

# ISCAP

INDEPENDENT SCHOLARSHIP  
& CREATIVE ACTIVITIES PRESENTATIONS



MAY 4, 2016

# ISCAP Day

Wednesday, May 4, 2016

Sweigart Hall

11:00 AM – 3:15 PM

## Schedule At-A-Glance:

<b>11:00-12:30</b>	<b>Panel Sessions:</b>	Health & Well-Being	<b>Sweigart 117</b>
		Social Movements	<b>Sweigart 118</b>
		War, Terrorism, and Disaster	<b>Sweigart 119</b>
<b>12:30-1:30</b>	<b>Poster Session &amp; Lunch</b>		<b>Sweigart Lobby</b>
<b>1:30-2:45</b>	<b>Panel Session:</b>	Making Music – The Artistic Process	<b>Sweigart 117</b>
<b>1:30-3:15</b>	<b>Undergraduate Research Scholar Awards Session</b>		<b>Sweigart 115</b>

### Planned by the URSA Committee:

Jason Chiu  
Hope Corman  
Catrinel Haught-Tromp  
Sheena Howard  
Robin Lewis  
Jamie Ludwig  
Kenneth Kauffman  
Kathy Price  
Gabriela Smalley (chair)  
Judith Stegmaier-Nappi



# RIDER UNIVERSITY

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May 4, 2016

Dear Students, Scholars, Faculty and Families,

Today the Rider University community will hear about the remarkable scholarship, research, and creative endeavors of our students as they apply their college education in innovative ways. To those students who are presenting their work today, I extend congratulations on your achievements. To all those who supported these students in their academic adventures, I offer appreciation and thanks. These activities exemplify the many valuable opportunities and resources students enjoy at Rider to enrich their learning experience. Frankly, our students could not have done their work without you.

Special congratulations to this year's Undergraduate Research and Scholarship Award winners. These students proposed detailed independent projects to be carried out in the following academic year and will each receive a \$5,000 tuition scholarship. You will hear about the wide variety of projects they will be undertaking in the awards session later this afternoon.

Whether you conducted research or helped to make it happen, your efforts send a strong message about the academic excellence students can achieve at Rider. Congratulations to everyone involved!

Sincerely,

Gregory G. Dell'Omo, Ph.D.  
President



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Vice President for Academic Affairs  
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May 19, 2016

Dear Students, Faculty, and Family Members,

Today is a full day dedicated to honoring and showcasing the creative works and research of Rider University students in collaboration with their faculty mentors. Each year, the Undergraduate Research Scholar Awards (URSA) Committee hosts ISCAP (Independent Scholarship & Creative Activities Presentation) Day in an effort to display student originality and contributions to their fields of interest. ISCAP Day is also meant as a forum for members of the Rider community—both faculty and students—to come together in an interdisciplinary dialogue focused on students' creative projects.

Another very important purpose for ISCAP Day is to announce the new URSA scholarship recipients, as well as to hear about the progress made among last year's URSA award winners on their year-long projects. This portion of the day is particularly important as we honor some of the most gifted undergraduates at Rider. We congratulate you on your outstanding accomplishment.

Please join us as we celebrate these student achievements and honor their creative works.

Congratulations on a job well done!

Sincerely,

DonnaJean A. Fredeen  
Provost and Vice President for Academic Affairs

## Panel Session 1: Health & Well-Being

Sweigart 117

11:00 AM – 12:15 PM

Chair: Hope Corman (Finance and Economics)

11:00-11:15	<b>Alexandra Reynolds, Jabria Benson, Kathy Blachut, Connor Kubitsky, Jessica Munyan, Rachel Nangle, Hayley Purcell</b> (Sustainability Studies) <i>Striving for Silver: Sustainable Jersey Recertification for Lawrence Township</i> Advisor: Brooke Hunter
11:15-11:30	<b>Danielle Allgor, Enzo Bonelli, Nicholas Forconi, Salman Khalid*, Elisa Nath*, Michael Pfeiffer, Sammy Piazza, Adam Schutsky</b> (Economics; *denotes presenters) <i>New Jersey Medicaid Expansion: Enrollment, Disenrollment, &amp; Costs</i> Advisor: Hope Corman
11:30-11:45	<b>Jay Maenhout</b> (Music) <i>“What’s Wrong With Being Confident?” Maturity, Sexuality, and Hypermasculinity in Top 40 Music</i> Advisor: Justin Burton
11:45-12:00	<b>Amanda Habner</b> (Vocal Pedagogy) <i>The Effects of Lavender Essential Oil on Breath Efficacy for Singing and Perception of Mood and Energy</i> Advisor: Kathy Price
12:00-12:15	<b>Evelyn Campbell</b> (Biology) <i>Expression Patterns of GDNF, Sprouty1 and ETV 4/5 in the Pronephric Duct of Ambystoma Mexicanum Embryos</i> Advisor: Julie Drawbridge

## Panel Session 2: Social Movements

Sweigart 118

11:00 AM – 12:15 PM

Chair: Catrinel Haught-Tromp (Psychology)

11:00-11:15	<b>Gianna Calvo</b> (Philosophy) <i>Getting There: Treatment of the 'Other'</i> Advisor: Daniel Garro
11:15-11:30	<b>William Strahle</b> (History) <i>The Keystone Man: How Joseph Tito Built the Yugoslav Identity</i> Advisor: Lucien Frary
11:30-11:45	<b>Haley Johnston</b> (Global Studies/Political Science) <i>Tackling a Refugee Crisis: Demands of the European Commission and the Rise of the Right</i> Advisor: Barbara Franz
11:45-12:00	<b>Alexander Gilbert</b> (History) <i>The Political Cult that Radicalized Rousseau: The Application and Interpretation of The Social Contract in the French Revolution, 1789-1794</i> Advisor: Nikki Shepardson
12:00-12:15	<b>Cameron Cook</b> (French) <i>Precarious Palimpsest in French Urban Literature: The Case of Abd Al Malik</i> Advisor: Mary Poteau-Tralie

## Panel Session 3: War, Terrorism, and Disaster

Sweigart 119

11:00 AM – 12:15 PM

Chair: Erica Ryan (History)

11:00-11:15	<b>Eric Faeder</b> (History) <i>Dying Where They Stood: Native Americans and the 1918 Influenza Epidemic</i> Advisor: Erica Ryan
11:15-11:30	<b>Stephen Hopson</b> (History) <i>How Natural Disasters Affect Government and Communities: Hurricane Sandy Case Study</i> Advisor: Brooke Hunter
11:30-11:45	<b>Rachel Safer</b> (Political Science, Global Studies, Homeland Security) <i>History of Terrorism</i> Advisor: Jonathan Mendilow
11:45-12:00	<b>Anthony Damiano</b> (History) <i>Hiroshima and Nagasaki: A Glimpse into the Use and Implications of the First Atom Bombs</i> Advisor: Erica Ryan
12:00-12:15	<b>Ryan Zettlemyer</b> (Musicology) <i>"O Freunde, nicht diese Töne!": Music as Torture in the United States Military</i> Advisor: Sharon Mirchandani

## Poster Session

Sweigart Lobby, 12:30 PM – 1:30 PM

1. **Bianca Acri** (Wendy Heath): Prevalence of Bullying at Rider University
2. **Kathy Blachut** and **Ambria Dell’Oro** (Hongbing Sun): Water Quality Baseline Data of the Delaware River Basin in PA and NJ
3. **Katherine Caughlin** (Kathy Price): Effects on Conductors’ Hearing in the Choral Rehearsal
4. **Naomi Goldman** (James Riggs): B Cell Subset Biology in a Tumor Microenvironment Model
5. **Madeline Hummel** (Paul Jivoff): The Influence of Human Urbanization on the Heavy Metal Content of Blue Crab Tissue
6. **John Lisowski** (Jamie Ludwig): Fischer Indole Synthesis of Alkylated Indole Derivatives- A Method for Isotope Labeling
7. **Elissa Lomakova** (James Riggs): Activation of T Cells Within the Tumor Microenvironment
8. **Moira Gannon** (Kathy Price): Differences in Acoustical and Perceptual Measurements of Expiratory Airflow/Volume and Vibrato Rate/Extent between Morning and Evening in a Classically Trained Singer
9. **Jessica Munyan** (Daniel Druckenbrod): Dendrochemical Analysis and Forest History at Thomas Jefferson’s Poplar Forest: A Case Study on Two Frost-Damaged Growth Rings
10. **Rachel Nangle** (Daniel Druckenbrod): Climate Change’s Impact on Water Conservation in New Jersey
11. **Alexa Nyktas, Heather Hartnett, and Stefanie Martin** (Cara DiYanni): Individual Differences in the Teaching and Learning of Unexpected Information
12. **Cierrah Parson** (Cara DiYanni): The Media and Body Image: The New Epidemic
13. **Melissa Rasimowicz** (Todd Weber): Effects of a Forced Desynchrony Protocol on Feeding Patterns and Glucose Tolerance in C57BL/6J Mice
14. **Dina Scheri and Collin Stiles** (Kathy Browne): Tracing a Treasured Resource: The Flow and Chemistry of the Campus Storm Water Drainage System



15. **Fatima Sulaman** (Hongbing Sun): Changes of Mercury Concentration in Response to Chloride Complexation Under Deicing Salt Condition
16. **Connor Szwetkowski** (John Bochanski): Detecting the Most Distant Stars in the Galaxy: Catalog Matching of Large Astronomical Databases
17. **Gretel Torres** (James Riggs): Loss of Humoral Immunity in a Mouse Model of Ovarian Cancer
18. **Cynthia Vlad** (Stephanie Golski): The Influence of Scent and Suggestion on Attention

## Panel Session 4: Making Music - The Artistic Process

Sweigart 117

1:30 PM – 2:45 PM

Chair: Robin Lewis (Theatre and Dance)

1:30- 1:45	<b>Christopher Hochstuhl</b> (Voice Pedagogy) <i>Singing in the Basement: Resonance Strategies in the Female Lower Extension</i> Advisor: Kathy Price
1:45- 2:00	<b>Alicia Cadmus</b> (Music Education) <i>Facilitating the Artistic Process of Connecting in Musical Theatre through the Framework of Sociotransformative Constructivism</i> Advisor: Frank Abrahams
2:00- 2:15	<b>Julianne Michalik</b> , (Music Education) <i>Increasing Awareness During Musical Experiences in the Elementary General Music Classroom for the Purpose of Decision-making in Composition</i> Advisor: Frank Abrahams
2:15- 2:30	<b>Genevieve McGahey</b> (Voice Pedagogy) <i>En Français: A Contextual Analysis of French Baroque Vocal Pedagogy</i> Advisor: Kathy Price
2:30- 2:45	<b>Cheuk Yee Wong</b> (Voice Pedagogy) <i>The Effects of Wind Instrument Playing Experience on the Singing Voice</i> Advisor: Kathy Price

## Undergraduate Research Scholar Awards Session

1:30 PM – 3:15 PM      Sweigart Auditorium (SWE 115)

Chair: Gabriela Smalley (Geological, Environmental, and Marine Sciences)

1:30	<b>Welcome by Provost DonnaJean Fredeen</b>
1:40-3:00	<p style="text-align: center;"><b>Presentations by 2015-16 URSA Recipients</b></p> <p><b>Katherine Caughlin</b> (Music) <i>Behind the Veil: An Investigation of the Role of Women, and Women Making and Performing Music in Arabic Cultures</i> (Advisor: Samantha Bassler)</p> <p><b>Andrew Jemas</b> (Biochemistry) <i>Enhancing the Antibiotic Properties of Choline Geranate With Respect to S. aureus and other Gram-Positive Bacteria</i> (Advisors: Danielle Jacobs-Duda &amp; Kelly Bidle)</p> <p><b>Natalie Tapykoff</b> (Marketing and Advertising) <i>Exploring the Current and Future Regulation of Electronic Cigarettes in the United States</i> (Advisor: Dr. Cynthia Newman)</p> <p><b>Elizabeth Urban</b> (Biology) <i>Expression Patterns of Ret Signaling Pathway Components Provide Further Evidence that Xenopus Pronephric Duct Extension and Mammalian Ureteric Bud Outgrowth Require Similar Molecular Pathways</i> (Advisor: Julie Drawbridge)</p> <p><b>Camila Bermúdez</b> (Theatre Performance/English) <i>Timberlake Wertenbaker's The Love of the Nightingale: Transformation of the Philomele Myth to Drama and its Relevance to Violence on College Campuses Today</i> (Advisor: Vanita Neelakanta)</p>
3:00-3:15	<p style="text-align: center;"><b>Announcement of 2016-17 URSA Recipients</b></p> <p><b>Johnathan Jackson</b> (Health Care Management &amp; Human Resource Management) <i>Impact of Population Characteristics on the Sustainability of Medicare</i> (Advisor: Anne Carroll)</p> <p><b>Elissa Lomakova</b> (Biology) <i>Activation of T Cells Within the Tumor Microenvironment</i> (Advisor: James Riggs)</p> <p><b>John Modica</b> (English Literature) <i>Setting the Watchman: Unifying the Legacy of Harper Lee in High School Classrooms</i> (Advisor: Matthew Goldie)</p> <p><b>Mallory Murphy</b> (Music Education) <i>Finding a Home in Music: Culturally Responsive Teaching for Homeless Youth</i> (Advisor: Donna Gallo)</p> <p><b>Natalie Strucinski</b> (Psychology) <i>Walk the Talk: Developing and Assessing Health Programming Designed to Change Both Attitudes and Behaviors in At-Risk Youth</i> (Advisor: Stephanie Golski)</p>

# PROJECT ABSTRACTS

PSTR= Poster Session

PNL= Panel Session

URSA=URSA Session

## **Acri, Bianca**

### *Prevalence of Bullying at Rider University*

Bullying has been acknowledged as a major problem affecting today's youth. A study was conducted to see the extent to which bullying occurs on Rider University's campus. A volunteer sample of students from Rider University psychology classes answered an online survey designed to assess how (e.g., verbally, physically, through social media) and under what conditions, Rider students have been bullied. In addition to providing a summary of the results, evidence-based suggestions for intervention will be offered to help prevent bullying on this campus. (Wendy Heath) **PSTR**

## **Allgor, Danielle, Enzo Bonelli, Nicholas Forconi, Salman Khalid, Elisa Nath, Michael Pfeiffer, Sammy Piazza, Adam Schutsky**

### *New Jersey Medicaid Expansion: Enrollment, Disenrollment, & Costs*

The Affordable Care Act (ACA) provided incentives for states to expand their Medicaid programs to cover previously ineligible nonelderly and nondisabled adults. New Jersey expanded its program called NJ Family Care in January 2014 to cover all non-elderly adults and with income under 138% of the federal poverty level. This expansion population was enrolled in the Alternative Benefits Program (ABP) of NJ Family Care. Around 750,000 individuals enrolled in ABP in its first 25 months. Individuals can enroll through county or local government offices, conversion from the general assistance program which provided benefits for very low-income adults previous to the ACA, through the federal ACA website, or through presumptive eligibility. This project will examine the characteristics of adults who disenroll from the ABP program, the characteristics of adults who disenroll and then have a medical emergency, and the expenditures associated with those medical emergencies. In addition, we will examine characteristics and costs associated with the different methods of enrollment. (Hope Corman) **PNL**

## **Bermúdez, Camila**

### *Timberlake Wertenbaker's The Love of the Nightingale: Transformation of the Philomele Myth to Drama and its Relevance to Violence on College Campuses Today*

Theatre or drama has the potential to create public awareness of violence and to effect change. Timberlake Wertenbaker's *The Love of the Nightingale* reflects this didactic potential through the transformation of the classical myth of Philomele. The project explores Wertenbaker's poetics of drama as a potential tool for social change in connection to violence against women on college campuses. Extensive research on Wertenbaker's work illustrates her concern with theatre as a tool for critical discussion of social issues conducive to change. Informed by the research, the staging illustrates through visual design, acting, and technology the potential of drama to address silenced acts of violence and effect change. (Vanita Neelakanta) **URSA 2015-2016**

## **Blachut, Kathy, Ambria Dell'Oro**

### *Water Quality Baseline Data of the Delaware River Basin in PA and NJ*

Over two hundred water samples were collected from various stream sites in the Delaware River Basin in New Jersey and Pennsylvania by dozens of volunteers from Musconetcong Watershed

Association, Delaware River Keeper Network, and Stroud Water Research Center. The samples were collected on a monthly, quarterly, and semi-annual basis, respectively, during late last year and early this year and were analyzed for their metal, phosphate, nitrate, and sulfate concentrations, and alkalinity in our laboratory. Sodium and chloride, which are the elements that we are particularly interested in, showed clear patterns of spatial variations. Their concentrations in water are generally higher downstream and near dense road network than their concentrations in water from upstream and rural regions based on our GIS analysis. The sodium concentrations for water samples in the spring season were higher than sodium concentration for water samples in the late fall due to the apparent road salt applications. The data collection will help us establish the base line salt, metal, and nutrient concentrations in the large Delaware River Watershed and can be used for future geochemical and source identification studies. (Hongbing Sun) **PSTR**

## **Cadmus, Alicia**

### *Facilitating the Artistic Process of Connecting in Musical Theatre through the Framework of Sociotransformative Constructivism*

This article explores the use of sociotransformative constructivism as a framework for teaching high school musical theatre to facilitate the artistic process of connecting. The framework of sociotransformative constructivism has four tenets: dialogic conversation, authentic activity, metacognition, and reflexivity. All four of these tenets accomplish the anchor standards necessary to make meaning for students and achieve the artistic process of connecting. The process of connecting requires student to make meaning out of the art they are experiencing and performing so they can deepen their understanding of history, society, and culture. This article examines the research done on sociotransformative constructivism, musical theatre, and the artistic process of connecting and draws conclusions based on the outcomes of this research. (Frank Abrahams) **PNL**

## **Calvo, Gianna**

### *Getting There: Treatment of the 'Other'*

Throughout history, radical groups have found opportunities to spread their xenophobic beliefs and the ability to dehumanize those deemed as 'others'. This has been particularly evident in contemporary times due to France's tense relationship with the 'other', mainly with the Muslim community. This tense relationship is created from the French government's failure to reprimand those who mistreat and harm the Muslim community. While perhaps justifiable, I suggest that the French government reacts far too quickly and harshly in times when they as a country feel threatened; yet, when they are responsible for the protection of subcultures, such as the Muslim community, they fail on many levels. I believe that the French government is very quick to protect their rights as 'French', but when it comes to the 'other' they are not as protective. While I emphasize France's relationship with the 'other', this is only due to contemporary events. The recommendations I suggest at the end of the paper can be applied to other countries, not only France. (Daniel Garro) **PNL**

## **Campbell, Evelyn**

### *Expression Patterns of GDNF, Sprouty1 and ETV 4/5 in the Pronephric Duct of Ambystoma Mexicanum Embryos*

Studies of the pronephric duct have given great insight on the evolution of the excretory system in mammals and amphibians, as well as provide better understanding of cell migration. GDNF, Sprouty 1, and ETV4/5 have been found to be important proteins that give rise to the ureteric bud in mammals. GDNF has been observed to work as a directional cue for pronephric extension in

amphibians, but the roles of Sprouty 1 and ETV4/5 have yet to be exhibited. Determining when and where transcripts for GDNF, Sprouty 1, and ETV 4/5 are expressed in the pronephric duct can give more insight on the roles of these genes in regards to pronephric duct extension. Evaluation of the evolutionary homology between the pronephric duct in amphibians and the ureteric bud in mammals is contingent upon determining the role of these proteins in pronephric duct extension. This study investigates location of these transcripts during the development of *Ambystoma mexicanum* embryos. Research for this project is still ongoing. (Julie Drawbridge) **PNL**

### **Caughlin, Katherine**

#### *Behind the Veil: An Investigation of the Role of Women, and Women Making and Performing Music in Arabic Cultures*

This research project explores the role of women in Arabic music culture. The project begins with a critical study of the perceptions and misconceptions of women in Arabic cultures. The role of women in private and public music making in two different Middle Eastern countries is then examined, highlighting particular women throughout Egyptian and Saudi Arabian music's history and present, in light of particular cultural tropes of women and their position in Arabic society. The methodology of this project will blend social and ethnographic research with musical and visual analysis, and posits that women played a much more active, albeit complicated, role in musical life "behind the veil" than many are led to believe. (Samantha Bassler) **URSA 2015-2016**

### **Caughlin, Katherine**

#### *Effects on Conductors' Hearing in the Choral Rehearsal*

The purpose of this research is to determine change, if any, in the hearing of choral conductors after a choral rehearsal using an equal loudness contour test given before and after the rehearsal. As a conductor in a choral rehearsal, one is exposed to high sound levels that are directly aimed toward you, especially in a choir composed of many singers. Testing a conductor's hearing before and after a choir rehearsal could give us data on how these high levels of sound affect the ear, and thus affect hearing. Three choral conductors who lead five choirs (Symphonic Choir, Kantorei, Chapel Choir, Westminster Choir, and the Schola Cantorum) from Westminster Choir College of Rider University will be evaluated. Hopefully, this research will provide insight into the effects on conductors' hearing during the choral rehearsal. (Kathy Price) **PSTR**

### **Cameron Cook**

#### *Prekarious Palimpsest in French Urban Literature: The Case of Abd Al Malik*

When Abd Al Malik received the prestigious Chevalier des Arts et des Lettres insignia in 2008, the French government's premier award for excellence in the arts, this popular French rap musician and author found himself in a precarious position among critics who had previously seen him as offering hope of synthesizing contemporary France's disparate identities. Born Régis Fayette-Mikano of Congolese immigrant parents, and raised in the suburb of Neuhoef in Strasbourg, one of the many troubled banlieues (urban outskirts) in France, Abd Al Malik's early life was marked by petty crime and drug trafficking. Raised Catholic and having attended Catholic schools, Abd Al Malik converted to Islam as an adolescent, adding yet another strand to his French hybrid identity, and becoming one whose voice for the Muslim communities in France began to be heard in his music and in his written works. With the receipt of this award and with the many interviews and accompanying fame among France's elite in government and in the literary world, this paper argues that Malik's voice has become appropriated by "official" France, thus rendering difficult any attempts to portray him as an "authentic" voice of those living in the margins in France today. (Mary Poteau-Tralie) **PNL**

## **Damiano, Anthony**

### *Hiroshima and Nagasaki: A Glimpse into the Use and Implications of the First Atom Bombs*

The atomic bombings of the Japanese cities of Hiroshima and Nagasaki have been a hot bed of historic debate since their detonation in 1945. Questions arise such as: What pushed the United States to use atomic weapons? Could World War II have been ended without their use? Was their usage necessary and or justified? This article tries to examine some of these age old questions by posing this argument: The United States could have ended the war in the Pacific without the use of atomic weapons on the cities of Hiroshima and Nagasaki, but they were used to quickly bring an end to the war, and insure no further loss of American life. Both of these goals were accomplished; however, the world should learn from their use and never deploy atomic weapons again because it resulted in the loss of many innocent human lives, survivor trauma, severe medical conditions, the acceleration of the Soviets atomic project, an arms race, and a decrease in global safety. (Advisor: Erica Ryan) **PNL**

## **Faeder, Eric**

### *Dying Where They Stood: Native Americans and the 1918 Influenza Epidemic*

The 1918 influenza epidemic killed an estimated 675,000 Americans, more than the major 20<sup>th</sup> century wars combined. Out of those victims, Native American suffered the most in proportion, with the Navajo and Eskimo nations suffering the most. Entire households perished because of the disease. Despite this, the 1918 influenza epidemic has been forgotten in the mainstream American historical narrative and is completely non-existent in Native American history and historiography. Considering that the 1918 flu is the deadliest 20<sup>th</sup> century event in Native American history, it is puzzling to see it forgotten so completely. In doing research, it has been discovered why the flu was so deadly and why it was forgotten, and how in the case of Native Americans how their own beliefs contributed to the degree of lethality and lack of record. A greater examination is needed for the 1918 flu still holds relevance at its centennial approaches. It is too dangerous to be ignored. (Erica Ryan) **PNL**

## **Gannon, Moira**

### *Differences in Acoustical and Perceptual Measurements of Expiratory Airflow/Volume and Vibrato Rate/Extent between Morning and Evening in a Classically Trained Singer*

Singers frequently complain about singing in the morning opposed to the evening. Though vibrato rate and extent measurements and airflow in singers has been extensively studied (Artkoski, Jennings, Guzman), there has not been specific research regarding how time of day affects singing. The data collected from this study will potentially aid singers with questions regarding the time of day in which they sing. The procedure involved the Maximum Sustained Phonation protocol of the Phonatory Aerodynamic System 660 to measure expiratory airflow and volume and Voce Vista to measure vibrato rate and extent. Each participant was assessed in both the morning and evening and perceptual questionnaire was given prior to each assessment. The purpose of this study is to acoustically and perceptually measure differences, if any, in a Classically trained singer's vibrato rate and extent as well as breath energy and perceptual breath control between the morning and evening. (Kathy Price) **PSTR**

## **Gilbert, Alexander**

### *The Political Cult that Radicalized Rousseau: The Application and Interpretation of The Social Contract in the French Revolution, 1789-1794*

This capstone project analyzes the importance of ideas presented specifically by Jean-Jacques Rousseau in his *Social Contract*, and how it is these ideas influenced the events of the French Revolution. The goal of this paper was to determine how Rousseau's ideas had been applied to the Revolution, if they were applied at all. Overall, the ideas presented by Rousseau had in fact been present and utilized throughout the entire Revolution, however various individuals throughout the Revolution heavily manipulated the meaning of Rousseau in order to attain their own ends of what they believed best for the Revolution, including individuals such as Robespierre and Saint-Just of the infamous Committee of Public Safety. This shift in how Rousseau was manipulated is traced through five phases being: the Estates General, the National Assembly, the Flight to Varennes, Trial of King Louis XVI, and the Terror, proving in the beginning Rousseau was followed nearly word for word, and by the Terror, Rousseau's ideas are present but are being utilized very differently. Through this analysis, a secondary function of this project is to rightfully prove that Rousseau is in deed a figure of the Enlightenment, even though some historians discount him as such. (Nikki Shepardson) **PNL**

## **Goldman, Naomi**

### *B Cell Subset Biology in a Tumor Microenvironment Model*

The high myeloid to lymphoid ratio of cultured peritoneal cavity (PerC) leukocytes can serve as an *in vitro* model to study the tumor microenvironment (TME). C57BL/6J PerC T cell responses to TCR ligation (anti-CD3e) and mitogen (ConA) are suppressed in these cultures. Likewise, the PerC B cell response to BCR (F[ab']<sub>2</sub> anti-IgM) and TLR4 (TLR4L/LPS) ligation are suppressed. The BCR response is recovered by blocking prostaglandin production with indomethacin; the LPS response by neutralizing IL10. To dissect putative receptor-ligand signals in this model, we investigated expression of the inhibitory cell surface marker PDL1/B7H1/CD274 on PerC cells. TCR ligation increased PDL1 expression on macrophages (Mfs), B1, and B2 cells and was reduced by blocking IFN $\gamma$ . TLR4 ligation increased PDL1 expression on Mfs and both B cell subsets and was reduced by blocking IFNAR1. Interestingly, BCR ligation increased B7H1 and Class II expression on Mfs and B2 cells, but not B-1 cells. Increased B7H1 expression could be reduced by neutralizing IL6, IFN $\beta$ , IFN $\gamma$ , or IFNAR1. TCR ligation led to B1, but not B2, cell division and proliferating B cells increased IL10 production. These findings illustrate that TCR, and surprisingly BCR, ligation can foster immune suppression in macrophage-dense cultures and suggest that regulatory B cells must be considered when designing immunomodulatory cancer therapies. (James Riggs) **PSTR**

## **Habner, Amanda**

### *The Effects of Lavender Essential Oil on Breath Efficacy for Singing and Perception of Mood and Energy*

Despite frequent research studies pointing to the positive effects of lavender essential oil, the U.S. Food and Drug Association has not approved it as an effective method for curing or alleviating symptoms of various physical or mental conditions. This study investigated the effects of directly inhaling lavender essential oil on vital capacity, mean expiratory airflow in singing, and perception of mood and energy changes. A group of seventeen ( $N = 17$ ) graduate level classically-trained voice students were tested for vital capacity and mean expiratory airflow using the Phonatory Aerodynamic System (PAS), before and after inhaling lavender essential oil. Each participant filled out a questionnaire before the protocol to collect information about mood, energy level, air efficiency in singing, and information about their knowledge of lavender essential oil. They also filled out a post-



test questionnaire concerning their perceptions of the effects of inhaling the lavender essential oil. The results of the study found that inhaling lavender essential oil showed little to no significant changes in vital capacity and breath efficacy in these singers. Most participants found that their mood improved, but their energy level decreased or remained the same as before inhaling the lavender essential oil. (Kathy Price) **PNL**

## **Hochstuhl, Christopher**

### *Singing in the Basement: Resonance Strategies in the Female Lower Extension*

Trained classical sopranos were asked to sing an 8 note, descending major scale from A4-A3 on the American /a/ vowel. On the lowest pitch A3(220Hz), singers were asked to crescendo as far as possible, without regard to vowel purity. All singers were recorded through an Earthworks QTC30 HFM microphone, and the sound she produced was analyzed with VoceVista software. Voices with resonant “lower extensions” (E4-A3) exhibited similar resonance shifts within the spectral envelope while descending down the scale. Sopranos who were capable of producing a crescendo on A220 exhibited an intensification of H3, H5, and the “singer’s ring” frequency range (particularly between 2700-3400Hz). Singers with less resonant lower extensions missed shifts in the spectral envelope experienced by more resonant singers at the shared transitory pitches of E4, B3, and A3. The similarities in formant-harmonic alignments shared by sopranos with resonant extensions suggest that a weak lower extension may be the result of inefficient vocal filter shaping (i.e. inefficient formant tuning) while descending into the bottom of the range. (Kathy Price) **PNL**

## **Hopson, Stephen**

### *How Natural Disasters Affect Government and Communities: Hurricane Sandy Case Study*

Hurricane Sandy was one of the worst disasters that New Jersey was a part of. Hurricane Sandy ravaged the Jersey Shore, affecting the lives of thousands of people. Homes were lost, families were uprooted, and businesses were destroyed. Seaside Heights, and surrounding shore towns, are still recovering from the physical damage that Sandy caused, as well as the fiscal damage that Sandy caused. Local businesses were lost, and the businesses that were able to rebuild say a loss in profits from tourism being down. I conducted oral interviews with business owners and residents from Seaside Heights to examine the recovery process, and researching past natural disasters, I was able to look into the link between natural disasters and the communities the disasters affect. Using Hurricane Sandy as a case study reveals the bigger issue communities face when dealing with a natural disaster: communities not being adequately prepared when facing a natural disaster and government programs ill-equipped to handle recovery efforts after a natural disaster hits. The failure in preparation by the community and ineffectiveness of government programs results in recovery efforts being slowed, hurting the residents as well as the local businesses. (Brooke Hunter) **PNL**

## **Hummel, Madeline**

### *The Influence of Human Urbanization on the Heavy Metal Content of Blue Crab Tissues*

Examining the influence of human urbanization on heavy metal content in the tissues of a marine organism is rare. I tested the influence of human urbanization on the heavy metal content of blue crab tissues between and within two estuaries that vary in the extent of human urbanization. Barnegat Bay has an urbanization gradient along the North-South axis of the bay, whereas, its neighbor, Great Bay-Mullica River, has minimal urbanization. The urbanization gradient in Barnegat Bay mirrors a salinity gradient; therefore, I used tissues from crabs that were collected at similar salinities in each estuary. Monthly variation in heavy metal content was also examined, but only in Barnegat Bay. I also tested the influence of tissue function on heavy metal content because the tissues analyzed differ in function; hepatopancreas for digestion and seminal fluid for

reproduction. This is the first examination of heavy metals in seminal fluid, to my knowledge. I used standard protocols to extract tissues via dissection, prepared tissues via acid digestion, and used ICP analysis to quantify the content of several heavy metals. I am still collecting data at this time; I will analyze my data statistically and will then be able to comment on my findings. (Paul Jivoff) **PSTR**

## **Jackson, Johnathan**

### *Impact of Population Characteristics on the Sustainability of Medicare*

The purpose of my research is to make a conclusion about the sustainability of the current Medicare system given an increasing population, particularly the “Baby Boomers” and “Gen X” generations. In this Research Project, I plan to explore the effects of increasing population in America on the total cost of providing Medicare given the current cost structure. As large population groups in the US move into the Medicare demographic we will see increased costs due to volume alone. Throughout country we are unsure about both the magnitude of this cost and whether or not our economy will bear those costs long-term. My research will investigate the relationship of the following circumstances and overall Medicare costs. As the working population shifts into the Medicare demographic, younger generations will be the taxpayers responsible for funding their health insurance<sup>2</sup>. I will make an assertion as to whether or not these generations will be able to support increasing Medicare costs. I will take into consideration projections regarding rate of the United States’ GDP, Medicare usage, and overall healthcare cost in determining my own cost projections of Medicare. This Research Project will use this information to overall make a conclusion as to whether or not Medicare under its current structure is sustainable over the next 10-15 years. (Anne Carroll)

**URSA 2016-2017**

## **Jemas, Andrew**

### *Enhancing the Antibiotic Properties of Choline Geranate With Respect to S. aureus and other Gram-Positive Bacteria*

Deep eutectic solvents (DESs) are comprised of a positively charged quaternary ammonium salts and hydrogen bond donors, and have a wide variety of potential applications. The novel DES, choline geranate, has previously been found to be an effective antimicrobial and biofilm removing agent for gram-negative bacteria. However, our preliminary research has shown that this DES is not as effective at killing the gram-positive bacterium *Staphylococcus aureus*. By replacing the cation, choline, in the DES with choline derivatives that are known to be antimicrobial towards *Staphylococcus aureus* and other gram-positive bacteria, we were successfully able to enhance the compound’s antimicrobial properties across a wider range of pathogenic bacterial species. (Danielle Jacobs-Duda & Kelly Bidle) **URSA 2015-2016**

## **Johnston, Haley**

### *Tackling a Refugee Crisis: Demands of the European Commission and the Rise of the Right*

The year 2015 is regarded by many political scientists as ‘The Year of the Refugee’. The mass migration has necessitated the creation of transnational legislation to outline a proper humanitarian response, putting popular destination states under immense pressure. Through the creation of the *Protocol and Convention Relating to the Status of Refugees*, the United Nations High Commissioner for Refugees (UNHCR) has not only defined the circumstances through which an individual can become a refugee, but has created a precedent by which UN bodies have acted to provide rights and services to those seeking asylum. The influx of refugees wishing to seek protection in European nations has made compliance with the aforementioned UN documents both economically inconvenient and politically damning. The reactions of each nation will gauge the value of universal

human rights to individual politicians and national legislative bodies as a whole. Although the European Commission has reacted to the influx of refugees in 2015 by calling for an increase in the number of Syrian, Eritrean, and Iraqi refugees accepted in all capable nations, a combination of the political backlash fueled by European citizens and economic strain have discouraged adequate acceptance in every EU nation except Germany. (Barbara Franz) **PNL**

## **Lisowski, John**

### *Fischer Indole Synthesis of Alkylated Indole Derivatives- A Method for Isotope Labeling*

The Fischer Indole Synthesis was evaluated as a method of introducing  $^{13}\text{C}$  isotope labels into small organic molecules. This reaction utilizes a low melting mixture of tartaric acid with dimethylurea to catalyze the reaction between phenylhydrazine and various ketones. Reactions were monitored via thin layer chromatography in ethylacetate. NMR characterizations were obtained from a Bruker 300 MHz NMR. Solid crystals were purified via recrystallization in ethanol and liquid products purified via organic separations. The reaction mechanism was shown to produce the desired products of 2,3-dimethylindole and 2-methyl-3-phenylindole using corresponding ketone starting materials. Major reaction conditions to optimize yield were determined to be temperature regulation and purification from waste product. The incorporation of a  $^{13}\text{C}$  isotope label was evaluated for practicality on select ketone starting materials via ketone alkylation reactions. (Jamie Ludwig) **PSTR**

## **Lomakova, Elissa**

### *Activation of T Cells Within the Tumor Microenvironment*

As America's elderly population increases, and as aging is the main risk factor of cancer, development of novel cancer therapies will be essential (1). Activation of killer T cells to eliminate cancer cells within the immune suppressive tumor microenvironment (TME) is a challenge in current cancer research (2). Phytohemagglutinin (PHA), a molecule found in red kidney beans, can trigger T lymphocyte division. Evaluating the role of PHA in killer T cell activation within the TME is the primary goal of this research. (James Riggs) **URSA 2016-2017**

## **Lomakova, Elissa**

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As America's elderly population increases, and as aging is the main risk factor for cancer, development of novel cancer therapies will be essential. Activation of killer T cells to eliminate cancer cells within the immune suppressive tumor microenvironment (TME) is a challenge in current cancer research. Phytohemagglutinin (PHA), a molecule found in red kidney beans, can trigger T lymphocyte division. The objective of this research was to study the activation of killer T cells in a model of the TME. Cells were isolated from the peritoneal cavity of wild-type C57BL/6J mice, cultured *in vitro*, and studied using flow cytometry. PHA, unlike other T cell stimulators, activates considerably more killer T cells than helper T cells in the TME. Furthermore, neutralization of interleukin 10 (IL-10), in combination with PHA activation, further promoted T cell division. This result was confirmed with cells from a mouse that cannot make IL-10. These results show that blocking IL-10 signaling can enhance PHA's role as an activator of killer T cells. This combination could serve as an effective strategy to treat cancer. (James Riggs) **PSTR**

## **Maenhout, Jay**

### *“What’s Wrong With Being Confident?” Maturity, Sexuality, and Hypermasculinity in Top 40 Music*

Child stars who remain in the spotlight through early adulthood face an interesting situation. As teenagers, the media often emphasizes their immaturity, playing up the “cuteness factor” they bring to the entertainment world. Such was the case during the early careers of Demi Lovato (Disney Channel star at age 15), Nick Jonas (member of the Jonas Brothers at age 13), Ariana Grande (Nickelodeon star at age 16), and Justin Bieber (discovered at age 13). Now having progressed into their early 20s, these pop stars have faced the challenges of maturity; they have had to take certain steps to prove they have “grown up” and should be taken seriously. This paper aims to examine the lives and music of these four artists and analyze the ways in which they navigate the transition from teen stardom to adulthood. Ultimately, I conclude that maturity can only truly be attained once a person has cemented for themselves a position of power in the hegemonic systems of the white cisheteropatriarchy. (Justin Burton) **PNL**

## **McGahey, Genevieve**

### *En Français: A Contextual Analysis of French Baroque Vocal Pedagogy*

In historical accounts of Baroque music, the French contribution is often judged to have been comparatively minor in comparison with music produced in Italy during that time period. By examining the life and output of female composer Elisabeth Jacquet de la Guerre (1665-1729), this presentation will argue that such statements obscure the existence of a varied and engaging musical repertory, one particularly focused on vocal music. De la Guerre composed over 12 cantatas, songs, and even an opera (une tragédie lyrique) in 1694. By focusing on and analyzing musical and textual elements of “Le sommeil d’Ulysse,” a solo vocal cantata composed by De la Guerre in 1715, and a major vocal treatise from the era authored by pedagogue and composer Bénigne de Bacilly, it is possible to draw conclusions concerning the specific vocal demands placed on contemporary singers and the potential pedagogical concerns that might have occupied vocalists and teachers during the late 17th and early 18th centuries in France. (Kathy Price) **PNL**

## **Michalik, Julianne**

### *Increasing Awareness During Musical Experiences in the Elementary General Music Classroom for the Purpose of Decision-making in Composition*

Music composition in the elementary general music classroom is often a daunting activity for teachers to pursue. How will students make compositional decisions? How will they make an organized composition? How will they be able to recognize how other pieces of music are put together, and how will that benefit students in their compositional pursuits? At what age should teachers start to introduce this process? As we encounter our first musical experiences, we are not always aware of what is happening musically during the experience. I believe that it is important to increase musical awareness in young children, specifically beginning in kindergarten and first grade, in order to give students the skills to draw from their musical knowledge and to make decisions during the process of creating a composition. This article examines the different elements of composition, the stepping stones to get to the process, and the importance of including this activity in an elementary general music classroom. (Frank Abrahams) **PNL**

## **Modica, John**

### *Setting the Watchman: Unifying the Legacy of Harper Lee in High School Classrooms*

This research project addresses the reception of Harper Lee's *Go Set a Watchman* alongside *To Kill a Mockingbird* and its lack of integration within high school classrooms. A critical study will explore how academic understanding of *Mockingbird* in the last thirty years shaped contemporary interpretations of *Watchman*, and respond with my own critical analysis that will consider its suitability as a classroom companion to the first novel. The synthesis of my work will be an instructional guide for teachers utilizing *Watchman* as a compliment to *Mockingbird* that will further engage students on topics of racial injustice and legal ethics. (Matthew Goldie) **URSA 2016-2017**

## **Munyan, Jessica**

### *Dendrochemical Analysis and Forest History at Thomas Jefferson's Poplar Forest: A Case Study on Two Frost-Damaged Growth Rings*

The environmental history of Thomas Jefferson's Poplar Forest extends back to the establishment of a colonial tobacco plantation in the 1760s and continues through the creation of ornamental grounds at Thomas Jefferson's personal retreat in the early 19<sup>th</sup> century. Currently, a new parkway is being designed to travel through its forests, which provided motivation to use tree rings to reconstruct past changes in its forests and climate. In addition to extracting samples from trees, we also collected samples from beams used in a mid-nineteenth century renovation of Jefferson's retreat home. The rings in these beams further extended our environmental reconstruction back into the colonial period. After examining these beams, we noticed two unusual years, 1774 and 1779, in which Jefferson also mentioned serious frost events. Using Rider University's tree-ring laboratory, we confirmed that frost events were recorded in some of the beam samples since ring growth during those years were significantly less than surrounding rings. We used the new Scanning Electron Microscopy (SEM) along with its elemental analyzer to further explore the fine-scale anatomy and chemical composition of these rings. (Daniel Druckenbrod) **PSTR**

## **Murphy, Mallory**

### *Finding a Home in Music: Culturally Responsive Teaching for Homeless Youth*

For this research project, I will review research in the field of culturally responsive/relevant teaching while also conducting interviews of elementary-aged children housed at the HomeFront Family Campus in Ewing, NJ. The literature review and interview data will inform the development of a detailed culturally responsive music curriculum for after-school music programs at the shelter, and may be applicable to other shelters in the region. I plan to teach this curriculum at HomeFront during the summer 2016 term. Exit interviews following the implementation of the curriculum will help determine the effectiveness of my teaching in terms of cultural congruity. (Donna Gallo) **URSA 2016-2017**

## **Nangle, Rachel**

### *Climate Change's Impact on Water Conservation in New Jersey*

Climate change is causing issues with water conservation all over the world. Issues like drought, flooding, pollution due to runoff, acidification and an increase in storm severity are all causing harm to development and people's livelihood. This thesis evaluates how climate change is impacting New Jersey's need for increased water conservation during this pluvial period. New Jersey's high development leads to a decrease in groundwater recharge and an increase in stormwater runoff due to the growth of impermeable land cover created by urbanization. Two watersheds and their corresponding stream hydrographs are analyzed to observe how a more rural land cover compares to

a majorly urban land cover in stormwater peak runoffs during two consecutive storm events. Best management practices for water conservation currently in place are not enough to sustain a reliable water supply to all of New Jersey's populace as development continues to approach full build out. Climate change is projected to increase the amount of variability in precipitation, which will require better water management practices for the future to protect New Jersey's development and maintain a sustainable water supply. (Daniel Druckenbrod) **PSTR**

## **Nyktas, Alexa, Heather Hartnett, Stefanie Martin**

### *Individual Differences in the Teaching and Learning of Unexpected Information*

To determine what factors affect whether 3- to 5-year-old children would be willing to imitate a model's use of an inefficient tool for a task, we explored the roles of model identity (e.g., parent vs. unfamiliar adult), ethnic background, parenting style, age, adult-child interaction during play, and child temperament. The children were exposed to two possible tools for crushing a cookie: one was functional and one was inefficient for the task. The model (either parent or unfamiliar adult) then began to crush the cookie using the functional tool, but realized that the tool was the wrong one. The model then claimed the inefficient tool was "made for crushing cookies" and began to use it. Children were asked to complete the task while the model responded to a text message. Finally, children were asked to teach a puppet how to crush a cookie, and tool choice was noted. Data collection has just begun, but very preliminary results indicate that children may more likely to imitate when their parents use an inefficient tool than when an unfamiliar adult does so. (Cara DiYanni) **PSTR**

## **Parson, Cierrah**

### *The Media and Body Image: The New Epidemic*

This study was designed to discover the effect that brief exposure to visual media has on the body image of females. I hypothesized that participants who were exposed to commercials involving thin models would have higher body dissatisfaction than those exposed to commercials celebrating "ordinary" women or commercials unrelated to body image. Participants consisted of female students, randomly assigned to one of three groups. All groups completed pre and post-test questionnaires. Group D viewed a commercial from the 'Dove Real Beauty' campaign, Group V viewed a Victoria's Secret commercial, and Group K viewed a Kia car commercial. Results for Group V showed significant increases in feelings of negativity, and significant decreases in feelings of optimism from before viewing to after. Additionally, Group D participants experienced significant increases in feelings of positivity, and significant decreases in feelings of negativity from before viewing to after. Results suggest that differences that emerged were not attributable to the amount of media consumption, but rather the content of the media viewed—in this case, the content of the 60-second commercials led to significant differences in self-esteem and body image. This research shows how much of an impact just 60 seconds of material can have. (Cara DiYanni) **PSTR**

## **Rasimowicz, Melissa**

### *Effects of a Forced Desynchrony Protocol on Feeding Patterns and Glucose Tolerance in C57BL/6J Mice*

Chronic disruption of the circadian system in humans leads to negative health outcomes, including Type 2 diabetes and obesity. This study aimed to determine how uncoupling central and peripheral circadian rhythms would affect the health of male C57BL/6J mice on either a high fat or low fat diet. The central circadian pacemaker (SCN) is synchronized by environmental light/dark cycles while rhythmicity in peripheral metabolic tissues (liver, pancreas) tend to be synchronized by feeding

rhythms. In an attempt to produce desynchronization between central and peripheral rhythms, mice were subjected to 24 hour feeding rhythms and 23 hour light/dark cycles (T23). Control animals were subjected to either 24 hour light rhythms and restricted feeding; T23 light cycle with ad lib food availability; or T24 light cycle with adlib food availability. High fat diet significantly increased body weight and impaired glucose tolerance in the mice. There was a trend toward better glucose tolerance in restricted versus adlib food availability. Mice on the T23 light cycle had slightly worse glucose tolerance than their T24 counterparts, and mice on the forced desynchrony protocol tended to have lower glucose tolerance. In summary it cannot be concluded that the forced desynchrony protocol yielded significant changes in glucose regulation. (Todd Weber) **PSTR**

## **Reynolds, Alexandra, Jabria Benson, Kathy Blachut, Connor Kubitsky, Jessica Munyan, Rachel Nangle, Hayley Purcell**

### *Striving for Silver: Sustainable Jersey Recertification for Lawrence Township*

The Sustainability Studies Capstone will present its work on Lawrence Township's recertification for Sustainable Jersey. This is a green designation for municipalities in New Jersey achieved through a point system. The goal is to advance Lawrence Township from Bronze to Silver status. To date over 400 municipalities have registered, of those 160 municipalities have been certified Bronze and just 33 hold Silver. We gained real world experience by working with township officials to collect data and draft actions earning more than the 350 points required for Silver. A final report analyzes the strengths, weaknesses, opportunities and threats to sustainability in suburban communities like Lawrence Township and makes recommendations for future actions. (Brooke Hunter) **PNL**

## **Safer, Rachel**

### *History of Terrorism*

Based on my senior research project, the aim is to understand the origins of terrorism and modern terrorism. The objectives of this research are to define terrorism and explain the theories of terrorism and homeland security both past and present. Terrorism, and the field of homeland security, are relatively new academic fields. Dating back to the late 1990's, there are many different definitions of terrorism and its origins are often disputed. Part of this project is to establish that there is not necessarily one all encompassing definition of terrorism. Instead, there are many definitions based on different time periods, events, persons involved, security theories, and other variables. A clear distinction is to be made between terrorism and criminal activity. Often used as overlapping phenomena, notably by the media, there is a need for firmer distinction between the two, especially concerning lone-wolf terrorism. Case studies will be examined to determine how mislabeling of criminal activity and terrorism has led to divides in the understanding of terrorism. An exploration of the media's impact on the public's understanding of terrorism will also be explored. (Jonathan Mendilow) **PNL**

## **Scheri, Dina, Collin Stiles**

### *Tracing a Treasured Resource: The Flow and Chemistry of the Campus Storm Water Drainage System*

In our Discovery Science class (SCI 100), we studied the flow of water through Rider University's drainage system as well as studied the chemistry of the water that drained into Centennial Lake from the surrounding parking lots. For the chemistry experiments facilities staff assisted us by pouring five hundred gallons of water onto the Fine Arts and Science parking lots. We observed the water's path to the lake through the drainage system and collected water samples directly from the truck, at the first drain the water reached, at the drainage pipe leading into the lake, and a sample directly from

the lake. We concluded that the water quality decreases as it moves toward the lake from the parking lot. This project allowed us to update the facilities staff on the flow of water on campus as well as become more aware of the water quality in the lake. (Kathy Browne) **PSTR**

## **Strahle, William**

### *The Keystone Man: How Joseph Tito Built the Yugoslav Identity*

The project is focusing on the early creation of Communist Yugoslavia, arguably beginning in the middle of the war with Tito's intervention in WW2 and early state building efforts, and focusing most energy on the period of 1946 with the first constitution to 1953 when the first real frame of Yugoslavia and their "alternate path to socialism" was enacted. It will begin with a brief background on Tito then move into the inter-war and immediate post war years. It is the position of the paper that Tito and the Communists were successful in building a unified state. Through both governmental adjustments and social factors such as inter-ethnic appeasement and some social and youth programs, Tito fostered the idea of Yugoslav identity above that of a Croat or Serb. (Lucien Frary) **PNL**

## **Strucinski, Natalie**

### *Walk the Talk: Developing and Assessing Health Programming Designed to Change Both Attitudes and Behaviors in At-Risk Youth*

Previously, a complicating dichotomy between the impact of health programming on attitudes and beliefs versus actual behaviors has been demonstrated. I propose to adapt and combine existing health programming curricula involving content instruction, which addresses the internal dimension, or attitudes, with the principles of role-playing, which addresses the external dimension, or ability to self-regulate behavior, for topics critically related to the period of adolescence in local at-risk youth: nutrition, exercise, stress, safety, and substance use. To evaluate efficacy, a step often skipped in health programming, I will develop and implement tools to assess changes, if any, in, knowledge and behavior. (Stephanie Golski) **URSA 2016-2017**

## **Sulaman, Fatima**

### *Changes of Mercury Concentration in Response to Chloride Complexation Under Deicing Salt Condition*

Laboratory and field experiments were conducted to study the effect of chloride (Cl) complexation on mercury (Hg) mobilization in an aqueous system due to deicing salt usage. For the lab portion of this experiment, cinnabar powders (0.5 grams), an Hg mineral, were added to various concentrations of CaCl<sub>2</sub> and NaCl solution, respectively, and placed on an orbital shaker for two months to facilitate complexation. The solutions were filtered before elemental concentrations were measured by the SPECTRO ICP. Water samples from the top and bottom layers of two locations in Centennial Lake were also collected in December and once a week this semester. A positive correlation between Hg and CaCl<sub>2</sub> was observed in the laboratory results while a negative correlation between Hg and high concentrations of NaCl was observed. The field results from Centennial Lake show that Hg concentrations are significantly positively correlated to Cl concentrations. Therefore, increased deicing salt usage might accelerate the mobilization of Hg concentrations in our watersheds. Hg is an environmental toxin known to accumulate in the food chain and can be an ecological and public health hazard. The results of this study will help to better understand Hg mobilization in response to increased chloride concentrations in a natural water system. (Hongbing Sun) **PSTR**



## **Szwetkowski, Connor**

### *Detecting the Most Distant Stars in the Galaxy: Catalog Matching of Large Astronomical Databases*

We are searching for the most distant stars in our Galaxy. Some of these stars are close to 1 million light years away, but still feel the influence of the Milky Way's gravity. In our project, we use large surveys of the night sky, such as the Sloan Digital Sky Survey (SDSS) or UKIRT Infrared Deep Sky Survey (UKIDSS), to scour the galaxy for distant red giant stars. Previous work has led to a sample of 500 red giant candidates. We have matched those candidates to new data from the Wide-Field Infrared Survey Explorer (WISE), which imaged the entire sky using a space-based telescope. To do this matching, we wrote a custom Python software routine. We present our findings, which include new observations of our candidates in the Far Infrared. We hope to use this matched dataset to improve our selection efficiency, and select the best candidates for follow-up spectral observations with other telescopes. (John Bochanski) **PSTR**

## **Taptykoff, Natalie**

### *Exploring the Current and Future Regulation of Electronic Cigarettes in the United States*

The purpose of my research is to explore the current rules regulating electronic cigarettes. With the increased popularity of electronic cigarettes and subsequent health concerns, the United States needs to implement new laws in order to properly regulate their usage, sales and advertising. Should electronic cigarettes have the same regulations as regular cigarettes? Are they considered medical devices in the market? As a result of the growing demand among teenagers, what advertising ethics should the distributors of electronic cigarettes adhere to? All of these questions and more will be addressed in my research. (Cynthia Newman) **URSA 2015-2016**

## **Torres, Gretel**

### *Loss of Humoral Immunity in a Mouse Model of Ovarian Cancer*

Although a low incidence cancer, ovarian carcinoma (OvCa) has a high mortality rate due to late detection. To study the humoral immune response to OvCa we transplant ID8 cells (mouse epithelial carcinoma) in the murine peritoneal cavity (PerC). We found that the OvCa depletes PerC B cells, particularly B-1 B cells. To determine the systemic impact of this we assessed humoral immunity. Following immunization, we found loss of the TI-2 response (FITC-dextran, FITC-Ficoll); the TI-1 (FITC-LPS) response was intact until very, late stage disease. Since B-1 cells also serve a housekeeping role in apoptotic corpse clearance, we developed a FACS assay and a cell-based ELISA to monitor anti-apoptotic cell antibody production. Sera from mice without OvCa bound apoptotic ID8 cells more than normal ID8 cells and these antibodies were reduced in mice with OvCa. Collectively these data validate systemic loss of B-1 B cell function in mice with OvCa. These results might inform strategies for early detection of OvCa. (James Riggs) **PSTR**

## **Urban, Elizabeth**

### *Expression Patterns of Ret Signaling Pathway Components Provide Further Evidence that Xenopus Pronephric Duct Extension and Mammalian Ureteric Bud Outgrowth Require Similar Molecular Pathways*

Our studies of axolotl and Xenopus embryos have shown that GDNF signaling through the Ret/GFRalpha-1 receptor plays a role in posterior pronephric duct (PD) extension, indicating that PD extension in amphibians and ureteric bud outgrowth from the mammalian nephric duct are homologous morphogenetic events. Here we extend our analysis of the role of Ret signaling pathway in Xenopus PD extension and show that expression of Xenopus sprouty - a negative regulator of Ret

signaling - and ETV4/5 - a downstream target of Ret signaling - are expressed in patterns consistent with a role in regulating PD extension. Furthermore, in contrast with published GDNF expression patterns, our in situ hybridization analysis reveals that GDNF expression includes tissue along the PD migration pathway. The emerging picture from these and other comparative studies suggests that the amphibian pronephric duct and the mammalian ureteric bud are homologous structures. (Julie Drawbridge) **URSA 2015-2016**

## **Vlad, Cynthia**

### *The Influence of Scent and Suggestion on Attention*

The aim of this study was to understand what influence, if any, suggestion and scent had upon an individual's attention. Although aromatherapy, or the use of plant oils to support well-being, is currently popular, little empirical evidence exists regarding the manner in which it may affect cognitive performance, and in what ways expectation or suggestion may modulate the effect. Exposure to a scent, either one generally viewed as a calming blend (peaceful sleep) or one viewed as a stimulating blend (mental focus), and suggestion (either performance enhancing or performance slowing) was manipulated followed by assessment of attention, mood, and physiological response (blood pressure and heart rate). Data collection will be completed 4/15. Results will be analyzed in terms of any main or interaction effect of scent and suggestion on psychological and physical well-being. In addition, I will be prepared to discuss the impact of the project on my future plans. (Stephanie Golski) **PSTR**

## **Wong, Cheuk Yee**

### *The Effects of Wind Instrument Playing Experience on the Singing Voice*

While it is a popular belief that picking up a second musical instrument is relatively easier than starting from scratch due to the phenomenon of knowledge transfer, there are not much empirical studies on the interplay between instrumental training and voice training. Gossett (1989) investigated concurrent study of oboe and singing of 4 subjects and postulated that concurrent study of both instruments would introduce great concerns to vocal teachers and students in areas of jaw, lip and tongue tension, as well as breath control. This study, instead, investigates the possible effects of wind instrument playing experience on the vibrato and expiratory airflow of the singing voice, by the inclusion of other wind instruments and a control group. Subjects ( $N=10$ ,  $n1=5$  and  $n2=5$ ) were asked to sing before and after 5 minutes of wind instrument playing. Expiratory airflow and phonation times were recorded by the Phonatory Airflow System. The vibrato rates and extents were processed by *VoceVista* program. Questionnaires collecting qualitative data on physical sensation of wind instrument playing and singing were also distributed to the participants. Results showed slightly lower airflow and more inconsistent vibrato pattern after instrumental playing. Moreover, participants generally expressed sensation of higher larynx position after instrumental playing. (Kathy Price) **PNL**

## **Zettlemoyer, Ryan**

### *"O Freunde, nicht diese Töne!": Music as Torture in the United States Military*

This research examines the use of music as a weapon, a use not often imagined, by reviewing use in military detention centers run by the United States during the War on Terror. The paper argues that music, when used in such settings, amounts to emotional and physical torture with effects equal to those of beatings and other more "popular" physical torture methods. Evidence is gathered from other researchers of the topic (including conducted interviews and opinions) as well as music psychology research, and this paper compiled these arguments to include specific cases of music

used as a form of abuse. This research concludes by addressing popular opinions on what is and is not torture, and argues that music used in such a fashion, according to the accounts of prisoners and interrogators, does amount to torture. By examining this case, a strong argument emerges against the use of music as a military tool. (Sharon Mirchandani) **PNL**