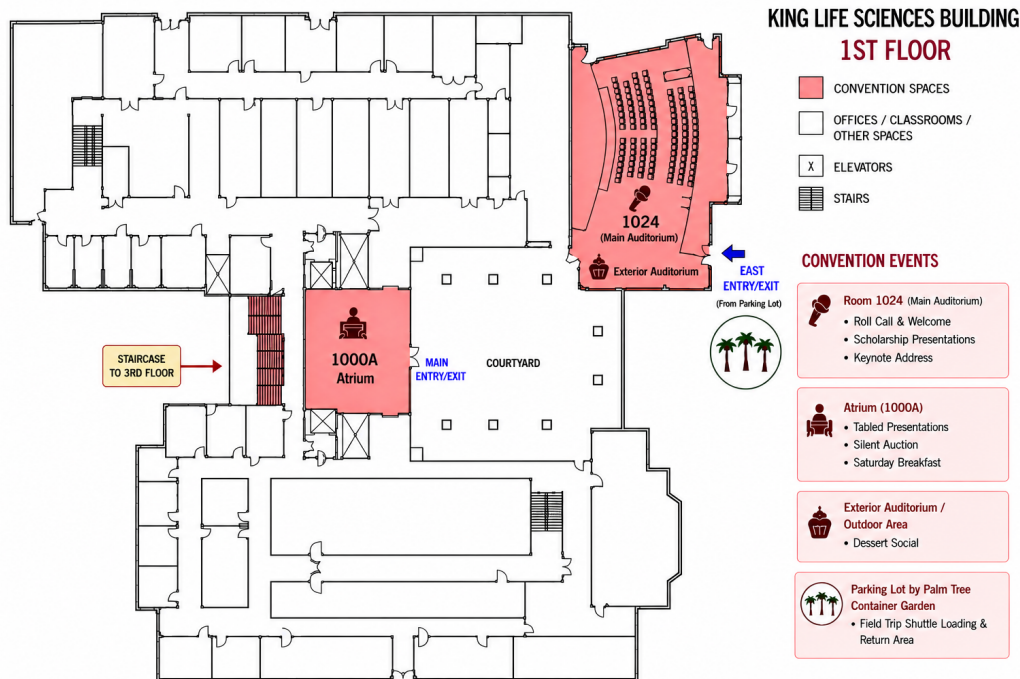


PARKING PLACES AROUND FSU (<https://transportation.fsu.edu/maps>) “NOT”

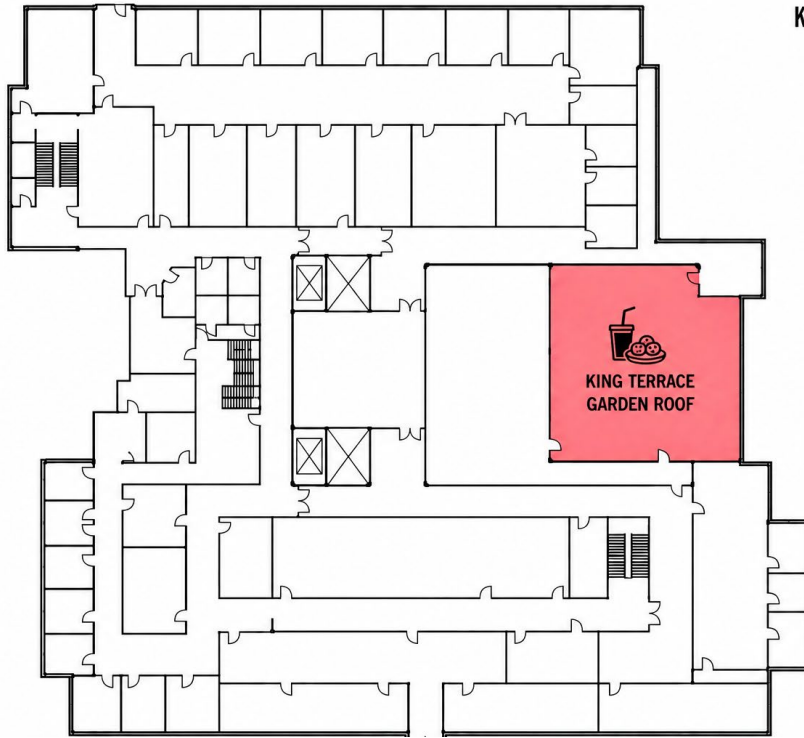
If you have driven to the conference, you will receive a parking pass for your overnight vehicle upon arrival to the Degraff Hall East Dormitory located at **808 W Tennessee St, Tallahassee, FL 32304**. As you can see from the map on the right, parking on campus can be the most challenging part of your visit to our campus. Because of this, we suggest that you park in a student or faculty designated lot with your pass clearly visible at a location closest to the dorms. After you have parked, we highly encourage you to leave your car parked for the duration of your visit and WALK through campus with others and guides from the Sigma Tau BBB Chapter!



KING Life Science building floor map (1st floor)



KING Life Science Building 3rd floor Map



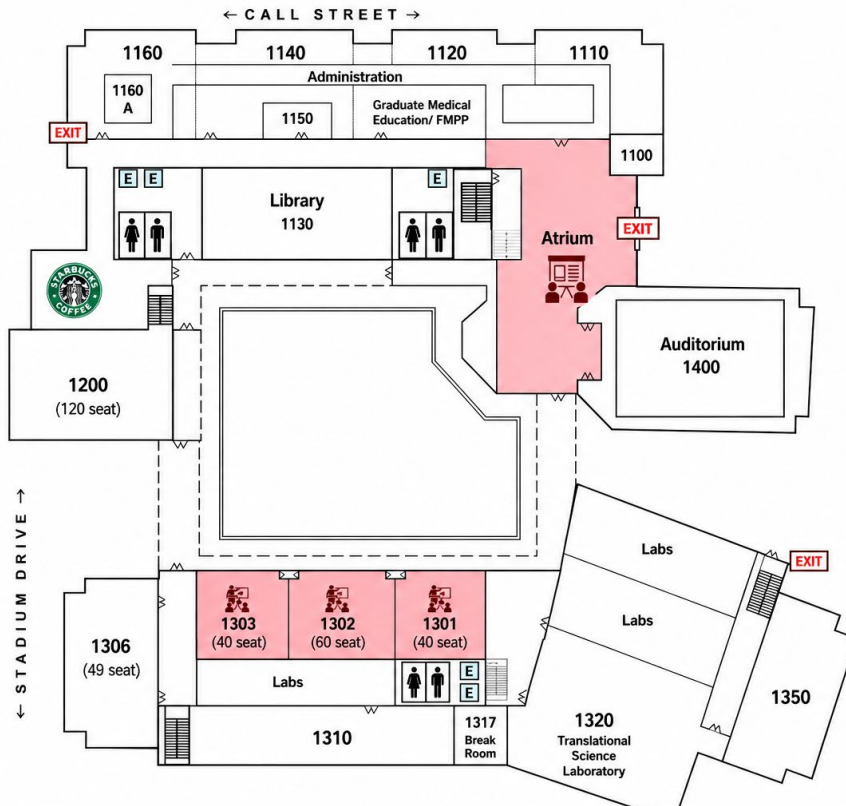
KING LIFE SCIENCES BUILDING 3RD FLOOR

- CONVENTION SPACES
- OFFICES / CLASSROOMS / OTHER SPACES
- X ELEVATORS
- STAIRS

CONVENTION EVENTS

KING TERRACE GARDEN ROOF
• Afternoon Refreshments

FSU College of Medicine - 1st Floor Map



FSU COLLEGE OF MEDICINE 1ST FLOOR

- CONVENTION SPACES
- OFFICES / CLASSROOMS / OTHER SPACES
- X ELEVATORS
- STAIRS
- ♂ ♀ RESTROOMS
- EXIT EXIT

CONVENTION VENUES

1301, 1302, 1303
• Oral Presentations

ATRIUM
• Poster Presentations

Thursday Evening's Keynote Speaker

Keynote Speaker: Gregory M. Erickson, Ph.D.

Distinguished University Professor Department of Biological Science Florida State University

Dr. Gregory Erickson is renowned for his expertise in dinosaur paleontology, crocodylian biology and participation in science documentaries. Greg's father was a professor of wildlife biology and he grew up assisting him in projects capturing and tracking bears and killer whales...along the way instilling his interest in animals (Unusual pets in his family included a baby polar bear named "Snowflake" [who had to go after tearing up their house!] and a bobcat named "Bobby"). As with many kids Greg was also interested in dinosaurs and initially set his sights on a career in paleontology but later was drawn towards aeronautical engineering. He enrolled at the University of Washington, ultimately receiving a degree in Geological Sciences. Along the way Greg took a course on dinosaurs with a mammalian paleontologist who invited him to participate in an expedition. The professor encouraged him to go to graduate school in paleontology, as his understanding of living animal biology and biomechanics were lacking from the field and felt he could advance the field. Greg did not immediately heed the sound advice and instead was employed for several years as a construction worker. Ultimately realizing this was not the life for him, he was accepted as a master's student in the lab of famed Montana State University paleontologist Jack Horner (The model for Alan Grant in Jurassic Park), where Greg helped consult in the making of the movie.

After taking a course in Comparative Vertebrate Anatomy Greg realized he had found his reconning, a field that encompassed his passions paleontology, animal biology and biomechanics. As such set his sights on being a comparative anatomist and learning everything that could be deciphered from just fossil bones and teeth. He subsequently received his Ph D. at UC Berkeley in Integrative Biology and conducted post-doctoral research in the Department of Biomechanical Engineering at Stanford University, and Ecology and Evolution at Brown University. In 2000 Greg joined the faculty in Biological Science at Florida State University.

During his tenure, Greg has published over 100 papers. Notable accomplishments include developing methods to determine dinosaur growth rates and how they achieved giantism (most notably *T. rex*) and showing dinosaurs were likely warm-blooded, measuring the bite forces of all 24 species of crocodylians (including Guinness records for the highest forces ever measured), co-naming of over a dozen dinosaurs and other fossil taxa, and discovery of a "Lost World of Arctic Dinosaurs" — The topic of the Tri-Beta lecture showing dinosaurs were not just warm weather creatures but rather were year-round polar denizens enduring months of snowbound, lightless winters.



Greg's accolades include Fellowship in the American Association for the Advancement of Science, membership in the IUCN Crocodylian Specialist Group, Distinguished Teaching Professorship at FSU and having the dinosaur *Glihades ericksoni* named after him. Greg is a strong advocate for the dissemination of science to the public making myriad presentations to k-12 and museum audiences and participation in over 175 science documentaries.

We are honored to welcome Dr. Gregory M. Erickson as the keynote speaker for the 2026

National Convention. His groundbreaking research has transformed scientific understanding of dinosaur growth, physiology, biomechanics, and behavior through the innovative use of bone histology and comparative anatomy. His work has helped reveal how dinosaurs grew, how quickly they matured, how they cared for their young, and even how powerful their bite forces may have been. He has also contributed to the discovery and description of numerous dinosaur species and has been featured in major science documentaries and publications focused on prehistoric life.

In his keynote lecture, *Ice Dinosaurs: The Lost World of the Paleo Arctic*, Dr. Erickson will take attendees into the remote Arctic regions of Alaska's North Slope, where his research team uncovered fossils of polar dinosaurs, birds, mammals, and fish that are reshaping our understanding of life in Earth's ancient Arctic ecosystems. Many of these species are entirely new to science and reveal extraordinary adaptations for surviving months of winter darkness, snowfall, and seasonally limited food resources.

Attendees will also have the unique opportunity to examine actual fossils brought by Dr. Erickson.



FIELD TRIP INFORMATION

Wakulla Springs State Park

Visit the largest freshwater spring in the world, pumping 60,000 gallons a minute. Now a Florida State Park, this property was first owned by Edward Ball and Family whose home is now a lodge welcoming guests that want to experience old Florida. The location is the site of early Hollywood filming *Tarzan's Secret Treasure* (1941) and *Creature from the Black Lagoon* (1954) – The former starred the Olympic swimmer Johnny Weismiller, and the later, an FSU film student that was brave enough to wear the costume with the gators! During the one-hour boat ride you will see animals in their natural habitat as other boats are not allowed in this undisturbed area of the river – alligators, manatee, birds, and giant cypress are abundant. After your ride you can enjoy swimming in the year-round 67 degrees water of the springhead or jump off the 10-meter platform that is a favorite of locals. There is an old-fashioned soda and ice cream bar and you can enjoy the historic hand-painted Spanish art on the ceiling of the lodge. As you drive in and out of the park, you will observe parcels that are part of the Loblolly pine restoration project.

BRING: bathing suit, towel, hat, sunscreen, comfortable shoes, water

ADA: is accessible for the boat ride and lodge

LEARN MORE:

<https://www.floridastateparks.org/WakullaSprings>

<https://www.floridastateparks.org/learn/habitat-restoration-progress>

Field Trip Times:

Friday AM (9am – 12pm)

Friday PM (1pm – 4pm)

Address: 465 Wakulla Park Drive, Wakulla Springs, FL 32327



Wacissa River (Blue Springs)

Enjoy your own wildlife adventure along this freshwater spring (Blue Springs) that stretches into a 15-mile river that is accessible by Kayak and Standup Board (SUP). You will get to observe mullet jumping, a host of birds, cypress and long-leaf pine along your journey. You will have 2 hours on the river to paddle approximately a 4-mile loop that contains a juncture to the springhead. You can try your hand at being a Floridian – climbing the trees and jumping off the rope swing – or you can just watch the locals! The depth of the springhead is around 50 feet, so you can swim or snorkel here in the crystal clear water.

BRING: bathing suit, towel, hat, sunscreen, water (optional: water shoes, snorkel/mask)

ADA: not designed for this

LEARN MORE: https://en.wikipedia.org/wiki/Wacissa_River

<https://www.wacissariverrentals.com/>

Field Trip Times:

Friday AM (9am – 12pm)

Friday PM (1pm – 4pm)

Address: Wacissa River Area,
Tallahassee, FL, 32344

National High-Field Magnetic Laboratory (MagLab)

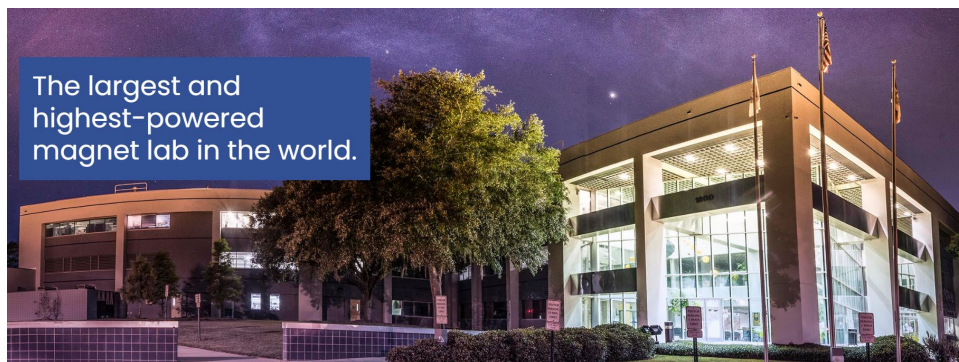
Visit our renowned physics laboratory that is a shared resource operated by Los Alamos Lab, University of Florida, and Florida State University, and sponsored by the National Science Foundation for over 35 years. You will see the strongest magnet in our country – over 60 tesla! – that is used to perform technically-challenging research that 1800 scientists (per year!) across the globe utilize and reserve time on these advanced instruments. Experimental equipment includes NMR, MRI, Pulsed Field, EMR, and DC Field. Specialty areas of FSU-based scientists include Geochemistry, Cryogenics, Condensed Matter, and a Center for Rare Earth Critical Minerals. You will have a 45-minute tour of this working laboratory by a scientist, followed by selection of one of 3 workshops to include – building an electromagnet, DC electricity, or superconductivity. If registered for this event, you will be provided background worksheets to assist with working knowledge of physical principles and magnets prior to your visit.

BRING: comfortable walking shoes

ADA: fully accommodated

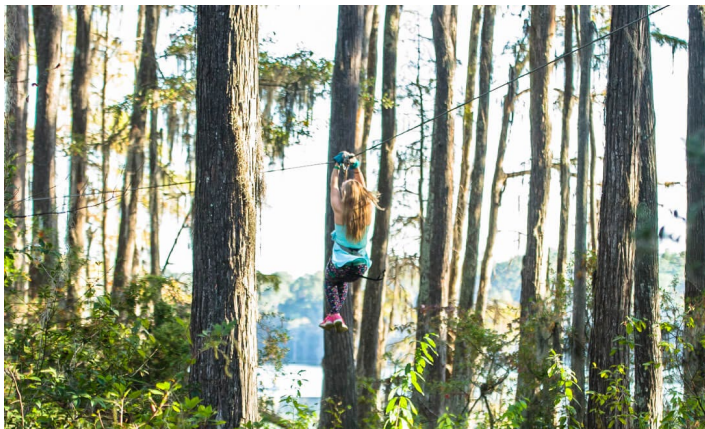
LEARN MORE: <https://nationalmaglab.org/><https://nationalmaglab.org/user-facilities/icr/research/science-highlights/whale-waste-improves-ocean-ecosystems/><https://nationalmaglab.org/user-facilities/dc-field/research/science-highlights/kagome-superconductor-quantum-materials/>**Trip Times:**

Friday PM (1pm – 4pm)

Address:
1800 East Paul Dirac Drive,
Tallahassee, FL 32310

Tallahassee Natural History Museum

This is not your typical museum of specimens – because it is 52 acres of outdoors and natural history! This tour accommodates those that would enjoy a leisurely stroll along boardwalks to observe red wolves, Florida panthers, reptiles, and flora along the swamp. You can also see outdoor exhibits related to Florida history and pioneer farming. OR...You can zip line over the swamp and enjoy the wildlife from the air in the museum's tree-to-tree adventure. Both groups will be able to learn about ongoing conservation efforts by the museum by a docent-lead discussion.



BRING: Comfortable shoes and clothing, water, sunscreen, hat; if zipping – braid your hair

ADA: fully accommodated for the boardwalk option and docent activity

LEARN MORE: <https://tallahasseeemuseum.org/>

Field Trip Times:

Friday PM (1pm – 4pm)

Address:

3945 Museum Drive

Tallahassee, FL 32310

Leon Sinks Geographical Area

The unique topography of this area is called a karst and is attributed to a limestone layer that gives way to the flowing water of the Florida aquifer and surrounding natural springs to create underground caverns, natural bridges, sink holes and tunnels. You will take a 2-3 mile hike along the swamps of the Apalachicola Forest to scope out the ecology and wildlife within the forest that includes tortoises, salamanders, hawks, eagles, and deer. The hike is flat and contains up to 9 sink holes of varying size, color, and depths.



LEARN MORE = <https://floridahikes.com/leon-sinks/>

BRING: Comfortable shoes and clothing, water, bug dope, sunscreen, hat, if available, America the Beautiful Park Pass

ADA: not designed for this, however there is an interpretive center that can be enjoyed here

Field Trip Times:

Saturday (9:30am – 1pm; stand-alone hike)

Saturday (9:30am, 4:30pm; part of longer tours)

Address

6605 Crawfordville Rd, Tallahassee, FL 32305

Panacea Marine Specimen Laboratory

This small aquarium in the sea-side town of Panacea was founded 60 years ago as a collaboration between Jack Rudloe, the author John Steinbeck, and commercial shrimpers as a means to supply marine animals to academic scientists, and to provide distribution of species that were not of value to the fishermen. The establishment of the laboratory is chronicled in the book, *"The Sea Brings Forth"*. Today the modest aquarium distributes specimens to over 30 institutions across the nation, retains specimens that require recovery, and provides an important local link for marine education. Over 50% of the tanks are designed for hands-on, so you will be able to roll up your sleeves to a host of marine invertebrates including sponges, echinoderms, and limulus that are abundant in our area. The Fiddler crab exhibit was recently renovated – also one of our favorites!

LEARN MORE = <https://gulfspecimen.org/>

ADA: fully accommodated

BRING: shoes that can be tied and can get really dirty (i.e. muck), sunscreen, sunglasses, hat, clothes that can get wet higher than your waist at times, water, an extra change of dry clothes

Field trip times:

Saturday Group 1 (10:30am-1:30am)

Saturday Group 2 (1:30 pm-4:30pm)

Address: 222 Clark Dr, Panacea, FL 32346



FSU Coastal and Marine Laboratory St. Teresa

Faculty from the Florida State University call the Coast and Marine Laboratory their scientific home at this extended campus of the university designed to facilitate research of the Gulf of Mexico, Apalachicola River, and bay system. Faculty have a wide-range of interests to include deep-sea, coastal, and near shore areas with an emphasis on conservation, management, and restoration. Special research areas include oyster reef ecology, human impacts on coral reefs, coastal & estuarine biogeochemistry, coastal & deep-sea sharks, and meiofauna ecology & biodiversity. On this field trip you will tour the coastal and marine laboratory to learn more of these ongoing research initiatives, will meet with research scientists to better understand the approaches of their projects, and then will go out on the Gulf in one of the research vessels of the laboratory to experience the habitat in which our marine laboratory is embedded.

For individuals that do not like to go out on open ocean, there are adjacent opportunities to tour the Carrabelle World War II Museum or picnic and rest at the Tate's Hell Conservation Area.

LEARN MORE = <https://marinelab.fsu.edu/>

ADA = not meant for this

BRING: old shoes that have a backstrap (ie. No flip flops, TEVAS, water socks, or crocs). Your feet will get wet.

Extra pair of clothes, lunch/snacks, Water bottle, Sunscreen, Hat and sunglasses, plastic bag for wet clothes.

PROVIDED: Sack lunch

Saturday Group 1 (9:30am-1:00am)
Saturday Group 2 (1:30pm-4:00pm)

Address:

3618 US-98, St Teresa, FL 32358

Carrabelle Crooked River Lighthouse & Museum

The Crooked River Lighthouse was constructed in 1895 to guide fishermen and oystermen through the pass between Dog and St. George Islands in the Panhandle. The top of the tower is red, while the bottom is white to offset the surrounding pine forest during the day. The tower was decommissioned in the late 1990s and is included on the National Registry of historic places. The Carrabelle Lighthouse Association maintains the tower that you can climb 103 feet to get a lovely view of the coastline and surrounding forest. You can view the original Fresnel lens fabricated in Paris, of a bi-valve open face design. There is a small associated nautical museum that retains the history of the keepers and everyday life of that era.

LEARN MORE = <https://www.crookedriverlighthouse.com/>



BRING: Comfortable shoes, sunscreen, hat, water, bug dope, small towel to picnic, and sun glasses (optional: book, binoculars, field guides, America the Beautiful Park Pass)

ADA: fully accommodated

PROVIDED: Sack lunch

Saturday Group 1 (9:00-9:30am)

Saturday Group 2 (3:30-4:00pm)

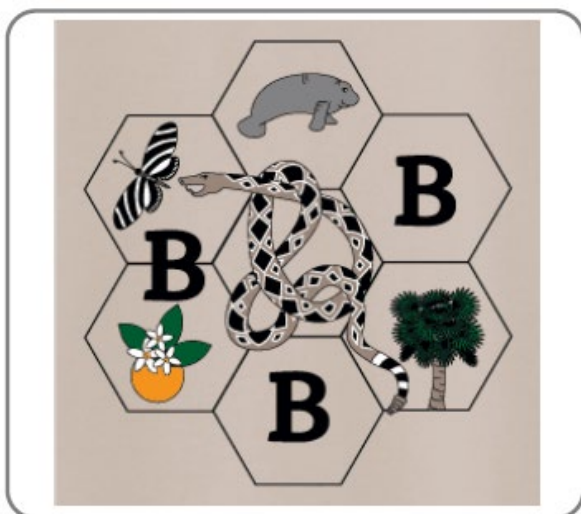
Address:

1975 Hwy 98 W, Carrabelle, FL 32322



CONVENTION LOGO AND COLOR OPTIONS

The convention shirt (available in sand, yellow, and light blue) was designed by Alexis Cox-Holmes, former BBB Student member and Convention 2022 attendee, who is currently a PhD Candidate in the laboratory of Dr. Braden McFarland in the Department of Cell, Developmental, and Integrative Biology at the University of Alabama, Birmingham. Her dissertation work is supported by a NIH Institutional Program in Brain Tumor Biology. In her design on the left, you can see the BBB key insignia with the coiled snake, which in this rendition is the eastern diamond back rattlesnake that is native to Florida. Highlighted is our beloved West Indian manatees that live in the springs that you might visit during the convention field trips. The official state butterfly of Florida is the Zebra Longwing (*Heliconius charithonia*) that you see pictured, which is common in gardens and our native hammocks alike. The official state tree of Florida is the Sabal Palm (*Sabal palmetto*), also known locally as the cabbage palm, which you should see in abundance if you tour on the Saturday coastal excursions because it is highly salt tolerant. And of course we are known as the “orange state” due to our citrus industry, pictured in bloom for the season of the convention. Thank you Alexis for your creativity!





BIOS Editor

Dr. Nancy Todd

BIOS@tribeta.org



www.tribeta.org/BIOS

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BIOS is the official peer-reviewed **journal of Beta Beta Beta Biological Honor Society** and has been published since 1930. Released quarterly in March, June, September, and December, the journal highlights biological research, scientific communication, and undergraduate scholarship across a wide range of biological disciplines.

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Reviewer



ORAL PRESENTATIONS

Oral presentations will be held at the FSU College of Medicine in rooms 1301 (Biomedical Sciences), 1302 (Molecular and Microbiology), and 1303 (Ecology, Environment, and Organismal) on Thursday morning from 9:00 AM to 12:00 PM during the 2026 National Convention at Florida State University. Presenters are encouraged to preload their talks to the presentation laptops on Wednesday evening at the desert social. Presentation rooms will open starting at 7:30 AM on Thursday morning, prior to the sessions, to allow presenters final time to upload their files and prepare for their talks.

To minimize disruptions, attendees are kindly asked to avoid entering or exiting a presentation room while a presentation is in progress. Audiences will only be allowed to quietly switch during the question and answer period between presentations.

Biomedical Sciences Room 1301 9:00 – 9:15 am		Welcome and Opening of Session
9:15 – 9:30 am	1	McKenzie Peurifoy and Dr. Carmony Hartwig; <u>Catawba College</u> , <i>Investigating the Mechanistic Effect of Heme on Artemisinin-induced Ferroptosis in MCF-7 Cancer Cells</i>
9:30 – 9:45 am	2	Pratt, C. and Russell, A.; <u>Hillsdale College</u> <i>Reduced Streptococcus mutans Biofilm Formation on Zirconia Compared to Titanium: The Role of Surface Roughness in Dental Implants</i>
9:45 – 10:00 am	3	Kear B , Brown E; <u>Florida State University</u> Regulation of gene expression in a Drosophila model of neurofibromatosis 1
10:00 – 10:15 am	4	Brito, J. , Daoud, A., O'Connor, T.; <u>North Park University</u> <i>The Role of CCL21 in Immune Surveillance of The Brain</i>
10:15 – 10:30 am	5	Adriani A , Megraw, T; <u>Florida State University</u> The ras signaling pathway controls the perinuclear microtubule-organizing center in fat body cells
10:30 – 10:45 am	6	Terzian S , Mejias A; <u>Christian Brothers University</u> <i>Impact of Virus and Bacteria Co-detection in children with severe Malaria</i>
10:45 – 11:00 am	7	Kallista Halatsis , Zoe Atherton, Carmen Varela; <u>Florida State University</u> Head Direction Cell Dynamics in Nonrapid Eye Movement Sleep During Memory Consolidation

11:00 – 11:15 am	8	Mercado-Hernández, A. , Rivera-Rodríguez, D., Cruz, M., Núñez-Reyes, R., Torres-Reveron, A., Appleyard, C.; <u>University of Puerto Rico at Ponce</u> <i>Environmental Enrichment Reduces Endometriosis Progression and Pain-Related Behaviors in an Animal Model via PPARγ-Independent Mechanisms</i>
11:15 – 11:30 am	9	Villarreal, K. , Jackson, C., Tasnim, F., Han, Y.; <u>University of Northern Colorado</u> <i>Dose-Dependent Cannabinoid Modulation of Hepatic Steatosis and Oxidative Stress in Metabolic Dysfunction Associated Steatotic Liver Disease</i>
11:30 – 11:45 am	10	Winborn R. , Jordan J; <u>Florida State University</u> <i>YBX1 post-transcriptionally regulates VNN1 to promote MASLD</i>
Molecular and Microbiology Room 1302 9:00 – 9:15 am		Welcome and Opening of Session
9:15 – 9:30 am	1	Aquino, A. , Benedict, A., Valencia, C., Buckner, B., Ganguly, C., Thomas, L., Rajan, R., Downs, D., Somalinga, V.; <u>Southwestern Oklahoma University</u> <i>Investigation of Streptococcus sanguinis Reactive intermediate Deaminase A (RidA): from crystal structure to bacterial physiology</i>
9:30 – 9:45 am	2	Boyle, C. , Swerdlow, S.; <u>University of Pittsburgh at Greensberg</u> <i>Isolating and Characterizing Mycobacterium Phage ZofJ Genes Relative to Cytotoxicity</i>
9:45 – 10:00 am	3	Mulvihill, H. , Chatterjee, K.; <u>Wittenberg University</u> <i>Examining tRNA Quality in Yeast Cells Under Oxidative Stress Conditions</i>
10:00 – 10:15 am	4	Nelson W. , Delghandi M; <u>Texas Wesleyan University</u> <i>Candidate Gene Analysis: Polymorphisms Within COMT, DAT1, & SERT1 and Their Predisposition to Attention Deficit Hyperactivity Disorder.</i>
10:15 – 10:30 am	5	Gantress N. , Murphy Z; <u>Saint John Fisher University</u> <i>Determining the Influence of Glyphosate on Erythropoiesis Using K562 Cells</i>
10:30 – 10:45 am	6	Hamraei N M. , Aiello D P; <u>Austin College</u> <i>Analyzing Whether Altered Activity of Pmc1p is Responsible for S. cerevisiae pgm2Δ mutant phenotypes</i>
10:45 – 11:00 am	7	DePaul, D. , Crookston, J. , Johnson, M; <u>University of Pittsburgh at Greenburg</u> <i>Nuclear Receptor Interactions with JAZF1/SUZ12</i>

11:00 – 11:15 am	8	Streng, K. , Flores-Mireles, M.; <u>University of Notre Dame</u> <i>Investigating SprE-Mediated Immune Evasion in Enterococcus faecalis: Implications for Catheter-associated Urinary Tract Infections</i>
11:15 – 11:30 am	9	Kannankeril, R. , Thierfelder, W.; <u>Union University</u> <i>Impact of Amyloid-Beta Fibrils on Gene Expression of Microglial Ion Channels</i>
Ecology, Environment, Organismal Room 1303 9:00 – 9:15 am		Welcome and Opening of Session
9:15 – 9:30 am	1	Payne E , Pytel A; <u>Hillsdale College</u> <i>The Effects of Roundup on Motility and Shelter Utilization in Crayfish <u>Faxonius virilis</u></i>
9:30 – 9:45 am	2	Guajardo E , Boothe J; <u>University of Pittsburgh at Greensburg</u> <i>Various Potential Stimulants and Their Effects on Lipid Accumulation in <u>Microchloropsis salina</u> for Biofuel Production</i>
9:45 – 10:00 am	3	Stanfield, Z.L. , Ammerman, L.K., Dixon, M.T.; <u>Angelo State University</u> <i>Investigating the Benefits of Invasive Species for Native Species: The Dietary Relationship Between the Texas Map Turtle and Zebra Mussels</i>
10:00 – 10:15 am	4	Rosario Santiago, J. , Rodríguez Velázquez, A., Santos López, Y.; <u>University of Puerto Rico, Cayey</u> <i>Occurrence of Microplastics in Rocky Shore Chitons from Contrasting Anthropogenic Zones in Puerto Rico</i>
10:15 – 10:30 am	5	Powell, A. , Perez, J., Henning, J.; <u>University of South Alabama</u> <i>Ghost Crabs Take the Spotlight: Ambient Artificial Light Pollutions' effect on Atlantic Ghost Crabs (<u>Ocypode quadrata</u>)</i>
10:30 – 10:45 am	6	Kealey Skinner , Jeremiah Henning; <u>University of South Alabama</u> <i>Bottles, Butterflies, & Biomass: Recycled Glass Sand, Microbial Additions, and Herbivory Effects on <u>Asclepias incarnata</u> Growth.</i>
10:45 – 11:00 am	7	Thomas, B., Scoville, G. , Rhodes, M.; <u>Saint Vincent College</u> <i>Effects of the Lunar Cycle and Oxytocin on the Hormonal Stress Responses, Anxious Behaviors, and Weight Changes of Male and Female Mice</i>
11:00 – 11:15 am	8	Nguyen M , Ezin M; <u>Loyola Marymount University</u> <i>Role of Serotonin Receptor 2B in Heart and Cardiac Valve Development</i>
11:15 – 11:30 am	9	Oladiran, A. , Abreu,E.; <u>Angelo State University</u> <i>Unravelling the Diversity of Nonvolant Small Mammals along the Purus River, Central Brazilian Amazonia, Through Field Work and DNA Barcoding</i>
11:30 – 11:45 am	10	Campbell T , Campbell D; <u>Gardner-Webb University</u> <i>On The Taxonomy of <u>Didianema</u> (Gastropoda: <u>Vetigastropoda: Skeneidae s. l.</u>)</i>

11:45 – 12:00 pm	11	Summers E , Perez J; <u>University of South Alabama</u> <i>Testing the role of thyroid hormone signaling in aseasonal breeders using zebra finches (<u>Taeniopygia guttata</u>) as a model.</i>
12:00 – 12:15 pm	12	Aparicio Z , Zinna R; <u>Mars Hill University</u> <i>Effects of tribromophenol (TBP) on gordian worm (<u>Paragordius varius</u>) larvae viability</i>

PRESENTATION SCHEDULES

Poster presentations will be held on Thursday afternoon from 1:00 PM – 4:00 PM in the FSU College of Medicine Atrium. All posters should be fully mounted no later than 8:45 AM in the morning and will be displayed all day. In parallel to the poster session, there will be tabled exhibitors (companies and graduate programs), silent auction, and presentations concerning the graduate application process and the Fulbright scholarship program. The tabled programs will be in adjacent, KING Life Science Building Atrium from 2 to 5:00 PM, with a refreshment break on the 3rd floor roof garden, which is our local BBB picnic and succulent garden.

Poster Presenters are expected to remain with their posters throughout the judging session (until 4:00 PM) unless otherwise instructed by convention staff or judges. Mounting clips and presentation materials needed to secure posters to the display boards will be provided onsite.

Biomedical Science – Group 1

Poster #1	Smith, H. , Singh, S., Hartwig, C.; <u>Catawba College</u> <i>Impact of Cortisol on the Chemotherapeutic Effectiveness of Cisplatin in MCF-7 Breast Cancer Cells.</i>
Poster #2	Park, R. , Connor, M.; <u>Colorado Mesa University</u> <i>A severe case of spina bifida in the Donated Human Skeleton Collection at the Forensic Investigation Research Station</i>
Poster #3	Andrade, S. , Majid, D., and Abbas, H.; <u>Houston Christian University</u> <i>Efficacy of Venetoclax in Acute Myeloid Leukemia Cell Lines and Primary Patient Sample</i>
Poster #4	Boyd E. , Burns P., Haughian J.; <u>University of Northern Colorado</u> <i>Incorporation of Omega-3 Fatty Acids from Fish Meal Supplemented to Cows into Cultured Luteal Cells</i>
Poster #5	Navarro M. , Hsu A.1, Chauv L, Kurian N, A Thomas, Raghavan A, Qiao N, Peng S, Sukhumalchandra P, St John L, Osilesi O, Vedia R, Kopetz S, Lu S, Morelli M, Alatrash G.; <u>Houston Christian College</u> <i>Enhancing Tumor Targeting in Colorectal Carcinoma with Fucosylated TIL</i>
Poster #6	Giraldo, S. , Rushing, A.; <u>Catawba College</u> <i>The Human T-cell Leukemia Virus (HTLV) basic leucine zipper factor (HBZ) contributes to the dysregulation of the pro-cancerous polyamine biosynthesis pathway</i>
Poster #7	Kyleena J. Lathram, Adam L. Weaver, Ruth Fabian-Fine; <u>Saint Michael's College</u> <i>Giant spider neurons uncover a myelin-derived waste-internalizing canal system that fails in neurodegeneration</i>

Poster #8	Duong L, Kong A; <u>University of California Irvine</u> <i>Comparison of injury severity and clinical outcomes between manual bicycles and electric bicycles and electric micromobility devices</i>
Poster #9	Nesterovitch, N., Yakobovich, R., Nguyen, N., Minond, D.; <u>Nova Southeastern University</u> <i>Immunomodulatory Mechanism of Actions: Effects of Compounds 2155-14 and 2155-18 on cGAS and TBK-1 Levels in the WM-266-4 Melanoma Cell Line</i>
Poster #10	Jacob M. Trainor, Deirdre M. McCarthy, Mia X. Trupiano, Pradeep G. Bhide; <u>Florida State University</u> <i>Biphasic Developmental Effects of Early-Life Nicotine Exposure on Striatal Parvalbumin Neurons</i>
Poster #11	Harrell M, Winborn R, Zhao J, Samuels P, and Jordan J; <u>Florida State University</u> <i>YBX1 post-transcriptionally regulates ABHD2 to promote MASLD</i>
Poster #12	Baquie A, Rushing A; <u>Catawba College</u> <i>Examining the anticancer activity of the Soursop (<u>Annona muricata</u>) bioactive component of gallic acid in pancreatic cancer</i>
Poster #13	Elijah Pierre Paul, Paul Zhou C; <u>Mercy University</u> <i>H101K & H101S Mutation Improves Predicted Stability and Protein Recovery of β-glucosidase B in a Bacterial Expression System</i>
Poster #14	Mpoungui Mpambou, AV, Chun Z; <u>Mercy University</u> <i>Mutagenesis and protein expression of bacterial enzyme</i>
Poster #15	Charles A, Zhou C; <u>Mercy University</u> <i>Navigating the Landscape of DNA mutations Through the D2D Project</i>

Molecular and Microbiology – Group 2

Poster #16	Santiago-Martell, J., Veray-Vélez, C., Rodríguez-Mártir, K. Ph.D.; <u>University of Puerto Rico Aguadilla</u> <i>Antibacterial Activity of Annona muricata: Tissue-Specific and Fertilization Effects</i>
Poster #17	Pérez-González, A., Rodríguez-Mártir, K., Ph.D.; <u>University of Puerto Rico Aguadilla</u> <i>Tissue-Specific Antibacterial Activity of Puerto Rican Persea americana Extracts</i>
Poster #18	Warren, E., Ladowitz, P., Kopyar, S., Fromuth, D., Collavo, E., McCormick, J.; <u>Duquesne University</u> <i>Do Mutations in a Gene Encoding a Nucleoid-Associated Protein Suppress a Defect in Cell Division in a Filamentous Soil Bacterium?</i>
Poster #19	Vargas-Méndez, K., Torres, C., Sonera-Román, Y., Aldarondo-Medina, K., Delrosario-Lorenzo, M., López-Roldán, G., Ramos-Santiago, P., Román-Morales, E., Ph.D., Areizaga-Martínez, H., Ph.D.; <u>University of Puerto Rico at Aguadilla</u> <i>Targeting Coffee Fruit Rot: Antifungal activity of <u>Bacillus atropheus</u> against <u>Fusarium spp.</u></i>
Poster #20	Mahabir, N., Izquierdo, J.; <u>Hofstra University</u> <i>Better Together? Evaluating interactions between <u>Sphingobium sp. AEW4</u> and <u>Herbaspirillum sp. SJZ99</u> in co-culture as a potential wheat biofertilizer</i>

Poster #22	Granata D. , Wallace, N., Van Tyne D.; <u>University of Pittsburgh at Greensburg</u> <i>Discovery and characterization of novel bacteriophages targeting Acinetobacter baumannii patient isolates</i>
Poster #23	Tomasino, B. , Boyle C., Swerdlow, S.; <u>University of Pittsburgh at Greensburg</u> <i>Superinfection Study on Novel Arthrobacter globiformis Lysogen Isolated from Arthrobacter Phage DreamEater</i>
Poster #24	Bagwell B , Maze T; <u>Lander University</u> <i>The Effect of Intermittent Fasting on PINK1/Parkin Pathway and Mitophagy</i>
Poster #25	Aryal S , Witalison E; <u>Catawba College</u> <i>From Ecology to Pharmacology; Antibiotic Discovery from Soil Bacteria</i>
Poster #26	Noble J , Witalison E; <u>Catawba College</u> <i>Biochemical analysis of the microbiome and proteome of dog saliva</i>
Poster #27	Diosdado P , Delghandi M; <u>Texas Wesleyan University</u> <i>Examining the association of COMT (rs4680) polymorphism and chronic stress in college students</i>
Poster #28	Jones A , Berman K; <u>Westfield State University</u> <i>Impact of LPS Priming and Hyperglycemic Conditions on Inflammatory Cytokine Secretion in THP-1 Macrophages</i>
Poster #29	Gill K , Crowder R; <u>Stetson University</u> <i>Peperomia obtusifolia Blue Light Exposure Does Not Increase Plant Anticancer Properties.</i>
Poster #30	Guevara, B. , López, S., Olivo, B., Zenón, C., Martir, M., Chardon, G., Caraballo, E.; <u>University of Puerto Rico – Aguadilla</u> <i>Investigating the Effects of Escherichia coli Secreted Factors on Colorectal Cancer Cell Lines</i>
Poster #31	Carlson, S. , Vincis, R., Odegaard, KE.; Florida State University Investigating neural connections between the mouse gustatory cortex and mediodorsal thalamus.
Poster #32	González-Hernández, A. , Velázquez-Rivera, L., Meléndez-Calderón, J., Rodríguez-Rivera, M., Colón-Rodríguez, E., Dorta-Estremera, S.; University of Puerto Rico Effects of Broad-Spectrum Antibiotics on the Tumor Microenvironment in HPV-positive Oropharyngeal Cancer
Poster #33	Al-Shihabi N , Dadkah S; Stetson University RNA-Seq Analysis of JAK/STAT Inhibition During Spermatid Individualization in Drosophila melanogaster
Poster #34	Carter, S. , Snyder, A. B., Sengupta, A., & Karen, K.; Georgia College and State University Biosynthesis of Fluorescent Pterins in Millipede Cherokia georgiana
Poster #35	Bevan P , Groh S; Delta State University Optimizing Detection of of Sarcospan ing 3T3-L1 Adipocytes: Preliminary Evaluation of Antibody Performance and Membrane Protein Solubilization
Poster #36	Robison S , Durkin E; <u>University of Tampa</u> <i>Detection of Toxoplasma gondii Using REP529 and Its Association with Fecal Glucocorticoid Immunoreactivity in Felis catus</i>
Poster #37	Condor da Silva I , Smith J; <u>Stetson University</u> <i>Investigating the Presence of FAST Proteins in Saccharomyces cerevisiae</i>

Poster #38	Humphries K , Jurgenson C; <u>Delta State University</u> <i>Structural Studies of the Biosynthetic Enzyme Tetraberberine Oxidase</i>
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Ecology, Environment, and Organismal – Group 3

Poster #39	Roberts, Luke & Rushing, Amanda; <u>Catawba College</u> <i>Examining the Diversity and Protective Functions of the Salamander Microbiota</i>
Poster #40	Stark I. , Wyse S. , and Dykstra, A.; <u>Bethel University</u> <i>Assessing the Long-Term Impact of Goat Grazing on the Abundance of <u>Rhamnus cathartica</u></i>
Poster #41	Bruce, J. , Luciani, P., McKee, R.; <u>Mercer University</u> <i>A Baseline Assessment for Mammalian Diversity at the Mercer University Observatory and Field Station</i>
Poster #42	Kovach, A. , Baker-Brosh, K.; <u>Bethany College</u> <i>Using eDNA Analysis to Determine if Eastern Hellbenders (<u>Cryptobranchus alleganiensis alleganiensis</u>) Utilize the Tributaries of a Stream in Northern West Virginia</i>
Poster #43	Hon, B. , Tedesco, S. (Advisor), Zacate, S. (Advisor); <u>Thomas Moore University</u> <i>Comparison of gram positive bacteria present in different growing conditions on a former archaeological excavation site.</i>
Poster #44	Posadas, C. , Egesi, J., Alegria, I., Gallardo, K.; <u>Houston Christian University</u> <i>Difference in Anthocyanin Expression in Hydroponics vs. Soil-Based Agriculture Under Light and Temperature Stressors</i>
Poster #45	Carballo N , Alvarez R; <u>Dominican University New York</u> <i>Biodiversity Study in Rockland County, New York</i>
Poster #46	Gray, C. , Haley, H.M., and Locklear, J.; <u>University of Mount Olive</u> <i>Seasonal Shifts in White-Tailed Deer (<u>Odocoileus virginianus</u>) Density During the Rut: A Comparison of Agricultural Fields and Bait Sites in Southeastern North Carolina</i>
Poster #47	Nichols, H. & Frost, L.; <u>University of South Alabama</u> <i>Is it Hybridization? Investigating Polyploidy in <u>Stuckenia</u> (<u>Potamogetonaceae</u>).</i>
Poster #48	Taylor M , Long O; <u>University of Pittsburgh at Greensburg</u> <i>Effects of Lithium Chloride and Mithramycin in <u>C. elegans</u>; Potential Therapeutic Treatments for Huntington's Disease</i>
Poster #49	Byrne K , James A; <u>University of Northern Colorado</u> <i>Effects of Cytochalasin D on zebrafish craniofacial development</i>
Poster #50	Farley, C. , Corbin, O., Draper, K., Saul, M.; <u>St John Fisher University</u> <i>Effects of Variable Isolation Stress on Compulsive-Like Behaviors in Male Sprague-Dawley Rats</i>
Poster #51	Sieja, D. , Thompson, E., Barnett, A.; <u>DeSales University</u> <i>Exploring the Evolution of Arachnid Appendages through Embryonic Gene Expression in the Mite <u>Archegozetes longisetosus</u></i>
Poster #52	Gzybowski E ; <u>University of South Alabama</u> <i>Snakes in the system; Resolving relationships within the Black-tailed Rattlesnake Species Complex</i>

Poster #53	Schultz, K. , Darrow, K., Brown, E.; <u>Florida State University</u> <i>Arc1 functions in insulin producing cells to regulate sleep and metabolic rate in Drosophila</i>
Poster #54	Thompson, J.C. , Salvador, E.M, Cushing, S.D, Alday, L.J, Davis, C.A, Moseley, S.C, Stimmell, A.C, Schatschneider, C, Wilber, A.A; <u>Florida State University</u> <i>40Hz rescues cortico-hippocampal coupling in Alzheimer's Disease</i>
Poster #55	Nichols, H. & Frost, L.; <u>University of South Alabama</u> <i>Is it Hybridization? Investigating Polyploidy in Stuckenia (Potamogetonaceae).</i>
Poster #56	Ezzeddine, R. , Pascua, Q., Parker, E., Nakamura, K., Yoshimoto, M., Matsuoka, K., Abe, T., Kuwagata, T., Hasegawa, T., Chen, C. Epsilon Gamma, <u>Azusa Pacific University</u> . <i>The Effects of Alternative Irrigation Treatments on Soil Matric Potential in a Lowland Rice Paddy System.</i>

ABSTRACTS

Abstracts are listed in alphabetical order by the last name of the primary author.

Adriani, A., Megraw, T. Sigma Tau, Florida State University.

ORAL PRESENTATION – BIOMEDICAL SCIENCES, Room 1301, 10:15-10:30 am

The ras signaling pathway controls the perinuclear microtubule-organizing center in fat body cells.

Microtubule organization centers (MTOCs) are integral to the regulation of intracellular trafficking, organelle positioning, and overall cell structure. MTOCs are extremely varied in their cellular location and molecular composition to serve the diverse needs of different cell types. With limited knowledge of these MTOCs, their investigation remains an important frontier in cell biology. We discovered a novel perinuclear noncentrosomal MTOC (ncMTOC) in fat body cells of *Drosophila melanogaster*. Further investigation revealed the Ras pathway as responsible for the development and regulation of this ncMTOC. The Ras pathway or the Ras oncogene is a signaling pathway crucial to the proper regulation of proliferation and differentiation of the cell. Ras mutations are one of the most common mutations associated with cancer, therefore proper global understanding of this signaling pathway is imperative to further innovation in addressing cancer as a disease. In this project we probed larval fat body tissues to further investigate the proteins in the Ras pathway that are critical for the regulation of the ncMTOC. Utilizing genetic manipulation and fluorescence imaging we assess how the various protein components of Ras impact ncMTOC formation. We aim to discern all components of the central and branching Ras pathway that regulate the ncMTOC.

This work was funded by a grant from the NIH and Tri-Beta.

Al-Shihabi, N., Dadkhah, S. Beta Xi, Stetson University

POSTER PRESENTATION – MOLECULAR AND MICROBIOLOGY, POSTER #33

RNA-seq Analysis of JAK/STAT inhibition during spermatid individualization in Drosophila melanogaster

Spermiogenesis in *Drosophila melanogaster* provides a powerful model for studying the molecular mechanisms of sperm maturation and soma-germline communication. Spermiogenesis in *Drosophila melanogaster* provides a powerful model for studying the molecular mechanisms of sperm maturation and soma-germline communication. The terminal step of *Drosophila* spermiogenesis is individualization, where actin-based individualization complexes (ICs) migrate along interconnected spermatid bundles to remove cytoplasmic bridges and produce individual sperm. Individualization requires JAK/STAT signaling in somatic cyst cells, but the underlying signaling mechanisms of this process remain incompletely defined. A previous RNA-Seq study has identified 336 genes that were significantly downregulated in the absence of JAK/STAT pathway in the somatic cyst cells. My research investigated the possible roles of these candidate genes in regulating individualization and soma-germline interactions. To do this, I analyzed the functional and regulatory features of the 336 candidate genes by performing gene ontology (GO) analysis utilizing DAVID, PANTHER, and then integrated these results with STAT92E binding-site proximity. This study revealed that the downregulated gene set was significantly enriched for functional categories related to membrane localization and cell fate commitment, suggesting that JAK/STAT signaling in somatic cyst cells may regulate genes involved in membrane-associated processes and developmental regulation during individualization. These findings enabled the prioritization of a subset of candidate genes for further functional analysis using gene knockdown approaches to determine their roles in individualization.

Andrade, S., Majid, D., Abbas, H., Iota Omicron, Houston Christian University.

POSTER PRESENTATION – BIOMEDICAL SCIENCES, POSTER #3

Efficacy of Venetoclax in Acute Myeloid Leukemia Cell Lines and Primary Patient Sample.

Acute Myeloid Leukemia (AML) is a hematological malignancy that causes an overproduction of immature myeloid cells in the bone marrow and blood. Venetoclax (VEN) is a therapeutic used to treat AML by binding to the anti-apoptotic protein BCL-2, triggering apoptosis. The aim of this project was to evaluate the efficacy of VEN inducing apoptosis in AML cell lines and a primary patient sample. VEN efficacy was evaluated in AML cell lines MOLM13 and NOMO1 using Vi-Cell and Cell Titer Glo. Annexin-V/PI was performed to evaluate cytotoxicity of VEN in NOMO1 cell line. Peripheral blood mononuclear cells were isolated from whole blood sample using FICOL. 5,000nM VEN treatment reduced cell population by over half in the VEN resistant cell line NOMO1, as it induced early and late apoptosis. VEN (25-100 nM) treatment did not effectively induce cell death in the primary patient sample. Certain AML cell lines, such as MOLM13, are sensitive to VEN while others like NOMO1 are resistant. Additionally, AML primary patient samples can show varying sensitivity to VEN depending on their mutations and/or cytogenetics. Due to the possibility of resistance and poor prognosis in AML, there is a dire need of more therapeutics that can effectively target AML.

Funding provided by CPRIT Training Program, Physician Scientist Training Program, and NSF Grant #1953667.

Aparicio, Z., Zinna, R., and Soper Gorden, N., Kappa Beta Alpha, Mars Hill University.

ORAL PRESENTATION -- ECOLOGY, ENVIRONMENT, AND ORGANISMAL, Room 1303, 12:00-12:15 pm

Effects of tribromophenol (TBP) on gordian worm (Paragordius varius) larvae viability.

The Southern Appalachia region experienced a devastating flood due to Hurricane Helene, with flood waters reaching heights up to 27 feet carrying an abundance of homes, debris, and pollutants. Rivers and streams like the French Broad are home to diverse freshwater ecosystems that flow directly beside towns that had been completely muddied over with toxins carried in by the storm. Many organisms interact to contribute to the ecosystem, including parasitic species. *Paragordius varius* are free living parasites known as gordian worms that infect aquatic and terrestrial invertebrates. Free-living parasites such as gordian worms can be sensitive to changes in water quality, making them suitable for testing pollutants. 2,4,6-tribromophenol (TBP), an organic compound used as intermediates for flame-resistant materials like fungicides and wood preservation, was a pollutant found in waterways following the storm. This experiment tests two different TBP concentrations on viability of *P. varius*. Viability includes larval attachment to their intermediate hosts *Physa acuta*. After treated *P. varius* were exposed to hosts with .53ug TBP for 48 hours, infection was observed. Although infection rate and structure between control and treatment were not statistically significant, there were observable differences between larva and cyst attachment development in treated groups. This study aims to present effects of the TBP pollutant found in post-storm water samples on aquatic free-living parasites and may also extend to other aquatic or terrestrial organisms.

Funding provided by Tribeta & Randolph Research.

Aquino, A., Benedict, A., Valencia, C., Buckner, B., Ganguly, C., Thomas, L., Rajan, R., Downs, D., Somalinga, V. Delta Sigma, Southwestern Oklahoma State University, University of Georgia, University of Oklahoma.

ORAL PRESENTATION – MOLECULAR AND MICROBIOLOGY, Room 1302, 9:15-9:30 am

Investigation of Streptococcus sanguinis Reactive Intermediate Deaminase A (RidA): from crystal structure to bacterial physiology.

Streptococcus sanguinis is a member of the oral microbiome in humans. Although considered harmless, this bacterium is an opportunistic pathogen capable of causing subacute infective endocarditis in susceptible individuals. Previous studies have explored the virulence factors that allow this bacterium to cause infection, but the pathometabolism of this bacterium is still relatively unknown. Based on previous studies in other pathogens, amino acid metabolism and its associated enzymes such as reactive intermediate deaminase A (RidA) may be important for *S. sanguinis* during endocardial growth. RidA has been shown to catalyze the neutralization of toxic enamine/imine intermediates, namely 2-amino acrylate (2AA), produced during amino acid catabolism. This led us to investigate the structure and function of RidA in *S. sanguinis*. BLAST analysis was used to identify a RidA homolog in *S. sanguinis* (SSA_0809). Biochemical analysis of SSA_0809, hereafter SsRidA, revealed that this protein is capable of enamine/imine hydrolysis to non-toxic keto products. To better understand SsRidA's catalytic mechanism, apoenzyme structure of SsRidA was solved at 2.0 Å resolution using X-ray crystallography. To characterize the physiological role of RidA in *S. sanguinis*, a deletion construct was made using fusion-PCR and transformation was performed to create a *S. sanguinis* ridA mutant for phenotypic studies.

Aryal, S., Lyons, W., Witalison, E., Tau Eta, Catawba College.

POSTER PRESENTATION – MOLECULAR AND MICROBIOLOGY, POSTER #25

From Ecology to Pharmacology: Antibiotic Discovery from Soil Bacteria.

Antibiotics are used to treat bacterial infections killing harmful pathogens or preventing them from reproducing. The modern world heavily relies on antibiotics to treat numerous bacterial illnesses. With regular use of antibiotics, bacteria have developed resistance. It is therefore important to search for new antibiotics effective against pathogens. Our research characterized bacteria that show potential antibiotic activity to identify based on their morphology, and what chemical compounds are present that allow them to display antibiotic activity. Environmental samples are often reservoirs for potential new antibiotic producers; thus we collected soil samples from the Catawba College Ecological Preserve and created a bacterial lawn on agar plates to allow bacterial colonies to grow. We isolated colonies with unique morphology and screened against ESKAPE relatives to observe any antibiotic activity. ESKAPE pathogens are often highly resistant to antibiotics. We further characterized isolates showing promising antibiotic activity to determine their Gram status and metabolic properties. We also performed 16S rRNA sequencing to identify the unknown isolates, followed by an antibiotic disk assay to determine the antibiotic class of the compound produced. The significance of this research is to identify compounds for new antibiotic development, aiding the pharmaceutical and healthcare sectors.

Funding acknowledgment: This work was supported by the Catawba College Impact Award.

Bagwell, B., Maze, T., Psi Theta, Lander University.

POSTER PRESENTATION – MOLECULAR AND MICROBIOLOGY, POSTER #24

The Effect of Intermittent Fasting on PINK1/Parkin Pathway and Mitophagy.

PTEN-induced kinase 1 (PINK1) accumulates on the membrane of damaged mitochondria to recruit an E3 ubiquitin ligase-like protein, Parkin, which initiates mitophagy. Dysregulation of PINK1/Parkin pathway is associated with various hallmarks of aging (oxidative stress, cellular senescence, and mitochondrial dysfunction). Under caloric restriction cells adapt to low energy, high stress environments by upregulating these processes of recycling to ensure efficiency and reduce the hallmarks of aging. We believe that under caloric restriction there will be an upregulation of this pathway, showing an increased expression of PINK1 and mitophagy. Twelve rats (female n=6; male n=6) were placed on a 24-hour fast twice weekly for 11 weeks. A control group (n=12) were allowed ad libitum access to food and water. Tissue collection occurred immediately after one 24-hour fast due to the dynamic nature of mitochondria and their proteins. Collected tissue was used for RT-PCR to quantify PINK1 expression levels in both heart and liver tissue. There was no significant increase in PINK1 gene expression in fasted female rats compared to fasted male rats nor in fasted vs fed females of either tissue type ($P>0.05$). Heart tissue of fasted vs fed males showed a significant difference in expression level of PINK1, though this wasn't seen in liver tissue. Caloric restriction upregulates the PINK1/Parkin pathway, increasing mitochondrial biogenesis, leading to greater accumulation of PINK1 protein on mitochondrial membranes. This upregulation of PINK1 expression, while not universally significant, indicates a decrease in the hallmarks of aging, particularly oxidative stress and mitochondria dysfunction.

Funding provided by Lander University and the Institutional Animal Care and Use Committee.

Baquie, A., & Rushing, A. Tau Eta, Catawba College.

POSTER PRESENTATION – BIOMEDICAL SCIENCE, POSTER #12

Examining the anticancer activity of the Soursop (Annona muricata) bioactive component gallic acid in pancreatic cancer.

Pancreatic ductal adenocarcinoma (PDAC) remains the third-leading cause of cancer-related death, with nearly half of new diagnoses being advanced stage and an average 5-year survival rate less than 10%. Treatments with chemotherapeutics are not consistently successful, thus a growing area of research is the investigation of anticancer activities of plant-derived compounds. This project evaluates the anticancer properties of compounds found in Soursop (*Annona muricata*), which is used medicinally in communities in tropical Africa and South America to treat various ailments including cancers. Plant extracts have been demonstrated to induce cancer cell cytotoxicity and promote apoptosis. This project explores the anticancer activity of gallic acid (GA), a major bioactive compound found in Soursop. Data collected show that GA treatment significantly reduces the viability of two pancreatic cancer cell lines, potentially through induction of DNA damage. Although GA is known to modulate the oxidative balance of the cell, our data do not support that GA is acting through this mechanism. Metabolic profiles of GA-treated pancreatic cancer cells were evaluated and found to have a significant and dose-dependent effect on lipid metabolism and biosynthesis. This project aims to determine whether manipulation of lipid metabolism may serve as a new therapeutic target.

Funding provided by TriBeta.

Bevan, P. C., Groh S. Beta Delta, Delta State University.

POSTER PRESENTATION – MOLECULAR AND MICROBIOLOGY, POSTER #35

Optimizing Detection of Sarcospan in 3T3-L1 Adipocytes: Preliminary Evaluation of Antibody Performance and Membrane Protein Solubilization

Sarcospan (SSPN) is a small, 25-kDa membrane protein that is part of the dystrophin-glycoprotein complex, mostly studied in muscle in the context of muscle dystrophy. Sarcospan null mice, developed as a model of muscular dystrophy, did not show the over muscular dystrophy phenotype expected. However, unpublished data show that this mouse model exhibited adipocyte hypertrophy, abnormal glucose clearance, and insulin resistance. While it is possible that the adipose phenotype in the absence of sarcospan is a mere consequence of an uncharacterized phenotype in muscle, it is also possible that sarcospan plays a role in controlling adipogenesis, especially through its interaction with extra-cellular matrix receptors. Here we used the murine cell line 3T3-L1, a well characterized cell line used to study adipogenesis. We started studying the expression of sarcospan in function of those cells' differentiation in adipocytes, both at the transcript level by RT-qPCR and at the protein level by western blot. Expression of known adipogenetic markers, both at the transcripts and the protein levels is also studied to accurately correlate the expression of sarcospan with the differentiation stage of the cells. Differentiation is qualitatively assessed by lipid staining and quantitatively by quantification of leptin and isoproterenol-induced lipolysis. We anticipate to show that sarcospan expression increases with cell differentiation and peak when lipid storage is maximal.

Boyd, E., Burn, P., Haughian, J., Phi Omicron, University of Northern Colorado

POSTER PRESENTATION – BIOMEDICAL SCIENCE, POSTER #4

Incorporation of Omega-3 Fatty Acids from Fish Meal Supplemented Cows into Cultured Luteal Cells.

The corpus luteum (CL) is an endocrine gland that produces progesterone to sustain pregnancy. In non-pregnant cows, prostaglandin F2a causes the regression of the CL. Sometimes, viable embryos fail to signal early pregnancy, leading to prostaglandin production, CL regression, and spontaneous abortion. Studies show that cows fed corn gluten meal exhibit 70% CL regression after prostaglandin pulses, while those supplemented with fish meal show only 25% regression. The protective mechanism of fish meal on luteal cells remains unknown. This study aimed to develop an in vitro protocol for delivering omega-3 fatty acids to luteal cells. Mixed luteal cells were obtained from bovine luteal tissue. Cells were plated in T75 flasks at a seeding density of 100,000 cells per flask. They were cultured in medium supplemented with 10% v/v serum from cows fed fish meal or corn gluten meal for 48 hours, removed from the flasks and analyzed by gas chromatography to assess fatty acids. Gas chromatography showed a 128.3% increase in docosahexaenoic acid (DHA) in cells treated with fish meal serum compared to controls, along with a 61.2% increase in eicosapentaenoic acid (EPA). These findings suggest that fish meal supplementation increases the incorporation of DHA and EPA into luteal cells.

Funding provided by TriBeta, John Brett, and the USDA.

Boyle, C. Swerdlow, S. Theta Pi, University of Pittsburgh at Greensburg.

ORAL PRESENTATION – MOLECULAR AND MICROBIOLOGY, Room 1302, 9:30-9:45 am

Isolating and Characterizing Mycobacterium Phage ZoeJ Genes Relative to Cytotoxicity.

Bacteriophages are viruses, obligate parasites that utilize the cellular machinery of bacteria to replicate themselves, lysing their host in the process. Their ability to specifically target and kill bacteria have brought them to the attention of scientists and healthcare professionals in the fight against antibiotic resistant bacterial infections. The majority of genes found in bacteriophages can not be assigned a function through sequencing alone. Understanding these functions as they pertain to phage-host interactions is vital as bacteriophages are increasingly being used to treat infections in the face of antibiotic resistance. Through Science Education Alliance-Gene function Exploration by a Network of Emerging Scientists (SEA-GENES), this study investigates the unknown genes of actinobacteriophage ZoeJ, a Cluster K phage that infects *Mycobacterium smegmatis* mc2155. ZoeJ genes were individually cloned, purified, and incorporated into a bioengineered pExTra plasmid. This plasmid is used to overexpress each gene in *Mycobacterium smegmatis* mc2155 in order to measure cytotoxicity and conferred protection.

Brito, J., Daoud, A., O'Connor, T., Theta Mu, North Park University.

ORAL PRESENTATION – BIOMEDICAL SCIENCES, Room 1301, 10:00-10:15 am

The Role of CCL21 in Tumor Surveillance.

The brain is an immune-privileged organ. Therefore, the chemokine CCL21, which is normally found within lymphoid tissues, should not be present in the brain. Yet, after lymphoma exposure, upregulation of CCL21 in the brain has been demonstrated. Based on these previous results, two experimental questions were pursued: which brain cell type is responsible for upregulating CCL21, and, secondly, does CCL21 induce T-cell migration through the blood-brain barrier into the brain? The first question was answered through co-culture experiments of lymphoma cells with BV2 cells (a microglial cell line), astrocytes, or SH-SY5Y cells (a neuronal cell line). In the BV2 co-culture, a 20% increase in CCL21 expression was observed compared to BV2 cells

alone. The SH-SY5Y cells co-cultured with lymphoma cells showed a 2-fold increase in CCL21 expression compared to SH-SY5Y cells alone. To determine whether lymphoma cell-induced CCL21 expression could induce T-cell migration, a transwell system was set up to simulate BBB conditions in vitro. Although none of the findings were significant, they indicated that the BV2 cell line appeared activated before lymphoma cell exposure, as T-cells migrated towards BV2 cells without co-culturing with lymphoma cells. Overall, these results indicate that the brain cells responsible for the expression of CCL21 in the presence of lymphoma cells may be microglia and neurons. Additionally, they demonstrate a need to optimize the transwell assay to prevent microglial activation prior to lymphoma cell exposure.

Bruce, J., Luciani, P., Beta Omega, [Mercer University](#).

POSTER PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL, POSTER #41

A Baseline Assessment for Mammalian Diversity at the Mercer University Observatory and Field Station.

Mammals are declining precipitously globally due to habitat loss and other anthropogenic threats. Even in regions with established federal and state programs to protect natural areas for wildlife, the majority of land is privately owned. Accordingly, privately-owned lands, particularly those that are managed in ways compatible with supporting native flora and fauna, are increasingly important to the persistence of native mammal populations. Recently Mercer University acquired a 157-acre property in Crawford County, Georgia and named this preserve the Mercer Observatory and Field Station. In the last year, Mercer has taken management actions to restore the site through the introduction of prescribed fire and planting of longleaf pines. Our research aimed to document mammalian diversity at the Mercer Observatory and Field Station early in this restoration process. To capture the mammal community, twelve cameras were placed at randomly generated points within the property spaced at least 200 m apart. Collected images were identified using Wildlife Insights, and three metrics of diversity and activity were calculated. Our results provide the first baseline survey of mammalian diversity and activity at the property as well as contributed to the Smithsonian Conservation Biology Institute's national mammal survey (SnapShot USA).

The presenters indicated an intent to apply for a TriBeta travel grant on their registration form.

Byrne, K., James, A., Phi Omicron, [University of Northern Colorado](#).

POSTER PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL, POSTER #49

Effects of Cytochalasin D on zebrafish craniofacial development.

An important mechanism of cell movement is the polymerization of actin – when an actin inhibiting drug such as Cytochalasin D (CytoD) is applied to zebrafish embryos, it may disrupt eye development which is dependent on proper cell movement and communication. The *VSX2* gene is critical in early eye development, specifically in controlling retinal progenitor cell movement and proliferation. Using green fluorescent protein, this gene can be tagged and allows one to track retinal cells throughout development. By 48 hours post fertilization, the optic fissure of the zebrafish eye is closed. If a small amount of CytoD is introduced to the embryos' water six hours before this point in development, it should disrupt the closure of the choroid fissure by preventing actin polymerization and blocking some cell movement during this stage, causing a coloboma. Out of five trials of this experiment, five embryos have displayed severe colobomas and several embryos have displayed minor colobomas, indicating that actin inhibition only has a minor effect on proper choroid fissure closure. Future

trials will stain the zebrafish jaw to visualize the effects on craniofacial development when there is a mutation in the matrix metalloprotease 9 gene.

This research has been funded by an NIH grant awarded to the James lab.

Campbell, T., and Campbell, D., Tau Sigma, Gardner-Webb University.

ORAL PRESENTATION -- ECOLOGY, ENVIRONMENT, AND ORGANISMAL, Room 1303, 11:30-11:45 am

On the Taxonomy of Didianema (Gastropoda: Vetigastropoda: Skeneidae s. l.).

Skeneidae *sensu lato* is a polyphyletic wastebasket for minute, generic gastropods. The only reliable feature for assignment to Skeneidae *sensu stricto* is reproductive anatomy, but many genera are known only from shells. *Didianema* is an obscure skeneimorph genus, with, as currently classified, one named extant and about seven named fossil species (plus one extant and two fossil undescribed species). It was originally assigned to Vitrinellidae, and later moved to Skeneidae. Recent examination of the holotype of the type species, *Didianema tytha* (Woodring, 1928), from the Bowden Formation (mid-Pliocene) of Jamaica has prompted a revision of the genus and species previously assigned to it. Based on the protoconch morphology, microsculpture, and umbilical form of *D. tytha*, *Didianema* is redescribed and transferred to the heterobranch family Cornirostridae, close to the Oxfordian to Tithonian *Heteronatica* (Guzhov, 2019). Examination of the other species assigned to the genus indicates novel generic assignments of three species to *Diagonaulus*; three to *Cirsonella*; one to “*Skenea*” *sensu* (Campbell, 2023) (gen. nov.); one to Solariellidae, Areneidae, or Liotiidae; and one to *Xyloskenea*. *Didianema errata* (Guppy in Dall & Guppy, 1896) from the Miocene of Trinidad is retained with *D. tytha* in *Didianema*.

Carballo, N., Sandoval, K., Alvarez, R., Nu Psi, Dominican University New York.

POSTER PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL POSTER #45

Biodiversity Research Study in Rockland County, New York.

This study investigates the biodiversity within Rockland County, New York State. Biodiversity refers to the various species living within an ecosystem and is essential in maintaining the health of that ecosystem. In this study, I recorded biodiversity in nine locations over six weeks. The focus was to document native, non-native, and invasive species to determine the ecological health of the sites. Native species are organisms that have evolved to live within their ecosystem. Non-native species are organisms that have been brought over time to an area by human activity, for example, pets or garden plants that have escaped into natural areas. Invasive species are known to cause severe ecological damage, resulting in the extinction or reduction of other species. I recorded a total of 222 species in 176 families. I identified 152 native species and 51 non-native species. Of those non-native species, 24 are invasive. Species were identified using the iNaturalist and Merlin apps, as well as consultation from my advisor, Dr. Regina Alvarez. I found that in disturbed sites, there was a higher percentage of invasive species. This supports the policy of removing invasives and supporting native species to increase biodiversity and improve the health of ecosystems.

Funding provided by STEM Opportunities for Hispanic and Low-Income Students.

Carter, S., Snyder, A. B., Sengupta, A., Karen, K., Kappa Gamma, Georgia College & State University.

POSTER PRESENTATION – MOLECULAR AND MICROBIOLOGY, POSTER #34

Biosynthesis of Fluorescent Pterins in Millipede Cherokia georgiana.

Millipedes of the family *Xystodesmidae*, such as *Cherokia georgiana*, exhibit fluorescence under UV light; however, the chemical basis and genetic origin of this fluorescence remain unknown. Fluorescence in animals is often attributed to pterins, a class of molecules known to emit visible light upon UV excitation. Previous studies in *Parafontaria laminata* identified 7,8-dihydropterin-6-carboxylic acid and pterin-6'-carboxylic acid as fluorescent compounds, but no such identification has been made in *C. georgiana* or other *Xystodesmidae*. Additionally, no prior study has fully characterized the biosynthetic enzyme pathways responsible for fluorescent pterin production in millipedes. This project aims to identify the fluorescent compound in *C. georgiana* and characterize differential regulation of pterin biosynthesis genes using thin-layer chromatography (TLC), spectrofluorometry, RNA sequencing, and differential gene expression analysis. Fluorescent cuticle tissue has been dissected and extracted from *C. georgiana* and separated using TLC, where detected pterins correspond to those previously identified in related millipede species. Fluorescence emissions will be measured and compared to reported pterin standards using spectrometry. For differential gene expression analysis, total RNA will be extracted from fluorescent cuticle samples and sequenced on the Illumina platform. Raw reads will be processed using the Galaxy suite, aligned to the *C. georgiana* reference transcriptome, and analyzed for differential expression. Candidate genes within the pterin biosynthetic pathway will be evaluated for upregulation. By integrating chemical identification with transcriptomic analysis, this study will directly confirm the presence of pterins and their biosynthetic pathways, providing the first molecular evidence of fluorescent pterin production in *Xystodesmidae*.

Funding provided by Tri-Beta and Georgia College & State University MURACE.

Carlson, S., Vincis, R., and Odegaard, KE., Sigma Tau, Florida State University.

POSTER PRESENTATION – MOLECULAR AND MICROBIOLOGY, POSTER #31

Investigating neural connections between the mouse gustatory cortex and mediodorsal thalamus.

Our eating decisions depend on how food tastes and the reward experienced while eating. This information travels from the oral cavity to the brain through interconnected, gustatory-related regions, many of which have been extensively studied in rodent models. Recently, the mediodorsal nucleus of the thalamus (MD), which is not part of the canonical taste pathway, has emerged as a region responsive to taste quality, intensity, and expectation that shares connections with the gustatory cortex (GC). To investigate the extent of how MD activity alters behavioral responses and cortical taste-related neural activity, the selective manipulation of MD projections to GC without affecting other thalamocortical or MD circuits is a key challenge. We addressed this using an intersectional viral strategy: retrograde AAV2/11 delivered to GC combined with Cre-dependent markers in MD. We reliably and selectively labeled projections from both the MD and VPMpc, the canonical thalamic nucleus in the taste pathway used as a control, to GC, establishing the foundation for targeted circuit manipulation. This work highlights the utility of advanced imaging and quantitative analysis tools for probing thalamocortical contributions to taste processing and provides a framework for assessing the functional role of MD in ingestive behavior.

Funding provided by R01 DC019326 to Dr. Roberto Vincis from NIDCD and TriBeta.

Audrey K. Charles, Zhou C. Upsilon Zeta, Mercy University.

POSTER PRESENTATION – BIOMEDICAL SCIENCES, POSTER #15

Navigating the Landscape of DNA Mutations Through the D2D project.

A statistical technique termed Delta Delta G (DDG) can be used to forecast the impact of a single point mutation on the stability of proteins. Double-changed Gibb free energy, or DDG for short, is the change in Gibbs free energy. The variation in energy between the folded and unfolded states (Gfolding) and the change in Gfolding in the presence of a point mutation are measured by DDG. This has been shown to be a highly accurate predictor of whether the protein stability of a point mutation will be improved. The study aimed to predict the thermostability of the beta-glucosidase protein by alternating leucine and serine at the 108 position. The D2D lab manual and workflow were used to create mutations on the software. The experiment involved phosphorylation, PCR, and ligation reactions using T4 DNA Ligase and FastDigest DpnI enzyme. Results showed that serine would bring more stability to the protein structure. DNA is an appealing biomolecular scaffold due to its chemical and thermal stability. Mutations can have no effect, negative effects, or both. Some mutations can result in illnesses like cancer.

Condor da Silva, I., Smith, J., Alpha Chi, Stetson University.

POSTER PRESENTATION – MOLECULAR AND MICROBIOLOGY, POSTER #37

Investigating the Presence of FAST Proteins in Saccharomyces cerevisiae.

The purpose of this research is to investigate the presence of FAST proteins in the transmembrane domain of *Saccharomyces cerevisiae*. Yeast mating requires membrane fusion to merge haploid cells into a diploid, yet the protein responsible for directly facilitating this fusion, a fusogen, remains unknown in *Saccharomyces cerevisiae*. Unlike other organisms with identified fusogens, which mediate cell fusion, the mechanism in yeast continues to be unknown. Consequently, FAST proteins, known for facilitating cell-cell fusion in different organisms, have not yet been identified in yeast cells. However, evidence suggests that these small transmembrane proteins exist in other eukaryotic organisms, making it highly likely that they are also present in yeast. This project aims to bridge this research gap by identifying and analyzing potential FAST-like proteins in yeast, expanding our understanding of membrane protein functionality and cell fusion mechanisms.

This research was funded by a TriBeta research scholarship.

DePaul D, Crookston J, Johnson M. Theta Pi, University of Pittsburgh at Greensburg.

ORAL PRESENTATION – MOLECULAR AND MICROBIOLOGY, Room 1302, 10:45-11:00 am

Nuclear Receptor Interactions with JAZF1/SUZ12.

JAZF1 in humans can undergo translocations that result in gene fusions that cause different cancers, including endometrial stromal sarcomas (ESS). The hallmark of ESS is the JAZF1/SUZ12 fusion protein. These fusions always occur between chromatin modifying proteins with JAZF1. Because of the conserved nature of

chromatin modifying proteins between humans and *Drosophila*, and their unique genetic tools. We can form a disease model in *Drosophila* to address some basic functional questions about these diseases. Therefore, we plan to use a JAZF1/SUZ12 in vivo model to study the effects of this fusion in the cell. Previous studies demonstrate that JAZF1 acts through a nuclear receptor NR2C2, homologs of *Drosophila* Hr78 and Hr51. This research aims to determine whether JAZF1/SUZ12 maintains JAZF1's ability to interact with the highly conserved nuclear receptors Hr78 and Hr51. To investigate this, we propose a Yeast Two-Hybrid Assay (Y2H) to analyze protein-protein interactions. Initial attempts to move the JAZF1/SUZ12 transgene into a yeast-compatible pGBKT7 vector were challenging, yet the completion was a key milestone of this project. We utilized an optimized Four-Primer PCR protocol to attach recombination linkers and employed Gateway Cloning for integration into a yeast compatible vector. While initial attempts at chemical transformation were unsuccessful due to the construct's size and concentration, we successfully established the model through electroporation of competent *E. coli*. The successful isolation of these clones has provided the foundation for future Yeast Two-Hybrid assays. By cloning the fusion gene into pGBKT7, we have created a method for testing whether JAZF1/SUZ12 retains its nuclear receptor binding function, which is vital for understanding the molecular mechanisms driving endometrial stromal sarcomas.

Diosdado, P., and Delghandi, M., Sigma Theta, Texas Wesleyan University.

POSTER PRESENTATION – MOLECULAR AND MICROBIOLOGY, POSTER #27

Examining the association of COMT (rs4680) polymorphism and chronic stress in college students.

The catechol-O-methyltransferase (COMT) gene encodes the COMT enzyme, which is crucial for the metabolic breakdown of catecholamines such as dopamine. This enzyme modulates dopamine concentrations within the prefrontal cortex. A non-synonymous single nucleotide polymorphism (SNP) located at codon 158 (Val158Met) also referred to as rs4680, reduces enzymatic activity by approximately a four-fold decrease, resulting in a significant increase of dopamine concentration in the brain. The Met158 polymorphism could be associated with an increased vulnerability to stress. This study seeks to examine the genetic influence of the Val158Met polymorphism with an associated stress response in college students. Undergraduate students from Texas Wesleyan University were genotyped using DNA extraction and gene amplification, and hair cortisol concentrations from the posterior vertex of the head were measured using an ELISA cortisol kit.

Duong, L., Kong, A., Epsilon Chi Kappa, University of California, Irvine.

POSTER PRESENTATION – BIOMEDICAL SCIENCES, POSTER #8

Comparison of injury severity and clinical outcomes between manual bicycles and electric bicycles and electric micromobility devices.

This study examines whether electric micromobility devices are associated with greater injury severity and healthcare utilization compared with conventional bicycles. A retrospective analysis of trauma registry data from UCI Medical Center, a Level 1 trauma center, was conducted from 2022–2024 and included 505 patients aged 10–75 years with bicycle, electric bicycle, or electric scooter-related injuries. Patients were grouped into conventional bicycle and electric micromobility cohorts, and outcomes including injury severity, hospital length of stay, and number of procedures were compared using nonparametric tests. No significant differences were identified between groups across these outcomes. However, subgroup analysis revealed variation by age, with older individuals in the bicycle cohort exhibiting greater injury severity, while adults in the electric

micromobility group required more procedures than younger patients. These differences did not consistently correspond to longer hospital stays. Overall, the findings suggest that injury severity and clinical management are more strongly associated with patient age than with vehicle type, highlighting the importance of considering demographic factors when developing targeted prevention strategies for micromobility-related injuries.

Funding provided by TriBeta and UCI UROP.

Ezzeddine, R., Pascua, Q., Parker, E., Nakamura, K., Yoshimoto, M., Matsuoka, K., Abe, T., Kuwagata, T., Hasegawa, T., Chen, C. Epsilon Gamma, Azusa Pacific University.

POSTER PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL , POSTER #56

The Effects of Alternative Irrigation Treatments on Soil Matric Potential in a Lowland Rice Paddy System.

Rice, a staple for over half the world's population, is primarily cultivated under continuously flooded conditions, raising concerns about greenhouse gas emissions as well as arsenic uptake into grain. Irrigation treatments that facilitate soil aeration by means of draining and reflooding have been proposed to mitigate these undesirable effects. One proposed alternative irrigation method is a schedule of 3 days of flooding, followed by 4 days of drainage (3F4D), imposed on a weekly basis. To evaluate whether the benefits of alternative irrigation outweigh potential physiological stress on rice plants, we investigated differences between continuously flooded (CF) and 3F4D treatments across two growing seasons, quantifying water availability as soil matric potential (SMP) using TEROS-21 sensors. Near the end of each 3F4D draining phase, SMP occasionally dropped below -45 kPa, a threshold for severe water stress, but reflooding mitigated the stress within 2 hours. SMP data was collected concurrently with soil volumetric water content (VWC) and integrated to generate soil-moisture release curves revealing VWC thresholds where SMP substantially dropped. Our findings indicate that the 3F4D method does not pose significant risk to long-term plant health, making it a sustainable alternative for rice cultivation.

Funding provided by TriBeta and APU.

Farley, C., Corbin, O., Draper, K., Saul, M. Upsilon Rho, St. John Fisher University

POSTER PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL, POSTER #51

Effects of Variable Isolation Stress on Compulsive-Like Behaviors In Male Sprague-Dawley Rats.

Rats have been a long-standing model organism for research due to their anatomical and physiological similarities to humans. Furthermore, they are a great model species to study behavioral patterns that can be seen in humans as well. Covid-19 created a longstanding time period of isolation followed by excess fear and anxiety. This is something that is particularly visible in the adolescent population. To investigate the potential behavioral patterns due to social isolation in rats, this study examined OCD-like and ASD-like behaviors in adolescent rats using a marble burying test. A group of 12 adolescent male rats will be subjected to isolation at age post-natal day (PND) 27 for two weeks, after previously being pair-housed. An additional group of 12 rats will be subjected to intermittent isolation at PND 27 until PND 41. The control group of 12 rats will remain pair-housed. After isolation the rats will be placed back together in pairs, with their initial partner. Behavioral assessments were conducted with the marble burying test, in which rats were placed into an empty cage

containing a layer of bedding and twenty marbles evenly spaced out for thirty minutes. Increased marble burying reflects repetitive and compulsive like behaviors which is characteristic of OCD and ASD.

Funding provided by Beta Beta Beta Biology Honor Society Research Grant 2025 – 2026.

Guevara, B., López, S., Olivo, B., Zenón, C., Martir, M., Chardon, G., Caraballo, E. Zeta Lambda, University of Puerto Rico-Aguadilla, University of Puerto Rico Comprehensive Cancer Center.

POSTER PRESENTATION – MOLECULAR AND MICROBIOLOGY, POSTER #30

Investigating the Effects of Escherichia coli Secreted Factors on Colorectal Cancer Cell Lines.

Colorectal cancer (CRC) is a leading cause of cancer-related mortality in Puerto Rico. Preliminary observations suggest elevated pro-inflammatory cytokines and Escherichia coli in CRC tumors. This study evaluated the effects of E. coli conditioned media (EC-CM) on non-metastatic (SW480) and metastatic (SW620) CRC cell lines. Cells were treated with increasing concentrations of EC-CM. Viability was assessed using Alamar Blue, while apoptosis, necrosis, and cell cycle distribution were analyzed by flow cytometry. Gene expression was measured by qPCR, and cytokine production was evaluated using Luminex. EC-CM treatment resulted in a dose-dependent reduction in cell viability and an increase in necrosis in both cell lines. Cell cycle analysis showed arrest at G0/G1 and G2/M phases. qPCR demonstrated significant treatment-time interactions for IL-8, STAT3, and RORC, while CCL2 was not significant. Luminex analysis showed significant changes over time and treatment for IL-10, IL-6, IL-8, and MCP-1, whereas IL-17 was not detected. These findings indicate that E. coli derived soluble factors resulted in reduced cell viability, altered cell cycle dynamics, and modulation of inflammatory signaling in CRC cell lines. Future directions include identifying the specific bacterial factors responsible for these effects, validating findings in additional models, and assessing their relevance in patient-derived samples.

Funding provided by the National Institute of Allergy and Infectious Diseases (NIAID) Grant #5R25AI183304-02 and supported by the UPRCCC institution.

Gantress, N., Murphy, Z., Upsilon Rho, Saint John Fisher University.

ORAL PRESENTATION – MOLECULAR AND MICROBIOLOGY, Room 1302, 10:15-10:30 am

Determining the Influence of Glyphosate on Erythropoiesis Using K562 Cells.

Glyphosate is a common chemical found in herbicides for agricultural and nonagricultural purposes. It has been linked to several health problems including cancer, liver disease, kidney disease, reduced fetal growth, and Non-Hodgkin's Lymphoma. There are several links between glyphosate and other biological processes that are being explored, including the effects of glyphosate on erythropoiesis in humans. This research uses varying dosages of glyphosate in cell culture to determine how it changes the growth and apoptotic rates of K562 cells, a model of non-adherent and erythroid-like cells. Importantly, glyphosate doses were tested at levels based on federal agency acceptable exposures and above. Through dose response testing we determined that glyphosate exposure at a high dose reduces cell amplification and viability. Investigation of cell morphology at lower doses may also show morphological changes. Due to the links between glyphosate, severe health problems, and our data, we conclude that higher amounts of glyphosate interfere with cell

processes and cause a decrease in cell growth and cell viability, and an increase in varied morphologic appearance potentially related to cell apoptosis or viability.

Giraldo, S., and Rushing, A., Tau Eta, Catawba College.

POSTER PRESENTATION – BIOMEDICAL SCIENCES, POSTER #6

The Human T-cell Leukemia Virus (HTLV) basic leucine zipper factor (HBZ) contributes to the dysregulation of the pro-cancerous polyamine biosynthesis pathway.

Human T-cell Leukemia Virus (HTLV-1) is a human retrovirus that establishes a lifelong infection of host immune cells. In some cases, infected people go on to develop a neurological condition known as HTLV-associated myelopathy (HAM), while some develop a fatal condition known as Adult T-cell Leukemia (ATL). While the process of carcinogenesis is not completely understood, the viral transcription factor known as the HTLV-1 basic leucine zipper factor (HBZ) has been shown to be an important driver of pathogenesis. While many studies have evaluated the impacts of HBZ on specific cellular pathways, few have evaluated how the host cell is impacted at a more global level. We performed metabolic analysis of cell models expressing HBZ. Here we show that HBZ modulates several pro-cancer metabolic pathways, including the polyamine biosynthesis pathway. Because HBZ is a transcriptional regulator, we question whether it is altering the expression of the enzymes in this pathway, including spermidine/spermine-acetyltransferase 1 (SAT-1), ornithine decarboxylase (ODC), spermine synthase (SMS), and spermidine synthase (SRM). Understanding the mechanism by which this pro-cancerous pathway is modulated may lead to the development of druggable targets in ATL.

Funding provided by Tri Beta.

Gill K, Crowder R, Beta Xi, Stetson University

POSTER PRESENTATION – MOLECULAR AND MICROBIOLOGY, POSTER #29

Peperomia obtusifolia Blue Light Exposure Does Not Increase Plant Anticancer Properties.

This study investigated how light-dependent phytochemical differences influenced the cytotoxic activity of *Peperomia obtusifolia* leaf extracts. The white-light extract contained a higher level of flavonoid phytochemical content compared to the blue-light extract. Similarly, the white-light extract mediated greater Jurkat leukemia cell cytotoxicity than the blue-light extract. Across 4, 9, and 12-hour timepoints, the white-light extract consistently produced a stronger reduction in live cell concentration, viability, and ATP metabolic activity compared to the solvent control (SC) group. The white-light plant extract with a 1500 µg/mL concentration resulted in complete cytotoxicity after 12 hours. The correlation between flavonoid content and pro-apoptotic potency suggested that flavonoids contributed to the observed anticancer activity, although additional compounds may also have played a role. Overall, the experiment demonstrated that light exposure influenced the phytochemical profile of *P. obtusifolia* leaves and that these differences translated into measurable biological outcomes. These findings supported the use of colorimetric flavonoid assays for phytochemical comparison and highlighted the potential anticancer relevance of white light-modulated plant extracts at higher concentrations.

González-Hernández, A., Velázquez-Rivera, L., Meléndez-Calderón, J., Rodríguez-Rivera, M., Colón-Rodríguez, E., Dorta-Estremera, S. Zeta Lambda. Clinical and Translational Cancer Research Division, University of Puerto Rico, Comprehensive Cancer Center, San Juan, PR.; Department of Microbiology and Immunology, University of Puerto Rico- Medical Sciences Campus, San Juan PR.

POSTER PRESENTATION – MOLECULAR AND MICROBIOLOGY, POSTER #32

Effects of Broad-Spectrum Antibiotics on the Tumor Microenvironment in HPV-positive Oropharyngeal Cancer.

The use of antibiotics in the post-operative setting for head and neck cancer patients remains non-standardized and has been associated with microbiome disruption, altered immune responses, and adverse cancer outcomes. While previous studies have shown that antibiotics can affect viability, morphology, and migration in HPV-negative carcinoma cells, their impact on HPV-positive oropharyngeal cancer remains unclear. Here, we evaluated the effects of two broad-spectrum antibiotics—cefazolin and tetracycline—on HPV-positive mEERL cells in vitro, and assessed tumor growth and immune responses in vivo, including ampicillin as a third antibiotic. Cell metabolism was measured using the MTT assay at 24 and 48 h, showing time- and concentration-dependent cytotoxic effects of tetracycline. Apoptosis was confirmed using Annexin V/7-AAD assays, with both tetracycline and cefazolin inducing cell death. In vivo, tumor-bearing mice were treated with tetracycline, cefazolin, or ampicillin to evaluate general health, tumor burden, and immune responses. Cefazolin-treated mice exhibited improved health scores and reduced tumor burden compared to other groups. These findings suggest that cefazolin may influence tumor progression and cellular viability in HPV-positive oropharyngeal cancer, supporting further investigation into its potential role in antibiotic selection for these patients.

Funding was provided by the National Institute of General Medical Sciences (NIGMS), National Institutes of Health (NIH), through the COBRE Puerto Rico Center for Microbiome Sciences (1P20GM156713-01), and by the National Institute of Allergy and Infectious Diseases (NIAID) (Grant #5R25AI183304-02).

Granata, D., Wallace, N., Van Tyne, D., Theta Pi, University of Pittsburgh School of Medicine.

POSTER PRESENTATION – MOLECULAR AND MICROBIOLOGY, POSTER #22

Discovery and Characterization of Novel Acinetobacter-targeting Bacteriophages.

Acinetobacter baumannii is a nosocomial pathogen responsible for infections that are often acquired within hospital systems and can readily develop resistance to the antibiotics used in treatment of these infections. To respond to this growing antibiotic resistance within infection-associated strains, novel treatment and therapeutic approaches are necessary to combat *A. baumannii* infections. Bacteriophages, which are viruses of bacteria, are an emerging opportunity to treat *A. baumannii* infections with specificity and complementarity to existing antibiotics. However, repositories of *Acinetobacter*-targeting bacteriophages are necessary to establish pipelines intended for patient isolate screening and possible treatment. We are working to discover and characterize novel *Acinetobacter*-targeting bacteriophages from diverse wastewater sources and to compare them with existing bacteriophages isolated previously by our lab and with bacteriophages sourced from research repositories. We will perform susceptibility screening of 53 clinical *A. baumannii* isolates collected from patients at UPMC hospitals against a panel of phages from multiple origins. The sequence type of each strain and the antibiotic resistance-associated genes present within these isolates were identified through whole-genome sequencing and revealed that the bacterial isolates are genetically diverse and encode an abundance of antibiotic resistance genes. Bacteriophage genomes will also be sequenced and significant

differences between them will be explored. In future work, we aim to evaluate the utility of combining these phages with clinically relevant antibiotics, and to identify the ways that select *A. baumannii* isolates evolve resistance to the bacteriophages in our collection.

Gray, C., Haley, H. M., Locklear, J., Sigma Zeta, University of Mount Olive.

POSTER PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL, POSTER #46

Seasonal Shifts in White-Tailed Deer (Odocoileus virginianus) Density During the Rut: A Comparison of Agricultural Fields and Bait Sites in Southeastern North Carolina.

White-tailed deer (*Odocoileus virginianus*) are highly abundant across North Carolina and strongly influence ecological and agricultural impacts on the ecosystems they inhabit. During the rut (breeding season), deer movement and activity patterns increase, potentially altering density estimates at different habitat types. This study examines changes in deer density and track changes around agricultural fields and bait sites in Chinquapin and Goldsboro, North Carolina, throughout the rut. Using camera traps and photo data, deer density was calculated at multiple time points to assess density and behavioral shifts throughout each phase of the rut. The results reveal how deer distribution fluctuates during the breeding season and evaluate whether bait sites artificially concentrate deer relative to natural forage areas near agricultural habitats. Bait sites are shown to increase deer density significantly; however, no significant changes were observed during the peak of the rut.

This research was funded by TriBeta.

Guajardo, E., Boothe, J., Theta Pi, University of Pittsburgh at Greensburg.

ORAL PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL, Room 1303, 9:30-9:45 am

Various Potential Stimulants and Their Effects on Lipid Accumulation in Microchloropsis salina for Biofuel Production

The oleaginous microalgae *Microchloropsis salina* (*M. salina*) is used for biodiesel production due to its ability to produce fatty acid methyl ester (FAME) biodiesel at a high rate. This FAME biodiesel produces little to no carbon emissions, and microalgae are very hardy organisms that can survive in many harsh conditions. Previous studies have shown that various pyridine and purine stimulants can increase lipid accumulation in the microalgal species. Pyridine and purine stimulants will be used in these experiments, with one sample group growing in a standard F/2 medium, and one sample group growing in the medium treated with kelp extract, which has been shown to increase the algae's lipid accumulation as well. The overall growth and lipid accumulation of the microalgae will be compared to a control. Readings will be taken periodically throughout the growth phase at set intervals until the stationary phase is reached (after approximately three weeks). Then, a Nile Red fluorescence assay will be performed to measure overall lipid accumulation.

Gzybowski, E., Mu Chi Beta, University of South Alabama.

POSTER PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL, POSTER #52

Snakes in the System: Resolving Relationships Within the Black-tailed Rattlesnake Species Complex.

The relationships within the Black-tailed Rattlesnake species complex remain unresolved due to poor sampling of individuals and genetic markers. The complex consists of six described lineages and are distributed throughout the southwestern United States and Mexico. Lineages exhibit notable variation in morphology and venom composition but the genetic work, to date, has not included all possible diversity. By integrating genomic data with observed phenotypic and venom variation, this study aims to test the hypothesis that *C. molossus* comprises multiple distinct evolutionary lineages. To do this, we will use phylogenetics to resolve relationships within the complex and refine the taxonomy. We will analyze six reference genomes and 71 venom-gland transcriptomes to identify and align at least 100 genetic loci. Both mitochondrial and nuclear gene trees will be used, and species-level phylogenies will be inferred using maximum likelihood and Bayesian approaches implemented in IQ-TREE, RevBayes, and BEAST. Concordance among methods will be evaluated to assess lineage structure and its association with geographic and ecological divergence. The expected outcome is a robust phylogeny that will allow future researchers to test evolutionary hypotheses associated with phenotypic evolution and contribute to a broader understanding of speciation in rattlesnakes.

Funding provided by a Summer Undergraduate Research Fellowship from the University of South Alabama.

Halatsis, K., Atherton, Z., Varela, C., Sigma Tau, [Florida State University](#).

ORAL PRESENTATION – BIOMEDICAL SCIENCES, Room 1301, 10:45-11:00 am

Head Direction Cell Dynamics in Nonrapid Eye Movement Sleep During Memory Consolidation.

Sleep is critical for memory consolidation, with interactions between the hippocampus and neocortex supporting episodic memory during nonrapid eye movement (NREM) sleep. However, the role of other regions, such as head direction (HD) cells in the anterior dorsal (AD) thalamus, remains unclear. AD HD cells fire prior to hippocampal sharp wave ripples, suggesting they play a role in coordinating memory reactivation. Our research investigated whether HD cell activity during NREM is modulated by spatial memory encoding using in vivo electrophysiology. We hypothesized that HD cell activity and overall NREM metrics would show experience-dependent changes following encoding. Neural dynamics were compared between baseline (BL) and post-encoding sleep (PES) in rats performing either an object place recognition task or a habituation condition without objects. HD cell firing remained stable across conditions and sleep epochs, indicating limited modulation during consolidation. Overall NREM metrics increased from BL to PES in both conditions, with a greater increase during habituation, reflecting stronger initial encoding of a novel environment despite the absence of objects.

This work was funded by the Whitehall Foundation and TriBeta.

Hamraei N M, Aiello D P. Delta Rho, [Austin College](#)

ORAL PRESENTATION – MOLECULAR AND MICROBIOLOGY, Room 1302, 10:30-10:45 am

Analyzing Whether Altered Activity of Pmc1p is Responsible for S. cerevisiae pgm2Δ mutant phenotypes

Phosphoglucomutase (PGM) is responsible for interconverting glucose-1-phosphate and glucose-6-phosphate in *Saccharomyces cerevisiae*. Yeast strains lacking PGM2, the primary PGM isoform, exhibit calcium

homeostasis defects in galactose, particularly increased calcium uptake into the vacuole. Previous research has demonstrated that knocking out the vacuolar calcium ATPase, PMC1, partially rescues the calcium defects observed in the *pgm2Δ* mutant, demonstrating a link between Pmc1p function and increased calcium sequestration in this strain. RNA sequence and qPCR data indicate no altered gene expression of PMC1 in the *pgm2Δ* mutant. These data suggest this link may be on the proteomic level. Prior studies predict sites on Pmc1p for ubiquitination-mediated degradation and phosphorylation-mediated protein regulation. However, neither ubiquitination nor phosphorylation of Pmc1p has yet been studied directly. We find that NYV1, a known Pmc1p regulator, is alternatively spliced in the *pgm2Δ* mutant grown in galactose media, suggesting altered Pmc1p regulation by Nyv1p. This study seeks to determine if altered protein degradation by ubiquitination, activity by phosphorylation, and direct regulation by Nyv1p lead to hyperactivity of Pmc1p, resulting in the altered calcium homeostasis phenotypes in yeast *pgm2Δ* mutants. Indeed, we find that T768A phosphorylation and K608R ubiquitination mutants partially rescue the *pgm2Δ* calcium homeostasis defects.

Harrell, M., Winborn, R., Zhao, J., Samuels, P., Jordan, J., Sigma Tau, Florida State University.

POSTER PRESENTATION – BIOMEDICAL SCIENCES, POSTER #11

YBX1 post-transcriptionally regulates ABHD2 to promote MASLD.

Metabolic dysfunction-associated steatotic liver disease (MASLD) is a common and growing metabolic liver disease characterized by excess hepatic lipid accumulation and progressive risk of liver injury. Y-box binding protein 1 (YBX1) has recently emerged as a maladaptive factor that promotes MASLD in diet-induced obesity, suggesting that YBX1-dependent target genes may contribute directly to steatotic remodeling. To identify downstream effectors of this phenotype, we combined multi-omic target discovery with functional screening in hepatocyte lipid-accumulation assays. Integration of YBX1 binding with matched mRNA- and protein-level changes identified ten high-priority candidate target genes. We knocked down one target – abhydrolase domain containing 2 acylglycerol lipase (ABHD2)—using siRNA, and measured lipid accumulation using Oil Red O spectrophotometry and BODIPY flow cytometry under basal and lipid-stress conditions. Knockdown of ABHD2 reduced lipid accumulation, supporting a pro-steatotic role downstream of YBX1. Ongoing studies will define how this regulatory network contributes to early MASLD pathogenesis.

This work was funded by: Tri Beta.

Hon, B., Tedesco, S., Zacate, S. Rho-Theta, Thomas More University.

POSTER PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL POSTER #43

Comparison of gram positive bacteria present in different growing conditions on a former archaeological excavation site.

Productive soil habitats are essential for crop vitality and overall environmental health. The environment is heavily reliant on microbial communities that drive biological processes. Finding innovative ways to retain soil health is essential for regulating the natural systems present in microbial ecosystems. Indigenous peoples across North and South America are renowned for developing agricultural methods that are non-reliant on additives or amendments which likely contributes to their long term application. Several indicators of soil health were quantified in order to determine the impact of the Indigenous planting methods on microbial habitat. 16S rRNA sequencing yielded four species level identifications for bacteria present in the samples. The

most prolific species identified across all growing contexts was *Bacillus velezensis* which had the highest average number of isolates in all growing contexts. Future directions of this study would be to increase the number of identifiable species with the application of direct Next Generation Sequencing (NGS) technology.

Humphries K, Jurgenson C. Beta Delta, Delta State University

POSTER PRESENTATION – MOLECULAR AND MICROBIOLOGY, POSTER #38

Structural Studies of the Biosynthetic Enzyme Tetraberberine Oxidase

Berberine is a molecule that has been shown to have therapeutic benefits in several areas like metabolic disorders and cancer. Tetraberberine oxidase (TBO) is a key enzyme in the berberine biosynthetic pathway, yet its catalytic mechanism and active site architecture remain unknown. This project uses computational approaches to elucidate the functional dynamics of TBO. Homology models of TBO, generated using AlphaFold3, serve as the foundation for molecular dynamics simulations performed to evaluate their binding interactions and stability, providing insight into key catalytic residues and conformational changes during catalysis. To complement these, computational investigations were performed by GROMACS software.

Jones, A., Berman, K., Upsilon Delta Epsilon, Westfield State University.

POSTER PRESENTATION – MOLECULAR AND MICROBIOLOGY, POSTER #28

Impact of LPS Priming and Hyperglycemic Conditions on Inflammatory Cytokine Secretion in THP-1 Macrophages.

Immune cells, like macrophages and neutrophils, are the first arm of the immune response. They can sense and respond to microbes and microbial molecules. During infection, immune cells release chemical mediators to communicate with other cells and initiate inflammatory responses. Cell signaling between immune cells through these chemical mediators, called cytokines and chemokines, is integral to proper immune system functioning. To closely study immune cell function and cell signaling, cultured human-derived immune cells are used as a model to evaluate cytokine secretion in response to pathogens and pathogen-associated molecular patterns (PAMPS). PAMPS include whole bacteria and viruses as well as their related molecules such as bacterial lipopolysaccharide (LPS), bacterial peptidoglycan, and viral lipoproteins. This research project will investigate how bacterial LPS and variable glucose levels affect the inflammatory cytokine response in cultured macrophages, expanding on previous experiments. This study will assess the effects of LPS, bacterial infection, and glucose levels (normoglycemic vs. hyperglycemic) on macrophage responses.

Funding provided by Beta Beta Beta Biology Honor Society Research Grant 2025 – 2026.

Kannankeril, R., and Thierfelder, W., Kappa Alpha Kappa, Union University.

ORAL PRESENTATION – MOLECULAR AND MICROBIOLOGY, Room 1302, 11:15 – 11:30 am

Impact of Amyloid-Beta Fibrils on Gene Expression of Microglial Ion Channels.

In Alzheimer's Disease, amyloid-beta fibrils (A β) accumulate in the brain and form plaques. These plaques activate microglia, the immune cells of the central nervous system. Stimulated microglia perform

phagocytosis, chemotaxis, and cytokine release, which is meant to eliminate A β but can also cause neuroinflammation and neuron death. Key channels involved in microglial signaling are ion channels, which are expressed in A β stimulated microglia. These channels are a potential therapeutic target for Alzheimer's Disease. Eight microglial ion channels, six potassium channels and two calcium channels, were selected for study based on their relevance in Alzheimer's Disease or neuroinflammation. This experiment used cultured mouse microglial cells treated with A β . From these cells, mRNA was extracted, and reverse transcriptase quantitative polymerase chain reaction (RTqPCR) was performed to detect the mRNA expression levels of ion channels produced in response to A β . Results indicate that individual ion channels follow unique expression patterns. These changes in ion channel expression provide insight into the signaling pathways involved in Alzheimer's Disease.

Funding provided by TriBeta, Leaders Education Foundation, and Union University.

Kear, B., Brown, E. Sigma Tau, Florida State University.

ORAL PRESENTATION – BIOMEDICAL SCIENCES, Room 1301, 9:45-10:00 am

Regulation of gene expression in a Drosophila model of neurofibromatosis 1.

Neurofibromatosis type 1 (NF1) is a genetic disorder resulting from mutations in the NF1 gene. NF1 affects 1 in 3000 people and presents with benign tumors of the peripheral nervous system, as well as a reduction in lifespan and dysregulation of sleep and metabolic rate. The fruit fly, *Drosophila melanogaster*, is an excellent genetic model to study NF1; flies with mutations in the NF1 gene display decreased sleep, increased metabolic rate, and decreased longevity. Sleep loss has been associated with changes in gut homeostasis in both flies and mammals, and we previously found that selective knockdown of NF1 in neurons of the brain increases gut permeability and reactive oxygen species (ROS) in the gut. This raises the possibility that loss of sleep contributes to gut dysregulation in this NF1 genetic model system. To explore the mechanisms that may underlie this link, we conducted an RNA sequencing analysis of dissected gut tissue from control and NF1 flies. We identified 76 genes that were upregulated and 81 genes that were downregulated with NF1 mutation. Among the downregulated genes, we found an overrepresentation of genes involved in carbohydrate metabolism and oxidoreductase activity. Future work will validate these candidate genes in regulating sleep, metabolism, and/or gut homeostasis through genetic screening approaches. Overall, this work contributes to our understanding of the genetic basis of NF1 and its effect on gut health and physiology.

This work was funded by TriBeta, the Bess H. Ward Honors Thesis Award, and the Clara Kibler Davis Scholarship in Neuroscience to B.K., and the National Institutes of Health R00AG071833 to E.B.B.

Kovach, Annabella & Dr. Kathleen Baker-Brosh. Alpha Phi, Bethany College.

POSTER PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL, POSTER #42

Using eDNA Analysis to Determine if Eastern Hellbenders (Cryptobranchus alleganiensis alleganiensis) Utilize the Tributaries of a Stream in Northern West Virginia.

The eastern hellbender, a large and fully aquatic salamander, is experiencing population declines throughout its range in Appalachia, which has led to its candidacy for listing as endangered under the Endangered Species Act. A stream in northern West Virginia (name undisclosed to protect the location of this sensitive species) is

known to host a population of hellbenders, but it is not known whether its tributaries are also used as habitat. To determine if hellbenders utilize the tributaries, water samples were collected from the mainstem and the tributaries, and environmental DNA (eDNA) was extracted from the samples and amplified. The results confirm the presence of hellbenders in the mainstem of the stream, but hellbender eDNA was absent from the tributaries. The surveyed tributaries generally meet water chemistry requirements for hellbender habitat, so the absence of hellbenders in the tributaries may be due to inadequate water depth, lack of boulders suitable for nesting, insufficient food sources, or some other requirement for suitable habitat. Hellbender eDNA was found downstream from where they were released as part of a headstart program, indicating that they may be finding suitable habitat in the mainstem of the stream outside of the headstart release site.

Funding provided by the Appalachian College Association and the Bethany College Gans Fund.

Lathram, K. J., Weaver, A. L., Fabian-Fine, R., Omicron Omicron, St. Michael's College.

POSTER PRESENTATION – BIOMEDICAL SCIENCES, POSTER #7

Giant spider neurons uncover a myelin-derived waste-internalizing canal system that fails in neurodegeneration.

The underlying causes for Alzheimer disease are presumed to lie in failed waste removal from the brain. However, the mechanisms by which waste is cleared from neurons, and how this system fails in neurodegeneration are poorly understood. A novel 'glial-canal-hypothesis' postulates that myelin-forming macroglia give rise to waste internalizing canals that project into neuronal somata and remove cellular debris in an aquaporin4-dependent manner. We postulate that abnormal swelling of the aquaporin4-expressing glial cells leads to spongiform abnormalities, gradual depletion, and death of associated neurons. Due to the novelty of this postulation little is known about the cellular architecture of this canal system that was first discovered in giant neurons of the wandering spider *Cupiennius salei*. Here we have utilized histological, ultrastructural and immunohistochemical methods to describe the structural foundation of this glial canal system in giant spider neurons in which waste-internalizing canals and associated structures are clearly visible. Sequencing the spider genome, we show compelling homologies of key proteins that are implicated in neurodegeneration between phylogenetically distant species. Based on this work, we provide a testable functional hypothesis regarding waste removal from neuronal somata and how this system fails in neurodegeneration. We highlight structural similarities of this system in rodent and human brain. Supported by the findings presented here we postulate that (i) neurodegeneration in *C. salei* may be caused by hypertrophic swelling of myelin-forming waste-internalizing macroglia, and (ii) that a similar canal system, although structurally modified, is likely highly conserved in the mammalian brain.

Mahabir, N., Izquierdo, J., Alpha Lambda, Hofstra University.

POSTER PRESENTATION – MOLECULAR AND MICROBIOLOGY, POSTER #20

Better Together? Evaluating interactions between Sphingobium sp. AEW4 and Herbaspirillum sp. SJZ99 in co-culture as a potential wheat biofertilizer.

The rhizosphere of plants contains a diverse array of plant-growth promoting bacteria that provide plants with improved nutrient uptake and the ability to withstand a variety of environmental conditions. The following study was conducted to investigate the interactions between two plant-growth promoting microbes, *Sphingobium sp. AEW4* and *Herbaspirillum sp. SJZ99*, in the rhizosphere of wheat plants. Wheat plants were

treated with either a single inoculation or repeated inoculations every other day for a week with monocultures or co-cultures of AEW4 and SJZ99 strains. Soil samples were collected, and DNA was extracted for 16S rRNA gene amplicon sequencing to determine the microbial community composition of the rhizosphere in response to the treatments. Both strains displayed antagonistic effects against each other when grown together in liquid media. However, plant growth increased in co-inoculations, in terms of plant biomass and plant height, relative to uninoculated controls and monocultures. In addition, when plants were given the repeated inoculation treatment with at least one of the microbes, shifts in the rhizosphere microbiome were seen at both the phylum and genus level. Our findings suggest that strains AEW4 and SJZ99 are beneficial plant growth-promoting rhizobacteria with synergistic interactions between them.

Funding provided by TriBeta.

Mercado-Hernández, Alanis P., Derick B. Rivera-Rodríguez BS, Myrella L. Cruz MT, Ricardo E. Núñez-Reyes BS, Annelyn Torres-Reveron PhD, Caroline B. Appleyard PhD. Zeta Kappa, University of Puerto Rico at Ponce, Ponce Health Sciences University-Ponce Research Institute, Sur180 Therapeutics Inc.

ORAL PRESENTATION – BIOMEDICAL SCIENCE, Room 1301, 11:00-11:15 am

Environmental Enrichment Reduces Endometriosis Progression and Pain-Related Behaviors in an Animal Model via PPAR γ -Independent Mechanisms.

Endometriosis is a chronic condition characterized by the ectopic growth of uterine-like tissue, commonly causing pelvic pain and reduced quality of life. Environmental enrichment (EE), a multifactorial psychosocial intervention, has been previously shown to reduce endometriosis progression in an animal model and demonstrates patient acceptability; however, its impact on pain-related behaviors remains unclear. We hypothesized that EE alleviates pain-related behavior via peroxisome proliferator-activated receptor- γ (PPAR γ), a nuclear receptor that regulates inflammatory and nociceptive pathways. Female Sprague–Dawley rats were assigned to EE or non-enriched (NE) conditions with/without PPAR γ antagonist (GW9662). Animals were randomized into four groups on day -21: NE-Vehicle, NE-Drug, EE-Vehicle, or EE-Drug (n=11-12/group). Endometriosis was induced on day 0, and GW9662 (10 mg/kg) or vehicle was administered every other day from day 7 to day 60. Pain-related behaviors were assessed using Von Frey and Hot Plate tests. EE reduced lesion development (EE-Vehicle 61.4% vs NE-Vehicle 84.1%; EE-Drug 54.2% vs NE-Drug 72.9%) and decreased vesicle size (p<0.01). Colonic damage and mesenteric fat were reduced by EE (p<0.01). EE was associated with recovery from mechanical hypersensitivity and increased thermal latency (p<0.01), not reversed by drug. These findings suggest that EE reduces endometriosis progression and pain independent from PPAR γ -mediated mechanisms.

This work was funded by NIH R16GM149365.

Annelle Veronika Mpoungui Mpambou, Chen Z. Upsilon Zeta, Mercy University.

POSTER PRESENTATION – BIOMEDICAL SCIENCES, POSTER #14

Beta-glucosidase B (Bgl B) catalyzes the hydrolysis of glucose from polysaccharides. BglB is a key enzyme in the production of ethanol for clean energy. Despite its usefulness in producing biofuel, studies have demonstrated that Bgl B lacks the preferred thermostability required to increase industrial production. The present research aims to design and express mutant Bgl B proteins to identify Bgl B variants that have higher

thermostability and/or enzymatic activity. Potential mutations were identified using the FoldItStandalone software. Site-directed mutagenesis was utilized to create three mutations for an amino acid residue of Bgl B, namely L108S, L108T, and L108K. The plasmids containing mutant Bgl B genes were transformed into E.coli BLR21(DE3). Protein expression was conducted using the induction of IPTG. Protein purification was done by running a nickel-NTA affinity column. Purified proteins were measured by A280 and confirmed by SDS-PAGE. Future experiments will be conducted to characterize the purified proteins in terms of their enzymatic activity and thermostability. This research can lead to the development of novel, highly thermostable Bgl B for improved applications in industry, which in turn will enable the generation of clean energy more effectively.

Mulvihill H, Chatterjee K. Xi, Wittenberg University.

ORAL PRESENTATION – MOLECULAR AND MICROBIOLOGY, Room 1302, 9:45-10:00 am

Examining tRNA Quality in Yeast Cells Under Oxidative Stress Conditions

This study explores the response of transfer RNA (tRNA) in the yeast *Saccharomyces cerevisiae* to oxidative stress. In protein translation, tRNA attaches amino acids to a growing polypeptide chain at the ribosome. Extra nucleotide sequences present on the 3' end of tRNA, where amino acids attach, interfere with the ability of the tRNA to transport amino acids. Such aberrant tRNA is useless to the cell. Previous work has identified the presence of this end-extended, aberrant tRNA under standard growth conditions in yeast cells. However, there is little research into the quantity of yeast aberrant tRNA under atypical growth conditions. We were interested in exploring the effect of various H₂O₂ concentrations on yeast tRNA quality and aberrant tRNA quantity. We first investigated yeast growth in liquid media under peroxide stress and determined that culture viability decreased after stress application. Through experimental methods, we then observed that under H₂O₂ stress, the aberrant tRNA quantity decreased. Whether aberrant tRNAs are being destroyed or repaired is still under investigation, however, it appears that at high H₂O₂ concentrations, transcription of tRNAs is hindered.

Navarro M, Hsu A., Chauv L, Kurian N, A Thomas, Raghavan A, Qiao N, Peng S, Sukhumalchandra P, St John L, Osilesi O, Vedia R, Kopetz S, Lu S, Morelli M, Alatrash G. Iota Omicron, Houston Christian University.

POSTER PRESENTATION – BIOMEDICAL SCIENCES, POSTER #5

Enhancing Tumor Targeting in Colorectal Carcinoma with Fucosylated TIL

Patients with advanced colorectal carcinoma (CRC) cannot be cured with currently available therapies. Patients with advanced colorectal carcinoma (CRC) cannot be cured with currently available therapies. Furthermore, there is a group of CRC patients who undergo successful curative standard of care treatment but remain with evidence of minimal residual disease (MRD) detectable only by circulating tumor DNA (ctDNA) assays; this group of patients has a high risk for disease recurrence but can be cured using appropriate systemic therapy. Immunotherapy, including adoptive cellular therapy (ACT) with antigen-specific cytotoxic T lymphocytes (CTLs) and tumor infiltrating lymphocytes (TILs), has the potential to treat such patients. A critical impediment to the success of ACT is engineering T cells with the ability to evade the immunosuppressive tumor microenvironment and the capacity to home in sufficient numbers to the tumor site. Studies have noted high levels of transforming growth factor beta (TGF β) in the tumor microenvironment and scant infiltration of adoptively transferred T cells into tumors, both of which

negatively impact the efficacy of adoptively transferred cells. We hypothesize that immunotherapy using TGFbDNRII CRC-TILs +/- fucosylation will inhibit CRC with minimal off-target toxicity.

Nelson, W., and Delghandi, M., Sigma Theta, Texas Wesleyan University.

ORAL PRESENTATION – MOLECULAR AND MICROBIOLOGY, Room 1302, 10:00-10:15 am

Candidate Gene Analysis: Polymorphisms Within COMT, DAT1, & SERT1 and Their Predisposition to Attention Deficit Hyperactivity Disorder

. With prevalence in children reported to be anywhere from 5–7% worldwide and genetic factors contributing up to 80% of overall risk, Attention Deficit Hyperactivity Disorder commonly referred to as ADHD is a heritable, polygenic, and clinically heterogenous neurodevelopmental disorder characterized by the presentation of an individuals' persistent inattention, hyperactivity, and impulsivity. Monoamine: dopaminergic and serotonergic specific signaling pathways both have been found to contribute a substantial portion to ADHD neurobiology as specific genotypes of an individual regarding monoamine signaling remain prominent targets for the understanding of the disorder's genetic basis. This capstone has analyzed three such genes: COMT (catechol-o-methyltransferase), SLC6A3 (solute-carrierfamily-6-member-3), and SLC6A4 (solute-carrier family-6-member-4). Each of the previously mentioned genes possess well characterized polymorphisms that influence reuptake efficiency or the enzymatic degradation of the ligand in their own, yet functionally related ways. Predating replication studies investigating genes with functional similarity and their contribution to the heterogenous nature of the disorder have yielded antithetical results. Therefore, one aimed to establish reliable polymerase chain reaction-based assays for the COMT Val158Met single nucleotide polymorphism (rs4680), SLC6A3 and SLC6A4 variable number tandem repeats, and a SNP within the long allele of SLC6A4 (rs25531). Successful validation of these genotyping methods provided the necessary technical foundation for the execution of a proof-of-concept, family-based case-control, candidate gene analysis that assessed the genetic predisposition conferred by these loci, supporting the broader question of whether specific polymorphisms within monoaminergic genes could serve as reliable biomarkers for the diagnosis of the disorder. No statistically significant associations were found; however, distribution of alleles at the DAT1 locus exhibited patterns that warrant further investigation.

Nesterovitch, N., Yakobovich, R., Nguyen, N., Minond, D., Rho Rho, Nova Southeastern University.

POSTER PRESENTATION – BIOMEDICAL SICENCES, POSTER #9

Immunomodulatory Mechanism of Actions: Effects of Compounds 2155-14 and 2155-18 on cGAS and TBK-1 Levels in the WM-266-4 Melanoma Cell Line.

Melanoma is projected to take 9,000 lives in the United States in 2026, with over half of malignant melanomas harboring BRAF mutations. Immune checkpoint inhibitors (ICIs) stand as the gold-standard for advanced melanoma treatment, yet up to 50% of patients remain unresponsive. Our lab discovered compounds 2155-14 and 2155-18, which were observed to downregulate spliceosomal proteins hnRNP H1 and H2 in treated cells, stimulating upregulation of pro-inflammatory pathways and suppression of anti-inflammatory ones. Previously, treated cell lines showed increased levels of MAVS—an adaptor molecule in the innate immune response known for detecting cytosolic double-stranded RNA (dsRNA)—as well as NF-κB, a group of transcription factors associated with pro-inflammatory cytokine and type I interferon production. Immunomodulatory proteins cGAS and TBK-1 are known participants in NF-κB signaling activation. To

pinpoint NF- κ B activation mechanisms, Western blots were performed on WM-266-4 cells treated with 2155-14/18 to determine cGAS and TBK-1 levels. Results revealed statistically significant cGAS upregulation in treated cells compared to controls, with no significant difference in TBK-1 levels, suggesting cGAS involvement in 2155-14/18 mechanisms of action, while implying TBK-1-independent NF- κ B activation. Prospectively, these findings support hnRNP H1/H2 targeting in conjunction with existing melanoma immunotherapy, which depends on tumor pro-inflammatory landscapes.

Research Funding Source: R16GM159132 NIH/NIGMS (PI – Minond).

Nichols H and Frost L. Mu Chi Beta, University of South Alabama.

POSTER PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL POSTER #47

Is it Hybridization? Investigating Polyploidy in Stuckenia (Potamogetonaceae).

Hybridization is a common evolutionary process in plants, and it can promote speciation. Hybrid speciation is often associated with whole genome duplication, or allopolyploidy. Duplication events can balance an odd number of chromosomes or, if the two parental genomes are incompatible with each other, provide chromosomes to pair with during meiosis. The pondweed family (*Potamogetonaceae*) exhibits high rates of hybridization in two genera, *Potamogeton* and *Stuckenia*, with nearly equal numbers of described hybrids and discrete species. This research examines whether the hexaploid genus *Stuckenia* is of hybrid origin. If so, we would expect to see multiple, distinct haplotypes that match separate parental genomes. Haplotypes of *Stuckenia* were analyzed, and multiple haplotypes were detected--one to five different haplotypes with two to three haplotypes being most commonly observed in samples. However, the inconsistent number and proportion of haplotypes did not match expectations for allopolyploid hybridization. Current results are inconclusive as to the source of polyploidy for *Stuckenia*. Possible explanations for the patterns observed are autopolyploidy (genome duplication without hybridization) followed by sequence divergence among the different copies or segmental allopolyploidy, in which parental genomes are similar enough to pair during meiosis and undergo recombination. Interpreting polyploid genomes is complex and future work will attempt to distinguish between these potential polyploid origins.

Noble, J., Barber, E., Witalison, E., Tau Eta, Catawba College.

POSTER PRESENTATION – MOLECULAR AND MICROBIOLOGY, POSTER #26

Biochemical analysis of the microbiome and proteome of dog saliva.

Dog (*Canis familiaris*) saliva is similar to human saliva in that both host multiple species of bacteria. However, the likeness stops short with dog saliva being a source of allergens for humans. By comparison, the dog oral microbiome has been studied far less than in humans. Our study investigated allergens found in dog saliva through characterization of the bacteria and proteins present. We first surveyed bacteria present in dog saliva samples from a randomized population. Saliva samples were plated onto a general growth media to culture the bacteria present. We isolated colonies to characterize based on Gram status, growth on selective/differential media, and biochemical metabolism. Isolated bacteria of interest were identified through 16S ribosomal RNA sequencing, determining the populations that are most prevalent and comparing results against factors including breed/body conformation, age, sex, health, and diet. To connect these microbiome

findings with allergens present in dog saliva, an ELISA specific to Can f 1, the most common allergen responsible for dog allergies, was performed to quantify Can f1 content. Our findings have the potential to help those who are hypersensitive to these allergens understand the connection between individual and breed-specific characteristics associated with their prevalence in dogs.

This work was supported by the Catawba College Impact Award.

Nguyen, M., Garramone, G., Wells, B., Ezin, M., Epsilon Delta, Loyola Marymount University.

ORAL PRESENTATION -- ECOLOGY, ENVIRONMENT, AND ORGANISMAL, Room 1303, 11:00-11:15 am

Role of Serotonin Receptor 2B in Heart and Cardiac Valve Development.

Cardiac neural crest cells (CNCs) are a critical embryonic population that migrates into the lengthening outflow tract, giving rise to the aorticopulmonary septum, membranous interventricular septum, and contributing to the cardiac valves. While serotonin acts as a neurotransmitter in the adult nervous system, serotonin functions as a morphogen in the embryo, regulating neural crest cell development. Prior work has shown that disruption of serotonin receptors 2B (5-HT2B) and 2C (5-HT2C) causes CNC migration abnormalities, leading to septal malformations in the chicken embryo. Here, we analyzed the impact of serotonergic disruption on cardiac valves, a CNC derivative. Chicken embryos were treated at Day 1, prior to CNC migration, with 1-methylpsilocin (1-MP), a 5-HT2C agonist and 5-HT2B inverse agonist. The embryos were then re-incubated until Day 7.5 for immunohistochemical staining, or until Day 10 for FIJI morphometric analysis. At Day 7.5, when valvular mesenchymal cushions are remodeling, Phosphohistone H3 and Click-iT stainings revealed decreased proliferation and decreased apoptosis in treated cushions. By Day 10, treated embryos exhibited malformed valves, with mitral and aortic valves most affected, and abnormal cardiac morphology, including absent ventricular trabeculae and occasionally absent ventricular lumen. Together, these findings indicate that 5-HT2B/2C signaling promotes valvulogenesis and ventricular development.

Aramide Oladiran, Camila Mayume, Joyce A. Voltolini, Maria Clara Ribeiro, Ana Lazar, Joyce R. Prado, Renato Gregorin, Ana Paula Carmignotto, Alexandre R. Percequillo, and Edson F. Abreu. Epsilon Sigma, Angelo State University, Universidade de São Paulo, Instituto Butantan, Universidade Federal do Rio de Janeiro, Universidade Federal de Lavras, Universidade Federal de São Carlos.

ORAL PRESENTATION -- ECOLOGY, ENVIRONMENT, AND ORGANISMAL, Room 1303, 11:15-11:30 am

Unravelling the Diversity of Nonvolant Small Mammals Along the Purus River, Central Brazilian Amazonia, through Field Work and DNA Barcoding.

Climate change and deforestation are altering the Amazon rainforest at unprecedented rates, increasing the urgency to document and study its biodiversity before major losses occur. Nonvolant small mammals, especially rodents and marsupials, represent a large portion of Amazonian biodiversity, yet little is known about the diversity and occurrence of small mammals across many regions of the Amazon. DNA barcoding has become an important tool for species identification by enabling accurate taxonomic assignments. In July 2024, we conducted a field expedition to the lower Purus River in central Brazilian Amazonia to survey nonvolant small mammals and generate molecular data to support species identification. Sampling was conducted at four sites using Sherman, snap, and pitfall traps, in addition to nocturnal hunting. With a total of 5,337 conventional trap-nights and 986 pitfall trap-nights, we captured 85 individuals representing 24 species,

including nine marsupials and 15 rodents. Sampling success was 0.94% for conventional traps and 1.32% for pitfall traps. Sherman traps and nocturnal hunting yielded the highest number of species across methods (12 and 11 species, respectively), followed by pitfall traps (six species). To complement field identifications, rodent tissue samples were processed for DNA extraction and barcoding using the Oxford Nanopore MinION adaptive sequencing platform. Preliminary analyses indicated that optimized extraction protocols yield DNA concentration sufficient for barcode generation, with complete mitochondrial genomes obtained for multiple samples, particularly within the species-rich genus *Oecomys*. All together, these findings highlight the high diversity of nonvolant small mammals in the Purus River basin and underscore the value of integrating field surveys with DNA barcoding. Our study provides an important baseline for future taxonomic, ecological, and conservation assessments in a region of the Amazon that remains poorly studied.

Park R, Connor M., Epsilon Omicron, Colorado Mesa University.

POSTER PRESENTATION – BIOMEDICAL SCIENCE, POSTER #2

A severe case of spina bifida in the Donated Human Skeleton Collection at the Forensic Investigation Research Station, Colorado Mesa University

Descriptions and imaging of skeletal markers of spina bifida (SB) are often based on radiological observation, which does not always for clear visualization of pathology. Descriptions and imaging of skeletal markers of spina bifida (SB) are often based on radiological observation, which does not always for clear visualization of pathology. This description of a severe case from skeletal remains will help clinicians better visualize the condition, so that treatment and diagnosis of spina bifida may continue to develop for the betterment of medicine. Forensic anthropologists will also benefit from the photographs of these skeletal markers, assisting them in the post-mortem identification of individuals with this condition. This case study describes and examines the skeletal anomalies consistent with a case of severe spina bifida observed on an individual's skeletal remains. Donor 14-11, is a human body donation at the Forensic Investigation Research Station (FIRS) at Colorado Mesa University (CMU). The clearest indicator of spina bifida on these skeletal remains is the two cleft neural arch lesions spanning a total of ten vertebrae affecting T8-L2 and L4-S1. There is also a fusion from L3 through the sacrum, which is supported by surgical implants. Skeletal photography of spina bifida is relatively rare, there are several examples of lesions in the sacrum. The literature lacks osteological photographs of lesions, making the documentation of this extreme case even more significant.

Payne, E., Pytel, A., Iota Psi, Hillsdale College.

ORAL PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL, Room 1303, 9:15-9:30 am

The Effects of Roundup on Motility and Shelter Utilization in Crayfish Faxonius virilis.

The global use of Roundup has increased substantially over recent decades, leading to widespread environmental distribution of its active ingredient, glyphosate, and its primary metabolite, aminomethylphosphonic acid (AMPA). Both compounds have been detected in surface and groundwater systems worldwide as a result of agricultural runoff. While previous studies have demonstrated physiological effects in crayfish exposed to high concentrations of Roundup, the behavioral effects of environmentally relevant concentrations remain unclear. This study evaluated the effects of realistic exposure levels of glyphosate (8.1µg/L) and AMPA (5.6µg/L) on crayfish behavior. *Faxonius virilis* crayfish were exposed to these concentrations for six days, after which motility and shelter utilization behaviors were analyzed, including

average speed, top speed, proportion of area explored, time spent in shelter, and total distance traveled. Behavioral metrics were analyzed using one-way ANOVA. There were no significant differences between the treatment groups. These null results suggest that it is unlikely that the crayfish are experiencing toxicity from acute exposure to realistic concentrations.

Funding provided by Hillsdale College LAUREATES program.

Pérez-González, A., Rodríguez-Mártir, K., Ph.D. Zeta Lambda, University of Puerto Rico –Aguadilla Campus.

POSTER PRESENTATION – MOLECULAR AND MICROBIOLOGY, POSTER #17

Tissue-Specific Antibacterial Activity of Puerto Rican Persea americana Extracts.

The rise of antibiotic-resistant microorganisms highlights the urgent need for novel antimicrobial agents. In this study, methanolic extracts from various tissues of *Persea americana* (avocado), including peel, pulp, leaf, and stem, collected in Puerto Rico, were evaluated for their antibacterial potential. Plant materials were subjected to methanolic extraction, followed by solvent evaporation and resuspension in deionized water. Antibacterial activity was assessed using the Kirby–Bauer disk diffusion assay against selected Gram-positive and Gram-negative bacterial strains. The peel extract showed the strongest and most consistent inhibition of Gram-positive and Gram-negative bacteria, with *Clostridium perfringens* and *Aeromonas hydrophila* being most susceptible. Leaf and stem extracts also displayed antibacterial activity, notably against *Escherichia coli* and *Bacillus cereus*, suggesting the presence of compounds with broad-spectrum activity. In contrast, pulp extracts showed no detectable antibacterial effect. Phytochemical screening revealed the presence of flavonoids exclusively in the peel extract. However, the antibacterial activity observed in leaf and stem extracts suggests that additional bioactive compounds may also contribute to these effects. Overall, these findings highlight *Persea americana* as a promising natural source of antibacterial agents and warrant further investigation of active components and their therapeutic potential.

Funding provided by Beta Beta Beta Biology Honor Society Research Grant 2025 – 2026 and the American Heart Association Scholar’s Program 2025 – 2026.

Peurifoy M and Hartwig C. Tau Eta, Catawba College.

ORAL PRESENTATION – BIOMEDICAL SCIENCES, Room 1301, 9:15-9:30 am

Investigating the Mechanistic Effect of Heme on Artemisinin-induced Ferroptosis in MCF-7 Cancer Cells.

Artemisinin (ART), a sesquiterpene lactone endoperoxide, has been studied for its potential as an anti-tumor therapeutic. In tumor cells, the proposed mechanism suggests that ART is activated by iron and heme, generating reactive oxygen species (ROS), disrupting iron metabolism, and inducing endoplasmic reticulum stress. Heme, an iron-containing porphyrin, cleaves the endoperoxide bridge of ART to produce cytotoxic radicals which amplifies ROS production. Many cancers undergo “heme overdrive,” increasing heme synthesis to support rapid proliferation, which may be exploited for selective ART activation. Preliminary work using resazurin-based viability assays on MCF-7 and HeLa cells suggests that ART and heme, alone and in combination, may inhibit cancer cell growth, while treatment of non-cancerous NIH 3T3 cells is hypothesized to reveal selective toxicity. To further investigate mechanisms, we propose parallel experiments in cancer cell lines and normal breast epithelial cells (HMEC). Ferroptosis, an iron-dependent cell death pathway, will be

evaluated through RT-qPCR analysis of key markers: SLC7A11, CHAC1, PTGS2, and GPX4. Lipid peroxidation will be quantified by malondialdehyde (MDA) assays following treatment with ART, heme, or ART and heme, compared to the known ferroptosis inducer FINO2. Protein-level analysis of ferroptosis pathways will be performed using western blotting to assess expression of GPX4, SLC7A11, and related regulators, alongside gene expression analysis to confirm transcriptional changes induced by ART and heme treatments. These studies will aim to clarify whether ART and heme selectively triggers ferroptotic death in cancer cells by exploiting their elevated heme metabolism. Together, these studies will advance our understanding of ART/heme interactions and highlight ferroptosis induction as a promising direction for selective chemotherapeutic therapy.

Pierre Paul, Elijah. Upsilon Zeta, [Mercy University](#)

POSTER PRESENTATION – BIOMEDICAL SCIENCES, POSTER #13

H101K & H101S Mutation Improves Predicted Stability and Protein Recovery of β -Glucosidase B in a Bacterial Expression System

The increasing demand for renewable energy has led to a boom in interest in bioethanol production as a sustainable alternative to fossil fuels. β -Glucosidase B (BglB) is an essential enzyme for cellulose breakdown which hydrolyzes cellobiose to glucose followed by fermentation to ethanol. However, the efficiency of bioethanol production in industrial environments can be limited by the stability, expression and efficiency of the enzymes. This study explored the effects of specific mutations at residue 101 of BglB on protein stability, bacterial transformation, protein expression and purification. In particular, we altered histidine at position 101 to lysine in H101K and to serine in H101S.

Foldit computational modeling was utilized to compare the structural stability of wild-type BglB with the H101K and H101S mutants. The mutant plasmids were transformed into *Escherichia coli* BLR21 (DE3), chosen using kanamycin plates, expressed by IPTG induction, purified by Ni-NTA affinity chromatography and evaluated by SDS-PAGE. Foldit analysis revealed that the energy score of wild type BglB was -1089.697 and for H101K it was somewhat lower (-1090.485) and for H101S it was slightly higher (-1089.519). Colony development was seen on transformation plates for both mutants, with colony density for H101K being higher than H101S. SDS-PAGE examination revealed protein bands at approximately the anticipated molecular weight of BglB, indicating effective production and purification of both mutants. H101K demonstrated higher projected stability and better protein recovery in the experiments compared to H101S, suggesting that replacement with lysine at position 101 would be more beneficial for future testing of activity and stability.

Posadas, C., Egesi, J., Alegria, I., Gallardo, K., Iota Omicron, [Houston Christian University](#).

POSTER PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL POSTER #44

Difference in Anthocyanin Expression in Hydroponics vs. Soil-Based Agriculture Under Light and Temperature Stressors

Anthocyanins are flavonoid compounds located in a variety of plants, namely *Brassica rapa*. They can be observed as pigments of pink, red, purple, or blue in flowers, vegetables, and other plants. These compounds serve as promoters of plant propagation and defense mechanisms (Alappat). Anthocyanin also plays a beneficial role in terms of health, with studies indicating positive effects against cancer, heart disease, and

varying levels of beneficial antioxidants. The intensity and accumulation of anthocyanin expression vary depending on environmental conditions/stressors (Ma et al), with multiple studies looking into what factors affect anthocyanin expression. These factors and effects may remain constant depending on the plant under the assumption that the method of growing the plant (i.e., potted/soil) remains constant. In our study, we will discuss the differences in anthocyanin pigment expression between soil-based and hydroponically grown *Brassica rapa* when put against the same stressors. We will be measuring pigment expression of anthocyanin as well as plant health in terms of height, width, leaf surface area, and chlorophyll intensity. This will be done in hopes of finding a more effective and efficient way of growing these plants with a higher concentration of their beneficial components.

Powell, A., Perez, J., Henning, J. Mu Chi Beta, University of South Alabama.

ORAL PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL, Room 1303, 10:15-10:30 am

Ghost Crabs Take the Spotlight: Ambient Artificial Light Pollutions' effect on Atlantic Ghost Crabs (Ocypode quadrata).

Artificial light pollution, the effects of artificial light in natural spaces, is an emerging problem in rapidly urbanizing coastal ecosystems. Light pollution has well-documented impacts on the navigation, feeding behavior, and nesting activity of organisms. Atlantic Ghost Crabs (*Ocypode quadrata*) are nocturnal mesopredators that visually seek prey, evade predators, and are common bioindicators of human activity in beach ecosystems. Escape response behaviors are essential for survival, and light pollution may impact their ability visually detect predators. To determine the impact of background light pollution on ghost crab escape responses, we reared 15 crabs from a high-light pollution urbanized area of beach and 15 crabs from a low-light pollution undeveloped area of the beach on Dauphin Island, Alabama. We reared crabs in a common environment and recorded behavioral responses following a stimulus of being pursued by flashlight. We found that crabs from low-light beaches fought more, froze less, and burrowed less than crabs from high-light beaches. Additionally, we found males had more defensive behaviors (run, freezing) relative to females that were more likely to fight and burrow. Additionally, we found evidence of plasticity in behavioral responses, as when we added lab ambient night light, crabs ran more and burrowed less.

Funding provided by a TriBeta Research Grant and a Summer Undergraduate Research Fellowship from the University of South Alabama.

Pratt, C., Russell, A., Iota Psi, Hillsdale College.

ORAL PRESENTATION – BIOMEDICAL SCIENCES, Room 1301, 9:30-9:45 am

Reduced Streptococcus mutans Biofilm Formation on Zirconia Compared to Titanium: The Role of Surface Roughness in Dental Implants.

Peri-implantitis is an inflammatory infection caused by biofilm formation surrounding oral implants, leading to deterioration of the supporting bone. This experiment evaluated whether titanium or zirconia, two popular implant materials, is more resistant to biofilm formation, considering surface roughness as a contributing factor. Surface roughness was measured via atomic force microscopy, and biofilm accumulation was quantified after growth in a Drip Flow Reactor, crystal violet staining, and spectrophotometry. Titanium showed greater surface roughness (M = 186.89 nm, SD = 32.85) than zirconia (M = 53.58 nm, SD = 10.11), with

a Mann-Whitney U test confirming zirconia was significantly smoother ($Z = -4.12895$, $p < 0.0001$). Titanium also exhibited higher biofilm biomass (OD600: $M = 5.332$, $SD = 2.791$) compared to zirconia (OD600: $M = 1.185$, $SD = 0.369$), with significantly less biofilm accumulation on zirconia ($Z = -4.12805$, $p < 0.0001$). These findings suggest zirconia may offer a clinical advantage by reducing biofilm formation and peri-implantitis risk.

This research was funded by Hillsdale College.

Robison, S., Durkin, E., Sigma Nu, The University of Tampa.

POSTER PRESENTATION – MOLECULAR AND MICROBIOLOGY, POSTER #36

Detection of Toxoplasma gondii Using REP529 and Its Association with Fecal Glucocorticoid Immunoreactivity in Felis catus.

Toxoplasma gondii is a widespread protozoan and opportunistic endoparasite that infects domestic cats (*Felis catus*) via fecal-oral transmission. *T. gondii* can cause the onset of symptoms such as lethargy, anorexia, behavioral change, and neurological impairment in cats that serve as definitive hosts. This study utilizes REP529-targeted PCR to establish *T. gondii* infection in shelter cats and investigate a potential correlation between parasitic infection and host physiological state by utilizing ELISA to evaluate fecal glucocorticoid immunoreactivity (FGI). Fecal samples were collected from a sample size of twenty shelter cats for DNA extraction and analyzed using molecular and immunoassay techniques. It is hypothesized that given the physiological and psychological stress *T. gondii* infection can impose on cats and confounding factors such as a shelter environment, infected individuals will display a particularly elevated FGI compared to those uninfected. These findings would establish a connection between parasitic infection and hypothalamic-pituitary-adrenal axis response in shelter cats to provide insights into veterinary parasitology and implications for animal welfare practices for shelter parasite prevention strategies.

Funding provided by the University of Tampa Biology Department.

Roberts, L., Rushing, A., Tau Eta, Catawba College.

POSTER PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL, POSTER #39

Examining the Diversity and Protective Functions of the Salamander Microbiota.

The process of cutaneous respiration is critical for gas exchange in salamanders. An external mucus layer is required to maintain moisture levels sufficient to dissolve atmospheric oxygen. Additionally, the mucus layer contains microorganisms, host antibodies, and antimicrobials that serve as the first line of defense against pathogens. Several studies have shown that the salamander mucosome plays a protective role against fungal infection. This study aims to better understand the symbiotic relationship between microbial populations and their amphibious hosts by characterizing the diversity and antibiotic-production capabilities of mucosome bacteria in salamanders that are native to the Piedmont region of North Carolina. We collected mucus swabs of native salamanders residing in the Catawba College ecological preserve, including *Ambystoma opacum*, *Ambystoma maculatum*, and *Plethodon cylindraceus*. Bacteria isolates were cultured in the laboratory, screened for their antimicrobial activity, and identified using 16s rRNA gene sequencing. Our analysis has identified several species of *Pseudomonas* that appear to possess antibacterial activity in a laboratory setting.

Rosario Santiago, J., Rodríguez Velázquez, A., Santos López, Y., Zeta Epsilon, University of Puerto Rico at Cayey.

ORAL PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL, Room 1303, 10:00 – 10:15 am

Occurrence of Microplastics in Rocky Shore Chitons from Contrasting Anthropogenic Zones in Puerto Rico.

Microplastic pollution is an increasing concern in coastal ecosystems, yet many benthic organisms remain understudied as potential bioindicators of contamination. Chitons, marine mollusks that graze on rocky substrates, are in constant contact with sediments and surface particles, making them particularly susceptible to ingesting microplastics present in biofilms and detrital material. Due to their feeding behavior and close association with intertidal substrates, chitons may provide valuable insight into the presence and distribution of microplastics in coastal environments. This study evaluated the occurrence of microplastics in chitons from two coastal areas of Puerto Rico that differ in levels of anthropogenic influence: San Juan Bay, characterized by intense urban and maritime activity, and Piñones, a coastal area with comparatively lower anthropogenic pressure. Specimens were collected from multiple sampling locations within each area. A total of 54 chitons were analyzed, with *Acanthopleura granulata* being the most abundant species. Laboratory processing included chemical digestion to remove organic matter, followed by filtration and ultraviolet light examination to facilitate particle detection. Microplastic-like particles were detected in chitons from both study areas, with fibers representing the most common particle type. Individuals collected from the more urbanized environment showed a greater abundance of particles compared to those from the less impacted site, and statistical analysis (Mann–Whitney U test) indicated significant differences between locations. These findings highlight the influence of anthropogenic activity on microplastic contamination in coastal ecosystems and support the potential use of chitons as bioindicators of microplastic pollution in rocky intertidal environments.

Funding provided by STARp, PR-LSAMP, and MSEIP.

Santiago-Martell, J. E., Veray-Vélez, C. A., Rodríguez-Mártir, K. M., Zeta Lambda, University of Puerto Rico at Aguadilla.

POSTER PRESENTATION – MOLECULAR AND MICROBIOLOGY, POSTER #16

Antibacterial Activity of Annona muricata: Tissue-Specific and Fertilization Effects.

Antibiotic resistance continues to pose a significant global health threat, underscoring the urgent need to discover novel antibacterial agents from natural sources. *Annona muricata* (soursop) has been reported to contain bioactive compounds, including flavonoids and polyphenols, associated with antimicrobial activity. This study evaluated the antibacterial effects of aqueous extracts from leaves, stems, peel, and pulp of fertilized and non-fertilized soursop trees from Puerto Rico against nine Gram-positive and nine Gram-negative bacterial strains using the disk diffusion method. Results demonstrated concentration-dependent inhibition, in addition, that extract potency varies according to plant tissue, fertilization status, and bacterial species. In non-fertilized trees, leaf extracts exhibited the strongest inhibition against *Citrobacter freundii* and *Bacillus cereus*, while stem extracts were most effective against *Aeromonas hydrophila* and *Bacillus cereus*. Peel and pulp extracts showed notable activity against *Enterococcus durans* and *Staphylococcus aureus*, respectively. In fertilized trees, leaf and stem extracts strongly inhibited *Enterococcus durans*, whereas *Pseudomonas fluorescens* was highly susceptible to leaf, stem, and peel extracts. Additionally, peel extracts

demonstrated marked antibacterial activity against *Micrococcus roseus*. Overall, these findings highlight *Anonna muricata* as a promising natural source of antibacterial compounds in Puerto Rico. The observed variability in activity suggests that both plant physiology and extraction sources influence antimicrobial efficacy. Further studies, including minimum inhibitory concentration assays and phytochemical characterization, are warranted to identify active compounds and evaluate their potential for therapeutic applications.

Funding provided by the Beta Beta Beta Biology Honor Society Research Grant (2025–2026) and the US Department of Education, Title III: Minority Science and Engineering Improvement Program (MSEIP).

Schultz, K., Darrow, K., Brown, E., Sigma Tau, Florida State University.

POSTER PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL, POSTER #53

Arc1 functions in insulin producing cells to regulate sleep and metabolic rate in Drosophila.

Neural regulation of sleep and metabolic homeostasis is critical to health, yet the mechanisms coordinating these processes remain poorly understood. The gene Activity-regulated cytoskeleton-associated protein 1 (Arc1) has been implicated in synaptic plasticity and metabolic regulation, suggesting roles in integrating sleep and metabolic function. *Drosophila* are ideal model organisms with short generation times and easily manipulated genomes. Using this model, our lab demonstrated that Arc1 silencing increases sleep duration by prolonging individual sleep bouts. These effects localize to neurons expressing *Drosophila* insulin-like peptide 2 (Dilp2), suggesting that loss of Arc1 in Dilp2 promotes deep sleep. In *Drosophila*, like mammals, metabolic rate declines during sustained sleep, providing a physiological readout of sleep-depth. Measuring CO₂ output using indirect calorimetry across behavioral states, we investigated whether Arc1 expression modulates sleep-dependent metabolic regulation. We hypothesized if silencing Arc1 expression in Dilp2 neurons promotes deeper sleep, a steeper reduction in metabolic rate during sleep would accompany it. However, sleep-dependent modulation of metabolic output was preserved. Moreover, Arc1 silencing reduced metabolic rate during both wakefulness and sleep, indicating a decrease in baseline metabolic activity and suggesting that Arc1 may independently regulate sleep duration and metabolic rate, revealing a functional dissociation between sleep architecture and metabolic physiology.

Funding provided by TriBeta, the National Institutes of Health (R00AG071833), and the FSU Council on Research and Creativity First Year Assistant Professor (FYAP) grant program.

Sieja, D., Thompson, E., Barnett, A., Delta Upsilon Sigma, DeSales University.

POSTER PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL, POSTER #51

Exploring the evolution of arachnid appendages through embryonic gene expression in the mite Archeogozetes longisetosus.

The arthropods, which include insects, crustaceans, millipedes, centipedes, and arachnids, owe their evolutionary success to the myriad appendage types that line their bodies. These appendages are composed of modular segments, known as podomeres, that lie along their proximal-distal axes. The evolutionary changes in arthropod appendages are usually the result of changes in the shape, number, and morphologies of these podomeres. Arachnid walking legs represent an arthropod appendage that has remained largely unchanged

throughout arachnid evolution. One exception is in the acariform mites, which have lost, or fused, many of their walking leg podomeres. Specifically, it has been hypothesized that acariform mites have lost one large podomere in their walking legs, i.e., the metatarsus. It has also been hypothesized that a subgroup of acariform mites, the oribatids, have lost an additional podomere. It has been hypothesized that this lost podomere is in fact a “re-fused” femur that is separated into two sub-podomeres in all other acariform mites. Because these hypotheses were developed using morphology long before the emergence of tools that can be used to follow embryonic gene expression, these hypotheses need further interrogation. We therefore propose to use modern gene-expression tools to identify what podomeres are grown, fused, or lost in the acariform, oribatid mite *Archezogetes longisetosus*.

Skinner, K., Henning, J., Mu Chi Beta, University of South Alabama.

ORAL PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL, Room 1303, 10:30-10:45 am

Rethinking Sand: A Restoration Dilemma.

Coastal ecosystems in the Gulf are increasingly threatened by human disturbance, rapid urbanization, erosion, and shortages of restoration materials. At the same time, glass waste continues to accumulate in landfills. One proposed solution to address both environmental issues is recycling glass into sand for use in coastal restoration. Although recycled glass sand is physically and visually indistinguishable from beach sand, its ecological role in plant growth and herbivore interactions remains unclear. This study used common milkweed (*Asclepias incarnata*) to test how substrate type (beach vs. glass sand), microbial additions, and herbivore activity (*Danaus plexippus*) interact to influence plant performance. Forty-four milkweed plants were grown under a fully factorial greenhouse design, with biweekly measurements of plant height and leaf count, followed by biomass harvest. We found limited differences between beach sand and glass sand; where differences occurred, glass sand resulted in taller plants over time compared to beach sand. Additionally, microbial addition increased root biomass, suggesting microbes enhance nutrient acquisition regardless of substrate type. Caterpillar feeding reduced plant height and leaf number across all treatments, but the effects of herbivory were stronger in beach-grown plants. These findings suggest recycled glass sand can support plant growth comparable to, and in some cases more resilient than, natural beach sand, particularly when paired with microbial addition. Importantly, the interaction between substrate and herbivory highlights trade-offs between plant vigor and herbivore resistance in shaping restoration outcomes.

Funding provided by the University of South Alabama Honors College.

Smith, H., Singh, S., Hartwig, C., Tau Eta, Catawba College.

POSTER PRESENTATION – BIOMEDICAL SCIENCES, POSTER #1

Impact of Cortisol on the Chemotherapeutic Effectiveness of Cisplatin in MCF-7 Breast Cancer Cells.

Cancer is a leading cause of death worldwide, responsible for over 9 million deaths annually (Siegel et al., 2020). Chemotherapy is widely used to treat cancer, but its effectiveness is often limited by severe side effects and variable cellular responses. One factor influencing these outcomes is the body’s stress response, particularly the hormone cortisol. As the primary stress hormone, cortisol can affect cellular processes and has been shown to promote cancer cell survival and resistance to apoptosis, potentially reducing the effectiveness of chemotherapy (Volden & Conzen, 2013). Despite this, the interaction between cortisol and

chemotherapy response in cancer cells has not been fully explored in vitro. This study aims to investigate how elevated cortisol levels influence the response of human breast cancer cells (MCF-7) to the chemotherapeutic agent cisplatin. Specifically, it examines whether cortisol alters cell viability and apoptosis when cells are exposed to chemotherapy. We hypothesize that MCF-7 cells treated with both cisplatin and elevated cortisol will show increased viability compared to cells treated with cisplatin alone. Understanding this relationship may provide insight into how stress impacts chemotherapy effectiveness and could contribute to improving cancer treatment outcomes.

Stark, I., Wyse, S., Dykstra, A., Gamma Omega, Bethel University.

POSTER PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL, POSTER #40

Assessing the long-term impact of goat grazing on the abundance of Rhamnus cathartica.

Globalization and deforestation have significantly affected local environments by introducing invasive species like *Rhamnus cathartica* to many areas of the US where it grows unchecked. Our study used long-term data from periodically goat-grazed areas near Bethel University, MN, to evaluate the effectiveness of goat grazing to manage *R. cathartica*. Random one square meter quadrats were established in 2018 (n=70) to compare differences in *R. cathartica* stem density in three height categories (0–30 cm, 30–150 cm, >150 cm) between control and treatment plots. Since 2018, grazed plots show consistent reductions in stem density across all three height classes after grazing. Spring pre-grazing stem densities show no significant group-by-year interaction for short and mid-height stems, but a significant interaction exists for stems exceeding 150 cm, suggesting goat grazing impacts large *R. cathartica* tree growth. Longitudinal data shows goat grazing as a promising deterrent to *R. cathartica* overgrowth, especially in combination with local nonvascular species. Further research will investigate different patterns of grazing over time, highlighting cost-effective solutions for land owners, and the impact of other plant species on *R. cathartica* abundance.

Stanfield, Z.L., Ammerman, L.K., Dixon, M.T, Epsilon Sigma, Angelo State University.

ORAL PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL, Room 1303, 9:45-10:00 am

Investigating the Benefits of Invasive Species for Native Species: The Dietary Relationship Between the Texas Map Turtle and Zebra Mussels

This project examines the incorporation of invasive zebra mussels (*Dreissena polymorpha*) into the dietary habits of the Texas Map Turtle (*Graptemys versa*) population in Lake Nasworthy, San Angelo, Texas. Because female map turtles are typically specialists in mollusks and there are limited native mollusks in this area, this newly introduced zebra mussel may represent a new potential food source. To assess this possibility, we will collect fecal samples from wild-captured turtles, and we will utilize quantitative polymerase chain reaction (qPCR) analysis to document and quantify the presence of zebra mussel DNA. This project adds to our knowledge of the potential effects of an invasive species on these turtles and may provide evidence of some ecological benefit of the invasion in a setting where it is not normally considered.

Streng, K. J., Kohler, K. N., Flores-Mireles, A. L., Upsilon Nu Delta, University of Notre Dame.

ORAL PRESENTATION – MOLECULAR AND MICROBIOLOGY, Room 1302, 11:00 – 11:15 am

Investigating SprE-Mediated Immune Evasion in Enterococcus faecalis: Implications for Catheter-Associated Urinary Tract Infections.

Catheter-associated urinary tract infections (CAUTIs) are the most prevalent hospital-acquired infection, with 15–25% of all hospitalized patients receiving catheters—a proportion expected to increase alongside aging populations and rising chronic disease rates. *Enterococcus faecalis* has emerged as a serious CAUTI pathogen, leveraging secreted proteases, metalloproteinase gelatinase (GelE) and serine protease (SprE), to evade host immunity. While GelE is known to degrade complement component 3 (C3) to prevent opsonophagocytic killing, SprE's immune evasion potential is unexplored due to inactivity under standard lab conditions. Crucially, in urine conditions, more accurately representing the catheterized environment, our group has identified GelE independent SprE activation. We hypothesize that SprE similarly degrades C3, shielding *E. faecalis* from complement-mediated destruction and enabling persistent infection. Here, we demonstrate active C3 recruitment to CAUTI catheters and *E. faecalis* presence correlating with reduced C3 abundance, suggesting active complement evasion. We show SprE degrades human and murine C3, reduces bacterial surface C3 deposition, and enhances survival against neutrophil and macrophage killing—effects dependent on catalytic activity. Furthermore, GelE shows limited activity toward non-human C3, highlighting SprE's importance in murine models. Together, these findings reframe SprE as a key urine-activated immune evasion factor and promising therapeutic target for persistent *E. faecalis* CAUTI.

Summers, E., Perez, J., Mu Chi Beta, University of South Alabama.

ORAL PRESENTATION -- ECOLOGY, ENVIRONMENT, AND ORGANISMAL, Room 1303, 11:45-12:00 pm

Testing the role of thyroid hormone signaling in aseasonal breeders using zebra finches (Taeniopygia guttata) as a model.

All vertebrates regardless of breeding strategy utilize the Hypothalamic Pituitary Gonad (HPG) axis to regulate reproduction. In seasonal breeders, changes in deiodinase enzymes altering local T3 signaling in the hypothalamus are strongly tied to reproduction. However, the role of deiodinase enzymes and local T3 signaling in regulating reproduction in aseasonal species has been poorly studied. Prior work found that when breeding is suppressed via water restriction in female zebra finches, hypothalamic deiodinase 2 expression increases. Deiodinase 2 is the primary enzyme that locally converts prohormone T4 into bioactive T3, suggesting that T3 plays a role in inhibiting reproduction. This study tested the hypothesis that an increase in T3 directly inhibits reproductive physiology and behavior in the aseasonally breeding Zebra Finch. Using subcutaneous, slow release T3 implants we aimed to establish a causal relationship between elevated T3 levels and suppression of reproduction. Breeding pairs of finches given ad libitum resources, including nesting material, were subject to either T3 implant or sham implantation. Finches were observed for three and a half weeks before tissue collection. Males in the control group had well developed nests, while treatment group males had either not constructed a nest or produced incomplete nests. Males maintained large gonads consistent with previous findings, but did show suppression of reproductive behavior (i.e. nest building). Females showed a trend towards reduced follicles and ovarian mass following T3 treatment. Our data supports the modulation of neural T3 signaling as an upstream regulator of the HPG axis to aseasonal breeders.

Funding provided by Tri Beta Research Grant and remainder of costs were covered by the PI.

Taylor M, Long O. Theta Pi, University of Pittsburgh at Greensburg.

POSTER PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL, POSTER #48

Effects of Lithium Chloride and Mithramycin in C. elegans: Potential Therapeutic Treatments for Huntington's Disease

Huntington's Disease (HD) is a genetic neurodegenerative disease caused by mutations in the huntingtin gene (repeats of CAG), leading to severe motor, cognitive, and psychiatric symptoms. Despite advancements in understanding its pathology, there is currently no cure. This research aims to explore potential therapeutic treatments using *Caenorhabditis elegans* (*C. elegans*) as a model organism. Specifically, the study investigates the effects of Lithium Chloride (LiCl) and Mithramycin (MTR), two compounds with neuroprotective properties, on improving Huntington's Disease symptoms in transgenic *C. elegans* expressing mutant huntingtin protein (mHTT). The strain, EAK103, has 128 CAG nucleotide repeats, causing a severe form of the disease in the worms. Previous findings suggest that LiCl improves motility without affecting lifespan, while MTR shows potential for prolonging lifespan and reducing neuronal cell death. To determine the impact of these treatments on the animals we will utilize three phenotypical assays: a thrashing assay to measure animal movement, an imaging assay to measure changes in protein expression, and a longevity assay to measure the treatments' impact on the animals' lifespan. We found in wild-type animals, movement decreased significantly when exposed to LiCl; however, in the EAK103 strain, 25 mM LiCl led to a significant increase in thrashing, suggesting that LiCl may help alleviate the HD symptoms. We observed 75 mM LiCl further increased thrashing in the EAK103s, providing additional evidence that LiCl could be a potential treatment for symptoms associated with HD. Imaging results showed that LiCl led to an increase in YFP expression in the EAK103 strain compared to the control, suggesting that these treatments increase HTT protein accumulation rather than clear it. Currently, we are investigating the impact of MTR alone and in conjunction with LiCl to determine its impact on phenotypical changes. By assessing movement, longevity, and protein aggregation through fluorescence imaging, this research seeks to determine the efficacy of these compounds, individually and in combination, as potential treatments for Huntington's Disease.

Terzian, S., Wynkoop, H., Jones, B., Wehenkel, M., Brenes-Chacon, H., Ramilo, O., Bline, K. E., and Mejias, A., Mu Tau, Christian Brothers University.

ORAL PRESENTATION – BIOMEDICAL SCIENCES, Room 1301, 10:30-10:45 am

Impact of virus and bacteria co-detection in children with severe malaria.

Malaria is a leading cause of death in children under five years of age worldwide. Clinically, malaria, pneumonia, and other febrile illnesses often present with similar symptoms, complicating management. The extent to which respiratory pathogens influence the clinical outcomes of children with malaria is poorly defined. This study aimed to characterize the prevalence of respiratory pathogens and assess their potential impact on clinical outcomes among pediatric malaria cases. From January 2021 through June 2023, children hospitalized with malaria in Blantyre, Malawi were enrolled, nasopharyngeal (NP) swab samples obtained and stored at -80 °C for further detection of 24 respiratory viruses, 3 herpes viruses and 10 bacteria using a PCR panel (TrueMark™ 2.0, OpenArray). Clinical information was collected and analyses were conducted to assess the role of pathogen co-detection on clinical outcomes defined as development of sequelae or death. Of 91 children enrolled, median age was 4.5 years, ranging from 6 months to 13.5 years; 43% (n=39) were males. Overall, 6 (7%) children experienced severe sequelae and 15 (16%) died. Children that died were significantly younger (3.1 [2.3-4.5] yrs) compared to survivors (4.7 [3.1-7.1] yrs) and those who experienced sequelae (5.2

[3.7-6.8] yrs; $p < 0.01$). Differences in fever, oxygen requirement, level of parasitemia and the Blantyre coma score according to severity are included in Table 1 in our presentation. A NP bacterial pathogen was identified in 97% ($n=88/91$) of children and detection rates varied by severity. Specifically, *S. pneumoniae* was identified in 100% of children who died compared with 67% of those with sequelae and 71% of survivors ($p=0.03$). *H. influenzae* detection ranged from 67% in children with sequelae to 76% in survivors and 93% in those who died ($p > 0.05$). Similarly, *K. pneumoniae* was identified in 53% to 67% of children with no differences according to severity. A respiratory virus was detected in 69% of children, with rhinoviruses (42%) and adenoviruses (26%) being the most frequently identified, and showing comparable distributions across severity groups ($p > 0.05$). Lastly, CMV was identified in 80% of children that died vs 33% of those with sequelae and 53% of survivors ($p=0.07$). Detection of bacterial and viral pathogens in the upper respiratory tract was common in children with malaria. *S. pneumoniae* was identified in all children who died, and CMV in 80%. Clarifying the contribution of pathogen co-detection to adverse clinical outcomes in these children requires further studies including those examining their relationship with host immune responses.

Funding for this research was provided by St. Jude Children's Research Hospital and Nationwide Children's Hospital.

Thomas, B., Scoville, G., Rhodes, M. Upsilon Gamma, [Saint Vincent College](#).

ORAL PRESENTATION -- ECOLOGY, ENVIRONMENT, AND ORGANISMAL, Room 1303, 10:45-11:00 am

Effects of the Lunar Cycle and Oxytocin on the Hormonal Stress Responses, Anxious Behaviors, and Weight Changes of Male and Female Mice

The influence of the lunar cycle on animal behavior and physiology represents a captivating yet underexplored research topic. Independent of the moon, other recent studies have suggested the efficacy of oxytocin (OXT) as a weight loss therapy and stress reducer. This novel study integrated these previously unrelated approaches to examine the relationships among stress, the lunar cycle, and oxytocin administration in male and female mice. Corticosterone (CORT), stress behaviors, and body weights were assessed over two lunar cycles in groups exposed to stress and administered OXT. Anxiety and CORT significantly fluctuated across the lunar cycle; the full moon phase augmented anxiety and CORT responses in both sexes. Treatment, lunar phase, and sex influenced anxiety and CORT. OXT significantly lowered CORT to a greater degree in females than in males. Results demonstrate that OXT inversely influenced weight. This study offered a dynamic integration of animal physiology research and the impacts of the lunar cycle. Our results demonstrated interesting interactions among sex, stress, OXT, lunar influences, and behavior. Future studies should account for lunar cycle and hormonal interactions when investigating anxiety behaviors and stress physiology in animals and humans.

Thompson, J. C., Salvador, E. M., Cushing, S. D., Alday, L. J., Davis, C. A., Moseley, S. C., Stimmell, A. C., Schatschneider, C., Wilber, A. A., Sigma Tau, [Florida State University](#).

POSTER PRESENTATION – ECOLOGY, ENVIRONMENT, AND ORGANISMAL, POSTER #54

40Hz Rescues Cortico Hippocampal Coupling in Alzheimer's Disease.

Alzheimer's Disease (AD) is the most common form of dementia affecting millions of patients and caretakers. Various forms of 40Hz stimulation have reduced AD pathology in mouse models and improved functional connectivity in patients, though some studies report limited benefit. We assessed the impact of optogenetically

induced 40Hz stimulation on hippocampal cortical coordination in 3xTg AD/PVcre mice following a spatial navigation task. Mice were implanted with a 16 tetrode recording array targeting the parietal cortex and an optical fiber targeting the hippocampus. Daily sessions were conducted as mice learned the task, followed by optogenetic stimulation. In 40Hz stimulated mice, phase locking of parietal cortex delta waves and hippocampal sharp wave ripples was rescued. In addition, 40Hz stimulation restored task performance compared with sham and non stimulated mice. However, rescued hippocampal parietal coupling no longer predicted performance as in nontransgenic animals, while both 40Hz and sham stimulation reduced beta amyloid load (A β 42). These findings suggest that 40Hz hippocampal stimulation independently rescues learning related neural interactions during sleep and improves spatial navigation deficits, potentially through direct modulation of neural activity or reduced amyloid burden.

This research was supported by NIMH R56 MH133929, R01 AG070094, Florida DOH 20A09 to Wilber, A.A, and NIA F31AG079619 01 to Cushing, S.D.

Tomasino, B., Boyle, C., Swerdlow, S., Theta Pi, University of Pittsburgh at Greensburg

POSTER PRESENTATION – MOLECULAR AND MICROBIOLOGY, POSTER #23

Superinfection Study on Novel Arthrobacter globiformis Lysogen Isolated from Arthrobacter Phage DreamEater.

Bacteriophages—also called phages—are viruses that replicate using the cellular machinery of bacteria by injecting their genetic material into the host cell. In lytic phages, viral replication occurs immediately upon infection, and the resulting daughter phage kill the bacterium by bursting out of the cell in a process called lysis. In lysogenic phages, the phage's genetic material is incorporated into the host's genome as a dormant prophage, and is inherited by daughter cells referred to as lysogens. Prophages do not undergo replication until triggered by assorted environmental stressors, and have the potential to induce a variety of effects in the lysogen. This study examined Actinobacteriophage DreamEater's (Phage DreamEater) ability to produce lysogens of its bacterial host, *Arthrobacter globiformis* (*A. globi*), and if its lysogens displayed superinfection immunity, a prophage induced resistance mechanism that prevents re-infection from phages. Phage DreamEater was selected due to its exceptionally turbid and bullseye-like plaques, characteristics indicative of lysogenic phages. Actinobacteriophage RazzB (Phage RazzB) was used as a control because it infects the same host as Phage DreamEater and was confirmed to be a lytic phage by genome sequencing. Utilizing protocols from the SEA-PHAGES (Science Education Alliance-Phage Hunters Advancing Genomics and Evolutionary Science) discovery guide, we confirmed that Phage DreamEater is able to produce lysogens, and found that they display superinfection immunity.

Funding provided by Beta Beta Beta Biology Honor Society Research Grant 2025 – 2026.

Trainor, J. M., McCarthy, D. M., Trupiano, M. X., Bhide, P. G., Sigma Tau, Florida State University.

POSTER PRESENTATION – BIOMEDICAL SCIENCE, POSTER #10

Biphasic Developmental Effects of Early-Life Nicotine Exposure on Striatal Parvalbumin Neurons.

Smoking during pregnancy remains a major public health concern and is associated with increased risk for attention deficit hyperactivity disorder, impulse-control deficits, and heightened vulnerability to substance use later in life. Despite these well-documented associations, the cellular and molecular mechanisms

underlying long-term behavioral consequences of early nicotine exposure remain poorly understood. Using a mouse model of early-life nicotine exposure, we identified robust alterations in motivated behavior at adulthood accompanied by significant reductions in the density of parvalbumin (PV) neurons in the adult striatum. PV neurons provide critical inhibitory control over striatal output neurons and are essential for the regulation of cognitive, emotional, and motor functions. To define the developmental origins of the PV neuron deficits, we used unbiased stereology to quantify PV neuron density and conducted volumetric analyses of the striatum at three critical postnatal time points: postnatal (P) day 21, 35, and 100. By integrating cellular and anatomical measures across development, this work identifies a biphasic response to early-life nicotine exposure: an increase in PV density at P21, normalization at P35, and a subsequent reduction at P100. This pattern suggests that early-life nicotine first accelerates or transiently enhances PV-neuron maturation before ultimately producing long-term deficits in adult inhibitory circuitry.

This work was supported by TriBeta, the Florida Department of Health (#24K07), the FSU Council on Research and Creativity (#046803), and the Jim and Betty Ann Rodgers Chair Fund.

Vargas-Méndez, K. M., Torres, C. M., Sonera-Román, Y. R., Aldarondo-Medina, K. Z., Delrosario-Lorenzo, M. N., López-Roldán, G., Ramos-Santiago, P. V., Román-Morales, E. M., Areizaga-Martínez, H. I., Zeta Lambda, University of Puerto Rico at Aguadilla.

POSTER PRESENTATION – MOLECULAR AND MICROBIOLOGY, POSTER #19

Targeting Coffee Fruit Rot: Antifungal activity of Bacillus atrophaeus against Fusarium spp.

Coffee strands are a widely consumed agricultural product in Puerto Rico, and it has been affected by Coffee Fruit Rot disease. This disease is caused by pathogenic fungi, being *Fusarium* spp. one of them. The common solution has been the use of fungicides, which are toxic to humans and the environment. Therefore, scientists have been developing ways to prevent Coffee Fruit Rot using biocontrols. A potential biocontrol may be *Bacillus atrophaeus*, a bacterium that produces secondary metabolites with antifungal properties that have shown fungal inhibition in vitro. This research project is focused on evaluating the potential of *B. atrophaeus* as an inhibitory agent against *Fusarium* spp. To evaluate the inhibition capacity of *B. atrophaeus* against *Fusarium*, dual culture samples were prepared to assess the effect of the bacterium on fungal mycelial growth and conidial germination. Also, well diffusion assay with cell-free supernatant containing lipopeptides was performed to evaluate the inhibitory potential of the secondary metabolites alone. The radial growth data obtained from dual culture samples showed an overall 40% growth decrease in *Fusarium* spp., while the results from well diffusion assay showed an overall 32.88% decrease, suggesting a measurable inhibitory effect on fungal growth and potential biocontrol capability.

Funding provided by STARp, PR-LSAMP, NIFA, and MSEIP.

Villarreal, K., Jackson, C., Tasnim, F., Han, Y., Phi Omicron, University of Northern Colorado.

ORAL PRESENTATION –BIOMEDICAL SCIENCES, Room 1301, 11:15-11:30 am

Dose-Dependent Cannabinoid Modulation of Hepatic Steatosis and Oxidative Stress in Metabolic Dysfunction Associated Steatotic Liver Disease.

Metabolic dysfunction associated steatotic liver disease (MASLD) results from irregular physiological state in relation to metabolism. MASLD is the leading chronic liver disease globally with estimated 30% of patients affected, and incidence rates expected to rise. MASLD is diagnosed when there is $>5\%$ build up of lipids in the hepatocytes and is not associated with alcohol consumption. MASLD is a multifactorial disease, meaning there are many biological targets to consider for decreasing steatosis and disease progression. Key pathological targets include lipid accumulation and oxidative stress. Cannabinoids come from *Cannabis sativa* and have increasing popularity from a pharmaceutical lens. Two major cannabinoids are cannabigerol (CBG) and cannabidiol (CBD). CBG has shown anti-inflammatory properties, while CBD has also shown anti-inflammatory properties and is used to treat neurological disorders. The role of CBG and CBD in MASLD treatment is not well understood. We aimed to investigate how dose-dependent cannabinoids influence oxidative stress and lipid accumulation in MASLD. Lipid accumulation was examined using Oil Red O staining to quantify lipid accumulation in hepatocytes. To visualize oxidative stress, we evaluated the presence of 8-OHdG in liver tissue samples via immunofluorescence. These methods help determine whether CBG and CBD treatment regulate key pathological targets in MASLD.

Funding provided from 2025 TriBeta Research Grant.

Warren, E. J., Ladowitz, P. N., Kopyar, S. R., Fromuth, D., McCormick, J. R., Xi Psi, Duquesne University.

POSTER PRESENTATION – MOLECULAR AND MICROBIOLOGY, POSTER #18

How do Mutations in a Gene Encoding a Nucleoid-Associated Protein Suppress a Defect in Cell Division in a Filamentous Soil Bacterium.

Streptomyces coelicolor is a gram-positive, filamentous, sporulating soil bacterium used as a model organism to study bacterial cell division. The reproductive phase of its life cycle involves simultaneous septation of an aerial hypha into uninucleoid spores, which are used for dispersal. A strain containing a deletion of the cell division gene *ftsQ* is defective for sporulation associated cell division, but is viable. Previous research demonstrated that spontaneous mutations accumulate in the *ftsQ*-null mutant strain that rescues sporulation. One set of these spontaneous mutations is in the gene encoding a nucleoid-associated protein, *lsr2* (denoted as *lsr2**). *Lsr2* acts in chromosome organization, compaction, and as a transcription factor. To investigate how *lsr2** mutations rescue sporulation in a *ftsQ*-null strain, transcriptional fusions of *Plsr2*, *PftsZ*, and a translational fusion of *ftsZ* to the reporter gene for Enhanced Green Fluorescent Protein (*egfp*) have been constructed. *FtsZ* is the master cell division protein. Strains expressing these constructs have been imaged using fluorescent microscopy. By establishing expression profiles for *lsr2* and *ftsZ* in suppressor-mutant strains, I have determined that altering the level of *FtsZ* does not play a role in rescuing sporulation in Δ *ftsQ* strains.

Funding from Beta Beta Beta Research Grant (2025-2026 Academic Year), and NIH Grant (GM148966).

Winborn, R., Harrell, M., Zhao, J., Samuels, P., and Jordan, J., Sigma Tau, Florida State University.

ORAL PRESENTATION – BIOMEDICAL SCIENCES, Room 1301, 11:30-11:45 am

YBX1 post-transcriptionally regulates VNN1 to promote MASLD.

Metabolic dysfunction-associated steatotic liver disease (MASLD) is a common and growing metabolic liver disease characterized by excess hepatic lipid accumulation and progressive risk of liver injury. Y-box binding

protein 1 (YBX1) has recently emerged as a maladaptive factor that promotes MASLD in diet-induced obesity, suggesting that YBX1-dependent target genes may contribute directly to steatotic remodeling. To identify downstream effectors of this phenotype, we combined multi-omic target discovery with functional screening in hepatocyte lipid-accumulation assays. Integration of YBX1 binding with matched mRNA- and protein-level changes identified ten high-priority candidate target genes. We knocked down one target, Vascular Non-Inflammatory Molecule 1 (VNN1), using siRNA, and measured lipid accumulation using Oil Red O spectrophotometry and BODIPY flow cytometry under basal and lipid-stress conditions. Knockdown of VNN1 reduced lipid accumulation, supporting a pro-steatotic role downstream of YBX1. Ongoing studies will define how this regulatory network contributes to early MASLD pathogenesis.

This work was funded by: Tri Beta.

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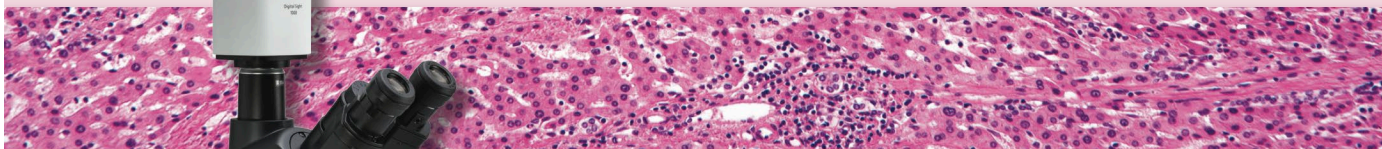
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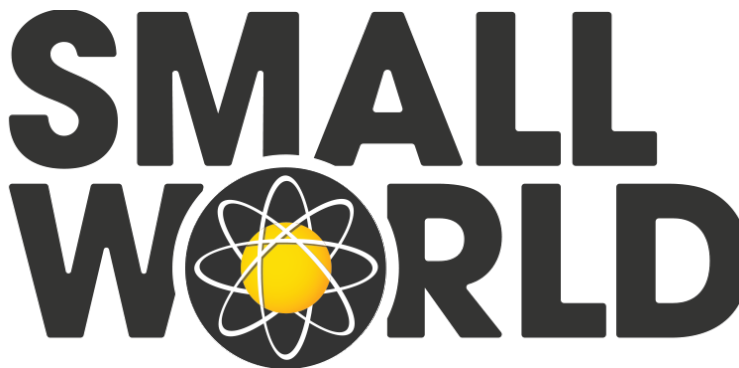
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CHAPTERS REPRESENTED & ATTENDEE LIST

Angelo State University, Epsilon Sigma

Dr. Hannah Jones – Faculty Advisor
Aramide Oladrian – Student
Zandria Stanfield – Student
Wesley Hale – Guest

Augusta University, Kappa Kappa

Lauren Kinney – Student
Marcena Kinney – Guest

Austin College, Delta Rho

Niki Hamraei – Student

Azusa Pacific University, Epsilon Gamma

Rami Ezzeddine

Beta Beta Beta National Office

Iris Daly – Executive Director
Conny Terry – Regional Director
Dr. Christi Magrath – District Director
Cason Williams – Guest
Michelle Magrath – Guest

Bethany College, Alpha Phi

Annabella Kovach – Student

Bethel University, Gamma Omega

Isaac Stark – Student

Bridgewater College, Nu Upsilon

Dr. Ed Lickey – Vice President

Catawba College, Tau Eta

Dr. Carmony Hartwig – BBB National President
Dr. Erin Witalison - Faculty Advisor
Dr. Amanda Rushing – Faculty Advisor
Dr. Jay Bolin – Faculty Advisor
Alex Baquie – Student
Hailee Smith – Student
Jacy Noble – Student
Luke Roberts – Student
McKenzie Peurifoy – Student
Shiva Aryal – Student
Samantha Giraldo – Student

Catawba College, Tau Eta (Continued)

Eva Bolin – Guest
Euna Bolin – Guest
Brad Smith – Guest

Christian Brothers University, Mu Tau

Suzy Terzian – Student
Pamela Watson – Guest

Colorado Mesa University, Epsilon Omicron

Rebekah Park – Student

Dallas Baptist University, Omicron Kappa

Dr. Debra Hinson – Vice President
Mark Hinson – Guest

Dalton State College, Beta Chi Nu

Mary Capehart – Student

Delta State University, Beta Delta

Dr. William Katembe – Faculty Advisor
Dr. Nina Baghai-Raiding – Faculty Advisor
Kent Humphries – Student
Peyton Bevan – Student
Sara Davis – Student

DeSales University, Delta Sigma Upsilon

Danielle Sieja - Student

Dominican College, Nu Psi

Angelina Pace – Student
Natalie Carballo – Student

Duquesne University, Xi Psi

Ezekiel Warren – Student

Embry-Riddle Aeronautical University, Epsilon Alpha Upsilon

Dr. Vikram Narayan – Faculty Advisor

Florida State University, Sigma Tau

Dr. Debra Ann Fadool – Faculty Advisor
Dr. James Fadool – Faculty Advisor
Dr. James Jordan – Faculty
Dr. Julia Steiner – Faculty
Dr. Hank Bass – Faculty
Dr. Sean Lindley – Faculty
Dr. Amber Brown – Faculty
Dr. Elizabeth Brown – Faculty
Dr. Douglas Storace – Faculty
Dr. Kenneth Taylor – Faculty
Dr. Liyun Miao – Faculty
Dr. Kayla Stoy - Faculty
Dr. Satya Prakash Singh – Postdoctoral Scholar
Dr. Evan Lloyd – Postdoctoral Scholar
Dr. Pearl Rivers Key – Postdoctoral Scholar
Dr. Giorgio Belperio – Postdoctoral Scholar
Dr. Saptarsi Mitra – Postdoctoral Scholar
Marty Compagno – Doctoral Student
Alana Chang – Doctoral Student, former chapter President
Rose Riley – Doctoral Student
Daniel Hiott – Doctoral Student
Jacob Dilliplane – Doctoral Student
Rimil Guha Roy – Doctoral Student
Austin Werner – Doctoral Student
Bridger Menlove – Doctoral Student
Jonathan Thompson – Student, current chapter President
Tara Fuchs – Student, former chapter President
Lucia Spanjol - Student
Kallista Halatsis - Student
Melinda Relethford - Student
Olivia Longo - Student
Ava Hernandez – Student
Nikolai Dutkewych - Student
Kamryn Schultz – Student
Bethany Kear – Student
Jacob Trainor – Student
Sydney Carlson – Student
Jessie Zheng – Student
Rebekah Winborn – Student
Ava Adriani - Student

Mia Harrell – Student
Isabella Bueno – Student
Emily Salvador – Guest
Tamara Halatsis – Guest

Gannon University, Theta Omega

Dr. Steven Ropski – District Director
Dr. Melanie Gustafson-Ropski – Guest

Gardner-Webb University, Tau Sigma

Dr. David Campbell – Faculty Advisor
Timothy Campbell – Student
Susan Campbell – Guest

Georgia College & State University, Kappa Gamma

Sarah Carter – Student

Hastings College, Pi Omicron

Amanda Solem – District Director

Hillsdale College, Iota Psi

Dr. Angelica Pytel – Faculty Advisor
Connor Pratt – Student
Elizabeth Payne – Student
Gracie Pratt – Guest
Jeff Pratt – Guest
Lee Ann Pratt – Guest

Hofstra University, Alpha Lambda

Naya Mahabir – Student
Sherlin Jiang – Guest
Nikita Persaud – Guest

Houston Christian University, Iota Omicron

Dr. Lisa Ellis – District Director
Collin Posadas – Student
Martin Navarro Ballagan – Student
Sophia Andrade – Student
Samuel Huffman – Guest

Lander University, Psi Theta

Bethany Bagwell – Student

Loyola Marymount University, Epsilon Delta

Mandoline Nguyen – Student

Mars Hill University, Kappa Beta Alpha

Zavanah Aparicio – Student

Mercer University, Beta Omega

Jackson Bruce – Student

Philip Luciani – Student

Mercy University, Upsilon Zeta

Annelle Veronika Mpoungui Mpambou – Student

Audrey Charles – Student

Elijah Pierre Paul – Student

Karen Nunez Ortiz – Student

Hirally Gonzales – Student

Midwestern State University, Delta Mu

Kaitlyn Postell – Student

Kaitlyn Magee – Guest

North Park University, Theta Mu

Dr. Tracy O'Connor – Faculty Advisor

Joshua Brito – Student

Caitlyn Matuska – Guest

Sophia Haska – Guest

Nova Southeastern University, Rho Rho

Nicole Nesterovitch – Student

Oakwood University, Lambda Upsilon

Maya O'Reilly – Student

Saint Mary's University of MN, Gamma Epsilon

Dr. Debra Martin – Vice President

Saint Vincent College, Upsilon Gamma

Braden Thomas – Student

Grace Scoville – Student

Slippery Rock University, Lambda Lambda

Katrina Fernacz – Student

Southwestern Oklahoma State University, Delta Sigma

Adreana Aquino - Student

St. John Fisher University, Upsilon Rho

Natalie Gantress – Student

Calleigh Farley – Student

St. Michael's College, Omicron Omicron

Kyleena Lathram – Student

Stetson University, Beta Xi

Isabelle Condor da Silva - Student

Natalie Al-Shihabi – Student

Kimberly Gill – Student

SUNY, Farmingdale State College, Chi Delta Eta

Allyson Bernardo – Student

Emma Raver – Guest

Texas Wesleyan University, Sigma Theta

Dianna Torres – Student

Perla Diosdado – Student

William Nelson – Student

Trinity Chounchantharat – Student

Thomas More University, Rho Theta

Blake Hon – Student

Union University, Kappa Alpha Kappa

Rose Kannankeril – Student

Prince Kannankeril – Guest

University of California, Irvine, Epsilon Chi Kappa

Ly Duong – Student

University of Mount Olive, Sigma Zeta

Dr. Jared Locklear – Faculty Advisor
Christian Gray – Student
Harley Marie Haley – Student

University of New Haven, Lambda Gamma Chi

Tony Uliano – Guest

University of Northern Colorado, Phi Omicron

Kira Villarreal – Student
Ella Boyd – Student
Kate Byrne – Student
Susan Boyd – Guest
David Byrne – Guest

University of Notre Dame, Upsilon Nu Delta

Kyla Streng – Student
Edward Streng – Guest

University of Pittsburgh at Greenburg, Theta Pi

Dr. Olivia Long – Vice President
Emily Guajardo – Student
Benjamin Tomasino – Student
Mackenzie Taylor – Student
Justin Crookston – Student
Dominic DePaul – Student
Dominic Granata – Student
Charlotte Boyle – Student

University of Puerto Rico, Aguadilla, Zeta Lambda

Dr. Yvonne Colón -Mena – Faculty Advisor
Javier Santiago Martell – Student
Karina Vargas – Student
Andy González-Hernández – Student
Bárbara Guevara Feliciano – Student
Adrián O. Pérez-González – Student
Rosa Méndez – Guest

University of Puerto Rico, Cayey, Zeta Epsilon

Josue Gabriel Rosario Santiago – Student
Josue Arriaga – Guest

University of Puerto Rico, Ponce, Zeta Kappa

Dr. David Forestier Montalvo –Vice President
Neyda Grajales Parra – Guest
Alanis Mercado – Student

University of South Alabama, Mu Chi Beta

Laura Frost – Faculty Advisor
Jason Strickland – Faculty Advisor
Ashley Coleman – Student
Lauren Dixon – Student
Ella Summers – Student
Ashley Stone – Student
Anya Powell – Student
Zoe Reeves – Student
Emily Gzybowski – Student
Haley Nichols – Student
Kealey Skinner – Student
Aaron Barribeau – Student
Yasmin Socop – Guest

University of Tampa, Sigma Nu

Sarah Robison – Student
Deborah Robison – Guest

Wayne County Community College, Xi Alpha Club

Janice Frazier – Student
Kevin Tsai – Guest

Westfield State University, Upsilon Delta Epsilon

Dr. Kimberly Berman – Faculty Advisor
Autumn Jones – Student
Abigail Burgess – Student

Wittenberg University, Xi

Hailey Mulvihill – Student

ACKNOWLEDGEMENTS

The Sigma Tau Chapter at Florida State University gratefully acknowledges the many individuals, faculty members, students, volunteers, staff, sponsors, and organizations whose dedication and support made the 2026 TriBeta National Convention possible. Hosting a national convention is truly a collective effort, and we sincerely appreciate the countless contributions made behind the scenes throughout the planning and execution of this event. We extend our sincere appreciation to Dr. Debra A. Fadool and Dr. James M. Fadool for their leadership, mentorship, scientific guidance, and organizational oversight throughout convention planning and preparation. We also thank TriBeta President Dr. Carmony Hartwig, Executive Director Dr. Iris Daly, Dr. Connie Terry, and the TriBeta National Executive Committee for their continued support, coordination, and guidance. Dr. Iris is AMAZING – it would have been a lot less fun organizing this conference without her tenacity, organizational talents, and energy.

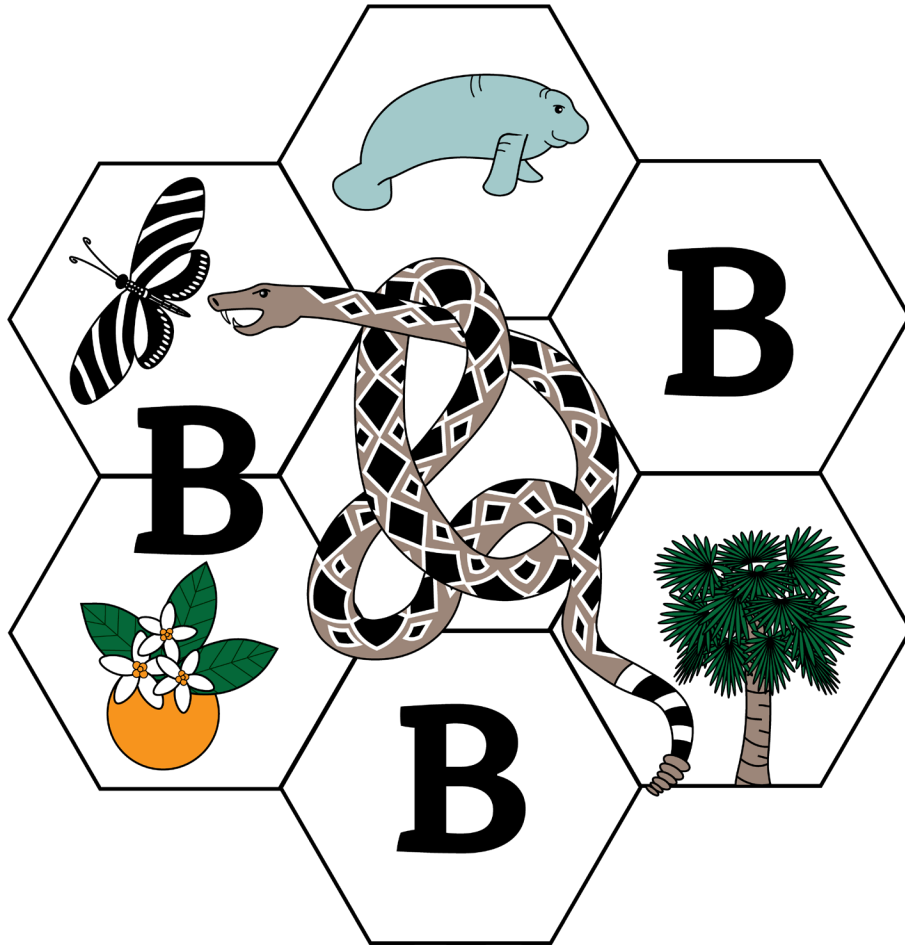
We would especially like to recognize the individuals who chaired the major convention responsibilities:

- Debi & Jim Fadool – *Convention hosts and local chapter co-advisors*
- Olivia Longo - *Dormitory check-in, attendee reception, program book, and administrative assistance*
- Saptarsi Mitra and Marty Compagno - *Program book preparation and abstract sorting*
- Bridger Menlove - *Name badge preparation*
- Rimil Guha Roy - *Refreshments and award dinner dessert*
- Tara Fuchs - *Judge packet preparation, awards dinner, and convention decorations*
- Giorgio Belperio - *Convention shirt distribution and lobby assistance*
- Jacob Dilliplane - *Award certificate printing and preparation*
- Austin Werner - *Transportation coordination*
- Austin Werner, Jacob Dilliplane, Bridger Menlove, Rimil Guha Roy, Daniel Hiott, Rose Riley, April Wooten, Alana Chang, Bentley Mercer, Franklin Pacheco, Makayla Collver, Lillie Bradshaw, Emilie Broussard – *Drivers*

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We also wish to recognize the faculty judges, moderators, session chairs, and Florida State University faculty and postdoctoral scholars who generously volunteered their time and expertise to support student presentations and scientific evaluation throughout the convention. Special thanks are extended to the faculty and staff of the Florida State University Coastal and Marine Laboratory and field trip coordinators who contributed educational experiences and helped organize the convention field trip activities. We gratefully acknowledge Florida State University, the Department of Biological Science, the College of Medicine, the Program in Neuroscience, the Institute of Molecular Biophysics, University Housing, Transportation and Parking Services, Dining Services, Facilities, and campus support staff for their assistance and hospitality. Finally, we thank Nikon, VWR, Fisher Scientific, the Department of Biological Science Staff members, and the Graduate School at Florida State University, for their generous support. Most importantly, we thank all attendees, presenters, faculty advisors, and TriBeta members whose participation continues to make the TriBeta National Convention an inspiring celebration of scientific discovery and collaboration.

Sigma Tau Chapter, *Florida State University, 2026 TriBeta National Convention*



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