For more information, check out the
South Central Regional Convention website:

www.tribetasrc.com

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National Biological Honor Society
South Central Region

South Central Regional Convention

April 6-8, 2018

Mt. Lebanon Retreat Center

Cedar Hill, TX

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For more information, check out the
South Central Regional Convention website:

www.tribetasrc.com

Lodging Assignments

Retreat Center (RC):

Dr. Lisa Ellis
Dr. Laurie Kauffman
Dr. Regina McGrane
Ms. Karen A. McMahon
Ms. Linda Luna
Dr. Nikki Seagraves
Dr. Greg Mullen
Dr. James Harper
Dr. Christopher Horton
Dr. Ali Azghani
Dr. Frank Knight
Dr. Warren Sconiers
Dr. Steve Ropski

Evergreen (all males)

Angelo State University
Houston Baptist University
Southwester OK State Univ.
University of Central OK
Sam Houston State University
University of Ozarks
The University of Tulsa
Texas A&M – Texarkana
East Central University
Oklahoma City University
Schreiner University

Dr. Charles Biles (Motel C – left side)
Dr. George Wang (Motel C – left side)
Dr. Celestino Velasquez (Motel D – right side)

Live Oak (all female)

University of Ozarks
East Central University
Oklahoma City University
Southwester OK State Univ.
University of Central OK
The University of Tulsa
Oral Roberts University

Sycamore (all female)

Angelo State University
Dallas Baptist University
Houston Baptist University
Sam Houston State University
Texas A&M – Texarkana

Ms. Lesa Presley (Director's Room)

FAQs (Frequently Asked Questions)

1. Where do we take our scrapbooks? We will have tables for scrapbook judging in the DBU House. Have your scrapbook there by midnight on Friday. Please remove it by Saturday night.

2. Is alcohol permitted on site? *Absolutely not!* It is a privilege for us to have these facilities available for our conference and it is our obligation to adhere to the rules and regulations of Mount Lebanon. Violators will be reported to their respective university administrators.

3. Is the awards ceremony "dressy"? We prefer that it be so, but you are not required to do so.

4. Are refunds available? No. It is the obligation of your chapter to deal with inevitable cancellations or changes of plans of its members.

5. How do we check out? You must report to the Grande to do so. We will check your facilities to ensure that you have thoroughly cleaned the premises, taken all trash out and removed any personal belongings that can be identified as originating from your chapter.

6. How do we get the materials for displaying our posters? On Saturday morning, you will find display easels and other mounting materials in the Texas Hall/Lone Star complex. Your poster is assigned a unique and specific number and will be tagged. (See program schedule).

7. What are the rules for oral presentations? You will get no more than 15 minutes including questions to make your presentation. Session moderators have been instructed to cut off presentations at the 15 minute mark. You must also have previously downloaded your presentation onto the Alpha Chapter computer Friday night before midnight at the DBU House.

8. What is the chapter introduction program scheduled for Friday night? It is your chance to introduce your chapter to everyone. Please do not exceed 7 minutes in your presentation. We will have a computer available for you to show a power point presentation if you like.

Schedule of Events

Friday, April 6

3:00 – 10:00 PM	Registration	DBU House
6:30 – 7:30 PM	Dinner	Dining Hall
8:00 – 11:00 PM	Chapter Introductions	Texas Hall (TXH)
Until 11:00 PM	Load Oral Presentations	DBU House
Until 11:00 PM	Leave scrapbooks for judging	DBU House

Saturday, April 7

8:00 – 9:00 AM	Breakfast	Dining Hall
9:15 – 11:45 PM	Oral Presentations	TXH & LSR
11:45 – 12:45 PM	Poster set up	TXH & LSR
12:00 – 1:00 PM	Lunch	Dining Hall
1:15 – 3:15 PM	Poster Presentations/Judging	TXH & LSR
3:30 – 4:30 PM	Regional Business Meeting	TXH
4:30 – 6:30 PM	Free Time	
6:30 – 7:45 PM	Banquet Dinner	Dining Hall
8:00 – 10:00 PM	Award Presentations	TXH
10:00-11:00 PM	Camp Fire w/Smores	Chuala Fire Site

Sunday, April 6

8:00 – 9:00 AM	Breakfast	Dining Hall
7:30 – 10:30 AM	*Departure	DBU House

*Participants **MUST** turn in your room key **AND** wait for a room check by a member of the Alpha or Nu Eta Chapter **BEFORE YOU CAN LEAVE**!

Beta Beta Beta
National and Regional Officers

National Officers

National President: ..... Dr. Steve Ropski
Gannon University (Erie, PA)

South Central Vice President: ..... Dr. Adam Ryburn
Oklahoma City University

South Central District 1 Director: .....Dr. Charles Biles
East Central University

South Central District 2 Director: ..... Dr. Ali Azghani
University of Texas at Tyler

National Secretary-Treasurer: ..... Kathy Roush
University of North Alabama

South Central Student Officers

President.....Johnny Desposorio – Omicron Kappa
Dallas Baptist University

Vice President .....M'Kayla Motley – Epsilon Sigma
Angelo State University

Secretary .....Marisa Thompson – Epsilon Sigma
Angelo State University

Motion 2017-1: Motion to change regional convention selection and planning procedures

1. A host and co-host chapter for the next year's regional convention will be elected each year during the annual business meeting.
2. In consultation with the Regional (faculty) Vice President and District Directors, the host and co-host chapters will select a date for the next regional convention. (Historically regional conventions have been held between the last weened of March to the third weekend of April. Every attempt should be made to keep the convention date within this window.)
3. In consultation with the Regional (faculty) Vice President and District Directors, the host and co-host chapters will select a venue for the next regional convention. When considering venues, please note there should be enough space for lodging of approx. 175-200 individuals, space for oral and poster presentations, dining and/or catering options, space for business meeting and awards ceremony (approx. 175-200 capacity), and handicap accessibility.
4. Date and venue of the next regional convention should be decided and announced to the Region by June 1 of each year.

Motion 2017-2: Motion to establish formal regional officer responsibilities and election procedure

Alpha Chapter moves to establish a formal process by which regional student officers are elected and a detailed description of officer responsibilities. We propose the following criteria:

1. The student officers of the South Central Region of Beta Beta Beta shall be a **President, Vice-President**, and **Secretary**; collectively referred to as the Executive Board. The Executive Board shall also include the faculty leadership of the region—Regional (faculty) VP and District Directors.
2. The regional student **President** shall preside at the annual regional business meeting (held in conjunction with the regional convention) and preside at any meeting of the Executive Board. The President shall also coordinate with the regional convention host and co-host chapters for the purpose of opening the annual regional convention. The President shall be a regular member of Beta Beta Beta.
3. The regional student **Vice-President** shall preside in the absence of the President, shall fulfill any special duties delegated by the President or Executive Board, and shall become President if that office becomes vacant.
4. The regional student **Secretary** shall keep the minutes of the annual regional business meeting and the meetings of the Executive Board. Within 7 days of each meeting, the Secretary shall publish the minutes by sending a copy to Regional (faculty) Vice President to post on the Region's website.
5. Officers shall be elected annually at the regional business meeting, with President, Vice-President, and Secretary being elected in subsequent order. All voting should be done via secret ballot.
6. Newly elected officers shall take office at the conclusion of the annual regional business meeting during which they were elected.

E. Election of regional student officers
   A. President
      i. Epsilon Sigma nominates Jennifer Nelson
      ii. Omicron Kappa nominates Johnny Desposorio
      iii. 4 chapters in favor of Jennifer Nelson, 9 chapters in favor of Johnny Desposorio
      iv. Johnny Desposorio elected
   B. Vice President:
      i. Epsilon Sigma nominates M'Kayla Motley
      ii. Sigma Theta nominates Mohana Hasona
      iii. 7 chapters in favor of M'Kayla Motley, 5 chapters in favor of Mohanad Hasona
      iv. M'Kayla Motley elected
   C. Secretary:
      i. Epsilon Sigma nominates Marisa Thompson
      ii. All chapters in favor of Marisa Thompson
      iii. Marisa Thompson elected

9. Closing Remarks by Regional President Ashley Watson (Delta Sigma)
10. Adjournment
    a. Omicron Kappa makes a motion to adjourn
    b. Sigma Theta seconds the motion
    c. Meeting is adjourned

2017 South Central Regional Business Meeting Minutes

1. Call to order – Parliamentarian, Melissa Penton (Psi Delta)
2. Welcome from South Central Regional President Ashley Watson (Delta Sigma)
   A. Welcome delegates
   B. Officer Introductions
      i. President, Ashley Powers – Delta Sigma chapter (SWOSU)
      ii. Secretary, Anne Kwok – Beta Tau (Baylor)
      iii. Parliamentarian, Melissa Penton – Psi Delta (ECU)
3. Roll Call of Chapters – Secretary, Annie Kwok (Beta Tau)
   Alpha Oklahoma City University Oklahoma City, OK
   Beta Tau Baylor University Waco, TX
   Delta Sigma Southwestern Oklahoma State University Weatherford, OK
   Delta Tau Sam Houston State University Huntsville, TX
   Epsilon Sigma Angelo State University San Angelo, TX
   Iota Omicron Houston Baptist University Houston, TX
   Kappa Xi University of Texas at Tyler Tyler, TX
   Nu Delta Beta Schreiner University Kerrville, TX
   Nu Eta University of the Ozarks Clarksville, AR
   Omicron Kappa Dallas Baptist University Dallas, TX
   Pi Alpha The University of Tulsa Tulsa, OK
   Psi Mu University of Central Oklahoma Edmond,
   Sigma Theta Texas Wesleyan University Fort Worth, TX
4. Vote to Approve 2016 Minutes
   a. Nu Eta makes a motion to approve
   b. Delta Sigma seconds the motion
   c. All chapters in favor, motion is passed
5. Report from District Director I: Dr. Charlie Biles – Psi Delta (ECU)
6. Report from District Director II: Dr. Ali Azghani – Kappa Xi (UT Tyler)
7. Report from Regional Vice President: Dr. Adam Ryburn – Alpha (OK City Univ.)
8. New Business
   A. Motion 2017-1: Motion to change regional convention selection and planning process (attached)
      A. Nu Eta seconds motion
      B. 7 chapters in favor, 2 chapters opposed
      C. The motion passes with majority
      D. Addendum: Keep it centrally located and using past data to support the choosing of the location
   B. Motion 2017-2: Motion to establish formal regional officer responsibilities and election process (attached)
      A. Psi Mu seconds motion
      B. All chapters in favor and none opposed
      C. The motion passes with majority
   C. Selection of host chapter for 2018 South Central Regional Convention
      A. Delta Sigma nominates Alpha for host
      B. All in favor, vote passes
   D. Selection of co-host chapter for 2018 South Central Regional Convention
      A. Alpha nominates Nu Eta
      B. All in favor, vote passes

On Behalf of the National Committee I would like to welcome all students and faculty to the South Central Regional Convention. We are here to celebrate all your accomplishments of this past year. For many of you that means presenting research, either in poster or oral format, that you have worked on going back this year and maybe even further. It really takes a lot of courage and confidence to present, so I congratulate you! A Tri Beta conference is a good place to do your first or second presentation and then you are ready for something more national…like our national convention to be held at Asilomar Resort in California 30 May to 3 June 2018. Remember that if you take a first place in either oral or poster (or took a first place in 2017) you are eligible for a travel grant to help you get to Asilomar and present. Even if you don't take a first there are also general travel grants available too. I would be remiss if I didn't encourage you to thank your research advisors for all the time they have put in helping you. I also encourage you to remember that Tri Beta offers research grants (usually applications are due late September) and the opportunity to have your work published in our journal BIOS. The latter is peer reviewed and one of the few journals that encourages publication by undergraduates. How wonderful receiving a grant or publishing as an undergraduate would look on your resume! Again, congratulations on attending and presenting and my best to you in your future endeavors.

Dr. Steve Ropski

National President

Dr. Steve Ropski is our guest speaker on Saturday evening. Dr Steve Ropski has been at Gannon University in Erie, PA for 34 years. He has been the advisor of their BBB chapter for 28 years and during that time they have won the Bertholf Award 6 times and hosted the national convention twice. Dr. Ropski was a district director for BBB for 16 years before becoming national president in 2016.He has been taking students to Yellowstone National Park since 1994 and has written a book titled *Let Yellowstone Come To You: A Non-Tourist Guide*. He will discuss history of the park and the ecology of grizzly bears.

Greetings to the student delegates and faculty attending the 2018 South Central Regional Convention. Springtime in north central Texas is an exciting time both biologically and intellectually for TriBeta members. It is a time to renew old friendships and a time to forge new relationships. It is a time to gather for conducting the business of the region and most importantly, for the members to present formally the research conducted during the previous year.

Much effort goes into a successful convention, beginning with the host chapter. I would like to thank the Alpha Chapter at Oklahoma City University, for their leadership in the planning and organizing this convention. Dr. Kauffman and her students have put a considerable amount of time and energy into setting up the program and scheduling events that make a convention operate smoothly. It is through the efforts of these members of the host and co-host chapters that the convention will be a success.

As always, we have a great line up of oral and poster presentations, representing all areas of the biological sciences. I thank all the students that are presenting their research this weekend and encourage you to consider presenting your research at the National Biennial Convention scheduled for May 30 to June 3 in Monterey, CA. This weekend's winners of the Brooks and Johnson Awards, qualify for up to $750 to support travel to this national convention.

I would also like to encourage our student researchers to take advantage of the funding and publishing opportunities for TriBeta members. This past year TriBeta awarded over $64,000 in student research funding through the TriBeta Research Grant Program. Be on the lookout for an announcement for grant applications starting in August. I would especially like to invite students to submit their work to *BIOS* for publication. Details on grants and publication opportunities can be found by going to the TriBeta web page (www.tri-beta.org).

Finally, I'm sure we are all going to have an excellent time at Mt. Lebanon. Please don't hesitate to contact me this weekend if I can help make your TriBeta experience better. My email address is below. Take care and have a great convention.

Dr. Adam K. Ryburn
South Central Regional Vice President
aryburn@okcu.edu

2018 South Central Regional Business Meeting Agenda

1. Call to order – President, Johnny Desposorio (Psi Delta)
2. Welcome from South Central Regional President Ashley Watson (Delta Sigma)
   A. Welcome delegates
   B. Officer Introductions
      i. President, Johnny Desposorio – Omicron Kappa, Dallas Baptist University
      ii. Vice President, M'Kayla Motley – Epsilon Sigma, Angelo State University
      iii. Secretary, Marisa Thompson – Epsilon Sigma, Angelo State University
   C. One Vote Per Chapter
3. Roll Call of Chapters – Secretary
4. Vote to Approve 2017 Minutes
5. Report from District Director I: Dr. Charlie Biles – Psi Delta (ECU)
6. Report from District Director II: Dr. Ali Azghani – Kappa Xi (UT Tyler)
7. Report from Regional Vice President: Dr. Adam Ryburn – Alpha (OK City Univ.)
8. New Business
   A. Selection of host chapter for 2019 South Central Regional Convention
   B. Selection of co-host chapter for 2019 South Central Regional Convention
   C. Election of regional student officers
   D. Other new business
9. Announcements
10. Closing Remarks by Regional President
11. Adjournment

undifferentiated Th cells under Tfh or Th1 polarizing conditions in the presence or absence of B7-DC or B7-H4, we have observed a selective augmenting effect of B7-H4 on Tfh cells. Future research aims to determine the influence of B7-H4 on other Th cell subsets and address a potential mechanism by which these alterations occur.

Host Chapters for 2018 βeta βeta βeta South Central Regional Convention

Oklahoma City University Alpha

Beta Beta Beta was founded in 1922 at Oklahoma City University by Dr. Frank G. Brooks and a group of his students. Chapters at several other midwestern colleges were established in the next few years, and the national organization was formed in 1925 by three faculty members: Dr. Brooks, Dr. William M. Goldsmith from Southwestern College in Winfield, Kansas, and Dr. John C. Johnson, Sr., from Western State College in Colorado. The Alpha Chapter, first among over 670 chapters across the U.S. and Puerto Rico, was officially chartered as part of the national organization on November 20, 1924. Dr. Brooks served on the OCU faculty from 1919 to 1936. He served as the Secretary-Treasurer of the national organization from 1925 until his death in 1955. He also helped to establish BIOS, the journal of the society and served as its managing editor. After his death his wife, Laura Jean Brooks, took over his duties and performed them until she retired in 1967.
Today, Alpha Chapter is one of most active student organizations at OCU. Annual activities include a welcome back event in the fall, a spring fling to start the spring semester, plants sales, and Earth Day celebration. Semimonthly meetings highlight guest speakers from all areas of the biological sciences; including pre-medicine, pre-dentistry, field biology, chiropractic, pharmaceuticals, and more. Alpha Chapter embraces the obligation of service and philanthropy by coordinating with Martin Nature Park and the Oklahoma City Zoo.

The University of the Ozarks Nu Eta

In 2005, the Nu Eta Chapter of BBB was established at University of the Ozarks in Clarksville, AR under the direction of Dr. Sean Coleman. University of the Ozarks is a private, Presbyterian liberal arts college in the river valley with approximately 700 students. Each year the Nu Eta chapter hosts “Science Day” at our University, an event aimed at recruiting and sharing the biological sciences with high school students from surrounding public school districts. Other events sponsored by Nu Eta include food drives, haunted housing, game nights, and more! Our chapter is rapidly growing and the number of students in our chapter conducting original research is increasing each year! We are excited to be co-hosting this year’s conference and hope that you enjoy this weekend!

Participating Chapters

District One Arkansas, Louisiana and Oklahoma

Alpha	Oklahoma City University	Oklahoma City, OK
Delta Sigma	Southwestern OK State University	Weatherford, OK
Mu Kappa	Oral Roberts University	Tulsa, OK
Nu Eta	University of the Ozarks	Clarksville, AR
Pi Alpha	The University of Tulsa	Tulsa, OK
Psi Delta	East Central University	Ada, OK
Psi Mu	University of Central Oklahoma	Edmond, OK

District Two Texas

Delta Chi Delta	Texas A&M University Texarkana	Texarkana, TX
Delta Rho	Austin College	Sherman, TX
Delta Tau	Sam Houston State University	Huntsville, TX
Epsilon Sigma	Angelo State University	San Angelo, TX
Iota Omicron	Houston Baptist University	Houston, TX
Kappa Xi	University of Texas at Tyler	Tyler, TX
Nu Delta Beta	Schreiner University	Kerrville, TX
Omicron Kappa	Dallas Baptist University	Dallas, TX
Sigma Theta	Texas Wesleyan University	Fort Worth, TX

Poster 9 Breann Stavinoha, Oklahoma City University

Development of Molecular Assays to Identify Hybrids between Two Sympatric Species of Deermice

Breann Stavinoha, Dylan Sutton, Anthony Stancampiano, and Greg Mullen

The White-footed Mouse (*Peromyscus leucopus*) and the North American Deermouse (*P. maniculatus*) exhibit distinct habitat preferences: *P. leucopus* occurs in the eastern two-thirds of the United States and along the east coast of Mexico while *P. maniculatus* occurs throughout North America. Within this distribution they are found in distinct habitat types, but are sympatric in ecotones where hybridization between these species is possible. To determine whether hybridization is occurring, we designed Polymerase Chain Reaction (PCR) assays to identify the species based on nuclear and mitochondrial genotypes. We collected mice at the John Nichols Scout Ranch and identified as *P. maniculatus* or *P. leucopus* based on habitat and morphological criteria. We also collected small hair samples for molecular analysis. DNA was extracted from the samples and amplified using the Phire™ Tissue Direct PCR system. We are currently analyzing a large set of samples, and will be presenting an update on our progress.

Poster 10 Jada Mack, Shelby Morales, and Cristin Connor University of the Ozarks

Analysis Bacterial Growth on Keyboards at the University of the Ozarks

Jada Mack, Shelby T. Morales, Cristin R. Connor

The following research was conducted on the University of the Ozarks campus and consisted of the identification of bacteria present on the keyboards within community computer rooms. The bacteria was identified using simple staining method, gram staining, endospore staining, acid-fast staining, catalase and oxidase tests, petrifilm, dextrose and lactose phenol broths, and differential media. The species present in both locations where samples were taken and were determined to be Pseudomonas aeruginosa which is an opportunistic pathogen but generally does not cause an infection though it is very common in the environment, especially moist environments.

Poster 11 Devin Widick, Southwestern Oklahoma State University

Using the co-receptor protein B7-H4 to promote Tfh cell accumulation

Devin Widick and Christopher G. Horton

CD4+ T helper (Th) cells work in the body to aid in coordinating target cell death and antibody production as means of protection against infections and cancer. The cells can acquire different fates or subsets that each carry out distinct functions for the immune system. Three signals are required to induce a cell into one of these fates: stimulation through soluble cytokines, the T-cell receptor, and co-receptors. Cytokines have been the most widely examined, and because of this, they have been viewed as the primary drivers of Th cell differentiation. Few studies have sought to examine the influence of co-receptors, a diverse group of proteins, on Th cell polarization. Our research has aimed to fill this void by examining the effects of co-receptor proteins, particularly B7-DC and B7-H4, on the accumulation of Th cells. Previous data from our lab and others has shown that B7-DC and B7-H4 may be involved in impairing the accumulation and function of Th1 and Th17 cells. We hypothesized that these co-receptors would induce alterations in Th cell differentiation, specifically involving Th1 and Tfh cells. By culturing

life on these shells vary from empty to heavily populated to only one or two worms on some shells.

Poster 7 Eddie Oviedo and Jessie Owens, Texas A&M University-Texarkana

Novel Flavi-like Viruses from Eukaryotic Intracellular RNA Pools

Eddie Oviedo and Jessie Owens

Emerging viruses related to Flaviviridae have been discovered in a variety of unexpected species. In theory it should be possible to scan publicly available metatranscriptomic data to preemptively identify viruses before they emerge. The program tBLASTn was used to search for homologs of conserved virus proteins in the Transcriptome Sequence Assembly database at PubMed. Using this process, several virus-like sequences with Flavivirus affinity were discovered in sequences from intracellular RNA pools. The most common potential host organisms identified were arthropods including mosquitoes and ticks, which have the potential to spread viruses to humans during feeding. These newly discovered viruses have several unusual sequence features, and contain highly divergent genes that would be very difficult to detect with conventional RT-PCR or serological methods. Together this suggests that preemptive scanning of transcriptomes is useful for discovering divergent Flavi-like viruses.

Poster 8 Cierra Soden, East Central University

Imported species of pathogenic *Fusarium* species from Central America differ from *Fusarium* species in Oklahoma

Cierra Soden, Matt Broge, Alisha Howard, Benny Burton, and Charlie Biles

Plant pathogenic *Fusarium* species cause detrimental effects on a large range of food crops around the world. Many of our fresh vegetables are imported from Central America including. This project is investigating the various Fusarium isolates that are being brought into the United States from Central America on cantaloupes. Symptoms that occur before harvest include a green margin around the area of infection, whereas the rest of the fruit turns yellow at maturity Lesions that develop postharvest and without the external preharvest symptoms, also develop interior spongy, white lesions. Melons (*Cucumis melo* L. var. *cantalupensis* Naudin) imported from Mexico were purchased from a local grocery store, surface disinfected with bleach and stored on disinfected table tops for 7 days. Several slightly sunken lesions were observed. The melons were dissected with a sterile knife and small infected fruit tissue pieces were placed on Potato Dextrose Agar (PDA). After 2 weeks of growth under a 12 hr light/dark regime at 25° C, the colonies appeared light pink to peach colored. Microscopic examination indicated that the majority of the isolates were *Fusarium* spp. A subculture was placed on Carnation Leaf Agar to determine morphological characteristics. A small portion of the hyphae was removed from the Petri dish and used for DNA extraction. ITS primers were used to isolate DNA sequences from the different isolates. The DNA analysis confirmed that the fungal genera were Fusarium species. GenBank blast search indicated that the isolates from Mexico were a 100% match with *Fusarium* sp. isolate ALO-IIHR. Isolates from Costa Rica matched with either *F. proliferatum* var. *proliferatum* or *F. subglutinans*. Isolates from Oklahoma matched with *Fusarum solani*. To our knowledge, *F. proliferatum* and *F. subglutinans* have not been reported as pathogens on cantaloupe.

Convention Menu

Friday Dinner

Beef & Chicken Soft Tacos
Chips w/ Guac and Queso
Refried Beans & Spanish Rice
Chocolate Chip Cookies

Saturday Breakfast

Scrambled Eggs
Biscuits and Gravy
Sausage Patties & Bacon
Home Fries
Milk and Cereal
Yogurt, Muffins, Fruit

Saturday Lunch

Fried Chicken Tenders
Yeast Roll
Mashed Potatoes & Gravy
Salad Bar
Green Beans & Kernel Corn
Peach Cobbler w/ Ice Cream

Saturday Dinner (Banquet)

Sliced Brisket Sandwiches and Pulled Pork Sandwiches
Mac and Cheese
Potato Salad
Cole Slaw
French Fries
Baked Beans
Salad Bar
Brownies w/ Ice Cream

Sunday Breakfast

Scrambled Eggs
Pancakes
Sausage Links & Bacon
Milk and Cereal
Yogurt, Muffins, Fruit

Convention Instructions

Chapter Introductions
On Friday night, chapters get the chance to introduce their members and describe this past year's activities and accomplishments. Chapters are highly encouraged to use a PowerPoint presentation to supplement their introductions. Please keep introductions to 5-7 minutes in length.

Oral Presentations
Oral presentations will take place Saturday morning from 9:15-11:45 in three locations concurrent. Oral presentations should be uploaded to the Alpha computer (located at registration table at the DBU House) by 11:00pm on Friday. Oral presenters should bring presentations on a memory stick. Remote clickers will be available in order for presenters to advance slides. Moderators will also be available to advance slides on request. The time allotted for oral presentations is 15 minutes; which includes time for questions. Moderators will not allow you to go beyond 15 minutes.

Poster Sessions
Poster sessions will take place Saturday afternoon from 1:15-3:15. Posters can be setup between 11:45 and 12:45. Early judging (without presenters) will begin at 12:45pm. Easels, poster boards, and tacks are available for Poster Presenters.

Scrapbook Competition
All scrapbooks must be deposited at in the DBU House by 11:00 pm on Friday, to be eligible for judging. They may be picked up Saturday after the business meeting.

Cleaning Your Rooms & Checking Out
All chapters **MUST** check out with the host chapters. A member of Alpha Chapter or Nu Eta will inspect your room before you are cleared to leave. Rooms **MUST** be clean and **ALL TRASH** taken out and put into the proper trash receptacle prior to departure.

significant difference in weight loss between the results of fad diets (e.g. low-carbohydrate, low-fat). Our second hypothesis is that a standard caloric deficit diet produces the greatest amount of significant weight loss. A standard caloric deficit diet is considered the control as the diet does not restrict any specific macronutrients, just energy intake. Low-carbohydrate diets and low-fat diets typically just set a limit of macronutrient intake based on which diet is followed. Keywords and MeSH terms such as, "diet fads", "low-calorie diets", "calorie-restriction", "low-fat, weight loss" were all used to locate the weight loss studies included. Contingency tables and odds ratios were used for the three following comparisons: low-fat vs. low-carbohydrate, low-fat vs. caloric deficit, low-carbohydrate vs. caloric deficit. Our analysis indicated that only low-fat diets produced a consistent amount of significant weight loss. Low-carb diets also produced a higher relative frequency of significant weight loss compared to caloric deficit. Greater amount of data are needed to further test the hypothesis. Current research is being performed to produce results with greater statistical power.

Poster 5 Grasyn Langley, University of the Ozarks

Microorganismal Identification of Infectious Agents Present as a Secondary Infection Due to Canine parvovirus

Grasyn Langley, Caitlyn Bell, and Sean T Coleman

Canine parvovirus (CPV) is a single stranded DNA virus that attacks innate immune defenses in the gastrointestinal tract of dogs causing a reduction in efficacy of the immune system. With a 90% morbidity rate, survivors of the deadly virus become susceptible to microbial infection due to the weakened state of the immune system. In a healthy, non-infectious dog microorganisms live in a commensal relationship with its host; however, in a sick, immunosuppressed dog microorganisms can become pathogenic. The purpose of this experiment was to test for and identify different possible pathogenic microorganisms present in a CPV carrier. Symptoms included in the carrier were excessive itching/licking of the skin, alopecia, hyper-pigmentation, foul odor, and reddened open wounds of the skin. Testing was then carried out on a healthy dog for comparison with the infected dog. Due to physical symptoms of infection and testing carried out it was concluded that the immunosuppressed dog contained pathogenic fungus with a secondary Staphylococcus epidermidis infection, and an unidentified parasite present in the ear canal. The healthy dog contained non-pathogenic Enterobacter cloacae as there were no signs of infection on the skin, respiratory system, or urinary tract.

Poster 6 Roya Morakabian, Texas A&M University Texarkana

Encrusting Parasitic Life on Fossilized Microchonchids

Over the past semester, I have conducted research on analyzing fossilized seashells and observing especially the encrusting parasitic life and worms found on these shells known as Microchonchids. My work has involved analyzing on the brachial side of such shells an assortment of ancient, fossilized parasites that thrive on these organisms. I have documented and drawn out observations for a total of twenty-eight of these shells. The various life forms I have seen plastered to these shells include segmented worms, flattened tubes, small and large inarticulate brachiopods, fat segmented flat worms, flat twisty worms, expanding curlworms, threadlike worms, and thin flat segmented worms in addition to observing numerous worm segments. It is clear that these worms thrived on these shells, although the density of parasitic

in culture within a few generations. We have been separately deriving DNA constructs that are designed to immortalize primary lancelet cells. Once we can reliably culture primary cells, we will develop and optimize a transfection method to introduce DNA into the cell. After achieving this, we aim to produce a library of immortalized cell lines from different lancelet organs.

Poster 2 Abbey Renner, Oklahoma City University

Bacteriophage-- A Potential Replacement for Antibiotics

Bacteriophage ("phage") are viruses that infect and replicate in bacteria. Since phage infect bacteria very specifically, there is considerable interest in exploiting them as antibacterial agents. Phage are found in natural environments such as soil, where there are complex bacterial ecosystems. We extracted phage from nutrient-rich soil by mixing the soil with a buffer (SM buffer), and filtering out the large particles and living organisms using a 0.45 micron syringe filtration system. Phage were added to cultured bacteria (*Bacillus cereus* or *Serratia marcesens*), mixed with top agar, and plated on LB-media. After incubation, the plates were checked for zones of clearing ("plaques"), indicating the presence of specific bacteriophage.

Poster 3 Brooke Rankin, Southwestern Oklahoma State University

Ice Nucleation: a look at evolutionary significance beyond frost injury

Brooke Rankin and Regina McGrane

Ice nucleation is the process of catalyzing the formation of sub-freezing water. Ice nucleation can be achieved by both biotic and abiotic nucleators including dirt, bacteria, and pollen. The phytopathogen *Pseudomonas syringae* is the most common biotic ice nucleator using the ice nucleation proteins (ICE) found in the membrane. Some ICE+ *P. syringae* strains are pathogenic to plants and causes frost injury when temperatures are near freezing. In addition to its presence on plants, ICE+ *P. syringae* has been found in clouds, the atmosphere, waterways, and snowpack. *P. syringae* ICE proteins are usually studied due to their role in pathogenicity when temperatures are close to freezing; however, ICE proteins are produced in bacteria at above freezing temperatures and are encoded by non-pathogenic *P. syringae* strains. This insinuates ICE proteins serve an additional evolutionary role. We hypothesize ICE proteins both enhance the ability of *P. syringae* to survive in hypertonic conditions and allow for the bacteria to undergo the process of aerosolization. To test this hypothesis, experiments were ran to compare ICE+, ICE-, and super ice nucleating strains of *P. syringae* along with ICE+ and ICE- *Pseudomonas putida*. An analysis of growth under stressful osmotic conditions was performed. Strains lacking ICE proteins were significantly effected in their ability to grow. The ability to aerosolize was compared by nebulizing strains in contact with a petri plate and determining concentration of viable cells. Because ice nucleating *P. syringae* are found in the atmosphere and different phases of the water cycle, it is likely the ice nucleating proteins serve a purpose beyond what is currently understood. A better understanding of ice nucleating proteins could lead to advances in snow manufacturing and food storage as well as increased inhibition of frost injury in crops.

Poster 4 Miguel Narez, Texas Wesleyan University

Meta-analysis on the human diet: What diet produces more significant weight loss?

A meta-analysis on the relationship of diet efficacy for human weight loss was performed using the PubMed database. Our hypothesis states that there is no

Oral Presentations Schedule

***Balanos* Session – Lone Star Room – A**

9:15-9:30 Tyler Birk, Angelo State University

Bacteriophage Isolation From Wastewater for Bacteria Pathogenic to Humans

Tyler Birk and Crosby Jones

Pathogenic bacteria have become increasingly resistant to antibiotics at an alarming rate and alternative methods for treating infections are being developed. One such treatment, phage therapy, involves using bacteriophages to destroy the bacteria. In order to use bacteriophages, they must first be located and there are many sources that are used today including sewage, soil, and bacterial colonies. Raw sewage is a commonly evaluated source due to the incredibly high quantity and diversity of bacteria found within it that could be used to find a host for the bacteriophages. The San Angelo Water Reclamation Facility was chosen for this research because its potential as a source for bacteriophages had not been previously evaluated. This research aims to assess the quantity of phages against the chosen pathogens in San Angelo's wastewater and whether related pathogens produce similar amounts. *Escherichia coli* (intestinal colonizer) was used as the baseline because it was already known that bacteriophages could be reliably isolated for it from the selected source. *Salmonella typhimurium* (intestinal colonizer), *Serratia marcescens* (intestinal colonizer), *Staphylococcus aureus* (skin colonizer), *Staphylococcus epidermidis* (skin colonizer), and *Streptococcus mutans* (oral colonizer) were also evaluated because of the important roles they play in healthcare and the food industry. Quantities will be assessed forming lawns with a mixture of bacteria and filtered sewage and counting the number of clearings, called plaques, that form after 24 hours of incubation. The plaques that form indicate the presence of a bacteriophage lineage that has developed and destroyed the bacteria in an area. If no plaques form for a species, phage enrichment will be done to further test the wastewater.

9:30-9:45 Sydney Decker, Angelo State University

Investigation of the phylogeographic Structure of the subspecies of northern yellow bats (*Dasypterus intermedius*) by molecular analysis

Sydney K. Decker and Loren K. Ammerman

Northern yellow bats, *Dasypterus intermedius*, occur in North and Central America, ranging from Honduras to South Carolina along the coast of the Gulf of Mexico. Two subspecies are currently recognized: *D. intermedius intermedius*, found from Honduras to south Texas, and *D. intermedius floridanus*, which ranges from southern Texas eastward to Florida and South Carolina. In this phylogeographic study, over 40 tissue samples were processed for DNA extraction and the amplification of the cytochrome b gene, with 21 sequences successfully attained. Samples were chosen from across the known geographic range, with particular attention paid to samples from south Texas, where the two subspecies' ranges overlap in order to test the hypothesis that molecular data will correspond geographically with the morphologically defined subspecies. A maximum likelihood phylogenetic analysis and a median joining haplotype network analysis recovered two well-supported lineages that did not correspond to the proposed geographic separation. A distance value of 0.119 between the two lineages of *D. intermedius*, as well as the relationship to the endemic Cuban species *Dasypterus insularis*, suggest that the taxonomy be re-evaluated according to the genetic species concept to reflect the level of divergence

found. More molecular data, especially from the nuclear genome, as well as morphological measurements for applicable individuals are needed to further corroborate the results.

9:45-10:00 Jailene Canales, University of Central Oklahoma

Characterizing Early Developmental Defects in an Avian Model of Maternal PKU

Jailene Canales, Morgan Massey, Austin McDonough and Nikki J Seagraves

Maternal phenylketonuria [MPKU] is a syndrome of multiple congenital anomalies including cardiovascular malformations [CVMs], brain and growth restriction when a mother with Phenylketonuria [PKU] does not control her dietary intake of Phenylalanine [Phe]. In this study, we aim to establish and characterize an avian model of MPKU. We focused on early developmental defects. METHODS: We investigated the effect of 2500μM Phe exposure by in-ovo yolk injection. Following the injection, the embryos underwent further development for 48 hours until dissection was performed. At HH14-17, India ink was injected into the yolk as a contrast dye. Images were taken of embryos and they were scored based on Drake et. al (2006.) RESULTS: Embryos exposed to high Phe displayed gross morphological changes including developmental and growth delays, anterior and posterior abnormalities, and torsion defects. FUTURE STUDIES: Histological analysis is underway to determine changes in heart development. Currently there is no data interrogating the mechanism by which Phe causes heart defects. We plan to utilize this model to define the mechanism of Phe cardiac teratogenicity which is critical for improving MPKU treatments and outcomes.

10:00-10:15 Raistland Valenzuela, University of Central Oklahoma

Silverleaf: a New Mycobacteriophage Isolated and Sequenced from Oklahoma Soil

Bacteriophages are viruses that can infect a host bacterium. Bacteriophages infect host cells, take control of the host's replication machinery, and replicate inside the host cell. Our goal in this project was to isolate, purify, amplify, characterize, and sequence a mycobacteriophage from Oklahoma soil. The mycobacteriophage we isolate can potentially be used by other researchers to conduct experiments such as examining the host range and potential application in phage therapy for treating *Mycobacterium tuberculosis* and *Mycobacterium leprae* infections. The Soil sample was obtained from water runoff located in my backyard. The area was boggy with dead foliage covering the topsoil, which is an ideal environment for mycobacteriophages. We used soil enrichment method and agar overlay method for isolating the phage. We did three plaque purifications to obtain a pure phage. We amplified the virus using webbed plates. Genomic DNA was extracted using the PCI method. We sequenced the phage genome using Illumina sequencing technology. We have successfully isolated and characterized a mycobacteriophage Silverleaf from Oklahoma soil. As of now, Silverleaf is the largest mycobacteriophage isolated and sequenced from Oklahoma soil. Our future work would including annotating the phage genome and submitting it to GenBank database.

"Prevalence of Antibiotic Resistance in the Environment (PARE)," we did tetracycline-resistant colony counts for both types of soil. Moreover, we went on to perform multi-drug resistance assays and obtain the 16sRNA sequence for 10 of the most tetracycline-resistant colonies.

Poster 12 Amelia McKennon, Southwestern Oklahoma State University

Understanding *Pseudomonas syringae* repulsion of competitors in the phyllosphere

Amelia McKennon and Regina McGrane

The phyllosphere supports 10^8 bacterial cells per gram of leaf tissue. This community includes commensal, mutualistic, and pathogenic bacteria that are constantly competing for heterogeneously distributed nutrients via antagonistic behaviors. *Pseudomonas syringae* is a foliar pathogen that causes crop loss. The signs of infection include lesions on fruit, yellowing of leaves, growth retardation, and reduced yield. To seek sites for infiltrating plant tissue, *P. syringae* uses a group movement, called swarming, that requires a surface lubricating biosurfactant called syringafactin. Strains lacking the genes for syringafactin biosynthesis (ΔsyfA) are nearly immobile in swarming conditions. Surprisingly, we observed movement by ΔsyfA away from a parent strain incubated in close proximity. This led to the hypothesis that *P. syringae* senses swarming and/or syringafactin production as a self-recognition signal to regulate antagonistic behaviors that repel competitors. To test this hypothesis, leaf colonizing bacteria were isolated from agricultural areas in Weatherford, OK. Because motility may serve as a *P. syringae* self-recognition signal, isolates were tested for ability to swarm, and isolates that lacked swarming capabilities were used for future experimentation. Non-swarming isolates were incubated in close proximity to the *P. syringae* parental strain and repulsion was monitored. *P. syringae* exhibited repulsion of 50% of the environmental isolates. To determine if *P. syringae* competitive repulsion is specific to certain leaf colonizing bacteria, 16s rRNA sequencing will be used to identify repelled isolates. This discovery could be used in the future to inhibit repulsion by pathogenic bacteria, thereby decreasing their competitive advantage during colonization.

Fish Session

Poster 1 Hamna Bhalli and Tristan Henderson, Houston Baptist University

Developing Molecular Tools to Study Amphioxus as a Model Organism for Evolutionary Immunology

Hamna Bhalli and Tristan Henderson

Lancelets, also known as Amphioxi, are cephalochordates, and they are thought to resemble the common ancestor they share with vertebrates. The primitive features of the lancelet help explain the complex features of a vertebrate. Thus we are using the Florida lancelet, *Branchiostoma floridae*, as a model organism to study the origin of adaptive immunity. To follow this idea, we needed to develop methods of lancelet husbandry and to create molecular tools to study this organism in vivo and in vitro. When caring for specimens, we stabilize the salinity levels and feed them concentrated stocks of *Tetraselmis chui* and *Nannochloropsis oculata*. These are unicellular marine algae that we culture at our facility. To study their cells, we dissected the animal and put tissues from each organ onto individual tissue culture plates. For the tissues to dissociate better, we used Type I Collagenase dissipation method. We have supplemented the growth media with Bovine Pituitary Extract (BPE) to enhance cell growth. Primary cells have a finite lifespan and are senescent

The Mediterranean gecko (*Hemidactylus turcicus*) is an exotic species that is a good model for studying processes related to invasion due to its slow dispersal. These geckos were repeatedly introduced to the University of Central Oklahoma (UCO) during 1963-1965 and 1985-1997. They have since spread to most campus buildings. Surveys in 2005 to 2010 and 2014 to the summer of 2017 documented the spread of geckos from 7 to 28 buildings on campus. However, buildings on and near campus that are likely colonization sites still need to be examined. This project expands surveyed buildings to see if more subpopulations have established on and off campus. Of the 23 new buildings inspected, 12 are inhabited by Mediterranean geckos and 61 tail tissue samples were collected for population genetic analysis. Individual capture will continue until we have obtained 10-20 samples from each building. An overall goal of the lab is to better understand the genetic structure and processes limiting gene flow between buildings with established gecko populations. Based on genotyping of 16 previously published microsatellite loci, we find two subpopulations on UCO's campus. Using analyses with STRUCTURE and ARLEQUIN, we expect to find more genetic clusters and genetic differentiation of distant buildings from those near the original site of introduction. This project continues to generate detailed geographic and genetic data for a well-documented population of an exotic species as it expands. This supports research on a variety of questions related to species invasions and adaptation to urban areas.

Poster 10 Veronica Rodriguez, Sam Houston State University

The detection of incompatibility groups in *Salmonella enterica* serovars Heidelberg and Typhimurium using Multiplex PCR

Human Salmonellosis is major issue as it is a common food-borne illness in the United States. Two strains, *Salmonella enterica* Heidelberg and *Salmonella enterica* Typhimurium are amongst the top causative agents and will be used in this study. To treat this infection, antibiotics such as cephalosporins could be used in both children and adults, but unfortunately, since antibiotic resistance has become so widespread, cephalosporin resistance has emerged due to the presence of AmpC β-lactamases and multidrug resistance. This multidrug resistance characteristic is due in large part to the transfer of Inc (incompatibility) plasmids, a set of related plasmids that are not able to coexist with one another. This study entails the usage of Multiplex PCR on 96 *S. enterica* Typhimurium strains and 48 *S. enterica* Heidelberg strains to detect which Inc (incompatibility) groups are present. So far, experiments have been done on twenty strains, thus results are limited.

Poster 11 Julio Molina-Pineda, University of the Ozarks

Comparing Antibiotic Resistant Bacteria between Organic and Pesticide/Herbicide-Treated Soils

Julio Molina-Pineda, Fernanda Hernández Sanzhez, and Sean Coleman

The prevalence of antibiotic resistance bacteria in the environment, especially in soil, is a very important topic. The continuous use of pesticides for crops and the over-use of antibiotics for animals and humans alike have created a crisis due to antibiotic resistant bacteria. Soil contains a large number of bacterial species, and evidence suggests that treatments with pesticides or herbicides can affect bacterial species identified and resistance profiles. In this experiment we were concerned with comparing the differences of antibiotic resistance bacteria between untreated soil (no pesticides) and soil that is usually treated with a broad spectrum of pesticides and herbicides. Following guidelines and procedures from Tufts University's Program

10:15-10:30 Rob Rodriguez, The University of Tulsa

Assessment of Species Diversity in Thinned Homogenous Blue Pine Stands at Kikila Pass, Bumthang Bhutan

Rob Rodriguez, Trevor Sleight, Sarah Wayman, Sam Wiles, and Kinley Tshering

Bhutan is a prominent biodiversity "hotspot" with sub-tropical ecosystems across its southern border with India and alpine ecosystems to the north. A large proportion of the nation's landcover is comprised of mixed conifer forests, composed mainly of blue pine (*Pinus wallichiana*). The blue pine timber industry is highly regulated as largescale modification to such forests may be detrimental to the natural environment. Kikila Pass in Bumthang District, Bhutan, due to its regulated mosaic of thinned and un-thinned homogenous blue pine stands, was selected to assess faunal and floral biodiversity. Our hypothesis was that thinned blue pine forest stands would be more biodiverse because more light may reach the undergrowth to facilitate shrub growth and be conducive to animal movement. Camera trapping techniques and undergrowth assessment plots were employed to assess biodiversity of faunal and floral species respectively. The camera trap data yielded images of a Himalayan serow, a leopard cat, two Himalayan black bears, three wild boars, a satyr tragopan, a Himalayan striped squirrel, a common pika, and a red fox, and most were seen in thinned stands. These thinned stands, as indicated via the Shannon Index, had a greater faunal biodiversity. Fifteen undergrowth floral species in thinned stands and eleven species in un-thinned stands, each with some novel species, were accounted for in floral assessments plots representative of both stand types. The Shannon and Simpson Indices both suggested a greater floral biodiversity in thinned stands. Both assessment strategies also indicate that the regulated blue pine thinning for timber facilitates faunal and floral biodiversity.

10:45-11:00 Michael Clowers, Houston Baptist University

Fire Ants: Fiends or Friends?

Transferrins are glycosylated proteins that bind ionic iron. The transferrins of many species are believed to be antimicrobial, sequestering iron away from pathogens. In a proteomic assessment of fire ant (*Solenopsis invicta*) venom, a transferrin protein was identified, and it is hypothesized that this uncharacterized transferrin likewise possesses antimicrobial activity. This hypothesis is supported by a separate study which noted increased expression of *S. invicta* transferrin mRNA in vivo in response to fungal challenge. However, no direct assays have been performed to investigate the antimicrobial activity of the isolated Solenopsis transferrin protein. The aim of this project is first to use quantitative PCR to measure in vivo transferrin mRNA expression in response to challenge with bacterial lipopolysaccharide, as previous research has not included bacterial-based induction data. The second aim is to clone and express the *S. invicta* transferrin gene, SiTf, in mammalian cell culture. Then, the mature recombinant protein product will be purified to conduct bacterial killing assays.

11:00-11:15 Lisa Lopez, Oral Roberts University

The Role of Amot in Breast Cancer Progression

Lisa Lopez and William P. Ranahan

The US Centers for Disease Control and Prevention predict that 1 in every 8 women will be diagnosed with breast cancer in their life time. In the United States alone, over a quarter of a million new cases were diagnosed this year (2018). Despite a surge in public awareness and many public and private funds being directed towards

breast cancer research, this cancer's mechanisms of development and metastasis remain poorly understood. Most breast cancers begin in the duct of the mammary gland. The mammary ductal system is unique in that it is an on-demand organ which undergoes dramatic differentiation following pregnancy and then an equally dramatic period of involution following weaning. The pregnancy-lactation cycle promotes growth and transformation of the ductal epithelial cells, and when completed, many of these cells undergo apoptosis. Mammary glands are comprised of highly organized epithelial cells which line the mammary ductal lumen. Maintenance of their cellular identity and apical-basal polarity is mediated by the epithelial polarity adaptor protein Angiomotin (Amot). Disruption of apical polarity results in aberrant pro-growth signals as apical and basal receptors mix. Loss of apical polarity is an early initiating event during mammary tumorigenesis. Amot expression in mammary epithelia directly correlates with tumor grade and invasive capacity. This study sought to elucidate the changes in gene expression which result from increases in Amot levels within mammary epithelia. Non-tumorigenic mammary epithelial cells (MCF10A) were transiently transfected with a yellow fluorescent protein (YFP) tagged Amot construct or YFP alone. After 48 hours, total RNA was extracted and purified from both control and treatment populations. Reverse transcriptase was used to generate cDNA which was subsequently assayed via BioRad's Prime PCR array. Changes in expression of gold-standard genes known to be associated with breast cancer progression were quantified. A 35-fold increase in Amot expression resulted in the up-regulation of multiple oncogenes as well as the down-regulation of several tumor suppressors. These data indicate a role for Amot as a regulator of gene expression in addition to its currently known role as a mediator of epithelial polarity.

11:15-11:30 Tesa Martin and Kyle Copp, Oklahoma City University

Use of Enclosure Space by Long-tailed Macaques at Mindy's Memory Primate Sanctuary

Tesa Martin, Kyle Copp, and Madison Snow

This study investigates how future macaque habitats can be designed for optimal efficiency by investigating how long-tailed macaques (*Macaca fascicularis*) at Mindy's Memory Primate Sanctuary use their enclosure space. We collected data on differential usage of ground, platform, and enclosure wall space. In addition, we compared enclosure space use patterns between former pet macaques and former lab macaques. Data was collected via narrated videos of ten male macaques to determine if any areas of the enclosure are being used more than expected. We hypothesized that overall the monkeys will prefer the platforms and firehose to the ground, and when comparing the monkeys based on their backgrounds, we hypothesized that there will be no difference in enclosure space use. All of our results are being shared with the primate sanctuary, in order to enhance how captive macaques utilize their habitat.

11:30:-11:45 Valeria Robleto, University of the Ozarks

Cloning and Expression of Human Separase

Separase (ESPL1) is a protease that cleaves the cohesin complex during the start of anaphase facilitating the separation of sister chromatids. When overexpressed, Separase induces aneuploidy and tumorigenesis, and it has been reported as an oncogene in a variety of cancers. Because of its importance for the cell cycle, it is highly regulated. The protein Securin acts as a chaperone helping to fold ESPL1 as

used in retail storage. Two strains of *S. aureus* (B4-59C and B6-55A) were incubated in MHB for 24 hours at variable temperatures (4oC, 25oC and 37oC). After 24 hours, *S. aureus* broths were filter sterilized and used as test media (B459C-4, B459C-25, B459C-37, B655A-4, B655A-25 and B655A-37) for *Campylobacter* survival. Six strains of Campylobacter [*C. jejuni* (T1-21, NCTC11168, OD2-67) and *C. coli* (HC2-48, WA3-33, ZV1-224)] were incubated in freshly prepared MHB and filter sterilized *S. aureus* grown media at 4oC up to 120 hours. Viable count for *Campylobacter* strains were taken at 0, 24, 48, 72 and 120 hours. Higher survival for prolonged time of all *Campylobacter* strains was found in *S. aureus* grown media than the reference MHB media control. This indicates that some extracellular metabolites of *S. aureus* strains produced during growth or survival at 4oC, 25oC and 37oC can enhance the survival of *Campylobacter* strains at low temperature. Further investigation is needed to identify such metabolic products through chemical fractionation. Our results suggest that the presence of *Staphylococcus aureus* in retail meat and liver products might enhance the survival of *Campylobacter* strains at low temperature. Intervension strategies are needed to reduce both foodborne pathogens in retail meat and liver products.

Poster 8 Chelsea Miller, Southwestern Oklahoma State University

Looking beyond the leaf: understanding the impacts ofmotility on *Pseudomonas syringae* seed colonization

Chelsea Miller and Regina McGrane

Pseudomonas syringae, an opportunistic phytopathogen, causes disease in agriculturally important plants. Strains of this bacteria are found ubiquitously in the soil and can have devastating effects on the global crop production. *P. syringae* is known to employ a surface motility called swarming to colonize leaf surfaces, which is mediated by the flagella, pili, and biosurfactants. Biosurfactants lower surface tension between a cell and the surface acting as lubricants to overcome friction. Mutants lacking the biosurfactants syringafactin (ΔsyfA) and rhamnolipid (ΔrhlA) have been shown to have impaired swarming and leaf colonizing abilities. *P. syringae* overwinters in infected plant tissue in the soil and is thought to reemerge in the spring to infect new seeds and seedlings. The mechanisms utilized to colonize seeds and seedlings following overwintering have not been studied. We hypothesize that *P. syringae* uses swarming motility in the soil to move toward and colonize seeds. The objective of this experiment is to evaluate the role of active motility in *P. syringae* seed colonization and to determine the impact of rhamnolipid and syringafactin biosurfactants in movement towards seeds. To test this hypothesis, sterile sand was inoculated with *P. syringae* pv. syringae B728a parent, ΔrhlA, and ΔsyfA strains, and common bean seeds were incubated in the soil for 15 minutes. To quantify the impact of growth independent of motility, half the seeds were moved into sterile sand. The remaining seeds were incubated in the inoculated sand for 12 hours. Population sizes for each treatment were tracked every three hours over 12 hours. Results show that *P. syringae* actively moves through sand and the biosurfactants play a role in *P. syringae* seed colonization. Understanding the impact of *P. syringae* swarming motility in soil could lead to control methods that prevent *P. syringae* colonization of seedlings at the beginning of a growing season.

Poster 9 Emily Falcon, University of Central Oklahoma

Documenting the Colonization of Mediterranean Geckos (*Hemidactylus turcicus*) near the University of Central Oklahoma

Poster 5 Brian Laverentz, Texas Wesleyan University

Analysis of a potential regulatory region of the Drosophila PYM gene

7.5% of *Drosophila euchromatin* are nested genes (Misra et al. 2002). This research is focused on the nested gene pair bgcn and PYM. The function of the bgcn gene product is unknown; however, mutations in the gene cause germline tumors in both males and females. (Grametes et al. 2017) PYM is nested within the first intron of bgcn and transcribed in the same direction as the host gene. PYM plays a role in splicing, as it has been shown to bind the 40S ribosomal subunit and the Y14-magoh complex, as well as participating in post-translation exon junction disassembly. (Gehring et al. 2009 and Diem et al. 2007) The promoter region for this nested gene is unknown. The first 253 base pairs of the first intron of bgcn are hypothesized to contain PYM's promoter. This paper outlines the isolation and amplification of the potential promoter region of PYM from *Drosophila melanogaster*, and describes future steps to determine the role of this region.

Poster 6 Fernanda Hernandez Sanzhez, University of the Ozarks

Comparison of Microbial Count, Isolation, and Antibiotic Resistance Assays on Three Different Toothbrush Storing Techniques

Fernanda Hernandez Sanchez, Julio Molina-Pineda, and Sean Coleman

Toothbrushes are commonly considered a hygiene product, but they can also be home to a lot of different bacteria. These bacteria may not only be coming from the mouth of the users, but also cross contamination from the sink or the toilet is possible. Thus, it should not be alarming to consider the fact that toothbrushes contain bacteria. Although usually related with fecal matter, coliform bacteria might actually be harmless, but it can also be pathogenic (like pathogenic *E. coli*). 3M Petrifilms were used to identify and count coliform and *E. coli* in water samples from toothbrushes kept in the bathroom (Covered and Non-covered) and toothbrushes outside the bathroom (all non-covered). Results show higher counts of coliforms in covered bathroom located toothbrushes, as compared to non-covered and the ones kept outside the bathroom. No *E. coli* was found, but two different isolates were identified as *Pseudomonas* spp. (specifically not *Pseudomonas aeruginosa*) through different staining techniques plus differential and selective methods. Antibiotic resistance assays show how even harmless bacteria is gaining resistance to the most common antibiotics. In conclusion, coliform and *Pseudomonas* sp. were isolated in higher counts from covered, toothbrushes that were located in the bathroom, which is consistent with a better way to store toothbrushes.

Poster 7 Claudia Harper, The University of Tulsa

***Staphylococcus aureus* Enhances the Survival of the Foodborne Pathogens *Campylobacter jejuni* and *Campylobacter coli* at Low Temperature Used in Retail Meat Storage**

Claudia Harper, Anand B. Karki, Kaylee Ballard, and Mohamed K. Fakhr

Campylobacteriosis remains a leading diarrheal illness in developed countries including the USA. Prevalence of *Campylobacter* (mainly *C. jejuni* and *C. coli*) has been found to be high in retail meat and liver products. *Staphylococcus aureus* was also highly prevalent in retail meat and liver products. Polymicrobial presence of *Campylobacter* with *Staphylococcus* and other bacteria have shown enhanced biofilm formation and prolonged survival of *Campylobacter* in adverse conditions including aerobic incubation. This study was designed to explore the influence of *Staphylococcus aureus* on the survival of *Campylobacter* strains at low temperature

well as inhibiting early activation. In order to continue our understanding of the structure and domains responsible for the expression of human Separase, this study will focus on co-expression of Human Separase with different domains of its inhibitory chaperone, Securin. The ORF of human Securin and various mutants of Securin were utilized to co-transfect mammalian cells along a plasmid encoding for WT Separase. After transfection, the yields of Separase significantly increased when bound to the Securin mutants when compared to a transfection of Separase alone. I was able to successfully express what should be an active and folded hSeparase.

***Boudetase* Session – Lone Star Room – C**

9:30-9:45 Ilana Silva, Oral Roberts University

Antioxidant Potential, Antimicrobial Activity, and Antiproliferative Action of Black Walnut (*Juglans nigra*) Husk

Ilana Silva, Marissa E. Bradley, Michelle L. Ammerman, Cheryl Storer Samaniego, Jonathan Wenzel, Lihua Wang, Eli Ward, Jenna Jernigan, and Kayla Topping

Walnuts are used for many purposes in the food, cosmetic, and agricultural industries. Walnut husks are usually discarded during the harvesting process despite showing promise in past studies. The objective of this work was to investigate the antioxidant potential, antimicrobial activity, and antiproliferative action of supercritically extracted walnut husk. These properties were assessed by the Total Phenolic Content (TPC) assay, the Kirby Bower disc diffusion assay, and the Alamar blue® assay, respectively. The results show that the supercritical extracts have significant antioxidant activity, moderate antibacterial activity against the Gram-negative bacterial species *C. violaceum* (ATCC 31352) and yeast species *C. albicans* (ATCC 14053). Alamar blue® assay exhibited that the extractions possess high antiproliferative activity against human SKBr3 breast cancer and FKBP52-knockout Mouse embryonic fibroblast (52KOMEF) noncancer control cell lines.

9:45-10:00 Julio Molina-Pineda, University of the Ozarks

Antioxidant Carbon Nanoparticle Results in Novel Auditory Response in Mice

Julio Molina-Pineda and Fred A. Pereira

Deafness is a common side effect in people undergoing chemotherapeutic treatment with Cisplatin, a chemical proven to be ototoxic due to its oxidative damage that results in disturbance of the endocochlear potential. An antioxidant carbon nanoparticle has been found to protect the ear from such damage and to enhance auditory response as well. Two experiments were performed: one in which the nanoparticle dosage and its effects were investigated by studying the effect of three continuous doses. And a second experiment in which the inner ear and brain potassium channel's mRNA expression was compared between nanoparticle treated and untreated mice. Preliminary findings suggest that the nanoparticle increases and delays auditory response, and that higher dosage just helps in maintaining the enhancement rather than increasing it. Furthermore, the mRNA analysis suggests a possible mechanism for the enhancement caused by the nanoparticle.

10:00-10:15 Nicholas Evans, Angelo State University

Creation of a MEGA-Plate to Understand the Nature of *Pseudomonas aeruginosa*

The MEGA-plate was originally used by Harvard University to study how Escherichia coli gains antibiotic resistance across a spatiotemporal landscape. Using

a MEGA-plate, antibiotic resistant strains of a bacterium can be produced within a few weeks. This is beneficial for testing new and existing drugs to counter the rise in antibiotic resistance. *P. aeruginosa* is an important nosocomial pathogen that afflicts patients with open wound and cystic fibrosis. *P. aeruginosa* infection, in cystic fibrosis patients, is treated with tobramycin, but a high incidence of resistant strains has been observed. I hypothesized that a MEGA-plate could be made to grow *Pseudomonas aeruginosa* and that it would be able to spread across the plate, into antibiotic regions. A suitable growth medium was determined for the soft agar through testing with a minimum nutrient medium including tyrosine and ammonium sulfate. The soft agar used for the plate consists of a cetrimide soft agar with tyrosine as the primary carbon source. Building a plate similar, but modified, in structure to Dr. Roy Kishony's lab at Harvard University, *P. aeruginosa*'s ability to grow and spread on the plate was observed. *P. aeruginosa* was able to move into areas containing tobramycin. Samples were taken from each run and their colony morphologies and antibiotic susceptibilities were observed.

10:15-10:30 Hunter Miears, Angelo State University

Pigment mutants of *Staphylococcus aureus* and their response to antimicrobials

Staphyloxanthin is a golden pigment that is produced by the bacterium *Staphylococcus aureus*. This pigment is a virulence factor for the bacterium and is hypothesized to have the dual function of acting as an antioxidant to protect against action of oxidizing agents, a common form of immune response in the human body, and stabilizing the cell membrane, much like cholesterol does in human cells. In this experiment, mutants with little or no staphyloxanthin were successfully created using UV light. These mutants were then tested against various agents, including oxidants, cell membrane active antibiotics, and *Pseudomonas aeruginosa* exoproducts, to determine if there was a difference in bacterial response between the mutants and the wild type, or non-mutated, bacterium that still produced the staphyloxanthin pigment. I hypothesized that the lack of staphyloxanthin would cause the mutant bacteria to be more drastically affected by the antibacterial agents. This was tested using a standard Kirby-Bauer method where the test compounds are impregnated into standard filter paper discs and tested against lawns of bacteria. Zones of inhibition were measured 48 hours. Among other data recorded was the influence on pigment production of the various test compounds. Results indicate that a difference exists in the bacterial response to the cell membrane active antibiotics and *P. aeruginosa* exoproducts between the differentially pigmented mutants of *S. aureus*.

10:45-11:00 McKayla Muse, University of Central Oklahoma

The Effects of Phenylalanine, Retinoic Acid, and Diethylaminobenzaldehyde on Cell Migration

McKayla Muse, Gabriel Rucci, and Nikki Seagraves

Maternal Phenylketonuria (MPKU) is a disease that affects embryos in early stages of development caused by increased levels of phenylalanine (Phe). Offspring show defects in craniofacial and heart development. We hypothesize that Phe acts as an inhibitor of migration, which may contribute to the defects seen in MPKU. This can be investigated by performing cell migration assays, in which different cell types are cultured and then treated with chemicals including: Phenylalanine (Phe), Retinoic Acid(RA), and Diethylaminobenzaldehyde (DEAB). Images were taken at time 0, 12hrs, 24hrs, 48hrs, and 72hrs after treatment and analyzed with ImageJ and GraphPad Prism. The results showed that Phe acted similar to DEAB, where the rate

direct result of these infections in the U.S. alone. Along with improvements in treatment practices, there is a serious need for new antimicrobial agents to treat drug-resistant microbes. In the present study, we have identified potentially new antibiotic-producing microbes (bacteria), as well as lytic bacteriophage. Two bacterial strains were isolated from soil and shown to inhibit the growth of *Staphylococcus aureus*, *Klebsiella pneumonia*, and other pathogenic bacteria. Biochemical tests, including the IMViC and sugar fermentation assays, suggest the two isolates are either atypical members of the Pseudomonas family, or belong to another group of bacteria altogether. To aid in species identification, we are conducting PCR assays based on 16S ribosomal DNA (rDNA) sequences. Additionally, we isolated bacteriophage (MSP1 and MSP2) that are able to infect *Mycobacterium smegmatis*, a bacterial species closely related to the causative agent of tuberculosis, *Mycobacterium tuberculosis*. An estimated 600,000 cases of multiple-drug resistant tuberculosis occurred worldwide in 2016 (Gupta-Wright et al., 2018). With this, there is considerable interest in identifying *M. smegmatis* bacteriophage because they may also infect *M. tuberculosis*. Our results indicate that MSP1 and MSP2 are capable of infecting other *Mycobacterium* species, suggesting a broad host specificity. We hope this project will contribute to the discovery of new therapeutic agents to treat serious bacterial infections.

Poster 4 Lindsey Hendricks, Southwestern Oklahoma State University

Pick your poison: the sublethal effects of pesticides on amphipod life history traits

Lindsey Hendricks and Rickey Cothran

Understanding sublethal effects of pesticides is critical because most pesticides are found at low concentrations in nature, which may harm organisms but not kill them. We know little of how sublethal concentrations affect ecosystems, which led me to explore the sublethal effects of malathion (an insecticide that targets the nervous system) on *Hyalella amphipods* (small, freshwater crustaceans). Individuals were collected from two populations in western Oklahoma that differ in proximity to agriculture. For both populations, I selected 60 male-female pairs of amphipods and equally distributed them across three treatments of malathion: no pesticide (0 ppb), low sublethal concentration (0.005 ppb), and high sublethal concentration (0.02 ppb). Each pair was exposed to the treatment concentration until they produced two broods of offspring. I measured how life history traits, which are traits directly related to survival and reproduction, responded to the malathion treatments. Specifically, I measured growth rate for both sexes. I also measured female fecundity (the number of offspring per female) and male gnathopod size (a claw-like appendage), which has been demonstrated to affect male mating success. We discovered that male gnathopod size in the high sublethal concentration treatment was significantly smaller than in the control and low concentration treatments, whereas, growth rate and female fecundity were not affected by the pesticide treatments. This provides some hope that populations can evolve pesticide tolerance to an insecticide that is commonly used in the home and garden and agricultural sectors, however, results for gnathopod size suggest that populations are still sensitive to this insecticide and there may be limits to the evolution of tolerance. Next, I plan to study the effects of pesticides on behavior. The response variables will include the ability to find food and other resources and the ability to avoid predators.

hope to further our findings by analyzing the fecal matter of superworms and mealworms to confirm the breakdown of PS.

Bird Session

Poster 1 Sam Harrison, Angelo State University

Microsatellite Analysis of two morphologically similar bat species *Myotis ciliolabrum* and *Myotis californicus*

Sam Harrison and Loren Ammerman

Myotis californicus and *Myotis ciliolabrum* are two species of bats in western North America, that just from their appearance, are difficult to distinguish. A previous AFLP analysis suggested that a nuclear marker such as microsatellite loci could be useful in distinguishing between the species. The purpose of our project was to identify a specific genetic marker that can differentiate between *Myotis californicus* and *Myotis ciliolabrum* and that could be used to easily confirm the identity of unknown samples. We analyzed 76 tissue samples from across the range of these species. Our analysis includes 28 *Myotis californicus* and 25 *Myotis ciliolabrum* with a confirmed identity. A total of 21 individuals have not undergone an AFLP analysis and therefore their identity has not been confirmed. We determined the genotypes at 10 different microsatellite loci, which gave the sizes of the microsatellite alleles. Through a comparative method, we will identify the genetic difference between the two species of bats that could be used to determine the identity of the unknown samples.

Poster 2 John Coggins and Jacob Flores, Houston Baptist University

Developing Molecular Tools to Immortalize Cells of *Branchiostoma floridae*

John Coggins and Jacob Flores

The Cephalochordate *Branchiostoma floridae* is important in the study of evolution due to its position in chordate evolution and unique immunology. Despite the amphioxus's potential as a model organism, there is minimal progress in its study and usage due to the lack of molecular tools and established procedures. Our research aims to develop new ways of studying these animals and ascertain the nature of their immune system. In order to study amphioxus as an origin of adaptive immunity, we cloned the Ras gene of *B. floridae* and engineered a mutation of V12 to make it active. We want to develop a library of stable cell lines that can be tested for their immune properties. With this goal in mind, a RasV12 oncogene capable of immortalizing cell cultures was chosen. A beta actin promoter, a housekeeping gene found in all cells, was identified and cloned from *B. floridae* to express the oncogene. Having successfully cloned the beta actin promoter into a PCDNA vector, we are currently working to test its functionality with a GFP protein reporter, to be inserted downstream of the promoter. The Ras V12 has been successfully cloned into a PCDNA 3.1 vector with the beta actin promoter. Next, we will transfect the cells with our DNA construct.

Poster 3 Brianne Barnes and Tesa Martin, Oklahoma City University

Identification of New Antimicrobial Agents

Brianne Barnes, Tesa Martin, Emily Stoltzfus, Beth Landon, and Greg Mullen

Resistance to antibiotics is a major health concern in the 21st century. According to the Centers for Disease Control and Prevention (2010), every year 2 million people are infected with antibiotic resistant bacteria and over 23,000 individuals die as a

of migration was slower than that of RA, which is known to increase migration. This suggests that Phe may act as an inhibitor of migration. This is significant because it eludes to a potential mechanism that Phe could affect RA signaling, thus resulting in the types of defects observed in human MPKU.

11:00-11:15 Bethany Bundrant, Austin College

PA28γ affects cellular resolution of oxidative DNA damage

Bethany Bundrant and L.F. Barton

Increased levels of reactive oxygen species (ROS) are present in almost all cancers. Since elevated ROS levels can cause serious damage to cells, understanding how cancer cells sustain their altered biology could identify ways to selectively target transformed cells. DNA base excision repair (BER) is the pathway responsible for the repair of oxidatively-damaged DNA. Disruption of the BER pathway is linked to a variety of cancers, including colorectal, gastric, and lung. The proteasome activator, PA28γ, plays an important role in the cellular response to oxidative stress through its degradation of oxidatively-damaged proteins and is elevated in many different cancers. Here, we identify a novel role for PA28γ in the resolution of oxidatively-damaged DNA. Murine embryonic fibroblasts (MEFs) deficient in PA28γ (PA28γ-/-) have higher baseline levels of oxidative DNA damage. Additionally, PA28γ-/- MEFs exhibited delays in DNA repair after treatment with hydrogen peroxide. PA28γ-/- MEFs exhibit comparable viability following treatment with hydrogen peroxide and elevated viability following inhibition of BER, suggesting a defect in DNA damage recognition. Expression profiles of pcna and ape1, genes important to BER, were comparable in both cell lines, so the mechanism through which PA28γ exerts these effects remains uncharacterized. Our data reveal an expanded role for PA28γ in the cellular response to oxidative damage, perhaps playing an important role in the recognition of oxidatively-damaged DNA.

11:15-11:30 Jay Garber, Southwestern Oklahoma State University

Investigating the effects of varying surface conditions on phytopathogens

Jay Garber and Regina McGrane

The ability of pathogens to respond to environmental variation is instrumental for survival. Adaptation to the local environment often takes place via a change in the pathogen's transcriptome. These changes in gene expression result in phenotypic variation. Increased understanding of how transcriptional changes occur provide potential means for pathogen control. Motility is an important pathogenicity factor for the phytopathogen *Pseudomonas syringae*. In the laboratory setting *P. syringae* exhibits three distinct motility behaviors, but the mechanisms regulating these behaviors in the phyllosphere is unknown. We hypothesized that *P. syringae* responds to changes in surface tension to modulate motility behaviors. In this study we evaluated two flagella stators and two flagella glycosylatransferases. These genes were chosen because we expected their expression to vary in response to surface conditions. The flagella stators MotAB and MotCD generate necessary power for flagella rotation. Previous studies suggest MotAB functions as a low torque stator while MotCD functions as a high torque stator. Flagella glycosyltransferase stabilizes the flagella in high friction environments and prevents breakage. To identify the surface signals which modulate surface behaviors, expression of motility factors was evaluated in conditions that simulate mechanical stress, disruptions in flagella rotation, and acute osmotic stress. These conditions were simulated using varying agar, ficoll, and salt concentrations, respectively. To investigate the potential

of the flagella itself as a sensor, both the wild type and a mutant strain of *P. syringae* lacking the gene encoding flagellin were evaluated. Our results indicate that expression of the flagella stators and glycosyltransferase are altered in response to mechanical stress and disruptions in flagella rotation and that the flagella serves as a surface sensor. Studies are underway to determine the impact of osmotic stress. Increased understanding of the mechanisms of transcriptional changes that increase adaptation to host tissue provide potential means for pathogen control.

11:30:-11:45 Gloria Farinango, Southwestern Oklahoma State University

Investigating *Pseudomonas syringae* pv. *syringae* B728a motility as means of colonization of above ground tissues.

Gloria Farinango and Regina McGrane

Pseudomonas syringae is a phytopathogen that causes brown spot disease on common bean in addition to deleterious symptoms in a variety of economically important plants. This causes economic losses due to yield reductions. *P. syringae* pathogenicity is associated with its ability to move across the leaf surface using pili and flagella. Active movement allows the bacteria to colonize leaves while seeking out heterogeneous pools of nutrients and sites protected from UV radiation and desiccation. *P. syringae* survives in association with infected plant tissue in the soil. It is assumed that plant tissue in soil and contaminated seeds serve as a significant reservoir for *P. syringae*; however, little is known about the importance of motility in colonization of above ground tissue from these reservoirs. The objective of this study is to investigate the importance of *P. syringae* motility in colonization of plant tissues from a below ground reservoir, and determine the motility factors utilized in this colonization. We hypothesized that *P. syringae* uses pili mediated motility to colonize the radical, stem, and primary leaves during transmission from below ground to above ground tissues. To test our hypothesis, we compared the colonization ability of strains lacking the pili filament (ΔpilA) and/or pili retraction protein (ΔpilT) to the parent strain on four different common bean tissues. Comparisons were made by inoculating each strain on seeds and tracking *P. syringae* populations during plant development. Our hypothesis will be validated if the population sizes for the pili deletion mutant are significantly lower than the parent strain on each plant tissue. Understanding the mechanisms used to colonize above ground tissues following overwintering of *P. syringae* could lead to new methods for preventing brown spot.

<u>*Boax* Session – Texas Hall</u>

9:15-9:30 Eric Ledieu, University of the Ozarks

Magnetohydrodynamic (MHD) Microfluidic Flow as Affected by Current and Chamber Height

Eric Ledieu, Foysal Khan, and Ingrid Fritsch

Magnetohydrodynamics (MHD) fluid pumping is an effective way to manipulate microfluidic volumes and can be leveraged for lab-on-a-chip applications. MHD holds promise for moving small fluid volumes in a programmable fashion to enable chemical mixing, separation, and detection on a small scale. One advantage of MHD over other microfluidic approaches is its independence from mechanical pumping mechanisms, allowing for significant miniaturization. Redox-MHD, or R-MHD, is obtained by introducing a redox species into the electrolyte solution or by immobilizing it onto the electrodes. It resolves problems like bubble formation due

the mesocarp tissue. The tissue was placed on either potato dextrose agar or malt extract agar. Approximately 65 *Diaporthe* isolates have been identified based on spore and colony morphology. Morphological and microscopic examination of indicate that approximately 50% are similar to *D. melonis* and *D. ueckerae* and the other 50% are similar to *D. cucurbitae* and *D. sojae*. This is a strong indication that Oklahoma has at least 2 Diaporthe species. Further work is underway to determine DNA sequences of the isolates.

Poster 10 Sarah Gore, Southwestern Oklahoma State University

Rhizobacteria promote plant-growth in winter wheat in Oklahoma Soil

Sarah Gore and Regina McGrane

As the world's population increases, the demand for improved food quality and agricultural yields heightens. Pathogens, nutrient-poor soil, and environmental stress reduce crop yields. Pesticides and fertilizers classically used to circumvent these issues harm the environment; additionally, plant pathogens develop pesticide resistance with overuse. An imperative area of research focuses on plant-growth promoting rhizobacteria (PGPR) that colonize the rhizosphere and have unique associations with host plants. Recent studies have concentrated on characterizing these rhizobacteria as biocontrols and biofertilizers. They are environmentally-friendly, decrease risk to human health, have specific target activity, are effective in small quantities, self-replicate, and decrease pathogen resistance. These bacteria impact plant growth by competing with pathogens for ecological niches, inducing systemic resistance via immune response to pathogens, increasing nutrient sequestration, phytohormone stimulation, increasing stress tolerance, and producing allelochemicals and antimicrobials that inhibit pathogen growth. The objective of this project is to further investigate species of bacteria that promote plant growth. We hypothesize that Oklahoma soil contains bacteria capable of promoting the growth of winter wheat. Soil samples of bacterial species were isolated from various farmland locations in Weatherford, Oklahoma. To identify species that promote plant growth, winter wheat seeds were grown in the presence of unknown bacterial isolates, and root and shoot length and fresh weight of inoculated plants were compared to seeds grown in sterile soil. Isolates that support the growth of larger wheat plants will be identified by 16s rRNA sequencing. Future studies will work to identify the mechanisms used by newly identified PGPR. Novel PGPR have the potential to be used as commercial inoculants to increase the yield of winter wheat.

Poster 11 Cam Huynh, Houston Baptist University

Why are Superworms Super-Eaters?

Polystyrene (PS) is known to be a very stable polymer used in single use commercial packaging. Its stable structure makes it a non-biodegradable material which accumulates in landfills. Recent studies have shown that mealworms (*Tenebrio molitor*) can break down PS into biodegradable components. A specific strain of bacteria (*Exiguobacterium* sp. strain YT2) found in the guts of these worms is responsible for the biodegradation of PS. Previous research by our group has shown that the use of superworms (*Zophobas morio*) along with mealworms increases the consumption of PS. Since superworms cannibalize mealworms, and the bacterium responsible for PS degredation is found in mealworms, we examined superworm digestive tracts for the presence of the *Exiguobacterium* strain. This potential transfer of gut bacteria may significantly improve the ability of superworms to digest PS. We

biodegradable and thus it builds up in landfills. Recent studies show that mealworms (*Tenebrio molitor*) can digest PS into biodegradable fragments, carbon dioxide, and water. Superworms (*Zophobas morio*) are however more efficient than the mealworms due to their larger size, increased appetite, and ability to delay the process of metamorphosis when housed in large groups. Along with replicating our initial experimental findings, we have further optimized the conditions of the experiment by elevating the moist sponges, changing the orientation of the experimental boxes, and maintaining a constant moisture level of 125 mL to increase PS consumption and survival rates. Under these conditions, we have conclusively established that the interaction between mealworms and superworms increase the PS consumption. Furthermore, this increase may be caused by the transfer of the bacteria strain Exiguobacterium sp. Strain YT2 into the gut microbiota.

Poster 8 Steven Jacob, Austin College

Characterization of a tau-based Alzheimer's model in *Drosophila melanogaster*

Steven Jacob, Venecia Perez-Huerta, and Ernesto Perez

Alzheimer's disease is a neurodegenerative disease that is characterized by an irreversible and progressive decline in memory and cognition. Two hallmarks of the disease are the presence of extracellular amyloid plaques and intracellular tau tangles. Tau protein is a microtubule associated protein that normally stabilizes microtubules in neurons. In Alzheimer's, tau protein is hyperphosphorylated and forms protein aggregates called neurofibrillary tau tangles, which can lead to neuronal cell death. The underlying mechanisms of cell death are largely unclear. Here, we examine the effects of expressing the neurotoxic form of the human tau gene in neurons and in epithelial cells of *Drosophila* using the Gal4-UAS genetic tool. Adult fly behavioral crawling assays and apoptotic and necrotic cell death detection assays were conducted. Results suggest that expression of human tau gene impairs adult fly climbing ability. Additionally, tau expression may promote caspase-dependent cell death through the Jun N-terminal kinase (JNK) activation in both neurons and larval wing epithelial cells. Future work will examine climbing ability in aged flies, further characterization of apoptotic cell death, and the role of JNK signaling in this tau-based Alzheimer's model.

Poster 9 Jacob Grimm, East Central University

Plant Pathogenic *Diaporthe* Species Infecting Melons in Oklahoma

Jacob Grimm[1], M. Broge[1], C. Biles[1], A. Howard[1], B. Bruton[2]. [1]East Central University, [2]United States Department of Agriculture, Agricultural Research Service, Lane, OK (retired).

Plant pathogenic fungi are the leading cause of plant diseases in the world. Variation in the population of a specific pathogen species determines how widespread the disease may progress in a certain crop. In 2015, Udayanga et al. published a phylogenetic re-assessment of the *Diaporthe sojae* species complex associated with field crops. They found that *Diaporthe* Nitschke (syn. Phomopsis (sacc.)) species that attack melons (*Cucumis melo* L. var. *cantalupensis* Naudin) separated into four distinct species; *D. melonis*, *D. ueckerae*, *D. sojae*, and *D. curcurbitae* based on morphology and DNA analysis. All four originate from different locations. *D. ueckerae* isolates were from Colbert, Oklahoma. The purpose of this study was to further investigate the variation in *Diaporthe* species on melons in Oklahoma. Melon fruit from the Atoka and Colbert areas were collected and stored for 4-15 days. As *Diaporthe* symptoms developed, the melons were cut and the pathogen isolated from

to hydrolysis that arise from passing current through unprotected electrodes in electroinactive electrolyte solution. By introducing redox reagents, the electrons pass to their intentionally designated reactions, instead of hydrolysis. However, a redox reagent in solution limits the use of R-MHD for analytical purposes, as the reagent could interact with the sample, or cause density gradients. Thus, a conductive redox polymer (e.g. poly 3,4-ethylenedioxythiophene, PEDOT) immobilized onto the electrodes has been introduced as a replacement. Previous studies investigating the R-MHD flow profile in a non-electroactive electrolyte between PEDOT-modified, parallel band electrodes found it to be flat, which is promising for analytical applications, because it offers motion of fluid elements without distortion. This study investigated the horizontal and vertical flow profile under variable applied currents with a constant chamber height (total depth of fluid), as well as varying chamber heights under constant applied current. This study has found that at all studied current and chamber height, the horizontal flow profile remained flat. Furthermore, at a current of 100 μA, the vertical flow profile also appeared to have remained qualitatively flat. Small chamber heights were also found to have a restrictive effect on flow speeds.

9:30-9:45 Parnia Forouzan, Houston Baptist University

The Effect of Tamoxifen on Skeletal Muscle

Calcium handling by the Ryanodine Receptor 1 (RyR1) channel is integral in excitation-contraction coupling during which an action potential generates muscle contraction. The RyR1 channel regulates the release of calcium ions from the store in the sarcoplasmic reticulum, and this release enables muscle fibers to contract. The goal of my summer project was to ascertain the effects of tamoxifen treatment on skeletal muscle, specifically the RyR1 channel, in both wild type and RyRY522S (YS) mutant mice. Tamoxifen is an FDA approved anti-estrogen drug used in breast cancer patients to prevent the growth of cancerous breast tissue, and it has been shown to ameliorate pathologies of Duchenne muscular dystrophy (Dorchies 2013). To evaluate the effect of tamoxifen on signal transduction pathways, I performed a western blot analysis targeted for RyR1 and phosphorylated RyR1 (phosphoRyR1). The western blot indicated a change in the RyR1 of treated muscles. Immunoprecipitation results also suggested a change in conformation of the RyR1. In addition, I tested muscle endurance and strength of RyR1 mutated mice using wire hang and grip strength tests. Results indicated that there was a deficiency in muscle strength of the YS mice compared to littermate wild types. We hope to treat these diseased mice with tamoxifen or vehicle over time and assess muscle strength to see if there are any improvements in muscle function. If tamoxifen is found to enhance muscle function, it can potentially be used as a treatment for patients with RyR1 mutations or other myopathies.

9:45-10:00 Ashley Rose, DBU

Telomere Dysfunction and Aberrant Hematopoietic Stem Cell Differentiation in Myelodysplastic Syndrome (MDS)

Myelodysplastic syndrome (MDS) is a pre-cancerous disease that primarily affects individuals aged 50 years or more, and it is caused by a DNA mutation in the hematopoietic stem cell that carries downstream in the myeloid lineage. The disease is characterized by cytopenias and the accumulation of immature blood cells (blasts). MDS has the capacity to develop into Acute Myeloid Leukemia (AML) if the percentage of blasts exceeds a certain limit. There is a well-established correlation between shortened telomere length and the development of MDS. A mouse model

was utilized with breeding of TERT ER/ER mice to study the DNA damage response that leads to aberrant stem cell differentiation in the myeloid lineage. The data collected from various tests indicate accumulations of DNA damage in stem cell and progenitor compartment, and this damage affects the ability of the hematopoietic stem cell to maintain the balance of self-renewal and differentiation.

10:00-10:15 Alyssa Watson, Oral Roberts University

Anti-Cancer Properties of Compounds Secreted from *Herecium erinaceus*

Alyssa Watson and William P. Ranahan

Cancer continues to be one of the leading causes of death worldwide despite researcher's concerted efforts to find a solution. Chemotherapy, while an effective cancer preventative, also is toxic to healthy human cells. Mushrooms have served as natural forms of medicine for thousands of years. Researchers have only recently begun to investigate their potential as a cancer therapy. To date, the vast majority of investigations have focused on fruiting body or mycelial extracts from the mushroom. Large molecules such as polypeptides are often extracted from the mushroom and taken in a supplemental form. This study investigates compounds secreted from mycelia and their anti-cancer properties. Compounds secreted by the mushroom *Herecium erinaceus* were tested on both normal and cancerous breast epithelial cell populations. Changes in gene expression were assayed via RT-qPCR. Changes in cell viability were assayed via mitochondrial respiration rater. Decreased expression of an indicator for cell growth (PCNA) was seen in both normal (MCF10A) and tumorigenic (MDA-MB-468) cells. The marker for apoptosis (BCL2) did not significantly change in either population suggesting that the decrease in PCNA was not due to activation of apoptosis. Consistent with these observations, cell cytotoxicity measurements suggested a decrease in cell viability in both populations. Interestingly, cell viability in both populations initially increased, suggesting there may be heterogeneity with respect to the compounds being secreted. Future studies will focus on elucidating and identifying the compounds being secreted by *H. erinaceus*.

10:15-10:30 Dorcie Gillette, Sam Houston State University

Rapid evolution of CRISPR-associated Cas proteins

Dorcie Gillette, Hyuk Cho, and M. Choudhary

CRISPR (Clustered Regularly Interspaced Short Palindromic Repeats) is a naturally occurring genetic defense system in bacteria and archaea; it is comprised of a series of DNA repeat sequences with spacers derived from previous exposures to plasmid or phage. This system has revolutionized our capacity for gene or genome editing of prokaryotes and eukaryotes. There are three major types of CRISPR systems, Type I, Type II, and Type III; each system type possesses an associated signature protein, Cas3, Cas9, and Cas10, respectively. Since the CRISPR loci originated from past independent exposures of the foreign genetic elements, it is likely that their associated signature proteins have rapidly evolved. In addition, their domain structures might have experienced different selective pressures, and therefore they have differentially diverged. We employed genomic, phylogenetic, and structure-function constraint analyses to determine the evolutionary relationships of Cas3, Cas9, and Cas10 proteins. Results reveal that all three Cas proteins are most highly represented in the phyla Bacteroidetes, Firmicutes, and Proteobacteria. Additionally, Cas proteins are prevalent in both pathogenic and nonpathogenic species among some of these phyla. Phylogenetic analysis reveals that each of these Cas proteins

Poster 5 Rodolfo Gonzales, Texas Wesleyan University

Identification and characterization of unknown spore-forming isolates

Throughout history, the relationships between mankind and bacteria have been both beneficial and harmful, with some proving to be mutualistic or symbiotic in nature. Acting as reservoirs for bacterial organisms we can assume that our presence in any given environment affects the overall composition of microbial communities. These microbial organisms can provide a glimpse into the lives of the people who carried them, and any challenges that these organisms may have faced. Whether it be the gaining of resistance to a challenge where none was observed before, or susceptibility due to lack of contact with a particular challenge, human occupation could be an explanatory factor in these developments. Ancient human occupied soil, dating back as far as 5,000 years, could provide a glimpse into any effects that human occupation may have had on the microbial community and could also provide an understanding of the challenges that spore-forming bacteria may have faced. Differences in antibiotic resistance have already been observed between different isolates from this ancient soil, and human occupation or soil composition may have played a role in these differences. The aim of this project is to identify the unknown spore-forming microbes isolated from this ancient soil, and to establish a relationship between antibiotic resistances between strata and the role that human occupation may have played in microbial composition and resistance.

Poster 6 Caitlyn Bell, University of the Ozarks

Prevalence of Tetracycline Resistant Bacteria in Pastures Containing Antibiotic Treated and Untreated Cattle

Caitlyn Bell, Valeria Robleto, and Sean T. Coleman

The increasing use of antibiotics in livestock has led to the evolution of organisms resistant to antibiotics – specifically tetracycline. Tetracycline is an antibiotic commonly utilized by farmers for the treatment of infectious diseases in their cattle. This antibiotic is administered by three of our four contributing farm owners to their cattle as needed, and is delivered via shot method. The growing pool of tetracycline and other possible antibiotic resistant organisms can be studied and identified through soil sample analysis from areas where livestock graze. This study analyses soil samples from areas where the cattle have been treated with antibiotics versus areas where they have not for changes in soil microorganism content and presence of resistance to tetracycline. Analysis was completed by collection of soil samples, purification processes involving a DNeasy soil kit, 16S RNA analysis, and production of cultures in media containing and media absent of tetracycline. The resistant bacteria found were isolated and tested for multiple antibiotic resistance through disk diffusion assays. Analysis will help compare the soil's microorganismal resistance to tetracycline in between areas where antibiotics are and are not present. It is expected that soil from the fields where antibiotic treated cattle reside will contain more organisms with antibiotic resistance than areas where untreated cattle roam.

Poster 7 Sana Quadri, Houston Baptist University

EFFICIENT BIODEGRADATION OF POLYSTRYENE USING SUPERWORMS

Polystyrene (PS) is a petroleum-based polymer composed of styrene, which can be made into expanded polystyrene (EPS). EPS is commonly used in packaging and is optimal for one time use because of its stable structure. However, it is non-

Poster 3 Paige Eberle, Oklahoma City University

Understanding the Effects of the cla-1 Gene on Synaptic Function in *Caenorhabditis elegans*

Paige Eberle and Greg Mullen

Communication in the nervous system occurs when neurons send signals to other cells through synapses. In this study, we are using the nematode *Caenorhabditis elegans* to study synapse function because of their high reproduction rate and the number of genes they have in common with humans. Two synaptic proteins present in humans are Piccolo and Bassoon, which are involved in vesicle fusion in the active zone. In *C. elegans*, we identified a gene called cla-1 that encodes a protein similar to these proteins. When cla-1 is lacking (in mutant strains), the mutants have mild behavioral defects in movement and enteric muscle contraction. This evidence suggests that there are defects in synaptic function in these mutants. In order to insure the behavioral defects are strictly due to the lack of cla-1 function, we are crossing a transgenic wild-type copy of the gene into the cla-1 mutants. This will used determine if the behavioral defects can be rescued by a normal copy of the gene. The wild-type gene has been fused to the yellow fluorescent protein (YFP) which will also help to determine whether the CLA-1::YFP fusion protein is localized correctly. The overall goal of this study is to understand the function of the CLA-1 protein in synapse function.

Poster 4 Ashna Dhoonmoon, Southwestern Oklahoma State University

Investigating the effects of innate stimuli on B7-molecules in bulk splenocytes vs sorted cells

Ashna Dhoonmoon and Christopher G. Horton

Lymphocytes require three signals for appropriate activation – signal 1 is obtained via antigen presentation to a receptor, signal 2 is provided by a co-receptor and signal 3 is obtained through cytokines. Absence of signal 2 prevents proper activation of T cells, hence demonstrating the importance of co-receptors. Co-receptors include two classes: stimulatory, including CD80 and CD86, and inhibitory such as B7-DC and B7-H3. In addition to orchestrating an immune response against pathogens, co-receptors have also been implicated in several diseases. Numerous studies have revealed higher than normal expression of inhibitory co-receptors in tumor microenvironments, contributing to less efficient killing of cancer cells. While the fundamental functions of these receptors are somewhat clear, the contexts in which they are expressed are not completely understood. We hypothesized that stimulating cells with innate immune agonists would alter the expression patterns of co-receptor proteins. Our experiments demonstrated that stimulation of mouse splenocytes with innate immune stimuli, particularly DMXAA, leads to selective alterations in co-receptor expression, most notably among B lymphocytes. The most significant results were obtained by stimulation with DMXAA on B7-H4 and hence we narrowed our focus down to this specific stimulus and co-receptor. DMXAA is known to be a potent tumor vascular disrupting agent in mice and an agonist of STING (stimulator of interferon genes), a cytosolic nucleic acid sensor. Bulk splenocytes or pre-sorted cells were stimulated with DMXAA for 24 hours. Following stimulation, cells were collected and stained with anti-B7-H4 antibody. Our results suggest no differential effects of DMXAA on sorted versus unsorted cells. Future studies aim to confirm these studies and address other potential mechanism by which DMXAA promotes the expression of B7-H4 on B cells.

originated monophyletically. Genomic analysis of the homologous proteins reveals that these proteins shared ~30-50% amino acid identity; therefore these proteins within and across Cas protein families have rapidly evolved. Additionally, structure-function constraint analysis shows that the whole protein experiences moderate levels of selective pressure. Further analysis of Cas9 shows that several protein domains (RecI, Bridge Helix, HNH, and RuvC) are highly conserved; these domains must have experienced purifying selection. However, two domains (Rec II and PAM interacting domains) must have experienced positive selection and therefore exhibit rapid divergence.

10:45-11:00 M'Kayla Motley, Angelo State University

A Preliminary Report on the Seed Dispersal Methods of *Sclerocactus brevihamatus* spp. *tobuschii*: An Endemic Cactus

M'Kayla G. Motley and Bonnie B. Amos

The Tobusch fishhook cactus (*Sclerocactus brevihamatus* spp. *tobuschii*) (TFC) is a small dome-shaped cactus found in Ash Juniper-Liveoak associations in nine counties in the Edwards Plateau, Texas. The cactus bears one to nine fruits, which ripen early May to mid-June. In 1979, US Fish and Wildlife Service listed TFC as endangered. Much is known about the taxon's breeding system and pollination; however, little is known about its seed dispersal. Therefore, our objectives were to: define fruit/seed attractants and identify fruit visitors and their behavior for TFC populations at Kerr Wildlife Management Area in Kerr County, TX. Time-lapse cameras were used to obtain approximately 40,000 images and videos of TFC fruit development and visitation. The only fruit visitors observed, in images, videos or field observations, were two species of ants: the fire ant (*Solenopsis invicta* or a hybrid *S. invicta* X *S. geminata*) and a smaller ant, *Forelius pruinosus*. Neither visited the plants until the fruits opened but then swarmed the fruits (N=10) feeding on the pulp and also harvesting pulp from the fruit. However, neither harvested seeds. Data analyses show that fruit visitation is short-lived with 1.5 to 3 days from first observation of ants to collapse and subsequent drying of the fruit. Seeds remain in the fruit and fall onto and around the plant. These observations differ from those of Emmett (1995) who reported the ant *Forelius maccooki* (=*F. foetida*) transported as much as 85% of TFC seeds back to the ant mound at three different sites. Studies in 2018 are planned to obtain additional visitor data, conduct exclusion experiments, and monitor sugar content in fruits.

11:00-11:15 Angela Rollins, Angelo State University

Temporal differentiation in activity periods of selected mesocarnivores in Texas

Angela M. Rollins, J. Clint Perkins, Alexandra A. Shaffer, and Robert C. Dowler

A study of time partitioning among co-occurring Virginia opossums (*Didelphis virginiana*) and northern raccoons (*Procyon lotor*) was conducted through the use of camera traps in three separate counties of Texas. Cameras were set at least 100 meters apart, with 17 cameras in Burleson County, 40 in Calhoun County, and 40 in Coryell County. All sites were sampled for nine-day sampling periods between December 14, 2016 and January 16, 2017. Cameras were baited with sardines or fish oil and set to take the maximum number of photos per successive activation event. Sampling periods were combined onto a 24-hour timeline and detections were characterized as individuals active within five- minute periods of time. These data were graphed as a line chart with the x-axis being a 24 hour timeline, the y-axis being the number of detections, and the dawn and dusk times notated. These combined data showed a

trend of similar activity times throughout the night between the two species with some notable differences in dawn and dusk activity levels. Opossum activity began 35 minutes before sunset while raccoon activity began 25 minutes after sunset. Similarly, opossum activity ended approximately 1.5 hours before sunrise while raccoon activity ended approximately 1 hour after sunrise. There was also a notable drop in activity for both species that lasted 30 minutes at 20:15. Patterns of these two species activity levels currently do not suggest distinct time partitioning; however, data obtained from additional counties coupled with statistical analysis could result in further understanding of these trends.

11:15-11:30 Kayley Pate, University of Central Oklahoma

Analysis of Proliferation in Phenylalanine, Retinoic Acid, and 4-diethylaminobenzaldehyde Treated Cells

Kayley Pate and Nikki J Seagraves

Maternal phenylketonuria [MPKU] is a syndrome of multiple congenital anomalies including cardiovascular malformations [CVMs], and brain and growth restriction when a mother with Phenylketonuria [PKU] does not control her dietary intake of Phenylalanine [Phe]. However, the mechanisms responsible for Phe-induced CVMs are poorly understood. It is thought that high levels of Phe could inhibit Retinoic Acid [RA] signaling, which promotes the expression of genes such as proliferation, migration, and differentiation. Previous studies have shown that cardiac neural crest cells are important in formation of the outflow tract (OFT) and aortic arch arteries (AAA). Proliferation of the neural crest cells is a central process in the development of the heart. Study Objective: In this study, we aimed to determine if exposure to high Phe levels perturbs cell proliferation. We also looked at the effects of exposure to RA and 4-diethylaminobenzaldehyde [DEAB], which is a known RA inhibitor. Methods: We conducted in-vitro proliferation assays on several cell types to determine if proliferation was affected by Phe, RA, and DEAB exposure. This involved plating and synchronizing the cells, treating them, and staining them with a Click-It Edu. Discussion: Current experimentation is underway. Present research suggests that Phe exposure causes a significant decrease in proliferation of cells. It is also shown that RA increases or does not affect proliferation, and that DEAB decreases cell proliferation. In this way, Phe is similar to DEAB, which suggests that it also acts as an RA inhibitor. This could contribute to the CVMs observed in MPKU.

11:30:-11:45 Gunner Parent, East Central University

Evaluation of the Blue River for Presence of *Campylobacter jejuni*

Gunner Parent and April Nesbit

Campylobacter jejuni is a bacterial species associated with cattle and poultry that can cause campylobacteriosis, a severe intestinal infection. The Blue River is a water source for many people and livestock in Southeast Oklahoma, and the Oka' Yanahli preserve includes one mile of the Blue River near the headwaters. For human and animal safety, I sampled for the presence of *C. jejuni* in the portion of the Blue River contained within the Oka' Yanahli preserve. Sediment and water samples were collected from six locations along the Blue River. Water samples were diluted using serial dilution protocols and placed on *C. jejuni*, Campylobacter blood-free selective medium. Plates were grown at 42°C for 24 hours under aerobic conditions and grown at 37°C for 72 hours under anaerobic conditions. Eleven bacterial colonies of interest were isolated followed by gram staining and eight biochemical tests. Three anaerobic colonies were isolated followed by gram staining. Isolated samples then underwent a PCR reaction, and were ran on a DNA gel. DNA bands were isolated and prepared for 16S DNA barcoding. Initial results suggest that none of the isolated colonies are *C. jejuni*, however 16S DNA barcoding did reveal the genus of a few species. Future work includes expanding biochemical test on isolated samples to distinguish between species and testing additional colonies using standard microbial techniques and 16S DNA barcoding.

Poster Presentations 1:15-3:15

Acorn Session

Poster 1 Matthew Hamilton, Angelo State University

A systematic assessment of endemic Galapagos rodents: *Nesoryzomys fernandinae* and *Nesoryzomys swarthi*

Matthew H. Hamilton and Robert C. Dowler

The genus *Nesoryzomys* is currently restricted to Galapagos, Ecuador, specifically four of the major islands: Isla Baltra, Isla Santa Cruz, Isla Santiago, and Isla Fernandina. Throughout these four islands are five described species, with two now considered to be extinct (*N. darwini* and *N. indefessus*). These five described species of *Nesoryzomys* are split into two size groups, the larger of the species (*N. indefessus*, *N. swarthi*, and *N. narboroughi*), and the smaller species (*N. darwini* and *N. fernandinae*). Previous systematic research has been almost exclusively on *N. narboroughi*, because *N. fernandinae* and *N. swarthi* were both thought to have been extinct. Discovery of populations on the islands of Fernandina (*N. fernandinae*) in 1995 and Santiago (*N. swarthi*) in 1997 allowed collection of specimens beyond the type series for these species. Only limited morphological descriptions are available for these two species. We describe gastric morphology, cranial measurements, and glans penis morphology for *N. fernandinae* and *N. swarthi* and compare these features to those reported for *N. narboroughi*. Using fluid-preserved specimens in the Angelo State Natural History Collections, we made observations and measurements of both the gastric and glans penis morphology. Images of stomach and glans penis anatomy were analyzed using ImageJ software. Skull measurements were taken using Fowler electronic digital calipers and subsequently analyzed for comparative analysis among species.

Poster 2 Natalie Aldous, Houston Baptist University

The Lab Saboteur: Identifying Fungi Contaminating the HBU Biology Labs

The purpose of this research is to identify the fungi species that is contaminating various cell and animal cultures in the labs of Houston Baptist University. The species of the fungus was identified using the internal transcribed spacer regions of the nuclear ribosomal RNA gene cluster (ITS). The fungi samples were provided by various faculty. They were also obtained by leaving potato media exposed to the air and were then incubated. The identity of the fungi will allow Houston Baptist University to choose the appropriate anti fungal to prevent the fungi from continuing to affect research projects from being performed.