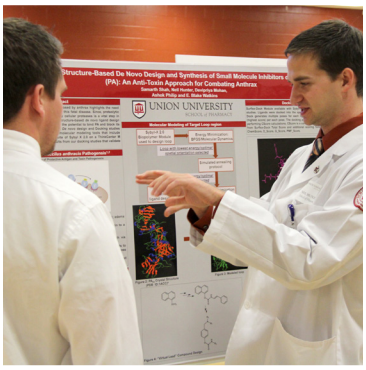

UNION UNIVERSITY

FALL POSTER SESSION

November 19, 2013

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FALL POSTER SESSION

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FALL POSTER SESSION

TUESDAY, NOVEMBER 19, 2013

Bowld 120 (Gym) | 11:00–12:30 p.m.

Student Presenters

Biology

Adrian Cain
"Occurrence and Variance of External Parasites on Raptor Species"

Josh Brinkman
"Modification of Green Fluorescent Protein to Contain Affinity Tag Sites for Isolation and Purification"

Chelsea Cothran
"Comparing Escape Velocity in Response to Auditory and Visual Stimuli in American Crows"

Jillian Evans
"Time Course of the Effect of Three Adjuvants on Antibody Response in Mice"

Robyn Reynolds
"Determination of Growth Regulators in Khaya senegalensis Regeneration"

Patrick Clark
"A Preliminary Comparison of Avian and Vegetation Communities Between a Forested Wetland and an Adjacent Mitigation Site Prior to Restoration"

Sarah Porter
"Measuring the Stress Levels and Behavior of French Grunts (Haemulon flavoneatum) from Hatchery-Rearing to the Marketplace"

Teala Terrell
"Identification and Long-term Storage of Bacteria and Fungi Induced by Gibberellic Acid in Populus tremula Axenic Shoot Tip Cultures"

Nursing

Tiffany Taylor
"Too Late to Reflect"

Vernita Phillips
"And Flights of Angels Sing Thee to Thy Rest"

Rebecca Brown
"Spring of Water"

Lacey Price
"Seeking Redemption"

Lisa Thomas
"Wit: The Power & Artistry of Words"

Lindsey Lowrie
"The Bittersweet Bridge to Life Everlasting"

Ryan Baker, Cissy Bowker, Emily Duggan, Kelly Fyfe, Whitney Noble, and Taylor Powell
"Wit Project"

Pharmacy

Neil Hunter and Jonathan Mitchell
"Project Population Health and Rural Medicine"

Devipriya Mohan and Neil Hunter
"Virtual Screening for Potential Small Molecule Inhibitors of Protein Kinase G: A Promising Target for Multidrug Resistant Tuberculosis"

BIOLOGY

Occurrence and Variance of External Parasites on Raptor Species

Presenter: Adrian Cain
Faculty Advisor: James Huggins

Ectoparasites including biting and chewing lice (Mallophaga) and hippoboscid flies commonly infest raptor species. Since external parasites are host specific, certain parasite species will be more prevalent on particular raptor species. This research determined the frequency and diversity of ectoparasites on four adult specimens of two owl species, the Great Horned Owl (Bubo virginianus) and Barred Owl (Strix varia). Injured or sick owls that have died at the Raptor Rehabilitation Center at Union University in Jackson, Tennessee, and have been stored in a freezer were examined for the presence of external parasites, the majority of which were located on the head. Parasites were identified using a dissecting microscope and key and the resulting data analyzed for correlation between the variance and occurrence of ectoparasites on different raptor species. No significant difference was found among the numbers of parasites between the two species, and no clinical signs of infestation were observed.

Modification of Green Fluorescent Protein to Contain Affinity Tag Sites for Isolation and Purification

Presenter: Josh Brinkman
Faculty Advisor: Mark Bolyard

The objective of this research was to insert affinity tag sequences onto the green fluorescent protein (GFP) to allow for greater efficiency in isolation of the protein. This was performed using the polymerase chain reaction (PCR) to insert nucleotide sequences for the affinity tag 6X Histidine or the Streptactin tag onto the N-terminus or the C-Terminus of the gene that codes for GFP within the pGlo plasmid. Previous efforts to insert these affinity tags have been unsuccessful. Modified plasmids have been amplified via PCR and show positive diagnostic PCR result, but clones containing the desired sequences of DNA have not yet been isolated. More research will be needed to successfully isolate clones containing modified pGlo.

Comparing Escape Velocity in Response to Auditory and Visual Stimuli in American Crows

Presenter: Chelsea Cothran
Faculty Advisors: James Kerfoot and James Huggins

It is not known which sense birds rely on more to warn of danger. This study focused on the escape response of American crows (Corvus brachyrhynchos) to varying stimuli. American crows are abundant in urban settings. Their eyes have a high density of cones giving them sharp eyesight, and their ears are sensitive enough to discern the myriad of calls utilized by the species, allowing them to be vigilant of their surroundings. Escape reactions of crows in response to either an auditory or visual stimulus were recorded with a high-speed camera. Videos were analyzed to estimate the escape velocities. Mean escape velocity of crows startled by auditory and visual stimuli was 182.70 ±36.22 and 210.28 ±36.22 cm s-1 respectively. No significant difference was found between the escape velocities in response to the 2 stimuli. These results indicate that crows similarly respond to perceived danger whether alerted by sound or sight.

Time Course of the Effect of Three Adjuvants on Antibody Response in Mice

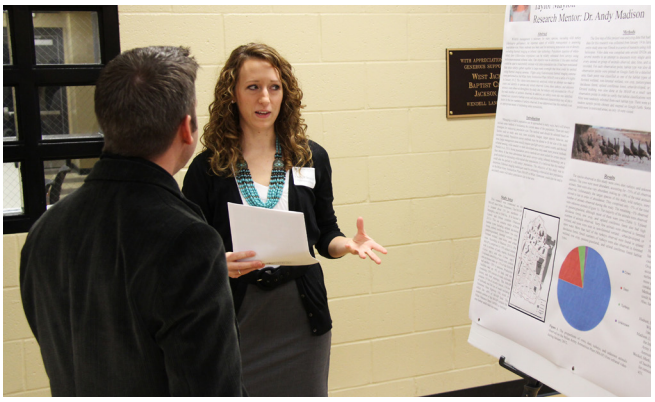
Presenter: Jillian Evans
Faculty Advisor: Jennifer Gruenke

Adjuvants were added to vaccines to stimulate and enhance the immune response at the humoral or cellular level to a co-inoculated substance. Three adjuvants were tested and compared based on their effect on the antibody response to ovalbumin in BALB/C mice: Freund's complete adjuvant (FCA), Freund's incomplete adjuvant (FIA), and aluminum salts (alum). Mice were immunized with ovalbumin plus one of the 3 adjuvants. Control mice received ovalbumin plus saline injections. An enzyme-linked immunosorbance assay (ELISA) was used to measure the anti-ovalbumin antibodies in the plasma of each mouse to determine which adjuvant elicits the greatest anti-ovalbumin antibody response.

Determination of Growth Regulators in Khaya senegalensis Regeneration

Presenter: Robyn Reynolds
Faculty Advisor: Mark Bolyard

The African mahogany (Khaya senegalensis) does not reproduce well and is threated due to logging in its native range. Many native African people rely on his plant as a source of income. Plant tissue cultures containing various hormone concentrations were used in this experiment to attempt K. senegalensis regeneration. The cytokinin used in the regeneration process was thidiazuron (TDZ), and the two auxins used were naphthaleneacetic acid (NAA) and 2, 4-dichlorophenoyacetic acid (2, 4-D). Though no regeneration was observed in this experiment, callus formation occurred at all hormone concentrations. The greatest callus formation was observed in tissue cultures containing a 1 µM TDZ:5 µM 2, 4-D concentration. Various sterilization techniques were tested during this experiment to determine which is more successful in sterilizing leaves, which is vital for successful regeneration. Mercuric chloride (HgCl2) sterilization was determined to be the most efficient technique.



BIOLOGY

A Preliminary Comparison of Avian and Vegetation Communities Between a Forested Wetland and an Adjacent Mitigation Site Prior to Restoration

Presenter: Patrick Clark
Faculty Advisor: Andy Madison

The Tennessee Department of Transportation began a wetland restoration project in 2013 to mitigate damage caused to a riparian wetland during the expansion of a bridge along the Big Sandy River in Carroll County, Tennessee. Our goal for this project was to collect preliminary data on avian and vegetation communities within the mitigation site before restoration began and within the riparian forest near that site in order to predict how those communities may change through time. We used 75 m fixed radius point counts conducted for 10 minutes at sunrise to sample bird communities. Vegetation was sampled using randomly placed 1 m2 quadrats for herbaceous plants, and the point-centered quarter method was used for woody plants. We found that bird relative abundance and diversity was higher in the forested wetland site, but plant diversity was higher in the mitigation site.

Measuring the Stress Levels and Behavior of French Grunts (Haemulon flavoneatum) from Hatchery-Rearing to the Marketplace

Presenter: Sarah Porter
Faculty Advisor: James Kerfoot

Stress is a leading cause of disease and death in fish during transport. Cortisol is a stress hormone, levels of which are a common indicator of stress in fish that may change during transport. This study examined a noninvasive way to measure stress in French Grunt (Haemulon flavolineatum) by analyzing the amount of cortisol in the fish's water. Other factors that may influence stress and hence the cortisol levels, are increased pH, decreased salinity, lower oxygen content, and temperature variation, and these may change during transport as well. It was hypothesized that there was no difference in cortisol levels throughout the transport. Water samples were collected before, 24-hours, and 48-hours after shipping. Cortisol levels and environmental parameters were measured in each sample and compared across time. Results indicated that there was a significant drop in cortisol levels over time and differences in temperature and salinity.

Identification and Long-Term Storage of Bacteria and Fungi Induced by Gibberellic Acid in Populus tremula Axenic Shoot Tip Cultures

Presenter: Teala Terrell
Faculty Advisor: Mark Bolyard and Cathy Huggins

When gibberellin acid (GA) is added to sterile aspen (Populus tremula) tree shoots, Lithuanian collaborators have found microbes present in the media. Identification of the microorganisms gives an insight to the relationship with the plant and also the location in the tissue. This study focused on the identification of the microbes present in aspen tree shoots, as well as the long-term storage of those microbes. In several of the shoots, evidence suggests Candida albicans, a common yeast species, was found in the media. A bacterium was also found in the infected shoots, and was identified as Serratia fonticola. Since contamination is such a problem for laboratories working with tree shoots and microbes, long-term storage is a necessity once isolation has occurred. Over a period of 3 months, dimethylsulfide (DMSO) and glycerol were compared as cryoprotectants (CPAs). Candida appeared to survive with both CPAs, and had a greater survival rate when stored at -80º C. Serratia did not appear to thrive with either CPA, having only a few colonies when grown with glycerol. The temperature in which this bacteria appeared to survive most effectively was -18ºC. ■

NURSING

Too Late to Reflect

Presenter: Tiffany Taylor
Faculty Advisor: Brad Harrell

The Wit is a film that documents the life of a college professor as she loses a battle with cancer. The movie caused me to reflect upon myself in a way that I had not before. This art piece is intended to allow you to do the same. It displays a casket with a mirror in side of it so that each time you look into it you see yourself. This was intended to do two things. First, it should make you aware that your days are numbered and that we will one day be laid to rest. When this day does come and you are knocking on deaths door can you look back over your life and be pleased with how you lived, how you treated people and will you have any regrets? The second purpose of the mirror is to make you think about this statement: Don't wait until it's too late to reflect! Look back now at your life and if there is something that you are not happy with change it while you still have time. Lastly, this piece includes a poem discussing the fact that the way you treat people could one day be the way you are treated. The poem also discusses the fact that you should live life while you are alive and not die while you are still living.

And Flights of Angels Sing Thee to Thy Rest

Presenter: Vernita Phillips
Faculty Advisor: Brad Harrell

The purpose of this project was to create a new art form that translates my experience with Wit and Death Be Not Proud into that medium. The letter to God and poem allowed expression of self, life and death. The letter and poem is written by Vivian Bearing during her final stages of treatment; her character is speaking to God and asking the question "Why me?" I chose to have Vivian speak with God and loved ones in her final moments because she did not appear to believe in God or life after death; however she knew that death was inevitable. As I viewed the film, I felt she regretted not being more understanding of others. The poem gives her a chance to make peace with her life choices and gives her some form of comfort during a time when she had no one else by her side, as she realized she missed valuable moments with family that she could never get back.

Like Vivian, many of us do not take the time to enjoy life until something tragic happens or a fatal diagnosis is received. We should cherish every moment of every day as though it is our last. As a nurse, we want to offer the best care to each and every patient that will cross our path. We should exhibit a caring, understanding, and loving spirit when caring for patients, as well as with others that we encounter on a day to day basis.

Spring of Water

Presenter: Rebecca Brown
Faculty Advisor: Brad Harrell

This work of art addresses the fear of death and dying as represented in the poem "Death be not proud" and the film "WIT". The medium used in this painting was acrylic. This painting may take on different meanings for different people but the basic concept is eternal life through our faith in Christ. The dying tree represents life on earth. The reflection of the tree represents the eternal life we are all given through our relationship with Christ. Even when life on the surface comes to an end, there is new life forming in the water. This new life may be difficult to see because of the ripples in the water but it never goes away.

Seeking Redemption

Presenter: Lacey Price
Faculty Advisor: Brad Harrell

This painting has several background meanings, all of which pertain to the underlying messages in the film, "Wit". The doves are a symbol of the Holy Spirit. They are flying towards eternal life, which is represented by the sun. The painting is divided into to separate sides; a darker, more sterile side and a brighter, warmer side. The sides depict the life of

NURSING

Emma Thompson's character from the movie. Until she had welcomed God into her heart, which was during the last few days of her life, she led a very cold, lonely and empty life. Once she had opened her heart to God, she housed a much warmer spirit. The quote is placed on newspaper to resemble the character's passion for words. It is a quote from the poem, "Death Be Not Proud" written by John Donne. The meaning of this particular quote, "Death shall be no more", leads the theme of the painting, which is redemption. Emma Thompson's character finally received redemption. Her temporary time here on Earth ended and her soul went to live eternally with God in his kingdom.

Wit: The Power & Artistry of Words

Presenter: Lisa Thomas
Faculty Advisor: Brad Harrell

In exploring how the film Wit impacted me and my practice as a future nurse, I chose to create a piece of art that focused on the power of words, both spoken as dialog in the film and written in the poem. I used coffee grounds to discolor my canvas and give it the texture of a "roughed up life," something the main character could relate to, as her experience of cancer and dying most definitely challenged her every ounce of being in such a rough way that it tore away her "perfect" edges. Rough edges was another element I brought into my piece, by tearing some edges of the center print, allowing the viewer to see how the roughness of life and the process of dying so often tears away at our façade, revealing our inner core and true self. It softens us to our past. Finally, I chose the most powerful words and phrases that impacted me as I participated in viewing someone else's art, in both the film & poem.

The Bittersweet Bridge to Life Everlasting

Presenter: Lindsey Lowrie
Faculty Advisor: Brad Harrell

My creation symbolizes the three stages of death embodied in the poem Death be not proud. Death begins as a fearful threat to man, as portrayed in my first drawing. Then death progresses to a more pleasant idea, where man is beginning to realize that death is more amiable than its reputation portrays. My third drawing emphasizes how death is only a means through which man will have eternal spiritual life. There is a bittersweet message found in both the movie, Wit and the poem, Death be not proud about insistence of the self-respect and pride of a human's life. Vivian Bearing in the movie Wit spends the latter part of her life fighting a losing battle with ovarian cancer. She learns to accept death as the necessary path to eternal life, while understanding that fearing death is futile. Also, do not try to escape dying, because death is only a means to life everlasting.

Wit Project

Presenters: Ryan Baker, Cissy Bowker, Emily Duggan, Kelly Fyfe, Whitney Noble, and Taylor Powell
Faculty Advisor: Brad Harrell

There are two different ways in which a person can live their life; a person can choose to live their life for the "wit" or the "truth". By living for the "wit" of life, a person chooses to focus on academia, achievements, knowledge, power, and money. On the other hand a person who lives for the "truth" of life chooses to focus on the things such as family, friends, God, humanity, and compassion. This project is designed for the viewer to objectively look at his or her own life. The blackness around the mirror and artwork represents death. The artwork around the mirror represents both the "wit" and "truth" of life, giving the viewer the ability to see what he or she truly values. This objective look into one's life, allows a unique opportunity to stare into death and decide what is truly important. ■

PHARMACY

Project Population Health and Rural Medicine

Presenters: Neil Hunter and Jonathan Mitchell
Faculty Advisor: Sean R. King

The purpose Project Population Health and Rural Medicine (PHARM) is to advance the Union University School of Pharmacy's (UUSOP's) ability to better care for the underserved population of West Tennessee, and it does so in several important ways. First, it serves as a model for effectively creating and utilizing interdisciplinary collaborations between pharmacists, nurses and physicians in a community pharmacy setting. Project PHARM increases access to free medical services for hundreds of individuals within our community. A focus of this project is to improve the medication consumption behavior of patients' prescribed cholesterol, hypertension and/or diabetes medications while also enabling community pharmacy to address serious issues associated with inadequate functional health literacy (FHL). This focus, coupled with free health screenings provided through the auspices of Project PHARM, could reduce the negative impact these disease states have on our community.

Virtual Screening for Potential Small Molecule Inhibitors of Protein Kinase G: A Promising Target for Multidrug Resistant Tuberculosis

Presenters: Devipriya Mohan and Neil Hunter
Faculty Advisors: Blake Watkins and Ashok Philip

More than 2 billion people are reportedly infected with Mycobacterium tuberculosis (TB), ~1/3 of the world population (1). Multidrug resistant-TB (MDR-TB) and extensively drug resistant-TB (XDR-TB) have emerged at an alarming rate resulting in poor outcomes with the existing regimens (2,3). Hence, the need for development of new drugs with novel mechanisms is imperative to limit the global burden of resistant TB. Mycobacterium has a remarkable capacity to survive within macrophages by modulating several factors (4). Protein Kinase G (PknG), a key mycobacterial enzyme is involved in inhibiting lysosome-phagosome fusion and thereby prolongs the survival of the bacterium which makes it a promising target. Here we report the results from our virtual screening efforts for potential small molecule inhibitors of PknG. Utilizing SYBYL X 2.1 drug design software, UNITY structure based query search followed by docking studies were employed to accomplish our research objectives. ■

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