



# UNION UNIVERSITY

## Fall Poster Session

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November 19, 2019

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## Fall Poster Session

TUESDAY, NOVEMBER 19, 2019

SUB Hallway | 11:00–12:30 p.m.

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### Student Presenters

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- Art**
- Mikaela Allen | “An Exploration into the Origins, Purposes, and Significance of the Business Card”
  - Emily Drost | “Exploring the Development of Propaganda Art during World War II”
  - Samory Gueye | “Graphic Designers in Virtual Reality”
  - Jamie Hodge | “Voulkos’s Shift from Functional to Non-Functional Pottery”

- Biology**
- Audrie Campbell | “Effect of Cosmetic Preservatives on the Growth, Biofilm Formation, and Gene Expression of *Staphylococcus epidermidis* 1457”
  - Taylor Lewelling | “Examining the Antibacterial Surface Properties of Blue Dasher (*Pachydiplax longipennis*) Dragonfly Wings”
  - Christopher Roberts | “Determining the Antibiotic Properties of *Artemisia abrotanum* Essential Oil using Spectrum Analysis and a Disk Diffusion Protocol”
  - Edward Sickle | “The First Recorded Host for the Assassin Fly (*Xanthomelanodes atripennis*) and a Phylogenetic Analysis of the Genus”
  - Ashley Scott | “Investigating the Effects of *Pseudomonas fluorescens* on Intestinal Barrier Formation using Fluorescent Tracers”

- Social Work**
- Rhonda Hudson and Students in SW 421-1 (Jenna Brasfield, Ashley Cioto; Miracle Gray, Jadelynn Green, Haley Henley, Aletta Jensen, Victoria Kersey, Allison Pananas, Mya Putman, Charlotte Richardson, Kara Stallsmith, Cara Stevenson, and Kelsey Yarbrough) | “The Effect of Reduction of Time Spend on Social Media on Perceived Stress and Quality of Sleep”
  - Ashley Cioto | “The Effect of Caffeine Decrease on Perceived Stress in Undergraduate Students”
  - Kara Stallsmith | “The Effect of Bible Meditation on Perceived Stress on University Students”

# ART

## **An Exploration into the Origins, Purposes, and Significance of the Business Card**

Presenter: Mikaela Allen

Faculty Advisor: Haelim Allen

The business card, though small, has significant power – it is a pocket-sized agent to potentially innumerable connections. The business card not only represents the individuals listed on the card, but the respective, greater organizations and brands represented by such people. Often times, business cards are the first point of contact with the public, the first glimpse into a company's identity, and the first example of a business' quality of work. The business card's roots are found amongst visiting or calling cards – social cards primarily used in the late 17th to 19th centuries to introduce oneself or to signify a visit made to a home if the desired occupant was absent. However, over time, the business card has evolved into a powerful marketing tool and a staple in the modern business world. This research seeks to further explore the development of the business card – its origin, purposes, evolution, and significance.

## **Exploring the Development of Propaganda Art during World War II**

Presenter: Emily Drost

Faculty Advisor: Haelim Allen

During the years of, and leading up to World War II, propaganda was used by both Axis and Allies as a tool of war. Looking through a contemporary lens, propaganda art was utilized using controversial and ethically questionable means in an attempt to influence the masses. While Propaganda Art—and specifically the use of propaganda posters—was used by both sides, it developed differently in both locations and reflected the issues and goals of each side. Examining Hitler's past, it is clear that he believed that whoever controlled art controlled the people. This research explores the development of this highly persuasive German propaganda, starting with the negative portrayal of Jews, moving towards an increased national pride, and pointing towards the desired future of German Utopia through the elevation of the Aryan people. Similarly, this research will investigate the development of World War II Propaganda in the United States, where propaganda began with an objective to rally the American people behind the war. Many in the U.S. were hesitant to join the war, and therefore pre-Pearl Harbor propaganda was about creating the idea of an enemy that the people could rally against. How this propaganda evolved into a way of bolstering a strong national identity, mandating involvement in the war effort, and uniting the country around a single goal will also be explored.







## Graphic Designers in Virtual Reality

Presenter: Samory Gueye

Faculty Advisor: Haelim Allen

Reflecting back on the past few decades, it is no secret that technology has completely changed the life of human beings. Technological innovations such as Virtual Reality (VR) will continue to drastically change the way people live. VR enhances or offers a different reality through a complete immersion in technological interactions through graphic design. It is predicted that in the future, the digital platform or VR will be used by companies to enhance and grow their businesses. For example, VR will impact education, health, entertainment, and basically, all aspects of life. This technological development will create more opportunities for graphic designers. Since VR will impact many areas in life, graphic designers will have greater responsibility towards society. The more visually-inclined our generation tends to be, graphic designers will have to be knowledgeable in various fields in order to be successful in producing high quality of work. The trend of utilizing Virtual Reality is predicted to provide graphic designers with a variety of new job opportunities, and dramatically change the way people live their lives across the world.

## Voulkos's Shift from Functional to Non-Functional Pottery

Presenter: Jamie Hodge

Faculty Advisor: Haelim Allen

Peter Voulkos, an American potter of Greek descent, was known for his ceramic sculptures that blurred the lines of craft and fine art. He started his ceramic career making well-thrown, functional pots that fit the traditional pottery standards. His experiences in teaching as well as being influenced by experimental artists transformed his work. The resulting experimentation became non-functional, sculptural ceramic pots. Voulkos slashed, stacked, and slammed large amounts of clay together to form large-scale ceramic pieces. Today, Voulkos is viewed as a leader who pushed clay and pottery towards non-functional works of fine art. ■



# BIOLOGY



## Effect of Cosmetic Preservatives on the Growth, Biofilm Formation, and Gene Expression of *Staphylococcus epidermidis* 1457

Presenter: Audrie Campbell

Faculty Advisor: Esther Choi

There are many beneficial microorganisms in our skin; however, our skin is frequently subjected to treatments and stresses that change the type and prevalence of skin microbiota. Growing concerns of synthetic preservatives in cosmetics have shifted our attention to natural preservatives, like seed oils and plant extracts. To provide a guideline for using natural preservatives in skin products, we aimed to compare effects of synthetic versus natural cosmetic preservatives on a skin bacteria, *Staphylococcus epidermidis* 1457. The bacteria was treated with propylene glycol, propyl paraben, and tea tree oil and the effect was determined on its bacterial growth, biofilm formation, and gene expression. A-431, a skin epithelial cell line, was also treated with these compounds to detect changes in proteins and cytokines involved in skin innate immunity. Our results can provide important guidelines in choosing effective cosmetic preservatives with safety while minimizing unwanted changes in skin microbiota.

## Examining the Antibacterial Surface Properties of Blue Dasher (*Pachydiplax longipennis*) Dragonfly Wings

Presenter: Taylor Lewelling

Faculty Advisor: Jeremy Blaschke

The remarkable hydrophobic properties of dragonfly wings may also function as natural antibacterial surfaces. Here, we investigate the ability of Blue Dasher wings (*Pachydiplax longipennis*) to inhibit the growth of the Gram negative bacteria *Escherichia coli*. Bacteria were genetically transformed to express Green Fluorescent Protein and a microplate reader was used to measure the increase of fluorescence over time as the bacteria colony grew. Dragonfly wings were cut and placed in individual wells of a 96-well plate and covered with nutrient broth. Double-sided sticky tape and polypropylene plastic were used as control surfaces. When compared to controls, dragonfly wings exhibited significantly less *E. coli* growth ( $p < 0.05$ ) as evidenced by lower expressed fluorescence over time. These results indicate that dragonfly wings may naturally inhibit the formation of biofilms by reducing the growth of Gram negative bacteria. Mimicking the physical structure of these wings could lead to the production of novel synthetic surfaces with antimicrobial properties.







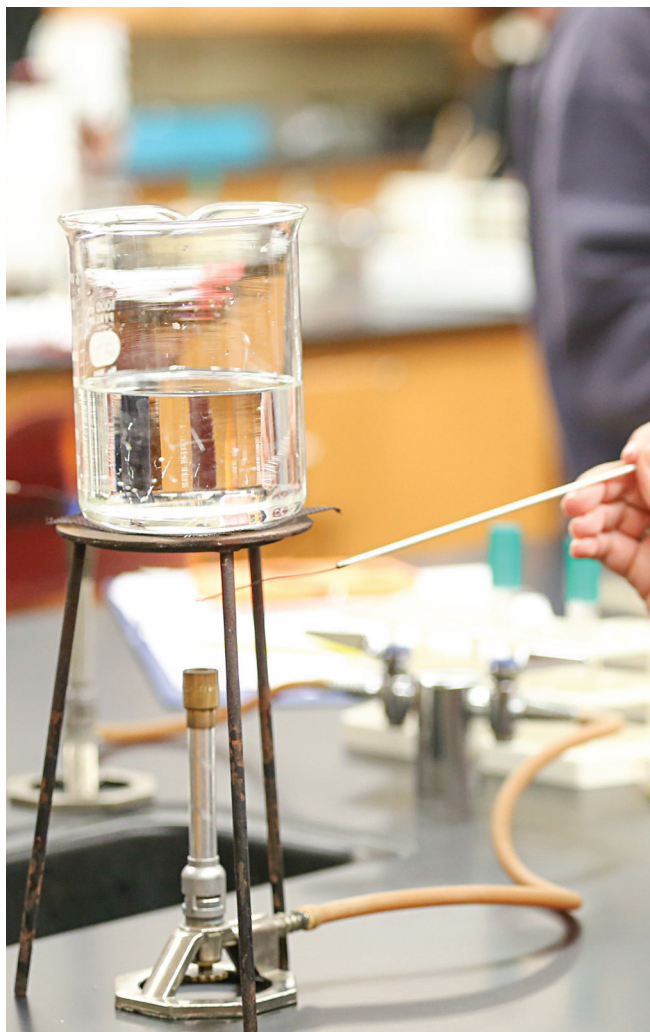
# BIOLOGY

## Determining the Antibiotic Properties of *Artemisia abrotanum* Essential Oil using Spectrum Analysis and a Disk Diffusion Protocol

Presenter: Christopher Roberts

Faculty Advisor: Mark Bolyard

The southern wormwood (*Artemisia abrotanum*) is a fragrant, perennial herb native to Asia and the Mediterranean; this species has been well-regarded by southern Europeans for its sharp citrus scent and medicinal potential, both of which are due to volatile oils found within the plant, such as borneol, camphor, and 1,8-cineole. The objective of this research is to attempt extraction of essential oils from wild-type *A. abrotanum* and from *A. abrotanum* clones grown in tissue culture; the compounds in the oils are to be examined and compared using gas chromatography/mass spectrometry (GC/MS), and their antibiotic properties assessed using a disk diffusion protocol. Results of GC/MS and disk diffusion are yet to be determined.



## Investigating the Effects of *Pseudomonas fluorescens* on Intestinal Barrier Formation using Fluorescent Tracers

Presenter: Ashley Scott

Faculty Advisor: Hannah Henson

Crohn's disease is an incurable intestinal disease caused by a disruption of the intestinal barrier. In this research, zebrafish (*Danio rerio*) was used as the model organism to investigate intestinal barrier integrity after the ingestion of the bacteria *Pseudomonas fluorescens*. The prediction was that the intestinal barrier will be compromised after ingestion of the bacteria. A 3-K Dalton Rhodamine dextran was used to trace the effects of the bacteria on the intestinal barrier epithelial cells. Tracer leakage would indicate that tight junctions in the intestinal barrier epithelial cells have been compromised. After measuring fluorescence intensity to detect tracer leakage outside of the intestine, no significant difference was found between those not treated with bacteria and the fish treated with *P. fluorescens*. Future studies will show if this is due to the size of the tracer or the amount of time the fish were exposed to the bacteria.

## The First Recorded Host for the Assassin Fly (*Xanthomelanodes atripennis*) and a Phylogenetic Analysis of the Genus

Presenter: Edward Sickle

Faculty Advisor: Jeremy Blaschke

*Xanthomelanodes* are rarely encountered endoparasitoid flies that attack assassin bugs. Only 4 species are currently recorded in the US, and only 2 of these have known hosts. Here, we report the sundew assassin bug (*Zelus luridus*) as the first documented host of *Xanthomelanodes atripennis* and include the first molecular phylogeny of the genus as a whole. Forty-five specimens representing all 4 US species and encompassing diverse geographic populations were included. Available barcodes (COI) were downloaded from the Barcode of Life Database and added to our newly generated sequences of COI. These sequences were concatenated with those from the nuclear coding gene MCS to reconstruct the final phylogeny. In agreement with morphological hypotheses, the molecular relationships between species were reconstructed as *X. atripennis* + (*X. flavipes* + (*X. arcuatus* + *X. californicus*)). An analysis of host-parasite evolution did not reveal any evidence of co-evolution with their assassin bug hosts. ■



# SOCIAL WORK

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# SOCIAL WORK

## The Effect of Reduction of Time Spend on Social Media on Perceived Stress and Quality of Sleep

Presenters: Jenna Brasfield, Ashley Cioto; Miracle Gray, Jadelynn Green, Haley Henley, Aletta Jensen, Victoria Kersey, Allison Pananas, Mya Putman, Charlotte Richardson, Kara Stallsmith, Cara Stevenson, Kelsey Yarbrough, and Rhonda Hudson  
Faculty Advisor: Rhonda Hudson

As research producers and participants in SW 421-1, students voted and agreed that they wished to explore the association between reduction of time spent on social media, perceived stress and quality of sleep. Current research supports these phenomena among college students (Rebello, Kallingappa & Hedge, 2018; Samaha & Hawi, 2016; and Hampton, Lu & Shin, 2016). During this 9-week study, students contributed to the literature review, developed the method for their research, logged the weekly total of hours slept for each week of the intervention and the number of nights each week that they turned off technology no later than 11 pm (0-7 nights), completed the 10-item Perceived Stress Scale (PSS) (Cohen, S., & Janicki-Deverts, 2012), and their quality of sleep, using the Pittsburgh Quality of Sleep Index (PSQI) (Buysse, D. J., Reynolds, C. F., Monk, T. H., Berman, S. R., & Kupfer, D. J. (1989).

## The Effect of Caffeine Decrease on Perceived Stress in Undergraduate Students

Presenter: Ashley Cioto  
Faculty Advisor: Rhonda Hudson

For my SW 421 class project, I decided to explore the association between caffeine intake and stress. Current research sees some correlation between stress levels and increased caffeine intake (Prajapati, S. K., Dangi, D. S., & Krishnamurthy, S. (2019). I therefore tested the question, "Does decreasing my caffeine intake improve my stress levels?" For the first week, I drank my average of 3 cups of coffee a day, and recorded my stress level on the Perceived Stress Scale. For the following six weeks, I drank a maximum of 1 cup of coffee each day, and recorded my stress on the Perceived Stress scale each week.

## The Effect of Bible Meditation on Perceived Stress on University Students

Presenter: Kara Stallsmith  
Faculty Advisor: Rhonda Hudson

For my class project in SW 421, I decided to research literature that shows and explains the correlation between perceived stress in college students and meditation through Bible reading and prayer. Current research observes a strong relationship between these two variables (Lemay 2018; Singh, Sharma & Talwar 2012; Crowley & Monk 2017; Tollefson, Kite, Matuszewicz, Dore & Heiss 2018). During this 9-week single-subject study, I took the first hour of each morning to focus on my chosen form of meditation which was Bible reading and prayer. I logged my perceived stress scale weekly (Cohen 2012). I also logged the number of minutes each day that I spent in the chosen meditation form. Data analysis was completed by evaluating correlations between Bible meditation and my stress level. ■







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BE TRANSFORMED

The Fall Poster Session is sponsored by  
the Union University Research Program