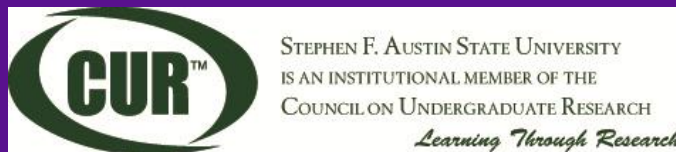


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# SFA Undergraduate Research Conference 2014



Stephen F. Austin State University  
 Baker Pattillo Student Center  
 Regent's Suite A and the Twilight Ballroom  
 April 8, 2014  
 4-7:30 p.m.

## Schedule of Events

### Regent's Suite A

4:00-4:10 Opening announcements, Dr. Eric J. Jones

4:10-4:40 Presentation of awards to Top Scholars and Finalists, Provost Dr. Richard Berry

### Top Scholar Presentations

4:40-4:50 **Jeremy Ayars, Juliet Flores, Whitney Johnson, Mark Nosal, and Laura Tapia**

Effectiveness of Lichens in Measuring Atmospheric Pollutants in Nacogdoches, TX

Faculty Sponsor: Dr. Sheryll B. Jerez (Environmental Science)

4:50-5:00 **Victoria Wolford, Brynna Kibler, and Erika Reyes**

Nelson Rusche College of Business The Freshman Perspective

Faculty Sponsor: Dr. Joe K. Ballenger (Management, Marketing, and International Business)

5:00-5:10 **Emily Robbins**

Bohemian Freedom vs. Bourgeois Society: A Study of Carmen as a Symbol of Liberty

Faculty Sponsor: Dr. Joyce Johnston (Languages, Cultures, and Communication)

5:10-5:20 **Alyssa Largent and Jean Meneses**

Comparison of Lentiviral Stock Storage Protocols

Faculty Sponsor: Dr. Sarah Canterberry (Biology)

5:20-5:30 **Stephen Decker, Heidi Bachrich, La Tori Flowers**

Effects of Hot and Temperate Environments on Executive Function Tasks During Moderate and High Intensity Exercise

Faculty Sponsor: Dr. Eric J. Jones and Dr. Mark D. Faries (Kinesiology and Health Science)

5:30-5:40 **René Phillips**

Thwarting History's Greatest Art Thieves

Faculty Sponsor: Dr. Jill Carrington (School of Art)

### Twilight Ballroom

5:40-7:30 Poster Presentations of Finalists  
Refreshments served

## Regional College Finalists

### Kimberly Greenlee

Obesity and the Food Industry

Faculty Sponsor: Larry Pilgrim (Biology-Tyler Junior College)

### Anna Johnson

Transformational Presidential Epochs in 20<sup>th</sup> Century America

Faculty Sponsor: Dr. Gene Kirkpatrick (History-Tyler Junior College)

### Bailey-Anne Kaytar

Supreme Court Development through a Criminal Justice Lens

Faculty Sponsor: Mary Pyle (Criminal Justice-Tyler Junior College)

### Joshua Phillips

HIGHer Education: Has the Drug Culture Intensified on Collegiate Campuses Near the Borders of Washington and Colorado?

Faculty Sponsor: Ryan Button (Sociology-Tyler Junior College)

## Faculty Mentor Dr. Sheryll B. Jerez



Dr. Sheryll B. Jerez joined SFASU in November 2007 right after receiving her Ph.D. in Agricultural Engineering from the University of Illinois at Urbana-Champaign. Her research interests are focused on improving the air quality in and around animal facilities. She is currently the research advisor to several graduate students. She also engages her undergraduate students in research because she sees its value in enhancing the quality of her teaching, and it gives the students an outlet to showcase their creativity and satisfy their intellectual curiosity. She believes that effective mentoring will help advance the students' careers.

## College of Science and Mathematics Finalists

### Tania Benavides

Determination of Anions in Lanana Creek by Ion

Chromotography

Faculty Sponsor: Dr. Michael Janusa (Chemistry and Biochemistry)

### Julianna Calkins

Thin Film CdS/CdTe Diodes for Nuclear Radiation Detection

Faculty Sponsor: Dr. Joe Musser (Physics and Astronomy)

### Saad Chaudhry and Kenechukwu Ekwemalor

Expression at Low Temperatures Reduces Stress and Improves Recombinant Protein Yield in *Escherichia coli*

Faculty Sponsor: Dr. Odutayo Odunuga (Chemistry and Biochemistry)

### Amey Gonzalez, Marianne Burnett, Jasmine Moreland

Antibacterial Activity of Biotransformation Product:

Faculty Sponsor: Dr. Michele R. Harris (Chemistry and Biochemistry)

### David Hauer

Analysis of Mineralized Karst Springs in Lampasas, Texas

Faculty Sponsor: Dr. Alyx S. Frantzen (Chemistry and Biochemistry)

### Jasmine Moreland, Amey Gonzalez, and Marianne Burnett

Characterization of Proteins Involved in Biotransformation

Faculty Sponsor: Dr. Michele R. Harris (Chemistry and Biochemistry)

### Antonio D. Trevino

Electrochemical Investigations of Benzanthrone

Faculty Sponsor: Dr. Kefa K. Onchoke (Chemistry and Biochemistry)

## Arthur Temple College of Forestry and Agriculture Top Scholars



Jeremy Ayars (pictured), Juliet Flores, Whitney Johnson, Mark Nosal, and Laura Tapia

### Effectiveness of Lichens in Measuring Atmospheric Pollutants in Nacogdoches, TX

The purpose of this study was to show that lichens can be used as biological pollution indicators in the city of Nacogdoches. Lichens have been used to monitor pollution in various places, but little information is available about lichens in Texas. In fact, there is no field guide. Initially, foliose lichens were collected in town and identified to find one that could be used for trace metal analysis. *Parmotrema perforatum* was chosen, and lichens were collected for chemical analysis at 16 sites. The tissues were analyzed for V, Cr, Cu, Pb, and Zn concentrations. Each element was present in measurable quantities, and concentrations were higher in populated areas and lower far away from industry and roads. For instance, the concentration of V was 2.6 mg kg<sup>-1</sup> in material collected just downwind of Lonestar Feeds and NIBCO, but only 1.1 mg kg<sup>-1</sup> one mile outside of Loop 244 east of town. Pb, listed as one of six criteria pollutants in the *National Ambient Air Quality Standards*, was found to be 19.8 mg kg<sup>-1</sup> in lichens at the site near Lonestar Feeds, far higher than the overall average Pb concentration of 4.5 mg kg<sup>-1</sup>. The tissue concentrations of the other metals showed similar spikes in areas heavy with industry or local traffic, such as downwind of the Kroger shopping center on North Street where the Pb was 56% higher than average and Zn was 64% higher, or downwind of the many industries flanking S. University Dr. south of Martin Luther King Jr. Blvd., where V was 57% higher and Cr was 41% higher than the associated average concentrations. Sampling lichens is possible throughout the city, and it is possible to find the amount necessary for analysis at many locations. The data obtained in this study supports the conclusion that a large scale lichen monitoring program could be instituted in Nacogdoches which would discover air pollution trends and track future changes in the local atmosphere.

## Nelson Rusche College of Business Top Scholars



Victoria Wolford (pictured), Brynna Kibler, and Erika Reyes

### Nelson Rusche College of Business The Freshman Perspective

We are seeking to gain an understanding of how freshman perceive the Stephen F. Austin State University Nelson Rusche College of Business and its academic

offerings. The College of Business houses four academic departments and offers two different types of degrees: Bachelor of Business Administration (areas of study include; Accounting, Business Economics, Computer Information Systems, Finance, General Business, International Business, Management and Marketing) and Bachelor of Arts in Economics. By focusing on how freshmen perceive the College of Business in its entirety, we are able to determine how the college is succeeding and failing in reaching the freshmen class.

The Rusche College of Business is interest in learning how to better attract SFA freshmen to declare a major within their college. Discovering how freshmen perceive the College of Business can help the client better strategize how to attract this population to pursue a business major. This research can also help the client make effective decisions and changes to their curricula to appeal to the freshmen population.

By conducting exploratory research we aimed to discover how SFA freshmen perceived the Nelson Rusche College of Business and to gather information about the level of awareness SFA freshmen have about the Rusche College of Business and their academic offerings. Since we do not know the level of awareness SFA freshmen have about the College of Business we must conduct primary research to ascertain the information.

Based on our research we have findings that correlate between the parent's occupation and the student's interest in pursuing a business degree. We also found that more male students were interested in pursuing a business degree. While we had these findings we also found that the majority of SFA freshmen did not hear about the Rusche College of Business before attending SFA, despite the proximity of their hometown to the university. While most surveyed students are not interested in pursuing a business degree they did have a positive attitude towards students that are business majors.

## College of Liberal and Applied Arts Finalists

### Zoe Ang

Social Work Values and Dying with Dignity  
Faculty Sponsor: Kristin Bailey-Wallace (Social Work)

### Russell Bartholomew

Whosoever Believeth: Whosoever Believeth: The Lexical Diffusion of the Third Person Singular Present-Tense Indicative Verbs in Early Modern English and Changing Verb Morphology in English Today  
Faculty Sponsor: Dr. Jessica Sams (English)

### Nicholas Goddard

Gay Marriage and State Constitutional Provisions  
Faculty Sponsor: Dr. Steven Galatas (Government)

### Gretchen L. Patterson

The Preservation of the Colonial Spanish Horse  
Faculty Sponsor: Dr. Perky Beisel (History)

### Diego Rubalacava

The Effects of Exposure to Sugar and Ethnicity on Body Image Satisfaction  
Faculty Sponsor: Dr. Lora Jacobi (Psychology)

### Hector Sanchez

iBooks Multimedia Portfolio  
Faculty Sponsor: Greg Patterson (Mass Communications)

### Bethanie Sterling

*The Lord of the Rings* Trilogy  
Faculty Sponsor: Dr. Michael J. Martin (English)

### Best Freshman Submission

#### Ashley Dutton

A Day in My Life with Parietal Lobe Damage  
Faculty Sponsor: Dr. Sharon Eaves (Psychology)

## James I. Perkins College of Education Finalists

### Rebecca Blubaugh

Recipe Makeover: Finding Flavorful Healthy Alternatives for Traditional Foods

Faculty Sponsor: Todd Barrios (School of Human Sciences)

### Jessica Colonneta

Students Serving Students: A Teacher Candidate Examines the Impact of Mentoring with Under-Resourced Elementary Students

Faculty Sponsor: Dr. Jannah Nerren (Elementary Education)

### Chau Phan

Universal Kitchen Design

Faculty Sponsor: Dr. Mitzi Perritt (School of Human Sciences)

### Shelby Post

Promoting Oral Language Development in an Early Childhood Classroom: From Theory to Practice

Faculty Sponsor: Dr. Robin Johnson (Elementary Education)

### Amanda Sellman, Emily Reynolds, and Katy Sharp

Media Influences on Adolescents

Faculty Sponsor: Dr. Erik Jon Byker (Elementary Education)

### Ashlee Whelihan

“Sassy Silver” Fashion Startup Business Plan

Faculty Sponsor: Dr. Rebecca Greer (School of Human Sciences)

### Candyce Young

Health-Related Fitness Results from FitnessGram Tests

Faculty Sponsor: David Goodman (Kinesiology and Health Science)

## College of Liberal and Applied Arts Top Scholar



Emily Robbins

### Bohemian Freedom vs. Bourgeois Society: A Study of Carmen as a Symbol of Liberty

Carmen’s story takes place in a whirlwind of excitement and danger as she leads the reader on a journey through her colorful Bohemian life. My class had read Prosper

Mérimée’s original book, as well as seen a recorded production of Bizet’s opera which was inspired by the book. I was fascinated by Carmen’s portrayal as a strong woman who defied social standards in favor of danger and the unknown. She and her dramatic Bohemian lifestyle are continually contrasted with the socially acceptable bourgeois society. She is also contrasted with the men in her life, as they are never able to truly tame her. The essay examines the ways in which Carmen symbolizes freedom, mostly drawing from the original book rather than the opera.

The purpose of the essay was to explore the complexities of Carmen’s character, and by so doing shed a light on the free nature of the femme fatale. Characters inspired by Carmen continue to appear in books, film, music, and other media, so I wanted to explore one of the aspects of her character, freedom, that made her such a compelling character. By better understanding Carmen, I could better understand her most recent incarnations in other stories. This character study takes into account the significance of multiple cultures, languages, and the way in which she defies (and manipulates) society. Despite society’s efforts to control her, she insists on her own way even in the face of danger. Rejecting an ordinary existence, she strives to experience life to the utmost.

This research paper was put together using material from scholarly writings and Prosper Mérimée’s book. I focused on Carmen’s use of language, the nature of her liaisons, and her cultural identity in defiance of society. Through this project I learned that Carmen, and other femmes fatales like her, represent so much more than sensuality and rebellion against society. They are also strong women who refuse to be controlled by societal expectations, preferring to take their destiny into their own hands no matter the cost. Carmen is a larger-than-life figure who will continue to captivate imaginations for years to come.

## College of Science and Mathematics Top Scholars



Alyssa Largent (pictured) and Jean Meneses

### **Comparison of Lentiviral Stock Storage Protocols**

Lentiviral vectors are effective tools used to deliver stable exogenous DNA into cells via transduction and are commonly used to generate transgenic cells for research purposes. Fresh viral stocks are often made for each experiment, but this is a very cost ineffective method. Therefore, the goal of this work was to identify storage conditions that do not significantly decrease viral titer. To that end, the following conditions were tested: 10% glycerol, 20% glycerol, 10% DMSO and a 10% DMSO+50% FBS, all stored at -80° C. HEK 293T cells were used to generate the lentiviral vector stocks by co-transfection of three plasmids. Fluorescence microscopy was used to visualize the results of these transfections as one of the plasmids expresses Green Fluorescent Protein (GFP). Lentivirus particles were harvested from these cells and was either used immediately or stored as described above. The viral stock's ability to subsequently infect a new batch of HEK293T cells was measured via typhoon molecular scanner capable of determining GFP values. Three trials were conducted to determine lentiviral vector efficacy following subzero storage. Resulting data showed that both 10% and 20% glycerol were better methods for viral storage than DMSO or FBS + DMSO. More specifically, 20% glycerol was the most conducive to favorable viral storage. These results indicate that storage protocol of viral vectors is significantly important to the quality and usefulness of stored vector stocks for future experimentation. Numerous compounds have been tested as cryoprotective agents alone or in combination, and may provide the basis for studies of other possible protocols in the future.

## College of Fine Arts Finalists

### **Marina Doss**

Instrumental Music and the Deaf: A Study in Education  
Faculty Sponsor: Dr. Jamie Weaver (School of Music)

### **Holly Haynes**

“Upon Closer Examination”  
Faculty Sponsor: Lauren Selden (School of Art)

### **Joel Livsey**

Der Ring des Howard Shore  
Faculty Sponsor: Dr. Jamie Weaver (School of Music)

### **Ashley Martin**

Is Sculpture for All  
Faculty Sponsor: Jeff Brewer (School of Art)

### **Emily Milius**

Triads and Text in *Ariettes Oubliées*  
Faculty Sponsor: Dr. Nathan Fleshner (School of Music)

### **Caleb Rose**

Collotype: A Resurrection  
Faculty Sponsor: Candace Hicks (School of Art)

### **Amanda Warren and Jason Monmoney**

Consulting Renovation of Theatrical Support Space  
Faculty Sponsor: Carolyn Conn (School of Theatre)



## Arthur Temple College of Forestry and Agriculture Finalists

**Amy Brennan, Briana Crockett, Justin Floyd, Angela Sutherland, and Jay Davis**

Comparison of Campsite Monitoring Methods in Texas Wilderness Areas Compared to Wilderness Areas in the Greater Yellowstone Area

Faculty Sponsor: Dr. Pat Stephens Williams (Forestry and Agriculture)

**Amy Brennan, Briana Crockett, Justin Floyd, Angela Sutherland, and Zach Jones**

Visitor Observational Studies in the Old Faithful Visitor Education Center in Yellowstone National Park

Faculty Sponsor: Dr. Pat Stephens Williams (Forestry and Agriculture)

**Amy Butler**

Effects of Residential Aerobic Sewage Treatment Irrigation Systems on Select Soil Properties

Faculty Sponsor: Dr. Kenneth Farrish (Environmental Science)

**Daniel Fyne**

A Spatial Analysis of a Colony of *Hibiscus dasyalyx*, the Neches River Rose Mallow, Established in 1996 in Nacogdoches County, Texas

Faculty Sponsor: Dr. David L. Kulhavy, Dr. David L. Creech, and Dr. Daniel R. Unger (Forestry and Agriculture)

**Elaine Harris**

Comparison of the Performance of a Digital Image Analysis Method versus a Leaf Area Meter in Measuring Leaf Surface Area

Faculty Sponsor: Dr. Sheryll B. Jerez (Environmental Science)

**Drew Weise**

Soil Phosphorus Loading in Urban Landscapes

Faculty Sponsor: Dr. Kenneth Farrish (Environmental Science)

**Mary-Leigh Winkler, Emily Greenstein, Turner McDougal, Bryce German**

Comparison of Water Pollutant Discharge from Three Parking Lots in Nacogdoches

Faculty Sponsor: Dr. Sheryll B. Jerez (Environmental Science)

## James I. Perkins College of Education Top Scholars



Stephen Decker, Heidi Bachrich, La Tori Flowers

### Effects of Hot and Temperate Environments on Executive Function Tasks During Moderate and High Intensity Exercise

Cognitive function testing during changes in body core temperature has been widely studied in regards to human performance, often employing passive hyperthermia. More recently, executive function (EF) testing during exercise has been addressed to assess changes in performance with some level of active hyperthermia. The purpose of the present study was to employ both external thermal stress and active hyperthermia in order to assess changes in executive function (EF) tasks within varying environmental temperatures before, during, and after a maximal treadmill test. Nine apparently healthy college-aged males participated in two trials of a Bruce protocol treadmill test in hot (35°C) and temperate (21°C) environments. Treadmill tests were terminated upon subjects reaching ventilatory thresholds (VT). Subjects performed three EF tests to assess simple reaction time, attention/inhibition, and planning/problem solving abilities (Stroop-dot, Stroop-color, and Tower of London (TOL), respectively). Each test was given on three occasions during both trials; pre, mid, and post VT. Subjects' performances on time of completion and errors within both EF tests were assessed across varying environments. Paired samples t-test revealed no significant differences ( $p=.05$ ) within time of completion or errors for either EF test across both environments, with the exception of TOL number of moves post VT ( $p=.03$ ). Pre to post reaction times were attenuated during hot trials (-.13 sec improvement), as compared to temperate trials (+1.34 sec. decline). Attention/ inhibition (Stroop-color time) from pre to mid exercise revealed attenuation of the worsening of performance within heat trials of +.64 sec. vs. +1.96 sec. during temperate. Planning/problem solving (TOL time) improved in both pre to mid (-12.62 sec. hot [ $p=.44$ ], -21.65 sec. temperate [ $p=.01$ ]) and pre to post exercise (-19.10 sec. hot [ $p=.07$ ], -27.67 sec. temperate [ $p=.01$ ]). Taken together, these support previous findings on the complexity of the exercise-EF relationships, while adding the potential of active hyperthermia to moderate these relationships. Future research should continue to focus on external thermal stress and active hyperthermia in regards to effects on executive function tasks.

## College of Fine Arts Top Scholar

René Phillips

### Thwarting History's Greatest Art Thieves

The student signed an Honor's Contract to create a PowerPoint Slide show based on the documentary, *The Rape of Europa*, which described Hitler's assault on cultural monuments, his confiscation of art from museums, and his theft of private collections. The twenty-minute presentation was presented to Art Alliance, a student art organization.

Research at the Tarleton Law Library at the University of Texas uncovered several excellent books in regards to textual content and photographs. Since the audience is college art students and the presentation is visual, the presentation tells the story of saving art through photographs.

The Monuments Men, the name for the American troops that worked to save antiquity's art, is based in Dallas, Texas, which makes the subject significant to a state university audience. The student also visited the library at the Dallas Art Museum to peruse the collection which had the book *The Monuments Men* written by Robert M. Edsel that provided the narrative for the presentation.

Enlisted men from Great Britain, France, and Italy supplemented the efforts of American troops. A modest French woman was an unlikely heroine in saving the personal collections of France's Jewish citizens that lost everything in World War II. The presentation focuses on the Americans as they raced against the Third Reich, Russian military troops, and the forces of nature to find and save irreplaceable art.

During 2013, we learned that George Clooney was making a movie titled *Monuments Men*, which will be released in February 2014, thus making the subject matter timely. *The Rape of Europa* and *Monuments Men* are films based on books by Robert Edsel, who continues to research and publish on this topic. He founded and manages the Dallas-based Monuments Men Foundation, devoted to remembering the heroic efforts of the dedicated men who rescued art from the clutches of destruction at the hands of the greatest art thieves of all time.

## Nelson Rusche College of Business Finalists

### Angéline Le Ménach and Tania Morales

Expanding Your Education Beyond the US Borders:  
Stephen F. Austin State University Freshmen and Study  
Abroad Programs in Europe  
Faculty Sponsor: Dr. Joe K. Ballenger (Management,  
Marketing, and International Business)

### Asad Choudhry

Federal Reserve's Monetary Policies  
Faculty Sponsor: Dr. Mark Scanlan (Economics and  
Finance)

### Clint Conner, Angela Bannout, Yolanda Gasaway, and Adriana Cabrera Sanchez

B.E.C.A.U.S.E. Biss Enterprises Caring About  
Underserved, Safety, and Education  
Faculty Sponsor: Judith L. Biss (Business Communication  
and Legal Studies)

### Ja'Nay Ford, Sarah Thompson, Lauren Overstreet, Jessie McNeese

The PEER Program  
Faculty Sponsor: Judith L. Biss (Business Communication  
and Legal Studies)

### Kathleen M. Saiz

Civil Air Patrol Marketing Plan  
Faculty Sponsor: Dr. Marlene Kahla (Management,  
Marketing, and International Business)

### Katelyn Windham

Determining the Sale Price of Residential Real Estate in  
Nacogdoches, TX  
Faculty Sponsor: Dr. Ryan Phelps (Economics and  
Finance)

