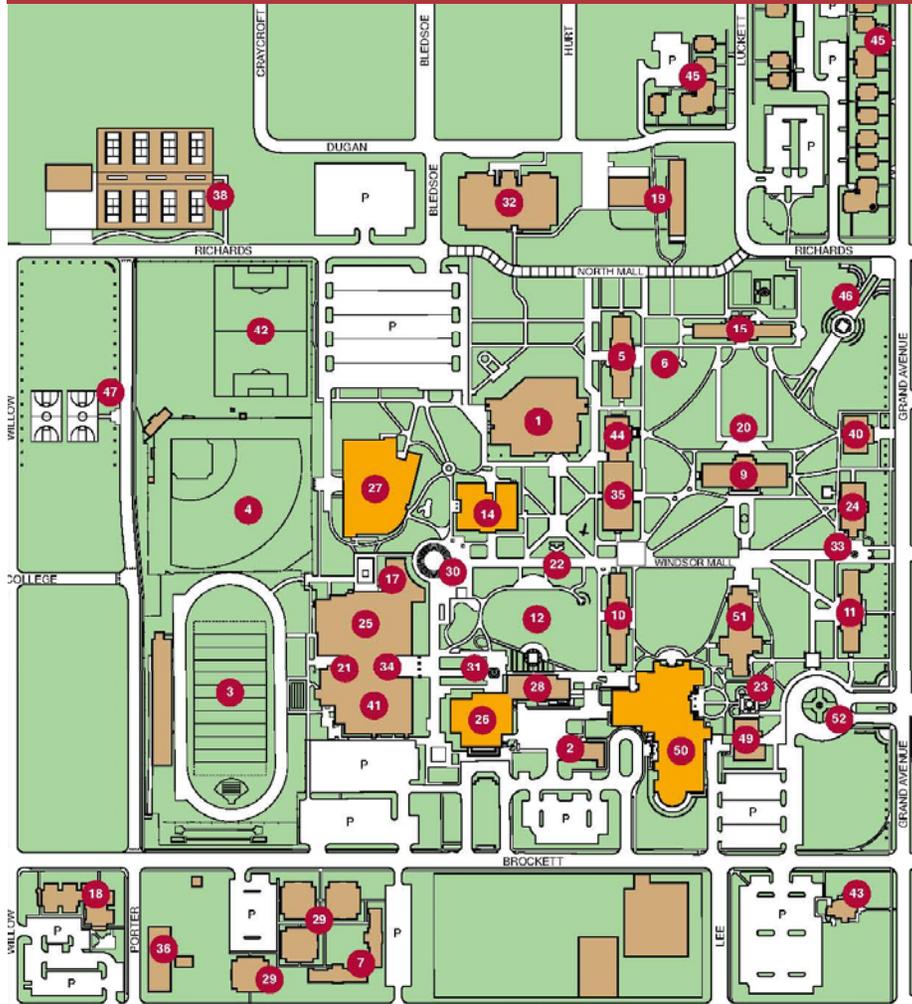
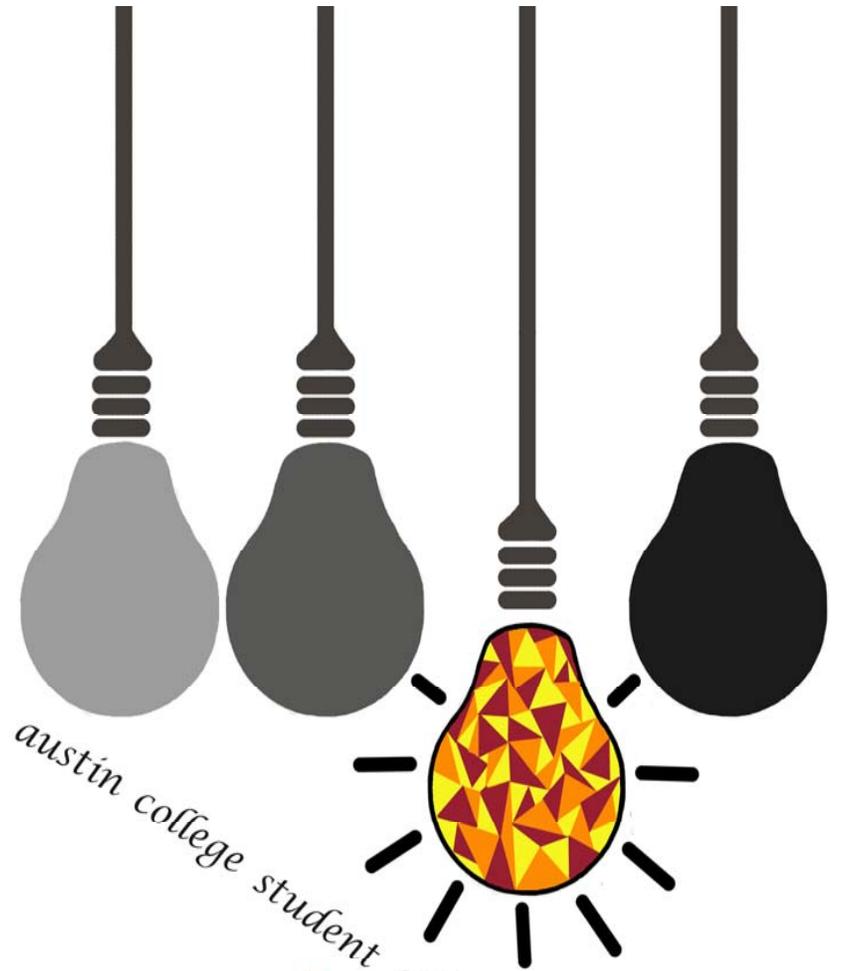


## Austin College Map - Student Scholarship Conference Locations



### MAP KEY

- |                                     |   |   |   |
|-------------------------------------|---|---|---|
| 1. Abell Library Center             | 14. Craig Hall for Music                  | 28. Jackson Technology Center                               | 41. Sid Richardson Recreation Center                          |
| 2. Adams Center                     | 15. Dean Residence Hall                   | 29. Johnson 'Roo Suites                                     | 42. Soccer Field  |
| 3. Apple Stadium                    | 16. Detweiler House                       | 30. Jonsson Fountain  | 43. Temple Center for Teaching and Learning at Thompson House |
| 4. Baker Athletic Field             | 17. Dickey Fitness Pavilion               | 31. Jonsson Plaza   | 44. Thompson Hall (Sciences)                                  |
| 5. Baker Residence Hall for Men     | 18. The Flats at Brockett Court           | 32. Jordan Family Language House                            | 45. The Village on Grand                                      |
| 6. Ella Barker Memorial Garden      | 19. Forster Art Studio Complex            | 33. Kappa Fountain  | 46. Williams Founders Plaza                                   |
| 7. Bryan Apartments                 | 20. Hall Graduation Court                 | 34. Mason Athletic-Recreation Complex                       | 47. Williams Intramural Complex                               |
| 8. Carruth Guest House              | 21. Hannah Natatorium                     | 35. Moody Science Center                                    | 48. Windsor House   |
| 9. Caruth Administration Building   | 22. Hersh Memorial Garden                 | 36. Physical Plant Building                                 | 49. Wortham Center  |
| 10. Caruth Residence Hall for Women | 23. Honors Court and Collins Fountain     | 37. President's House                                       | 50. <b>Wright Campus Center</b>                               |
| 11. Clyce Residence Hall            | 24. Hopkins Social Science Center         | 38. Russell Tennis Center                                   | 51. Wynne Chapel  |
| 12. College Green                   | 25. Hughey Gymnasium                      | 39. Settles House   | 52. Zauk Circle Drive and Garden                              |
| 13. Collins Alumni Center           | 26. <b>Ida Green Communication Center</b> | 40. Sherman Hall (Humanities) and Hoxie Thompson Auditorium | P = Parking   |
|                                     | 27. <b>IDEA Center</b>                    |   |   |



austin college student scholarship conference

**AC**  **SC** March 23 & 24, 2018



## Literatura, Arte y Cultura Hipánica

Sandra Carrasco, Karla Herrera, Kirstin Nance, Ivonne Moran,  
Sarah Smith, and Lourdes Bueno  
Classical and Modern Language Department, Austin College

The Bilingual A.C.T. Group will perform a stage-reading during the Spring 2018 ACSC. The performance will be based on some texts written by AC students with four literary female characters as protagonists (since March is the month of women rights): Juliet, Ophelia (from Shakespeare's works), Melibea, and Adela (from two Spanish plays). The students participating in the stage-readings are: Ivonne Moran, Melissa De Leon, Sandra Carrasco, Salina DuClos, and Sarah Smith. Director: Lourdes Bueno.

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*Learning Through Research*

# Schedule of Events

## Thursday March 22

- 7:00 p.m. - 9:00 p.m. Elevator Speech Competition, WCC Living Room

## Friday March 23

- 11:30 p.m. - 1:00 p.m. Picnic on the Green, WCC Lobby
- 1:15 p.m. - 3:15 p.m. Student Posters I, Mabee Hall, WCC
- 3:30 p.m. - 4:45 p.m. Oral Presentations I, WCC
- 5:00 p.m. - 6:00 p.m. Inauguration Ceremony, Wynne Chapel
- 6:30 p.m. - 7:30 p.m. Campus Reception, Mabee Hall, WCC
- 7:30 p.m. Art Exhibit and Reception, Ida Green Art Gallery
- 9:00 p.m. Performance by the Austin College Improv Troupe, Ida Green Theater
- 9:00 p.m. Star Party, Idea Center Observatory

## Saturday March 24

- 8:00 a.m. - 9:00 a.m. Oral Presentations II, WCC
- 9:00 a.m. - 10:20 a.m. Oral Presentations III, WCC
- 10:30 a.m. - 11:00 p.m. Brunch, WCC Cafeteria
- 11:00 a.m. - 12:00 p.m. Honors Panel with President O'Day, WCC Living Room
- 12:00 p.m. - 2:00 p.m. Student Posters II, Mabee Hall, WCC
- 2:00 p.m. - 3:20 p.m. Oral Presentations IV, WCC
- 3:30 p.m. ACSC Music Recital, Craig Recital Hall
- 4:30 p.m. A.C.T. Bilingual Performance, WCC 231

# Suspension

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Send inquiries and submissions to:  
**[suspension@austincollege.edu](mailto:suspension@austincollege.edu)**

## Student Contributors

Acobyán, Anastasia	Fletcher, Nicolas
Adams, Mindalena	Flores, Savannah
Aguilar, Jessica	Foose, Aubry
Alejo, Esmeralda	Fu, Yue (Nancy)
Allen, Benjamin	Garner, Zoe
Alphonse, Justin	Gascich, Mikayla
Amin, Dev	Gilbert, Matthew
Anderson, Sophie	Gill, Alexandra
Andes, Elijah	Goldstein, Courtney
Andrle, Austin	Goodman, Abigail
Apgar, Lindsay	Grothues, Jared
Ayyappan, Kartika	Grundy, Emma
Barfield, Daniel	Hagge, Laurel
Behar, Joshua	Hankins, Spencer
Bernal, Amanda	Hao, Shutong
Bourcier, Emily	Hardy, Aimi
Bronaugh, Lois	He, Weiheng
Bundrant, Bethany	Herrera, Karla
Butterfield, Hannah	Hess, Isabella
Calhoun, Condey	Hood, Ryan
Carrasco-Bueno, Sandra	Huggins, John
Carrell, Bailey	Hunt, Hannah
Casey, Gary	Jacob, Steven
Charales, Ashley	Jess, Christian
Cheadle, Mary	Jimenez, Rachel
Chiu, Megan	Johnson, Katherine
Coe, Freyja	Jones III, Robert
Cooper, Christopher	Kackley, Isabella
Coronado, Julian	Kapp, Holly
Croninger, Christina	Kuehnhold, Katelyn
DeVaughn, Bryce	Kuncham, Manasa
Dewitt, Danielle	Kuppurajan, Vivek
Donovan, Brice	Laine, Erin
Dowdy, Truman	Lazarow, Brian Rael
Dowell, Jacob	Li, Matthew
Draaisma, Bridget	Li, Wenhao
Easley, Chelsea	Liang, Todd
Eppallappi, Divisha	Lide, Carlye
Farra, Jessica	Lindsey, Michael
Fasullo, Rosemary	Lopez, Katia
Finegan, Zaliah	Malhotra, Saloani

Malone, Keara  
 Marshall, Nicholas  
 Martin, Erin  
 Martin, Jacob  
 Martinez, Jae  
 Mathew, Joann  
 McCaskill, Lauren  
 McCurry, Deric  
 McDonald, Rebecca  
 McDonough, William  
 McFadden, Fredre  
 McGregor, Sean  
 Menocal, Kylie  
 Menocal, Logan  
 Messerle, Madison  
 Mitchell, Jessica  
 Moore, Robbie  
 Moran, Ivonne  
 Moran, Michael  
 Mortenson, Marie  
 Murugesan, Nikitha  
 Nam, Raphael  
 Nance, Kirstin  
 Natinsky, Eva  
 Newsom, Rachael  
 Nguyen, Brian  
 Nguyen, Trung  
 Ninan, Shamika  
 Nolting, Amanda  
 Nystrom, Spencer  
 Olaleye, Ololade  
 Oriz, Sarah  
 Ortiz, Tristan  
 Perales, Guadalupe  
 Perez-Huerta, Venecia  
 Pernik, Mark  
 Pham, Anh-Thu  
 Poe, Shelby  
 Pollard, Josh  
 Ramesh, Janani  
 Ramos, Norely

Ratliff-Johnson, Zsuzsanna  
 Reagan, Bennett  
 Reyes, Richard  
 Riyaz, Faran  
 Rodriguez, Selena  
 Rogan, Danielle  
 Rose, Audrey  
 Ross, Abigail  
 Rudd, Jaran  
 Ruiz, Cesar  
 Ruth, Clason  
 Ryes-Leon, Carlos  
 Saldivar, Azlin  
 Samiya, Nadia  
 Schone, Callin  
 Shah, Dilan  
 Shaw, Tyler  
 Smith, Sarah  
 Spurgin, Taylor  
 Stavrianopoulos, Niki  
 Sterken, Alexandra  
 Tessier, Veronique  
 Thomas, AnnaBeth  
 Thompson, Rachel  
 Thornburg, Emma  
 Tran, Matthew  
 Tupper, Elisabeth  
 Tuttle, Katherine  
 Urban, Rebekah  
 Vandereviere, Quinten  
 Vandergrift, Jillian  
 Vania Martinez, Monica  
 Waldie, Catherine  
 Wilkinson, Marissa  
 Winborne, William  
 Worstell, Bonnie  
 Zambrano, Estefany  
 Zee, Clara  
 Zhang, Congling  
 Zhou, Michelle  
 Zimmerman, Reid

# ACUMEN

## Call for Papers

*ACUMEN is Austin College's student-run journal of research. Are you involved in a research project on campus? Have you written a paper for class you are particularly proud of? Submit your paper for publication! All subjects welcome.*

### How to Submit

Send your research paper (with bibliography) as .doc or .rtf to [acumen@austincollege.edu](mailto:acumen@austincollege.edu)

### Submission Guidelines

- Submissions should be approximately 7-20 pages in length.
- Submissions may be the products of individual or class research, directed or independent studies. Please do not submit work that is up for publication elsewhere, such as honors theses or research done in collaboration with AC faculty.
- Students should consider their audience to be generally educated and well read. However, the emphasis on interdisciplinary exchange of ideas requires that technical terminology from any field be generally explained for the audience.
- Submissions may be selected for publication on a conditional basis, provided the student makes the necessary revisions.
- All papers must follow college guidelines for academic integrity.

For more information, or if you are interested in participating in Acumen as a member of the review board, please email the editor at [acumen@austincollege.edu](mailto:acumen@austincollege.edu).

# Committee

## **Coordinator**

Renee Countryman

## **Associate Coordinator**

Andrea Overbay

## **Humanities Representatives**

Tom Blake

Kirk Everist

## **Fine Arts Representatives**

Ricky Duhaime

Mark Monroe

## **Social Science Representatives**

Audrey Flemming

Ashley Tharayil

## **Sciences Representatives**

John Richardson

David Whelan

## **CREATE**

Lance Barton

## **Student Intern**

Deric McCurry

## **Administrative Support**

Amy Parsons

## Conference Music Recital

The *Scholarship Conference Music Recital* will be at **3:00 p.m.** on **March 24th** in **Craig Hall's Recital Hall**. The students who will be performing are:

Mindelena Adams

Norely Ramos

Truman Dowdy

Megan Chin

Jacob Martin

## Home Near and Far

Hannah Hunt and Brianna Burnett  
Art Department, Austin College

I present a series of square, black and white, photographs enhanced and embellished with embroidery. These photographs are representative of the emotions inspired by home and belongings. These include simple, positive memories I have held since childhood and more nuanced, conflicting emotions that developed as I matured. The home where I grew up has many emotional ties, none greater than family members, many still there. Conflicting emotions arise as I mature and confront real life problems of nearby environmental degradation with associated health and fitness concerns. In the end though my home is where I grew up and is the foundation of what I will be as an adult.

## Art Contest Winners

Congratulations to

The Winners of the 2018  
Abstract Book Cover Artwork  
Design Contest

**1st Place: Rachel Thompson**

**2nd Place: Christian Jess**

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*Learning Through Research*

## Elevator Speech Competition

Join us on **Thursday, March 22 from 7:00 - 9:00 p.m.** in the **Wright Campus Center's Living Room** for an Elevator Speech Competition. Prizes will be awarded (for first and last place). Students will be judged by special "celebrity" judges.

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Are you Artistic?

Are you Imaginative?

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**Suspension Literary Magazine**

POETRY  
FICTION  
DRAMA  
PHOTOGRAPHY  
ESSAY  
ART  
ORIGINAL WORK

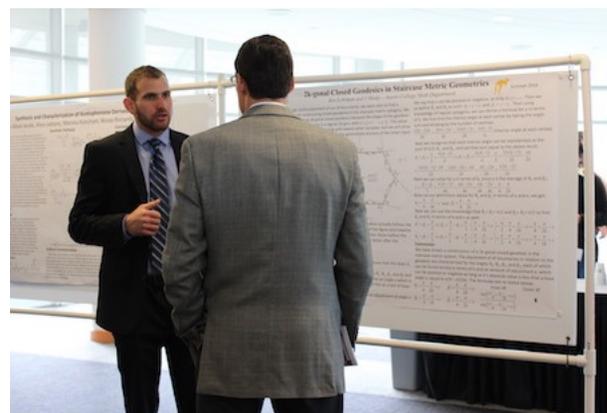
Send inquiries and submissions to:  
**[suspension@austincollege.edu](mailto:suspension@austincollege.edu)**

# Poster Sessions

Mabee Hall  
March 23 - March 24

Session 1: Odd Numbers  
Friday, 1:15 p.m. - 3:15 p.m.

Session 2: Even Numbers  
Saturday, 12:00 p.m. - 2:00 p.m.



## Factors Associated with the Endorsement of Emotional Abuse

Ruth F. Clason and Matthew Findley  
 Psychology Department, Austin College  
 Abstract #1

A. Stirling and G. Kerr (2012) describe emotional abuse as “a pattern of deliberate non-contact behaviors experienced directly by an individual within a critical relationship role that has the potential to be harmful to the individual’s emotional well-being.” The goal of this study is to determine if any demographic characteristics correlate with an individual’s endorsement of emotionally abusive behavior or endorsement of a victim’s responses. To determine which, if any, characteristics correlate, we examined each participant’s average abuse endorsement scores and response endorsement scores. To see what demographic information was significant, a variety of correlations and ANOVA analyses were run. The variables we correlated with the average scores included: number of relationships, length of longest relationship, and age. The variables we analyzed with the ANOVA were gender, major, class, sexuality, race, and whether or not the participant had been in a relationship.

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## Exploration of Metal-Templated Organogelators for Use in Dye-Sensitized Solar Cells

AnnaBeth Thomas and Andy Carr  
Chemistry Department, Austin College  
Abstract #2

Interest in improving viability of dye-sensitized solar cells (DSCs) has driven recent research in examining metallogels as alternative charge-transfer mediums to traditional liquid electrolytes. Additionally, previous work by Carr et al found successful urea-based organogelators capable of forming thermoreversible gels in a variety of organic and inorganic solvents. In this study, urea-based organic compounds containing pyridyl groups (L1 and L2) were synthesized in moderate yield and examined as potential ligands for eventual use in metallogelation of liquid electrolytes in DSCs. Compound L1 successfully complexed to silver(I) in THF to form amorphous, transient gels, whereas L2 successfully complexed to silver(I) in a mixture of THF/octane and in octane to form strong, durable gels.

## Asymptotic Properties in Staircase Metric Space-Times

Aimi Hardy and Jack Mealy

Mathematics and Computer Science Department, Austin College

Abstract #3

This project expands on traditional notions of geometry and relativity by using geometric principles to examine atypical space-time systems. We do this by constructing and examining a variety of general (1,1) space-time systems in the category of staircase metric geometry. Various asymptotic triangles in a staircase metric system with straight boundaries and varying dilation factors are examined to determine convergence of area, such that a class of asymptotic triangles with finite space-time area is constructed. The project includes proofs concerning the calculation of space-time angle, which involves a generalization of Snell's Law, and space-time area, which was found to be analogous to Euclidean area, and undertakes the calculation of dilation factors in the various systems. Two additional systems with curved boundaries are examined to determine gravitational effects.

## Bilingual Performance

The Bilingual Performance of *Literatura, Arte y Cultura Hipánica* will be at **4:30 p.m. on March 24th** in WCC 231:

Sandra Carrasco

Karla Herrera

Kirstin Nance

Ivonne Moran

Sarah Smith

The Bilingual A.C.T. Group will perform a stage-reading during the Spring 2018 ACSC. The performance will be based on some texts written by AC students with four literary female characters as protagonists (since March is the month of women rights): Juliet, Ophelia (from Shakespeare's works), Melibea, and Adela (from two Spanish plays).

Director: Lourdes Bueno

## Impacts of the 2011 Fukushima Nuclear Accident on Japanese Fauna

Jared Grothues, Veronique Tessier, Bridget Draaisma, and Mindy Landeck  
East Asian Studies Department, Austin College  
Abstract #4

Japan's so-called "Triple Disaster", comprised of a massive earthquake, devastating tsunami, and loss of containment at the Fukushima Dai-Ichi nuclear reactor of March 2011, continues to negatively impact animal populations in the surrounding regions. This project examines those multiple impacts on livestock animals, marine life, and insect populations in the months and years following the initial release of radiation in March 2011, and continuing to the present day. This poster will present data to support a full assessment of the current situation in the region in various animal populations, even as the cleanup and containment efforts remain ongoing. Our analysis will consider the scientific, economic, and social aspects of the disaster and responses to it at the international, state, and local levels.

## Efficacy of Chronic Disease Self-Management Education in Improving Quality of Life

Kylie Menocal and Renee Countryman  
Public Health Department, Austin College  
Abstract #5

The growing burden of chronic disease is a high priority in both developed and developing nations, and Mathers and Loncar (2006) project that noncommunicable diseases will account for a clear majority of morbidity and mortality by 2030. The extreme rate at which some countries are doubling and tripling their elderly population – the population with the highest rates of chronic disease (Nation Council on Aging, 2017) – is of major concern to global public health groups (He, Goodkind, and Kowal, 2016). Health-related quality of life (HRQOL) is yet another public health concern, where HRQOL is consistently impacted by the presence of a single chronic disease and is even further reduced in the presence of chronic disease comorbidities (Alonso et al., 2004). HRQOL, thus, is of concern in the elderly population, specifically, as they are forced to live with chronic diseases and their multiple comorbidities. Chronic disease self-management education (CDSME) professionals across the country were interviewed to identify the efficacy of CDSME programs in improving perceived long-term quality of life and the program's overall success. Participants were interviewed with a series of HRQOL and CDSME protocol, effectiveness, and community fidelity questions. Based on existing research, we predict that a long-term chronic disease self-management education program has a positive impact on perceived long-term quality of life and includes a successful, universal protocol for current and continued health promotion and disease management.

## Conference Music Recital

The *Scholarship Conference Music Recital* will be at **3:30 p.m.** on **March 24th** in **Craig Hall's Recital Hall**. The students who will be performing are:

Megan Chiu  
Jacob Martin  
Truman Dowdy  
Mindalena Adams  
Norely Ramos

## Wright Campus Center 254

### Modeling Gravitational Wave Back Reaction

Eva Natinsky, Niki Stavrianopoulos, Callin Schone, Danielle Dewitt, William Winborne, Matthew Gilbert, and Don Salisbury  
Physics Department, Austin College

This year's Nobel Prize in physics culminates decades of controversy, affirming now definitively approximation techniques that relate the production of gravitational waves to their back reaction on astrophysical sources. This talk will review aspects of the debate among theorists – beginning with Einstein himself in 1916. In 1969, William Burke, a student of the 2017 Nobel recipient, made significant advances in applying a procedure called asymptotic matching to the problem. We will illustrate the procedure, showing a movie of an analogous mechanical system consisting of a spring coupled loosely to a string which carries away a wave. Then we will show, employing another Mathematica simulation that we have created, how two orbiting stars spiral inward as a consequence of the emission of gravitational waves.

## Excavation at Huqoq (Summer 2017)

John Huggins and Martin Wells  
Classical and Modern Language Department, Austin College  
Abstract #6

A Late Roman (5th century CE) synagogue at Huqoq, a few miles away from the Sea of Galilee in northern Israel, has been the site of an ongoing archaeological excavation since 2011, overseen by the University of North Carolina. Excavations have revealed not only this original synagogue with a collection of astounding and unique mosaics, but also an unexpected medieval successor to the building, all of which are under the remains of an early 20th century village. Over four weeks of early mornings and long hours in the dirt, along with other students from across North America, I learned what it is like to be a part of such a project and insight to a few specialty fields and processes of archaeology. At the end of each day and during breaks from working, I recorded the events and finds of the day in the detailed journal I kept. Once the digging had ended each day, we would attend lectures by the wide variety of experts on the site. Specialists of architecture, pottery, frescoes, and the conservator of the mosaics at the site were among these. In this poster, I will present my experience and the results of my first season at Huqoq.

## Learning Language, Fostering Communication

Jessica Aguilar and Julia Shahid  
Education Department, Austin College  
Abstract #7

This study evaluated the current learning strategies identified by language learners as highly beneficial for successful foreign language acquisition. A modified version of the Strategy Inventory for Language Learners (SILL) was administered to 40 current foreign language learners. An interest and motivation interview was also conducted with the participants to identify the reasons behind their decision to study a second language. The hypothesis was that language learning strategies that are based on social interaction will be most reported as contributing to a successful second language acquisition for learners. The data collected supported the hypothesis and provided valuable insights into language learning that can help structure future foreign language classroom teaching styles.

## Raising a Feminist: The Mother Daughter Bond Between the Dames des Roches

Joshua Behar and Stacey E. Battis  
Classical and Modern Language Department, Austin College

The literary community of 16th-century France represents an era where salon culture permitted the exchange of ideas, knowledge and debate between the sexes. The mother and daughter poets Madeleine and Catherine des Roches were the center of the Poitiers literary circle in 1570. Surrounded by poets like Louise Labé and Jean de Morel, these women distinguished themselves by promoting the establishment of a literary community founded by women for women. In this paper, I explore the life of Madeleine des Roches, how her writing created a unique maternal ethos, and how this ethos impacted the development of the feminist ethos of Catherine des Roches. Madeleine had a limited literary career due to remarriage and dealing with the death of her children before the birth of Catherine. It is through several of her poems, like “Epistre aux dames” and “Epistre à ma fille” that she reflects on these constraints. Her work represents a call to women, and above all to Catherine, to encourage a sense of sisterhood and promote the development a female literary community. As a result, as I will argue, Madeleine develops a feminist ethos dominated by a rhetoric of motherhood. This maternal influences Catherine to live her life as an active writer and feminist who ultimately rejects the prospect of marriage in order to further her literary career. I show that a comparative exploration of the poetic and feminine ethos of this mother-daughter duo are paramount to

## Birds Trapped in a Cage: The Feminism of the Des Roches

Lauren McCaskill, Keara Malone, and Stacey Battis  
Classical and Modern Language Department, Austin College

In this paper I examine the work of Madeline and Catherine Des Roches through the lens of H el ene Cixous's feminist text, *La Rire de la M eduse*. The Des Roches are widely viewed as great feminist figures of 16th-century France, as their refusal to conform to rigid social expectations allowed them the opportunity to have a unique voice in what was typically a male dominated space. However, they are still women of their time, and for this reason, I argue that there are limits to the feminism of the Des Roches that have not yet been adequately explored. I aim to analyze the ways that their actions and work perpetuate the patriarchal structure of 16th-century France, and in what ways they chisel away at those structures. In order to accomplish this, I chose to use *La Rire de la M eduse*, as it is an excellent example of mid-20th-century French feminist thought. Such an examination will allow us to appreciate the ways in which the Des Roches align with what is considered to be modern feminist thought, and in the ways that we might need to rethink the label we have given to them.

## The Exploration of Aldol Condensation Towards the Synthesis of Bis-urea Organogelators

Anh-Thu Pham and Andy Carr  
Chemistry Department, Austin College  
Abstract #8

Thermoreversible organogelators have various practical applications from the ability to provide a safer and more efficient way to transport and clean up oil to being a valuable tool in the medical industry. Preceding literature have found bis-ureas organogelator with increasing alkyl tail lengths increased the Van der Waals surface area in aggregation which made for a better, sturdy gel. With the hypothesis of the addition of alkyl tails substituents on the organogelator would contribute to the stability of the gel, we aimed to synthesize organogelator with four alkyl tails. The aldol condensation reaction allowed not only the addition of more alkyl tails but also the possibility of attaching differing types of tails onto the organogelator thus to make it adept to gel a more diverse array of organic solvents, both polar and nonpolar. Acetophenone and benzaldehyde derivatives were coupled through the aldol condensations and placed through Dr. Carr's patented bis-urea procedure.

## The Intertwining of Classical Stories in La Bella Durmiente by Jerónimo López Mozo

Ivonne Moran, Katia Lopez, Sandra Carrasco, Karla Herrera, and  
Lourdes Bueno  
Classical and Modern Language Department, Austin College  
Abstract #9

Once upon time... there was a Spanish writer who wanted to “play” with some traditional fairy tales in order to recreate a new story. Jerónimo López Mozo utilizes the original fairy tales as a starting point from which to draw. The main character, Francis, becomes entangled in the fictitious world of fairy tales, thus creating a sense of bewilderment. Francis becomes a part of different fairy tales, anxious to find his own princess to awaken with a kiss. However, the fairy tales that we have so often heard are unlike real life, and Francis’ journey shows that not every story has a happy ending. Therefore, our purpose with this research is to analyze the different fairy tales mentioned in the text and to discover how López Mozo brings into play these traditional tales to create a contemporary and original story.

## Wright Campus Center 254B

### Writing Women in Renaissance France

#### The Woman Question: Interpretive Ambiguity in The Heptameron

Keara Malone, Joshua Behar, Lauren McCaskill, and Stacey  
Battis

Classical and Modern Language Department, Austin College

Among the many ideas explored during the French Renaissance were the debates over the place and duties of women in society. Many 16th-century French authors spent their time writing texts that attempted to participate in this querelle des femmes, or the woman question. Queen Marguerite of Navarre, wife of Henry of Navarre, was no exception. In her Heptameron, Marguerite tells us of ten pilgrims who are forced to take shelter from a storm for seven days. In the abbey where they find refuge, they tell each other stories to pass the time, but each of these has a moral and is preceded and followed by discussion from the storytellers. This could, then, be Marguerite’s own voice, but finding her in these pages has proven rather difficult. However, this ambiguity is what is central to the meaning of The Heptameron. The voice of Marguerite is well-hidden in the voices and reactions of her storytellers. Of the five female storytellers, two have been studied in detail, but the other three have generally remained out of focus. My work on revealing the voice of Marguerite focuses on these three storytellers, and shows that we can find Marguerite’s ambiguous answer to the woman question in their own voices. I show that an analysis which includes special attention to these three storytellers showcases more completely the ambiguity that reflects Marguerite’s proto-feminism found in The Heptameron.

## Wright Campus Center 254A

### Gendered Bodies in East Asia: Four Views

Tristan Ortiz, Azlin Saldivar, Guadalupe Perales, Jae Martinez,  
and Mindy Landeck  
East Asian Studies Department, Austin College

This panel adopts a broad view of East Asia to examine controversial practices and historical scandals connected to the human body – spanning themes of bodily modification, criminal mutilation, human trafficking, and family planning practices. Tristan Ortiz's presentation will consider the now-outmoded custom of foot-binding in China, revealing it both as a bodily modification directed toward male pleasure as well as one that created a particular type of community among Chinese women. Jae Martinez will consider the scandalous case of Abe Sada, a woman whose 1936 murder and emasculation of her lover resulted in decades-long impacts upon Japanese attitudes surrounding female sexuality. Guadalupe Perales' paper challenges conventional readings of the history of inter-Asian sexual slavery in East Asia during the Pacific War era, revealing how both Japanese imperialism and social patriarchy shaped the nature of these human rights abuses. Finally, Azlin Saldivar's paper examines China's recently rescinded one-child reproductive policy through the case study of a rural village in which residents bucked national trends toward the preference of male offspring in favor of choosing daughters over sons in their family-planning decision-making processes. Each of these projects engages the manner in which East Asian notions of the human body, and human rights, have intersected and emerged at key historical moments.

### Loss of SPT4 as a Global Rescuer of Growth Defects Caused by a *pgm2Δ* Mutation in *Saccharomyces cerevisiae*

Lindsay Appgar, Rachel Jimenez, Courtney Goldstein, and David Aiello  
Biology Department, Austin College  
Abstract #10

Phosphoglucomutase (PGM) is responsible for the interconversion of glucose-1-phosphate (G1P) and glucose-6-phosphate (G6P), a key step in carbohydrate metabolism. PGM2 is the major isoform of PGM in *Saccharomyces cerevisiae*. Mutants lacking PGM2 exhibit glycogen accumulation, slow growth, and calcium homeostasis defects on galactose containing media. Functional secretory pathways are needed for proper intracellular calcium homeostasis. GDT1 codes for a calcium transporter localized to the Golgi apparatus. Mutants lacking GDT1 are haploinsufficient, have a lower competitive fitness, and are sensitive to extracellular calcium. GDT1 has a similar function to PMR1, which codes for another calcium transporter on the Golgi apparatus. Loss of either PMR1 or GDT1 is shown to exacerbate defects of the *pgm2Δ* mutant on galactose containing media, a phenotype rescued by the addition of low levels of extracellular calcium. Separate studies in our lab have independently characterized that loss of the transcriptional elongation factor encoded by SPT4 can suppress phenotypes associated with the *pgm2Δ* mutation. This study examined how the *spt4Δ* mutation affects *pgm2Δpmr1Δ* and *pgm2Δgdt1Δ* mutant phenotypes. Deletion of SPT4 rescues the exacerbated growth defects of the *pgm2Δpmr1Δ* mutants and the *pgm2Δgdt1Δ* mutants. These results indicate that loss of SPT4 may be a global rescuer of *pgm2Δ* mutant defects.

## “Islamophobia”: A Content Analysis on Muslim Discrimination in American Journalism

Deric McCurry and Mike Fairley  
 Communication Department, Austin College  
 Abstract #11

U.S. news media play a role in “Islamophobia” through negative portrayals of Islam. Recent examples from relevant media sources are analyzed in how they frame events to construct otherization, stereotyping, racism, ignorance, and misunderstanding in relation to Islamic topics. Journalists play a key role in exacerbating institutionalized bigotry by consistently framing Islam in negative terms. Through careful contextual analysis of selected American journalism, focusing on key words, phrases, and framing, it is evident that across the political spectrum in media there is a relatively apparent bias against Islam, presenting a major problem for racial and religious relations moving forward.

## Analysis of Asian-Peruvian Authors

Audery Rose and Elena Olivé  
 Classical and Modern Language Department, Austin College

The project will analyze several poetic works of Asian-Peruvian authors, including poems by noted female authors Julia Wong Kcomt and Doris Moromisato. Works will include the former’s *Un Salmon Ciego* (2008) and the latter’s *“Paisaje Terrestre* (2007). A specific focus will be the role that nature plays in the particular formulation of immigrant poetry, and how it differs from that of Asian poetry. How does Asian culture influence the authors? How does nature help reveal the immigrant experience? How does nature reflect Asian identity and the experiences of a Chinese/Japanese immigrant in Latin America?

## Transatlantic Links: Exiled Art of the 20th Century

Rachael Newsom and Elena Olivé

Classical and Modern Language Department, Austin College

This paper analyzes the effect of homeland displacement on the work of artists exiled from dictatorships in Spain and Cuba during the 20th-century. I first give a broad definition of exile to explain its varied nature. To understand the reasons behind exile, I examine the political and sociocultural atmosphere during the totalitarian regimes of Spain and Cuba. The works of several exiled artists from those countries are then analyzed based on content, style, and technique, showing how these artists expressed their dissatisfaction with totalitarian rule, the feelings of isolation they experienced, and the historical memory of their mother country. I argue that upon crossing the Atlantic, the artists reinforced the historical link between Spain and its former Latin American colonies by reaffirming the heritage they share and introducing contemporary artistic styles to the new country. Influenced by the state of exile itself along with other accompanying factors such as religion and oppression, the artists also adopted some of the characteristics of the artistic movement in the new country. Their exodus and the resulting body of work emphasized the trans-Atlantic connection that continues to link Spain and Latin America today.

## Assessing Chaperone Function of $\alpha$ B-Crystallin Mutants within the N- and C-Terminal Domains

Danielle Rogan and James Hebda

Chemistry Department, Austin College

Abstract #12

Aggregation of proteins in the eye causes cloudiness in the eye lens, known as cataracts, which can eventually lead to blindness. Although cataracts can be treated with surgical procedures, a method to prevent or delay to the onset of cataracts would increase the quality of life for anyone affected by this disease.  $\alpha$ B-Crystallin ( $\alpha$ BX) is a highly expressed protein in the eye lens that exists in a range of oligomeric states (20-40 subunits). This protein helps prevent misfolding and aggregation of other proteins by acting as a chaperone. In the oligomeric form, the transient binding of the C-terminal tail from one monomer to another (strand exchange) has been hypothesized to partially govern both chaperone function and oligomeric size. The C-terminal tail contains a palindromic sequence hypothesized to allow bidirectional binding. To characterize possible function of the palindromic sequence, a series of mutants were designed to break the symmetry of the sequence by introducing electrostatic repulsion to bias one orientation over the other. Chaperone function of the wild type (WT), K92E, and E156K mutants in the palindromic sequence were tested to determine the effects of temperature and pH levels using insulin as a model aggregation system. In addition, a relatively new 3E mutant with three mutations of Serine to Glutamate within the N-terminal domain was also tested using the same insulin aggregation system. Preliminary results suggest that the 3E mutant maintains activity at temperatures and pH's where WT activity has been previously shown to be suppressed. These data will further the understanding of oligomer formation and chaperone function in a protein whose loss of function is linked to cataract disease.

## Characterizing Cancer Hallmarks in PA28 $\gamma$ -/- Cancer Clones and A9 Tumor Cells

Estefany Zambrano, Bethany Bundrant, and Lance Barton  
Biology Department, Austin College  
Abstract #13

Cancers make up an extremely diverse family of diseases, with a set of characteristic hallmarks that manifest universally. Understanding the various molecular mechanisms through which cells obtain these hallmarks is an important step towards the development of anticancer treatments. PA28 $\gamma$ , a proteasome activator that stimulates the degradation of proteins, is upregulated in a number of different cancers and has an established role in tumor growth and maintenance. Cells deficient in PA28 $\gamma$  were mutagenized and selected for anchorage independence, a phenotype exhibited by many cancer cells. In order to determine the extent to which these mutagenized PA28 $\gamma$ -/- "Cancer Clones" had taken on cancer-like characteristics, this investigation examined genomic instability and invasive capabilities in these cells. Both of these hallmarks were also investigated in the established A9 tumor cell line. A9 cells exhibited the highest degree of genomic instability and invasiveness, while PA28 $\gamma$ -/- Cancer Clones exhibited a phenotype intermediate between A9 and controls. Additionally, the genes *hras*, *akt1*, and *p53* were sequenced in A9 and PA28 $\gamma$ -/- Cancer Clones to see if there was any deviation from database sequences. A mutation in one or more of these genes is a commonality seen in many different types of cancer. Taken together, these data suggest that A9 tumor cells exhibit cancer-like characteristics to a greater degree than PA28 $\gamma$ -/- Cancer Clones, however, both cell lines exhibited more cancer-like characteristics than control cells.

## Wright Campus Center 255

### Literatura, Arte y Cultura Hipánica

#### Los Efectos de Terror y Memoria en el Desarrollo de Paulino y Carmela

Karla Herrera and Elena Olive  
Classical and Modern Language Department, Austin College

The Spanish Civil War (1936-1939) left lasting effects on the citizens of Spain regardless of their participation in the war. The bloodshed and traumatic events, coupled with living under Francisco Franco's regime, created a terrorized society haunted by memories of the war. In this paper, I analyze two of the characters in José Sanchis Sinisterra's play, *¡Ay, Carmela!*, by demonstrating how the civil war affects them, causing one of the characters to sympathize with the leftist Republican side of the conflict. Focusing on the theme of memory, I contrast how the playwright portrays his character Paulino with how Carlos Saura depicts him in the movie adaptation. This character analysis shows how living through a tumultuous period in a war-ridden country can lead to memories that often catalyze unintended actions.

## Modernist Difficulty and Marianne Moore

Joshua Pollard and Greg Kinzer  
English Department, Austin College

Marianne Moore, a frequently overlooked Modernist poet, often explores America's scenic landscapes, and is essentially a nature poet, though quite unlike any who preceded her. She infamously blends and celebrates the beauty of ordinary language, sampling from sources like business documents and national park brochures, with the austerity of untouched nature, capturing its remoteness with her equally austere poetics. Like many of her other more canonical Modernist contemporaries, Moore's poetry presents its own unique difficulty due to her formal innovations in meter and structure, her complex syntax, and her revolutionary use of syllabic rhyme. This can be disconcerting for readers accustomed to traditional poetic forms, and forces one to adopt the uncomfortable notion that art can be appreciated before it is understood, although according to Moore, "enigmas are not poetry," so the inexperienced reader should rest assured that satisfactory meaning can be derived no matter how elusive it might seem upon a first reading.

## Does Familiarity with the Charity Affect the Prosocial Behavior of the Donors?

Sean MacGregor and Matthew Findley  
Psychology Department, Austin College  
Abstract #14

In this project, I wanted to find out whether or not one's familiarity with a given charity (or the subject matter of that charity) would increase the likelihood of a donation to that charity. To effectively test this, I researched past studies related to prosocial behavior. Using the knowledge I gained from these studies, I created measurements for familiarity with each of my hypothetical charities, as well as measurements that told me how likely each participant was to donate to each individual charity. I found that the more familiar one is with the charity, the more likely one is to donate to that charity. This is good news for charity organizations seeking donations, as they can use this information to effectively advertise to individuals who are familiar with charities and perhaps even raise awareness for the subject matter of their charity to increase donations.

## Molecular Line Survey Data of IRC+10216 from 96-116 GHz

Dev Amin and Lindsay Zack  
Chemistry Department, Austin College  
Abstract #15

IRC +10216 is a carbon-rich asymptotic giant branch (AGB) star and has been an object of interest due to the detection of over 50 distinct molecules in its inner and outer circumstellar shells. In this work, we analyzed data from a new molecular line survey of IRC+10216 in order to identify new molecules and to further characterize the chemical environment. Archived data, collected over the past 20 years, were combined with new measurements taken between April 2016 and June 2017 using the Arizona Radio Observatory (ARO) 12 m telescope on Kitt Peak, AZ over the 96-116 GHz frequency range. There was a detection of 305 spectral lines, with close to 90 identified. The identified lines were assigned to different molecules and radicals, some of which include CO, *c*-SiC<sub>2</sub>, 29SiC<sub>2</sub>, and C<sub>4</sub>H.

## Mina Loy Versus the Patriarchy

Zsuzsa Ratliff-Johnson, Josh Pollard, Erin Laine, Salina DuClos,  
and Greg Kinzer  
English Department, Austin College

With the women's movement gaining momentum in the early 1900s, women's voices began to grow louder than ever. Mina Loy, a prominent Modernist poet and vocal feminist writer, uses her skills as a poet to not only bring attention but also to attack institutions such as marriage, something she argues is glorified prostitution. Modernism's ideas and concepts give Loy the ability to loudly reject materialistic society and push the limits of what society says a woman can (or can't) do. Unlike earlier writers who embraced a more "flowery" use of language, Loy employs a blunt treatment of poetry and prose to describe the female experience and challenge the ideals of patriarchal male society.

## Wright Campus Center 231

### Modernism, Difficulty, and Gender

#### "Picking Periwinkles from the Cracks": Marianne Moore and Verbal Collage

Erin Laine and Greg Kinzer  
English Department, Austin College

Marianne Moore, a prominent American Modernist poet of the early 20th century, pushes the boundaries of what poetry means through her intermixing of language. Moore's self-described "passion for actuality" allows room to experiment with often unexpected materials such as business documents, intertwining them with everyday language. Just as visual artists may paste obscure materials onto the canvas to create new textures, Moore amplifies the imagery in her poetry through her meticulous incorporation of quotations from documents ranging from school books to nature pamphlets. Because Moore does not adopt these insertions as her own, her quotations create a verbal collage that sets her work apart from poetry of the past in intriguing and often difficult ways.

## Improvement of Telescope Guiding at the Adams Observatory

Callin Schone, Danielle Dewitt, Matthew Gilbert, and David  
Baker  
Physics Department, Austin College  
Abstract #16

Research telescopes are outfitted with high precision motors to track celestial objects, yet even the best telescopes experience drift throughout the night. An additional guide camera can monitor the location of a "guide star" and send small corrections to the motors depending on the drift of the guide star. The purpose of this research was to install an auto guiding system at the Adams Observatory. We tested the capabilities of our guide camera and determined the optimal settings required for the most precise guiding possible. Initially, the addition of the guide camera negatively affected the images taken by the main imaging camera, and we modified the guide system to minimize these effects. This new guiding system has dramatically improved tracking of the telescope at the Adams Observatory.

## Meat-Eating in Japan: A Historical View

Freyja Coe and Mindy Landeck  
East Asian Studies Department, Austin College  
Abstract #17

This project examines the evolution of Japanese foodways over time with a particular focus on the practice of meat consumption, a practice which has largely emerged and become prevalent only within the last century. How did early religious and social prohibitions against meat consumption give way to a rapidly expanding rates of meat consumption in the modern era? How and why did the Japanese population come to include meat as a central part of its diet? What animal groups were consumed in this way and what meanings were attached to various types of animal flesh? Finally, the project will explore the lasting repercussions of meat consumption on contemporary Japanese culture and society.

## Oral Session IV

March 24, 2:00 p.m. – 3:20 p.m.

Wright Campus Center 231

Wright Campus Center 255

Wright Campus Center 254A

Wright Campus Center 254B

Wright Campus Center 245



## Increased Expression of PA28 $\gamma$ is Linked to Carcinogenesis Through Hallmarks of Cancer

Joshua Behar, Amanda Nolting, Divisha Eppallappi, and Lance Barton  
Biology Department, Austin College  
Abstract #18

Cancer develops through the accumulation of mutations resulting in the acquisition of cancer hallmarks. PA28 $\gamma$ , an activator of the 20S proteasome, plays a vital role in cell cycle regulation and therefore the pathways that lead to acquiring selected hallmarks. Increased expression of PA28 $\gamma$  was found to be four-fold greater in wild-type cancer clones (WTCC) and ten-fold greater in A9 cell lines as compared to wild-type murine embryonic fibroblast cells (WT-MEF). Cell lines were analyzed for phenotypes of cancer. Karyotyping and flow cytometry reveal the degree to which genomic instability acts as an enabling characteristic of carcinogenesis. Activation of invasion and metastasis were evaluated through scratch and transwell assays. The greatest migratory potential in A9 followed by WTCC. A9 and WTCC were capable of invasion while WT-MEF were not. Gene sequencing and subsequent analysis of the p53 tumor suppressor gene revealed shared point mutations in WT-MEF and WTCC. Identical point mutations were found in the akt-1 oncogene pleckstrin homology domain in WTCC and A9. Drug response to Akt-1 Inhibitor VIII illustrated increased viability in A9 and WTCC over WT-MEF following inhibition of the PKB/Akt pathway. Taken as a whole, the magnitude of cancer hallmark expression is shown to increase as PA28 $\gamma$  expression increases. PA28 $\gamma$  is thus implicated in a role of carcinogenesis and the severity through which cancer phenotypes are expressed. While future research is needed to elucidate the mechanisms by which PA28 $\gamma$  helps promote carcinogenesis, these experiments have potential to guide decisions regarding therapeutic treatment in cancers that elevate expression of PA28 $\gamma$ .

## Archeological Methodology in Ancient Sikyon, Greece

Kirstin Nance and Martin Wells

Classical and Modern Language Department, Austin College  
Abstract #19

The archeological site of Ancient Sikyon is located in the Corinthia in the northern part the Peloponnese, Greece. Since 2013, excavations have been carried out at Sikyon under the direction of Professor Yannis Lolos of the University of Thessaly and the Greek Archaeological Service. Under the supervision of Dr. Martin Wells, I participated as a member of the archeological team in the summer of 2017 for 6 weeks. The team is currently excavating the marketplace of Ancient Sikyon. In my time on site, we were digging in a Late Roman (5th century CE) industrial area. The excavation team was international, with representatives from Greece, Canada, France and the U.S., most participants, including myself, lived in villages located near the site. As a member of the team I learned proper excavation techniques using the Corinth system, and learned procedures for processing and conservation of artifacts after they came out of the ground. My participation in excavating this site contributed to the materials collected and assisted with the overall understanding of what people did in this area in the 5th century CE. In this poster, I will outline my experiences and the extensive knowledge I have gained while working on this excavation.

## Student Honors Panel with President Steven O'Day

Wright Campus Center Living Room

11 am - 12 pm

Mark Pernik - Neuroscience  
Bethany Bundrant - Biology  
Deric McCurry - Political Science  
Lissie Tupper - English



## Extracurricular Involvement and Academic Motivation Mediated by Social Support in Predicting Stress

Nicholas Marshall, Kartika Ayyappan, Katherine Tuttle, and  
Peter Marks  
Psychology Department, Austin College  
Abstract #20

College students often experience stress as a result of the new responsibilities of managing academics, social life, and other commitments, including extracurricular activities (Civitci, 2015). The current study investigated whether perceived social support moderated the relationship between extracurricular involvement and perceived stress. 89 Austin College psychology students completed four online self-report questionnaires to assess perceived social support, perceived stress, academic motivation, and academic involvement. Involvement in extracurricular activities was coded in a binary fashion; 76 respondents were concurrently involved in extracurricular activities, and 13 participants were not. As expected, we found significant correlations between social support and both perceived stress ( $r = -.32, p < .01$ ) and academic motivation ( $r = .40, p < .01$ ). An independent sample t-test showed that participants who reported being involved in one or more extracurricular activity(s) had a higher level of perceived stress than those not involved ( $t = -2.17, p < .05$ ). Multiple regression analyses determined that, contrary to hypotheses, social support did not interact with extracurricular involvement to predict levels of perceived stress. Our study's findings indicate that as perceived social support decreases, perceived stress increases. This study also found that social support was associated with increased academic motivation. Both of these bivariate findings suggest that social support may play an important role in social and academic well-being among college students. However, our analyses did not support the hypothesis that those who were involved in extracurricular activities and experienced more social support would experience less stress.

## Effects of a High Fat Diet on Ghrelin Concentrations within Thirteen-Lined Ground Squirrels (*Ictidomys tridecemlineatus*)

Monica A. Vania Martinez and Jessica Healy  
Biology Department, Austin College  
Abstract #21

Ghrelin is an orexigenic hormone produced by the endocrine cells within the mucosal layer of the stomach. During low energy conditions this peripheral hormone enters the bloodstream and stimulates food intake which in turn increases adiposity within rodents. Previous literature reports that a high polyunsaturated fatty acid diet creates conditions for low ghrelin secretion within the organism, yet few studies confirm whether this pattern is applicable to the Thirteen-Lined Ground Squirrel (*Ictidomys tridecemlineatus*). In 2016, 6 individuals were placed in either control or high polyunsaturated fatty acid ad libitum diet. Enzyme immunoassays were used to measure ghrelin concentrations within blood samples taken from each organism prior to hibernation. Ghrelin concentrations in post-hibernating individuals were measured within the anterior and posterior dissections of the stomach with the use of western blots. There was no statistical difference between high fat and control diets in ghrelin pre-hibernation. Observing the effects of ghrelin concentration within a high polyunsaturated fat diet will give more insight into the physiological mechanisms underlying energy balance and allocation within *Ictidomys tridecemlineatus*.

## Modern Political Theatre

Christopher Cooper and Kirk Everist  
Theatre Department, Austin College

In this paper I examine some of the influence theatre has had on the modern world. While theatre has been largely thought of as an instrument of entertainment, it has been used as a tool for political action and change – as a weapon against oppressive regimes, or as a means of helping impoverished communities. I intend to analyze a few examples of these uses from South America, Russia, India, and elsewhere to examine how theatre was used in these places for sociopolitical or economic change. My goal is to shed more light on how theatre exceeds its goals as spectacle and can serve to help change whole communities.

## Women Speak Too Much: Myth or Realisty?

Sean MacGregor and Truett Cates  
Classical and Modern Language Department, Austin College

The common misconception that women speak quantitatively more than men do can be found across cultures, including those of Japan, the Maori, and the West. When looking at linguistic research around the world, the simple idea that women are much more talkative than men does not hold up. Rather, there is evidence to suggest a variety of factors that play into whether or not each gender is more or less talkative. The amount of words said by each gender is often affected by various factors such as the context of the speech as well as the cultural views held by the particular culture being discussed. This assumption that women are more talkative than men is largely an issue of attitudes towards genders in each different culture. Often the notion that women talk more than men is used to belittle women, suggesting that the idea originates as a sexist bias rather than an observation based in fact.

## Synthesis and Characterization of a New Phenothiazine-Based Ligand

Benjamin Allen and Bradley Smucker  
Chemistry Department, Austin College  
Abstract #22

The synthesis and characterization of the redox-active ligand phenothiazinedithiocarbamate is reported. The yellow ligand exhibits a reversible oxidation and its coordination to platinum(II) was also investigated.

## A Study on Pain Sensitivity and Competitiveness

Selena Rodriguez, Mary Cheadle, and Lisa Brown  
Psychology Department, Austin College  
Abstract #23

We conducted a correlational study examining variations between athletes and non-athletes in their pain sensitivity and competitiveness. We measured competitiveness and pain sensitivity using validated self-report scales. We also measured status as an athlete, presence of past injuries, and severity of past injuries. Our hypothesis was that there would be a positive correlation between competitiveness and pain sensitivity. We found that there was no significant correlation between pain sensitivity and competitiveness. It should be noted that we found a significant positive correlation between severity of injury and competitiveness, as well as a significant relationship between athlete status and pain sensitivity, with athletes reporting lower pain sensitivity.

## Wright Campus Center 254B

### Investigation of Amide and Urethane Gelators with Two Tailed Branched Aromatics

Nicolas Fletcher and Andy Carr  
Chemistry Department, Austin College

Organogels have possible uses in oil spill remediation and safer transportation volatile organic compounds. Bis-ureas have proven to be effective gelators when each urea is flanked by two alkyl tails. The goal of the research was to synthesize various organogelators with similar tails on the periphery of the structure while changing the hydrogen bonding functional group from urea to urethane and amide. Synthesis of the urethane derivatives was started with alkylation of 3,5 dihydroxybenzaldehyde. The aldehyde was then reduced to the alcohol with sodium borohydride. The isolated alcohol was reacted with a diisocyanate to produce the urethane gelator. The amide gelator was synthesized from the alkylated aldehyde which was transformed to the oxime and reduced to the primary amine. The amine was then reacted with sabacoyl chloride to generate the desired gelator. Additionally a urea-amide gelator was synthesized from an alkylated methyl benzoate. Of the gelators created the urea-amide produced the best gelation data with a critical concentration of 0.28 wt% (3.75 mM). Synthetic details and gelation data for other derivatives will be presented.

## Midnight Solstice

Brian Rael Lazarow and Peter Anderson  
English Department, Austin College

A full length novel that I worked on with Peter Anderson in an Independent Study course. The story is a work of young adult, science fiction with strong literary elements. I will speak about the process of crafting the novel and will read an excerpt for the audience. To my knowledge, no book projects have ever been presented previously, thus making this a unique project to present at the conference.

## Improved Calibration at the Adams Observatory

Carlos Reyes-Leon, William Winborne, Sophie Anderson, Carlye Lide, and David Baker  
Physics Department, Austin College  
Abstract #24

Reduction of noise is critical for high quality astronomical imaging. Dust on the CCD camera, pixel variations in the camera, and scattered light in the optical path can produce imperfections in the image. Astronomers use a process called flat fielding to reduce this type of noise. A set of images of an evenly illuminated surface can be used to calibrate science images; in effect, the imperfections are divided out of the science images, or flattened. The main goal of this research was to test a new, evenly illuminated calibration target inside the dome of the Adams Observatory. The new dome flat system produces better flat images than the previously used technique of twilight flats in which the sky is used as an evenly illuminated area.

## Analyzing Global Changes in Gene Expression Due to the Loss of SPT4 and PGM2 Indicating a Hyper-active Stress Response in *pgm2Δ* Mutants

Keara D. Malone<sup>1</sup>, Spencer L. Nystrom<sup>2</sup>, Rachel V. Jimenez<sup>1</sup>,  
Courtney D. Goldstein<sup>1</sup>, and Ashley Charales<sup>1</sup>

Biology Department, Austin College<sup>1</sup>

Curriculum in Genetics and Molecular Biology, University of  
North Carolina at Chapel Hill<sup>2</sup>

Abstract #25

Transcriptional elongation factors play an important role in regulating gene expression, including SPT4 and SPT5. As part of the DSIF complex, Spt4p is non-essential, but plays an important role in transcriptional pausing in mammalian cells, and in regulation of transcription through long trinucleotide repeats in *Saccharomyces cerevisiae*. Previous work in the lab identified the loss of SPT4 as a suppressor of *pgm2Δ* defects through an EMS mutagenesis screen. Yeast which lack PGM2, the major isoform of PGM, lose the ability to interconvert glucose-1-phosphate (G1P) and glucose-6-phosphate (G6P), and exhibit a variety of growth defects when grown in galactose-containing media. The most relevant of these include slow growth, imbalanced levels of G1P to G6P, high levels of intracellular Ca<sup>2+</sup>, and induction of the unfolded protein response (UPR), which is putatively related to the imbalanced relative levels of G1P:G6P. Deletion of SPT4 was shown to rescue the Ca<sup>2+</sup>-related growth defects in the *pgm2Δ* background, but this rescue is indirect. Data collected by RNAseq have shown that SPT4 is important in mediating the response to non-optimal growth conditions, such as those created by the imbalanced levels of G1P:G6P found in *pgm2Δ* mutants when grown in galactose. However, the mechanism by which this response occurs is unknown. We have begun to elucidate this mechanism through a bioinformatic analysis of three subsets of genes exhibiting more than a 4-fold log<sub>2</sub> increase when compared across genotypes (wild-type, *pgm2Δ*, *spt4Δ*, and *pgm2Δspt4Δ*). We show that many of these genes are involved in various stress responses, and provide a working model for how the loss of PGM2 induces expression of stress-response genes to respond to problems within the cell.

## Investigating the Role of PA28 $\gamma$ in DNA Base Excision Repair

Bethany Bundrant, Condey M. Calhoun, and Lance Barton  
Biology Department, Austin College

Increased levels of reactive oxygen species (ROS) are present in almost all cancers. Since elevated ROS levels can cause serious damage to cells, understanding how cancer cells sustain their altered biology could identify ways to selectively target transformed cells. DNA base excision repair (BER) is the pathway responsible for the repair of oxidatively-damaged DNA. Disruption of the BER pathway is linked to a variety of cancers, including colorectal, gastric, and lung. The proteasome activator, PA28 $\gamma$ , plays an important role in the cellular response to oxidative stress through its degradation of oxidatively-damaged proteins and is elevated in many different cancers. Here, we identify a novel role for PA28 $\gamma$  in the resolution of oxidatively-damaged DNA. Murine embryonic fibroblasts (MEFs) deficient in PA28 $\gamma$  (PA28 $\gamma$ <sup>-/-</sup>) have higher baseline levels of oxidative DNA damage. Additionally, PA28 $\gamma$ <sup>-/-</sup> MEFs exhibited delays in DNA repair after treatment with H<sub>2</sub>O<sub>2</sub>. PA28 $\gamma$ <sup>-/-</sup> MEFs exhibit comparable viability following treatment with H<sub>2</sub>O<sub>2</sub> and elevated viability following inhibition of BER, suggesting a defect in DNA damage recognition. Expression profiles of *pcna* and *ape1*, genes important to BER, were comparable in both cell lines, so the mechanism through which PA28 $\gamma$  exerts these effects remains uncharacterized. Our data reveal an expanded role for PA28 $\gamma$  in the cellular response to oxidative damage, perhaps playing an important role in the recognition of oxidatively-damaged DNA as well as in the degradation of oxidatively-damaged proteins.  $\hat{\Delta}$

## Wright Campus Center 254A

### Violence in Times of Protest: Morocco and Egypt during the Arab Spring

Lauren McCaskill and Marat Akopain  
Political Science Department, Austin College

At the tail end of 2010, long simmering dissatisfaction with oppressive regimes sparked an emergent movement, which soon became known as the Arab Spring. What began as a symbolic form of protest in Tunisia soon engulfed the rest of the Middle East North Africa region, exhibiting varying levels of violence in each affected state. This paper focuses specifically on two countries that exhibited disparate levels of violence: Morocco and Egypt. While Morocco experienced a high level of police brutality during the protests, there is only one death attributed to the violence. On the other hand, in the first two months alone, over 800 people died as a result of violence in Egypt. The focus of this research examines three key areas of difference between the countries. The first is that the level of violence is correlated with the level of perceived oppression. While not viewed favorably, Moroccans experienced a relative lifting of oppressive policies, though the same could not be said for Egypt. Next, this paper explores the demographic differences between the two states. The differences in multiple demographic characteristics, primarily population density, have explanatory power with regard to levels of violence. Finally, increased levels of education lead to an increase in expectation for employment opportunities in Egypt. When this expectation was not met, it contributed to a combustible social environment.

### Xi Jinping, the Most Powerful Leader Since Mao Zedong: China's Hope or Destruction?

Esmeralda Alejo and Jennifer Johnson  
East Asian Studies Department, Austin College  
Abstract #26

In this presentation, I discuss the unconventional leadership of Xi Jinping as President of China and core head of the Communist Party. When Mr. Xi took the presidency in 2012, he made it clear that he would lead China back to the center of the world stage and under his governance, there is no doubt that China has become more assertive and confident than ever. China is on its way to an era of great international power and influence but as Mr. Xi prepares to take on a second-five-year term as president, and concentrates more power in Congress, I consider what Xi Jinping's rule means for the future of China and the World. Through an examination of Mr. Xi's style of governance, that consists of injecting himself into all kinds of Chinese governing responsibilities, and by analyzing the anti-corruption campaign that has resulted in perhaps the most dramatic crackdown on civil rights and society since the 1989 Tiananmen Square protests, I discuss how Mr. Xi has been successful in consolidating power and in realizing his "China Dream". Furthermore, in comparison to past predecessors and, more specifically, Mao Zedong, I argue that it is possible Mr. Xi is developing a "Cult Personality", as he stages himself as China's strongman and savior; this is especially dangerous in a country with very few government limitations. Xi Jinping is a powerful man with notable significant goals but under his rule, China could very well be at risk of stagnation.

## An Investigation into the Identification of Proteins Undergoing Cold Denaturation in Hen's Egg Yolk

Faran Riyaz and John Richardson  
Chemistry Department, Austin College  
Abstract #27

During the thawing of a frozen whole egg, it is observed that the egg whites thaw back into liquid, but the egg yolk does not. The egg yolk enters a gel-like solid state that is unable to be mixed with the rest of the components of the egg. The freeze-thaw process of hen egg yolk carries out a phenomenon known as non-reversible cold denaturation. Our hypothesis states that a protein or complex of proteins are responsible for the formation of aggregates causing the permanent aggregation of the egg yolk after freeze-thawed. To determine the identity of these proteins, a few purification methods have been used such as centrifugation and size exclusion chromatography. To determine the contents of sample fractions after purification, SDS-PAGE was used. Finally, it has been noted that lipoproteins may play a role in the formation of aggregates. This is supported through the formation of a pellet on top of the plasma after centrifuging samples that have undergone cold denaturation.

## Mass Violence Against Ethnic Germans in "Liberated" Romania, 1944-47

Katia Lopez and Hunt Tooley  
History Department, Austin College

This project expands on traditional notions of geometry and relativity by using geometric principles to examine atypical space-time systems. We do this by constructing and examining a variety of general (1,1) space-time systems in the category of staircase metric geometry. Various asymptotic triangles in a staircase metric system with straight boundaries and varying dilation factors are examined to determine convergence of area, such that a class of asymptotic triangles with finite space-time area is constructed. The project includes proofs concerning the calculation of space-time angle, which involves a generalization of Snell's Law, and space-time area, which was found to be analogous to Euclidean area, and undertakes the calculation of dilation factors in the various systems. Two additional systems with curved boundaries are examined to determine gravitational effects. (Could remove: In one system, we find an attractive gravitational force and in the other, we find a repulsive force.)

## Investigating the Relationship Between Glycogen Accumulation and Calcium Homeostasis in *Saccharomyces cerevisiae*

Rebecca McDonald and David Aiello  
Biology Department, Austin College

Phosphoglucomutase (PGM) plays an important role in yeast carbohydrate metabolism. It is responsible for interconverting glucose-1-phosphate (G1P) and glucose-6-phosphate (G6P). PGM2 is the major isoform of PGM in *Saccharomyces cerevisiae*. Yeast that lack PGM2 (*pgm2* $\Delta$ ) exhibit slow growth, sensitivity to cyclosporine A (CsA), high G1P levels, calcium homeostasis defects, and an accumulation of glycogen when metabolizing galactose. The purpose of this investigation is to determine whether hyperaccumulation of glycogen is causative to the other phenotypes observed in the *pgm2* $\Delta$  mutants. High glycogen accumulation can be rescued by increasing glycogen breakdown. The gene *GPH1* encodes the glycogen phosphorylase enzyme, which catalyzes the breakdown of glycogen into G1P. A plasmid allowing for overexpression of the *GPH1* gene was inserted into strains of varying genotypes. The growth on glucose and galactose containing cyclosporine A media, glycogen/trehalose accumulation, and calcium accumulation phenotypes of each strain were analyzed. We report here that *GPH1* overexpression partially rescues *pgm2* $\Delta$  defects, potentially due to an increase in trehalose accumulation. Further, we investigated if glycogen accumulation in general can lead to defects in calcium ion homeostasis, independent of the *pgm2* $\Delta$  mutation. Our results provide support for this hypothesis and highlight new avenues of investigation for examining the link between glycogen accumulation and calcium homeostasis.

## Investigation of Cancer Hallmarks in Uncharacterized MEF Cancer Clones

Chelsea Easley, Jessica Mitchell, and Lance Barton  
Biology Department, Austin College  
Abstract #28

Cancer is a group of diseases, generally characterized by abnormal division of cells and destruction of body tissue. However, a spectrum of characteristics, known as the Hallmarks of Cancer, can arise through DNA driver mutations and confer selection advantage to cancer cells. In the present study, an uncharacterized, mutated Mouse Embryonic Fibroblast (MEF) cell line was examined for of Hallmark capabilities. The MEF cancer clones were found to exhibit abnormal karyotypes (genomic instability) and migratory potential in wound healing and Transwell assays (metastasis). A known cancerous mammary cell line (M158 cells) was used as a positive control for the Cancer Hallmarks. When compared to the M158 cells the MEF cancer clones exhibited both Hallmarks, but to a lesser degree. These data suggest that this mutated MEF cell line is transformed, cancer-like in nature and can serve as model for further cancer research.

## **A Review of Cultural Practices about Experiences of and Attitudes Towards Transgender People**

Azlin M. Saldivar and Lisa Brown  
Psychology Department, Austin College  
Abstract #29

This research focuses on examining attitudes held towards transgender individuals and communities through an extensive literature review combining psychology, anthropology, and gender studies. Many different populations are included in this research to cover a wide range of experiences transgender individuals encounter, as well as majority group experiences with this minority group. Beyond differing attitudes towards transgender individuals, institutional structure, varying cultural perspectives, and mental health are also examined.

## **Does Self-Control Depletion Affect Gratitude Expression Among Males?**

Amanda Bernal, Nikitha Murugesan, and Matthew Findley  
Psychology Department, Austin College

The current study aims to investigate whether the depletion of self-control resources affects the expression of gratitude primarily among males. This study is a replication of Mazara, Ogunbanwo, Campbell, and Findley's (2016) study examining the same question, but the depletion condition the participants underwent was modified. The sample consists of Austin College psychology students who completed a series of questionnaires and tasks in a lab setting, in which they were randomly assigned to a no self-control depletion or self-control depletion group. Those in the self-control depletion group were told to not think of a white bear while completing a thought-listing task (Muraven, Tice, and Baumeister, 1998). The participants were then asked to think of the following relationships- a close family member, a close friend, a professor, and a person they met within the last 6 months. After thinking of each relationship, participants were told to express how grateful they would be to each individual. The study is still undergoing collection data, but we hypothesize that males, who are depleted of self-control resources, will exhibit significantly less gratitude expression compared to males who are not depleted of self-control resources and females generally.

# Wright Campus Center 255

## Novella

Zoe Garner and Peter Anderson  
English Department, Austin College

Over the past semester, I have been working under the guidance of my professor to complete and edit the short novel that I am writing. The short novel is a historical fiction that takes place during the early romantic period in Vienna. The story's main character is a fictional character named Elizabeth who falls in love with Ludwig von Beethoven, a historical icon. The story incorporates information about the romantic period, and has themes involving class, love, and music. Upon completion, I am aiming for publication.

# Constructing and Comparing the Geodesics Both in the Staircase Metric Category and the Differential Category

Congling Zhang and Jack Mealy  
Mathematics and Computer Science Department, Austin College  
Abstract #30

In this project we construct manifolds featuring prescribed geodesics utilizing two distinct geometric schemes. In the differential geometry category, we utilize the geodesic equations to solve for the smooth metric, given that a particular family of geodesic curves. Then, in staircase metric geometry category, we specify the dilation factor boundaries and the dilation factors to construct staircase metric manifolds that feature geodesics that track those that we had previously constructed in the differential category. Comparing the two schemes is instructive. Finally, an extension of the staircase metric geometry to feature PUHP subdomains is included.

## Synthesis of 2,5 bis-urea

Matthew Tran and Andy Carr  
 Chemistry Department, Austin College  
 Abstract #31

Oil slick remediation is possible by solidifying the oil on the water. A compound that solidifies or gels the oil is known as an organogelator. A class of gelators with 2 urea units has been studied and has been shown to be very strong gelators. However, the presence of the alkyl tails on the periphery of the molecule may affect this type of gelators ability to gel. A derivative of the bis-urea tail on the 2 and 5 positions have been synthesized from 2,5 didodecoxybenzaldehyde, and critical concentrations have been determined in toluene (2 w/w%) and octane (1 w/w%). These gels set in hours unlike the 3,5 derivative that sets in 20 minutes or less. However, the strength of the gels made from the 2,5 derivatives are comparable to the gels produced from the 3,5 bis-urea. This could be due to the molecule's ability to form threads in solution easier due to the position of the alkyl tails. Further tests using different length alkyl tails are required to adequately test the strength of the urea.

## "A Reminder to All the Women of the World"

Jillian Vandergrift and Randi Tanglen  
 English Department, Austin College

One of the key goals of protest literature lies in how it “strives to give voice to a collective consciousness” and “announces to people that they are not alone in their frustrations” (Stauffer xii). My letter “A Reminder to All the Women of the World” focuses on this struggle to find one’s place in the world of dissent and how important it is to remember that we are never without support. The piece acts as an homage to the nineteenth-century writer Angelina Grimke, who in 1836 penned “Appeal to the Christian Women of the South” in an effort to garner support for the anti-slavery movement. In this open letter, Grimke outlined a four-step process to help women see beyond the trappings of their places in society and discover what they were capable of. My letter adopts Grimke’s style and the specific nature of her advice, but brings it into the twenty-first century and emphasizes my own perspective as a young activist working to find my own voice in the chaos. I wrote the letter as an encouragement to all women of all groups to prioritize working together and supporting one another in issues of women’s rights, with an emphasis on intersectional feminism. In my presentation, I will read from my piece and reflect on how the process affected me as a student and hopeful activist. This paper is part of the panel on “American Protest Literature: A Roundtable Reading of Original Work.”

Source: Stauffer, John. “Foreword.” *American Protest Literature*. Ed. Zoe Todd. Harvard University Press: 2006.

## The Sin of Choosing Sins – Exposing Hypocrisy of Anti-LGBTQ

Abby Ross and Randi Tanglen  
English Department, Austin College

Protest literature can be defined as words, art, music, or film that hold a mirror to society's ills and acts as a moral guide to offer a solution (John Stauffer xii). My opinion essay "The Sin of Choosing Sins" defends the LGBTQ community against religious discrimination with biblical reasoning. I use the style and rhetorical strategies of J. Hector St. John de Cr vecoeur, Henry David Thoreau, and Frederick Douglass to argue that homophobia, not homosexuality, is immoral and against biblical teachings. Cr vecoeur, Thoreau, and Douglass were all abolitionist authors who argued that slavery was immoral through moral reasoning. Douglass uses a religious perspective to address why slavery is wrong and antithetical to Christian teachings. Instead of writing on slavery, I write on LGBTQ discrimination. Using these authors' works as inspiration, my essay makes known the hypocrisy that lies within religious judgement of the LGBTQ community. My essay discusses why religious reasoning is not a moral excuse for hatred. In my presentation, I will read from my essay and discuss my personal growth as an LGBTQ rights activist and writer. This paper is part of the panel, "American Protest Literature: A Roundtable Reading of Original Work."

## Relationship between Mental Health and Music Preference and Usage

Alexandra Kaia Gill and Lisa Brown  
Psychology Department, Austin College  
Abstract #32

I wanted to investigate the relationship among mental health, music genre preference, and music usage. This correlational study used self-report measures of self-esteem, depression, stress, anxiety, music genre preference, and music usage. The hypotheses were 1. generally, music usage would be associated with positive wellbeing and 2. usage, specifically of punk, metal, and alternative rock, would be associated with negative wellbeing. The results partially confirmed these hypotheses.

## Cyclizing Acyclic Substrates with NHC-Borenium Ions

Laurel Hagge and Ryan Felix  
Chemistry Department, Austin College  
Abstract #33

The purpose of the current research is to determine if NHC-borenium ions can be used to cyclize acyclic compounds in an effort to mimic the work of cyclase enzymes in nature. The formal positive charge of the structure and available p-orbital of the boron gives NHC-borenium ions the potential to be highly potent Lewis acids. After synthesis of substrates and borane complexes, three substrates were tested under different conditions in an effort to cyclize the material. Although the results were inconclusive, this research demonstrates the synthesis of test substrates and begins to provide insight to the reactivity of the NHC-borenium with these structures. Future work can be done to test the reactivity of different substrates with the NHC-borenium ion and altering the NHC ligand of the borenium ion to test reactivity.

## “What to the Black Woman is...”: Intersections of Gender and Racial oppression in Today’s World

Ololade Olaleye and Randi Tanglen  
English Department, Austin College

Protest Literature as articulated by literary critic John Stauffer is “Literature that functions as a catalyst, guide, or mirror of social change” (Stauffer xii). My poem “What to the black woman is...” elucidates the challenges surrounding the path a black female is born into today. It connects these challenges to racial oppression from the time of slavery protested by nineteenth-century writers/orators Fredrick Douglass and Sojourner Truth and present-day writer Claudia Rankine. Fredrick Douglass’s oratory exposes the hypocrisy of white Americans who celebrate their freedom while suppressing the freedom of black Americans. Sojourner Truth unapologetically calls out the intersection of racial and gender oppression black women face. Claudia Rankine uses distinctive literary techniques and photographs to resist several forms of racial oppression in the black community that white Americans might be oblivious to. Motivated by these activists and writers, my poetry focuses on the troubles in the black community with an emphasis on the black woman. By explaining the cycle in the systems of racial and gender oppression, my protest poem aims to spur social change, so the black woman is no longer the most under-represented disrespected and neglected group in America. In my presentation, I will read from my poem and reflect on how the process or writing it changed and transformed me as a writer, feminist, and activist. This paper is part of the panel on “American Protest Literature: A Roundtable Reading of Original Work.”

Source: Stauffer, John. “Foreword.” *American Protest Literature*. Ed. Zoe Todd. Harvard University Press: 2006.

## “It Started at Age Eight”: Micro-aggressions in Women’s Lives

Madison Messerle and Randi Tanglen  
English Department, Austin College

Protest literature is defined by “the uses of language to transform the self and change society” and “functions as a catalyst, guide, or mirror of social change” (Stauffer xii). My free verse poem “It Started at Age Eight’: Micro-aggressions in Women’s Lives” presents the parallels between modern author Claudia Rankine’s views on micro-aggressions directed at African Americans and my views on similar actions focused on young women. In her free verse poem, *Citizen*, Rankine displays the minute actions that merge to form stereotypes and aggressive actions based on race. Using a similar format and the idea of micro-aggressions, my free verse poem draws from the experiences of myself and other young women I know to display the seemingly insignificant events that often eventually lead to sexual assault and harassment. My poetry focuses on emotional appeal, convincing readers that their actions influence the culture surrounding sexual assault. I hope that people will change the way they speak and think about women’s issues and transform the casual attitudes we now see towards sexual assault and harassment. In my presentation, I will discuss my writing and consider the impact of each individual story I gathered, as well as elaborate on their impact on me as a woman and an activist. This work is part of the panel on “American Protest Literature: A Roundtable Reading of Original Work.”

## Characterization of a Tau-Based Alzheimer’s Model in *Drosophila* *Melanogaster*

Steven Jacob and Ernesto Perez  
Biology Department, Austin College  
Abstract #34

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

## The Relationship of Small Mammals and the Community Structure of Invertebrates and Vegetation in the Blackland Prairie

Michael Moran and Jessica Healy  
Biology Department, Austin College  
Abstract #35

To evaluate the restoration efforts and determine the health of the ecosystem, many restoration projects target small mammal populations because they heavily depend on the diverse species composition of the ground flora. The effects of small mammal predation on the community structure of invertebrates and vegetation have been studied in grassland ecosystems. These studies found that small mammal excluded plots resulted in higher numbers of invertebrates as well as greater numbers of established plants inside exclosures than in control plots. The aim of this study was to test and compare these effects in a blackland prairie restoration ecosystem in North Texas. Small mammal exclusion plots were set up in three different field types with Sherman live traps and pitfall traps to assess the community composition of these animals. Additionally, vegetation surveys were conducted to observe any differences between controls and exclosures in each field type. Data collected in 2013 was compared to the results of the 2017 study to track the effects of the exclusions over time. The results of the 2017 study exemplify that the exclosures are not completely effective in keeping small mammals out, and will need to be reinforced for future studies. Like the 2013 study, this study found no difference in total invertebrates in the absence of small mammals. Plant community composition varied between controls and exclosures, but overall there was not a significantly greater number of established plants inside exclosures. This evidence has important implications for the use of small mammal exclusions in ecological monitoring.

## A Collection of Short Stories on the Immigrant Struggle

Karla Herrera and Randi Tanglen  
English Department, Austin College

Protest literature takes on many definitions, but ultimately it empowers and transforms readers in becoming prepared and well-informed individuals, ready to tackle and solve the social injustices that arise in their community. As defined by John Stauffer, protest literature gives people hope that “they are not alone in their frustrations” (xiii). In my collection of short vignettes, I tried to capture the frustration and fear from anecdotes that I have experienced and heard from relatives and friends who are immigrants in the United States. When a whole country seems to be in uproar about a group you might be a part of, it’s easy to get discouraged and feel like there is no one you can voice your worries and frustrations to. The fear that is instilled in those individuals affects their day-to-day activities and there is a constant sense of restlessness that never goes away. The current political climate worsens the situation by shaming immigrants and portraying them as criminals.

Following Claudia Rankine’s lyrical prose and Harriet Beecher Stowe’s use of personal anecdotes, I wrote these short stories to show a different perspective on immigrants that might be obscured by the negativity that surrounds them. The lyrical prose style the Rankine utilizes lets the story speak for itself in an effort to make the reader ponder on the immigrant situation and the immigrants who face these issues in their lives. Exposure to another individual’s struggles may help outsiders understand the difficulties of being an unwanted immigrant in a foreign country, but also help people who are in a similar situation feel that they are not alone in their problems.

Source: Stauffer, John. “Foreword.” *American Protest Literature*. Ed. Zoe Todd. Harvard University Press: 2006.

## “The Silent Minority”: Struggles of an Asian American Identity

Weiheng He and Randi Tanglen  
English Department, Austin College

According to literary critic John Stauffer, protest literature provides a “voice to a collective consciousness” and “announces to people that they are not alone in their frustrations” (xii). In the style of “Citizen” by Claudia Rankine, my poem reflects the difficulties that come with the Asian American identity. Rankine is a contemporary poet and activist who explores post-racial America in her literature. In “Citizen,” she includes situation poems based off of personal experiences and observations to portray the daily events of racial discrimination experienced by Africans and African Americans. By incorporating this style of situational poetry, my poem unveils feelings of micro-aggressions of an Asian American affected by the misrepresentation and stereotypes created in modern society. My poem serves as a “voice to a collective consciousness” shared by many Asian Americans and other ethnic minorities today. In my presentation, I will read from my poem and evaluate how these situations have shaped my identity as an Asian American. This paper is part of the panel on “American Protest Literature: A Roundtable Reading of Original Work.”

Source: Stauffer, John. “Foreword.” *American Protest Literature*. Ed. Zoe Todd. Harvard University Press: 2006.

## Examining the Effects of Chiral Centers on Bis-Urea Organogelators

Todd Liang and Andrew Carr  
Chemistry Department, Austin College  
Abstract #36

Bis-urea organogelators have been shown to be very effective gelling agents for a variety of organic solvents. In particular bis-ureas with alkoxy substituents on the 3 and 5 positions of an aromatic core are super gelators in alkane solvents. The ureas mentioned so far are achiral (without any chiral centers). It was hypothesized that introducing a chiral center between the urea and the aromatic core would weaken the gelation properties of the bis-urea molecules. Synthesis of the model system started from 3,5-dihydroxyacetophenone which was alkylated with different tails ( $C_{12}H_{37}$  and  $C_{16}H_{37}$ ). The ketone was then converted to an oxime and reduced in situ to the amine. The amine was then reacted with a diisocyanate to generate the desired bis-urea molecules. Each bis-urea tested was a mixture of RR, SS, RS chirality. No attempt to resolve the isomers was made.

## Motivating Factors of Hickey Behavior in College Relationships

Taylor Spurgin, Vivek Kuppurajan, and Renee Countryman  
 Psychology Department, Austin College  
 Abstract #37

In this study, we wish to see if hickey giving behavior is correlated with skin tone or with dominance traits. Our first hypothesis is that hickeys are a form of territory marking. Given that hickeys are a bruise on the surface of flesh, they are more obvious on lighter skin tones than darker ones. Following this train of thought, people with lighter skin should be more likely to receive hickeys than individuals with darker skin. Our second hypothesis is that sexually dominant individuals are more likely to mark their territory with hickeys than non-dominant individuals. Support for this hypothesis would map onto existing data in other mammalian species. Our study uses a survey to ask questions about these variables. This research will give us a greater understanding of the evolutionary basis of hickeys.

## Disinterested Dictums: Using Satire to Protest Sexual Harassment and Assault

Zaliah Finegan and Randi Tanglen  
 English Department, Austin College

A work is considered protest literature when the author critiques society and offers up solutions to the problems described in an effort to transform prominent societal thought and policies. My satirical piece inspired by William Lloyd Garrison's "Truisms" focuses on the rampant sexual assault cases that have been exposed in the last six months. Garrison was a nineteenth-century American abolitionist and journalist known for his satirical pieces focused on the hypocrisy of slavery. Using Garrison's writing style as a model, I wrote a piece exposing the hypocrisy of famous wealthy men and sexual misconduct, a controversial subject ignored until the "Me Too" and "Time's Up" movements. My piece relies on the absurdity that is revealed when denying sexual misconduct and the excuses that are employed to allow for some to stay ignorant and for the guilty to not be held accountable. In my presentation, I will read my satirical piece and reflect on how satirical writing can strengthen one's argument, while also reflecting on how this piece developed my own thinking about the issue of sexual harassment and assault. This paper is part of the panel on "American Protest Literature: A Roundtable Reading of Original Work."

Wright Campus Center 231  
**American Protest Literature:  
 A Roundtable Readings of  
 Original Work**

**I Speak My Mind. They Think I'm  
 Crazy: Protest Poems**

Brice Donovan and Randi Tanglen  
 English Department, Austin College

Protest literature is literature that evokes social and self-transformation. Studying and writing protest literature helps one realize how much or how little the world has changed and sheds light on the fact that history repeats itself and that change happens slowly. My collection of poetry includes several lines of poetry that I have typed in my phone's notes over the past two plus years in response to social events such as the women's rights march and Donald Trump's misogynistic comments in speeches. They are styled after Claudia Rankine's, Alexander Hamilton's, and Angelina Grimké's protest writing. These three historical and modern women's and human rights advocates heavily influenced my writing style because I am also a feminist and women's rights advocate. Their goals help us realize that we have not progressed as a society because the treatment of women and people of color is repeated throughout each era and into the present day. This causes us as activists to do something about it and affect change in the world: this is why I wrote poems on my phone. In my presentation, I will read my series of poems and then an author's statement about my own transformation through protest writing. This paper is part of the panel on "American Protest Literature: A Roundtable Reading of Original Work."

**The Role of PA28 $\gamma$  in Cancer:  
 Determination of Phenotypes of  
 Unknown Cancer Cell Line**

Mikayla Gascich, Catherine Waldie, Saloani Malhotra, and Lance Barton  
 Biology Department, Austin College  
 Abstract #38

Cancer is a family of diseases caused by host cells, which have "gone wrong" due to an abnormality in normal development or regulatory controls. PA28 $\gamma$  is a proteasome activator in mammalian cells associated with the acquisition of several of the hallmarks of cancer, because of its association with key pathways. To determine the role of PA28 $\gamma$  in cancer, PA28 $\gamma$ -deficient cells were compared to other cell types (M158 mammary carcinoma cells and control MEF mouse embryonic fibroblasts). In order to characterize the properties of PA28 $\gamma$ , mRNA was isolated and cDNA was then synthesized in order to sequence and examine mutations in commonly mutated genes p53, hras, and akt. The cells were karyotyped to determine the degree of genomic instability of the cell types. A migration assay was performed to test the cells' invasion and metastatic ability. Additionally, the cell's ability to resist cell death induced by chemotherapeutic drugs was examined. The PA28 $\gamma$  deficient cell line showed a decrease in genomic instability and no mutations in the selected genes, as compared to the other cell lines. Also, PA28 $\gamma$ -deficient cells were less invasive and less migratory. The PA28 $\gamma$  deficient cells did not show a resistance to treatment in the 24-hour time but did show some resistance at the 48 hour time point. Overall, PA28 $\gamma$ -deficient cells showed different phenotypes than PA28 $\gamma$  expressing cells. Further studies are needed to elucidate the level of influence of PA28 $\gamma$  expression on cancer cells.

## Candidates Beware: You Are What You Wear

William McDonough and Michelle Helfrich  
 Psychology Department, Austin College  
 Abstract #39

During the 2016 presidential race, there was much ado in the media about Hillary Clinton's pantsuits. Prior to that, the media focused on Sarah Palin's updated clothing choices (which cost thousands of dollars). Media is often criticized for focusing more on female candidate clothing choices and appearance than male candidates, but it is unclear how much voters are influenced by candidate appearance/clothing. To investigate the impact of appearance on candidate judgements, we provided participants a picture of a male or female candidate dressed in casual or professional clothing, or with a child. They then read the same statement by the candidate about student loans. Participants provided demographic information, evaluated the candidate on a number of character dimensions on 6 point scales and then indicated voting likelihood. The preliminary analyses indicated that the female candidate, in particular, was evaluated less positively on a number of dimensions, and participants were less likely to vote for her when wearing casual clothing compared to either professional clothing or when pictured with a child. Multiple regression analyses showed that voting likelihood was significantly affected by candidate likeableness, competence, and knowledge. Further, all variables were significantly impacted by candidate attire.

## Oral Session III

March 24, 9:00 a.m. – 10:20 a.m.

Wright Campus Center 231

Wright Campus Center 255

Wright Campus Center 254A

Wright Campus Center 254B



## Wright Campus Center 255

### Japanese Women: Negotiating Modernity

Karla Villaneuva, Bryce DeVaughn, Aubry Foose, and Mindy  
Landeck  
East Asian Studies Department, Austin College

This panel explores various ways in which women occupy the public sphere in Japan as political activists, business professionals and cultural consumers. Karla Villanueva's paper considers the case of Matsuo Taseko, a peasant woman who became one key engineer of the 1868 Meiji Restoration in an era when Japanese women remained largely excluded from the political sphere. Bringing the focus forward to contemporary Japan, Bryce DeVaughn picks up the theme of modernity by considering the gendered nature of personal and professional challenges which emerge within the modern workplace for both male and female wage-earners. Finally, Aubry Foose will explore the manner in which financially independent working women of means in Japanese urban environments may elect to spend their earnings in Japan's host clubs, much in the same way their male counterparts also enjoy compensated female companionship. These glimpses into the ways in which Japanese women have explored what it means to be modern suggest much about the historical arc and trajectory of women's lives within Japan.

## Detection of Exoplanets at the Adams Observatory

Eva Natinsky, Ryan Hood, Raphael Nam, and David Baker  
Physics Department, Austin College  
Abstract #40

The purpose of this research was to assess the capability of the Adams Observatory for detection of exoplanets using the transit method. When an exoplanet passes in front of its host star, a small amount of light will be blocked during the transit. We measured light from three different stars with known exoplanets. Our results show a decrease in star brightness during these exoplanet transits as expected, with uncertainties less than the dip in star brightness. These are the first light curves from the Adams Observatory to show exoplanet transits. Because of these successful results, Austin College has been invited to participate in the Kilodegree Extremely Little Telescope Follow Up Network (KELT-FUN), an international consortium of observatories searching for exoplanets.

## Akt 1 and PA28 $\gamma$ do not have a Synergistic Effect on the Wnt Pathway in Cancer

Emma Thornburg, Brian Nguyen, and Lance Barton  
Biology Department, Austin College  
Abstract #41

Uncontrolled cellular proliferation is one of the defining hallmarks of cancer. One pathway that may contribute to enhanced proliferative signaling in cancer cells is the Wnt signaling pathway. In the absence of Wnt signals, GSK3 $\beta$  triggers  $\beta$ -catenin degradation. Two proteins that inhibit GSK3 $\beta$  and also display increased expression in cancer are Akt1 and PA28 $\gamma$ . The purpose of this research was to examine a possible synergistic relationship between Akt1 and PA28 $\gamma$  on GSK3 $\beta$ . In order to examine the Wnt pathway, levels of GSK3 $\beta$ , Akt1, and  $\beta$ -catenin were measured in cell lines containing various expression levels of PA28 $\gamma$ . Additionally, the transcriptional targets of  $\beta$ -catenin, cyclin D1 and fgf18, were measured by qPCR. Interestingly, the lowest levels of  $\beta$ -catenin were identified in the two cancer lines, with the highest expression in the cells lacking the PA28 $\gamma$  gene. Conversely, the transcriptional targets of  $\beta$ -catenin, cyclin D1 and fgf18, showed a different pattern of gene expression than the levels of  $\beta$ -catenin. Total expression and phosphorylation status of GSK3 $\beta$  did increase with transformation in cell lines, but it did not correlate with PA28 $\gamma$  expression. In conclusion, there were insufficient evidence to suggest a synergistic relationship between Akt1 and PA28 $\gamma$  on the Wnt signaling pathway, and further research needs to be conducted in order to understand if PA28 $\gamma$  is involved in the activation of cellular proliferation by the Wnt pathway.

## Translating Mediated Representations of Women in Chaucer's The Franklin's Tale

Jillian Vandergrift and Thomas Blake  
English Department, Austin College

This talk expresses how an upper-level English course on Chaucer utilized a series of Middle English translation assignments to help expose underlying tones of anti-feminism and inequality in Chaucer's The Clerk's Tale, which is often read as a story depicting the ideal wife and woman whose morals and loyalty make her the example of the 'ideal woman.' Through thorough analysis via translation assignments, I was able to discern how the tale strips women not only of their clothing, but of their humanity while pressuring them to strive to be emotionless and submissive housewives. I chose to focus on a passage in the tale which expresses how Walter, an Italian marquis, is overcome by jealousy and suspicion of his wife Griselda, who thus far has been the submissive and loyal paradigm of wifhood in the face of immense torture and cruelty via Walter's tests in which he fakes the death of her two children. An etymological analysis of Middle English vocabulary from words like "pacienc" from this passage reveals that Walter's insecurity causes him to suffer inwardly and project his suffering onto poor Griselda, whose own name becomes the definition of submissiveness: patient Griselda. My deep translation helps highlight the cruel nature of the marquis and how women were seen as mere toys to be played with and tested, instead of humans who have the right to feel any wide range of emotions and act accordingly. My talk will finish with a recitation of the passage interpreted through my own personal lens after utilizing the skills gained through the translation assignments.

## Let's Talk: The Clerk's Tale

Julian Coronado and Thomas Blake  
English Department, Austin College

This talk expresses how an upper-level English course on Chaucer utilized a series of Middle English translation assignments to help expose underlying tones of anti-feminism and inequality in Chaucer's *The Clerk's Tale*, which is often read as a story depicting the ideal wife and woman whose morals and loyalty make her the example of the 'ideal woman.' Through thorough analysis via translation assignments, I was able to discern how the tale strips women not only of their clothing, but of their humanity while pressuring them to strive to be emotionless and submissive housewives. I chose to focus on a passage in the tale which expresses how Walter, an Italian marquis, is overcome by jealousy and suspicion of his wife Griselda, who thus far has been the submissive and loyal paradigm of wifehood in the face of immense torture and cruelty via Walter's tests in which he fakes the death of her two children. An etymological analysis of Middle English vocabulary from words like "pacienc" from this passage reveals that Walter's insecurity causes him to suffer inwardly and project his suffering onto poor Griselda, whose own name becomes the definition of submissiveness: patient Griselda. My deep translation helps highlight the cruel nature of the marquis and how women were seen as mere toys to be played with and tested, instead of humans who have the right to feel any wide range of emotions and act accordingly. My talk will finish with a recitation of the passage interpreted through my own personal lens after utilizing the skills gained through the translation assignments.

## Self-Confidence and Persistence and Performance

Justin Alphonse, Isabella Cerritos, and Lisa Brown  
Psychology Department, Austin College  
Abstract #42

Our study was a correlational study examining the relationship between self-confidence and persistence. We hypothesized that people with high self-confidence would be more persistent in their performance. Pearson-product correlation coefficients were computed to assess the relationship between puzzle self-confidence, attempts to complete the puzzle, total time for the attempts, and whether the puzzle was solved. There was no correlation between puzzle self-confidence and time, puzzle self-confidence and attempts, and puzzle self-confidence and whether the puzzle was solved. Increases in self-confidence were not related to these variables, suggesting that our hypothesis was not supported by the results.

## Investigation of Polypyridyl Thiolato Iron(II/III) Complexes

Richard A Reyes and Bradley Smucker  
Chemistry Department, Austin College  
Abstract #43

A series of iron(II/III) complexes incorporating both polypyridyl (2,2'-bipyridine or 2,2':6',2''-terpyridine) and thiolate (maleonitriledithiolate or ethyl xanthate) ligands were synthesized and characterized using UV-vis spectroscopy and cyclic voltammetry. The compounds have tunable absorption in the visible region and each exhibit a reversible oxidation around 1.2V and multiple reductions associated with the polypyridyl ligand.

## Wright Campus Center 254B

### Translating Gender in Chaucer

#### Finding Emelye in The Knight's Tale

Holly Kapp, Jillian Vandergrift, and Thomas Blake  
English Department, Austin College

This talk examines the role of Emelye (or Emily) in Chaucer's *The Knight's Tale* as seen in a series of assignments from an upper level English Class on Chaucer that examined her female agency, and what exactly that entailed, further than most interpreters of the Tale tend to. For the assignments which inspired this talk, I chose a passage from *The Knight's Tale* in which Emily prays to the goddess Diana for freedom from her impending betrothal to one of the knights fighting for her hand. Through an etymological analysis of Middle English vocabulary from said passage, I was able to interpret and discover just what the Middle English words such as "wyf" (often interpreted as wife but sometimes going much further in definition) entailed, and why Emily states that she never wants to be one in my chosen passage. In the next stage of assignments, the Deep Translation stage, I examined my entire passage as a whole and was able to more fully see the plea of Emily. It revealed a clearer interpretation of what Emily did not want out of the classic Knight in Shining Armor battle, and ultimately revealed feminist notions and ideas possessed by her character, and further highlighted the idea of female agency. My talk will conclude in a recitation of the original Middle English passage, which considers my new understanding of the passage, and of Emily as a medieval woman, through these translation assignments.

## Wright Campus Center 231

### "The Science and Culture behind a Good Cup of Coffee"

Christina Croninger, Matthew Li, Nicholas Marshall, Sarah Oriz, Jaran Rudd, Wolfgang Lueckel, and Colin Foss  
Classical and Modern Language Department, Austin College

In this panel, students who participated in the 2018 Janterm, "Coffee and Café Culture in Paris and Vienna," share their hands-on research into how coffee is produced, roasted, brewed, and consumed in two European capitals. The panelists' remarks will range from the role of water in coffee production and presentation, the urban geography and interior design of cafés, and the centuries-long relationship between Paris, Vienna, and coffee.

## Thinking Outside the Plane: Teaching Non-Euclidean Geometry

Tyler Shaw and Jack Mealy  
Mathematics and Computer Science Department, Austin College  
Abstract #44

This is an ongoing research project involving the introduction of non-Euclidean geometry to an advanced mathematics class in intermediate primary education. Euclidean geometry is the type of geometry that is almost universally taught in school and is based on a well-defined set of axioms, which are a set of statements that are given to be true. Non-Euclidean geometries operate on different sets of axioms, which can have lines that obey traffic rules, wrap around corners, or go through "stargates". For this project, we will first teach students some non-Euclidean geometries and then will collect quantitative data through students' work to gain an idea of how well the students understand the material. Additionally, we will collect qualitative data through observations, student surveys, and interviews to gauge students' interest and confidence in the subject. Teaching students something besides the familiar Euclidean geometry will help them broaden their horizons and will also provide opportunities for much needed compare-contrast experiences in mathematics.

## Towards Developing a New Assay for Chaperone Function with Hydrophobic Interaction Chromatography

Joann Mathew and James Hebda  
Chemistry Department, Austin College  
Abstract #45

Protein aggregation causes cloudiness in the eye lens, known as cataracts, which can eventually lead to blindness. Although cataracts are easily treated with surgical procedures, this treatment is not easily accessible for every patient with cataracts. A method for prevention or a delay of onset of cataracts would dramatically increase the quality of life for anyone affected by cataracts.  $\alpha$ B-Crystallin ( $\alpha$ BX) is a highly expressed protein in the eye lens that exists in a range of oligomeric states (20-40 subunits). This protein helps prevent misfolding and aggregation of other proteins by acting as a chaperone. In the oligomeric form, the transient binding of the C-terminal tail from one monomer to another (strand exchange) has been hypothesized to partially govern both chaperone function and oligomeric size. The C-terminal tail contains a palindromic sequence hypothesized to allow bidirectional binding. To better characterize the palindromic strand exchange, a series of mutants were designed to break the symmetry of the sequence by introducing electrostatic repulsion to bias one orientation over the other.  $\alpha$ B-Crystallin acts as a chaperone protein by binding to the hydrophobic surfaces of misfolded protein. This concept was applied towards developing a new assay with Hydrophobic Interaction Chromatography. By utilizing the chaperone activity of  $\alpha$ B-Crystallin, this chromatography will explore the affinity of binding towards the protein and ligands within various hydrophobic resins using different pH's and salt concentrations. This data will further the understanding of chaperone function in a protein whose loss of function is linked to cataract disease.

## Oral Session II: Panels

March 24, 8:00 a.m. – 8:55 a.m.

Wright Campus Center 231

Wright Campus Center 254B

Wright Campus Center 255



## Characterizing the DNA-Binding and Anti-Proliferative Effects of Modified Planar Platinum(II) Compounds

Manasa Kuncham, Janani Ramesh, Dilan Shah, and Lance Barton  
Biology Department, Austin College  
Abstract #46

A notable hallmark of cancer is uncontrolled cell proliferation. Cisplatin is a chemotherapy drug used to interfere with cellular proliferation and treat the progression of cancer by inducing DNA crosslinks; however, the disadvantage of cisplatin is the lack of selective toxicity to cancer cells. This conserved mechanism, while effective, also has negative side effects on non-cancer cells. Additionally, over time cancer cells can develop resistance to cisplatin, providing a need for alternatives. The chemical composition of cisplatin includes a square planar platinum core with two cis-chloride and two cis-ammonia ligands. The objective of this project is to determine if modified square planar bioactive platinum compounds will demonstrate higher preferential toxicity and avoid resistance in cancer cells than cisplatin. Assessing the binding pattern of these compounds to cells could potentially lead to further development of platinum derived chemotherapies. Upon testing platinum compounds that contain sulfhydryl ligands in place of chloride ligands as found in cisplatin, reduced overall toxicity was observed in certain derivatives, as reducible sulfur bonds could enhance bioactivity inside the cytoplasm of the cells. Cellular viability decreased more in cancer cells treated with B2D Pt(II) compound than in normal fibroblast cells, indicating higher selectivity to cancer cells compared to the other tested compounds. Differential toxicity for cancer cells compared to normal cells indicates that some modifications can improve specificity. These modifications could better enable DNA-compound interactions, potentially resulting in higher toxicity than previously observed, while staying selectively toxic to cancer cells and surpassing cisplatin-specific resistance mechanisms.

## Identifying B-type Stars with Helium Anomalies at the Adams Observatory

Gary Casey, Wenhao Li, Bennett Reagan, and David Whelan  
 Physics Department, Austin College  
 Abstract #47

Over the course of the Fall 2017 semester, we identified four massive, B-type stars that showed less helium absorption in their ultraviolet-optical spectra than is expected. These so-called Helium-weak stars are known to account for approximately 15% of B-type stars with late spectral types. However, two of our Helium-weak stars are early-type, which means that they have hotter surface temperatures than typical Helium-weak stars. We analyze our spectra taken at the Adams Observatory to look for clues to help unravel this anomaly, and suggest some steps that can be taken in the future to determine the fraction of early-type stars that are likely to be Helium-weak.

## Austin College Improv

The *The Austin College Improv* will be at **9:00 p.m. on Friday, March 23th** in **Ida Green Theater**. The students who will be performing are:

Bailey Carrell, Student Facilitator  
 Jacob Neptune Dowell  
 Marissa Wilkinson  
 Reid Zimmerman  
 Sarah Smith  
 Emma Grundy  
 Rosie Fasullo  
 Chris Cooper  
 Abbey Goodman  
 Kyle Andrie  
 Robbie Moore

## The Effects of Social Support on Academic Stress

Katelyn Kuehnhold, Shamika Ninan, Nadia Shamiya, and Peter Marks  
Psychology Department, Austin College  
Abstract #48

The college years are a transitional period in an individual's life, marked with new independence from childhood to adulthood, a different educational atmosphere, and new relationships. Additionally, college students struggle with academic stressors that come in the forms of homework, deadlines, under-performance, time management pressure, and grade competition, as well as expectations of both family members and teachers. To help cope with these stressors, students rely on a support system of friends and family. This study tested the hypothesis that participants who scored higher on measures of family support and peer support would score lower on academic stress. Data were collected using an online survey adapted from previous research. The sample consisted of 88 college student from the Austin College psychology participant pool. Correlational analysis revealed that peer support and family support were both negatively correlated with academic stress. In addition, peer support was positively correlated with family support. Results also indicated that peer support was significantly negatively correlated with homesickness. The research from this study suggests that college students might not rely as heavily on family than peers when dealing with academic stress, and might explain how college communities differ from other educational environments. Our results can add to the development of effective coping strategies for academic stress in students, which could better help prevent the negative emotional and physical consequences associated with stress.

## $\beta$ -2-microglobulin Mutations

Mikayla Gascich and John Richardson  
Biochemistry Department, Austin College  
Abstract #49

$\beta$ -2-microglobulin (B2M) is a 99 residue protein that is a part of the Class 1 Major Histocompatibility Complex (MHC). The protein is characterized by a 7-stranded B sandwich stabilized by a single disulfide bond. B2M misfolds to aggregate into amyloid fibrils which has been linked to the disease Dialysis Related Amyloidosis (DRA). To investigate the misfolding process B2M will be mutated at different locations of the protein to test their effect on how the protein folds normally and how it misfolds. There are a lot of mutations that have been seen to cause big differences in the lag and elongation of the protein at or around position 60 such as position 58, 60, and 65. The lag and elongation time of protein folding has been directly tied to the formation of amyloid fibrils. The lag and elongation are two stages of the protein misfolding process. Where lag is a measure of the amount of time it takes in order to initiate the misfolding event and the elongation is the rate of propagation. There are also some interesting positions found towards the end of the protein that have major effects of the lag and elongation of the protein. Position 82 is one such position. By changing specific amino acids in specific places in the protein, valuable information will be obtained on how misfolding is occurring. Mutations were made through the process of Quick Change PCR, PCR purification, transformation, and QIAprep. The mutations were then confirmed with DNA sequencing.

## Art Presentation

Join us Friday, March 23 at 7:30 p.m. in the Ida Green Art Gallery for the art presentations by **Hannah Hunt** and **Savannah Flores**.

## Efforts Towards the Synthesis of Vitopyrrolid A.

Marie Mortensen and Ryan Felix  
Chemistry Department, Austin College

Many different medicines are inspired by plant produced chemicals. The *Vitex trifolia* L., a plant native to several providences in China, is used for treating headaches, colds, migraines, and arthritis. Several compounds extracted from the plant's leaves and fruits have many different medical benefits. However, the concentrations of these chemicals are very low. The research in this project focuses on one the synthesis of one of the chemicals derived from the plant's leaves, Vitopyrrolid A. The beneficial property of these chemicals in the leaves, is how they are cytotoxic towards certain cancer cells. The compound that will studied has a labdane diterpenoid with a 2-cyanopyrrole functional group. Using a synthetic pathway with two starting points, the first attempts to creating this compound are currently being investigated

## The Effects of Tai Chi on Stress Levels in College Students

Erin Martin, Quinten Vandereviere, Daniel Barfield, and Lisa Brown  
Psychology Department, Austin College  
Abstract #50

We examined the effects of Tai Chi, a mindfulness-based exercise, on stress levels in undergraduates. As a pre-test we gave students the Positive Affect Negative Affect Scale (PANAS) to determine their initial stress levels at that moment in time. They then watched and followed along with a twenty-minute long Tai Chi exercise video. Immediately after, the participants completed a post-test of the PANAS to determine their stress levels after completing the exercises. We predicted and found a significant decline in self-reported stress from pre-test ( $M = 2.12$ ) to post-test ( $M = 1.71$ ) suggesting that stress levels were reduced after completing a mindfulness based exercise.

## Characterizing Oligomerization of $\alpha$ B-crystallin Mutants Using Forster Resonance Energy Transfer

Clara Zee and James Hebda  
Chemistry Department, Austin College  
Abstract #51

$\alpha$ B-crystallin is a small heat shock protein that is expressed throughout the body. It plays a crucial role in the eye lens by acting as a chaperone to prevent misfolded proteins from aggregating to maintain proper protein homeostasis. Aggregation of misfolded proteins leads to formation of cataracts. Characterizing  $\alpha$ B-crystallin will help in understanding, potentially delaying, and possibly preventing cataracts. Based on previous research, the intermolecular strand exchange of the C-terminus was implicated to have an effect on chaperone function and oligomer exchange rate. The correlation between chaperone function and oligomer exchange rate is still unknown. This research utilizes a fluorescent dye-labeling technique to characterize oligomer exchange rates of  $\alpha$ B-crystallin mutants, S85C K92E, S85C E156K, and 3E by observing Forster resonance energy transfer (FRET) between monomers to analyze oligomer formations. With data gathered from FRET,  $\alpha$ B-crystallin oligomer exchange rates can be correlated to chaperone function under similar condition to further the understanding of  $\alpha$ B-crystallin.

## Trump or Sanders: Populism in the 2016 Presidential Election Cycle

Deric McCurry and Nate Bigelow  
Political Science Department, Austin College

With roots in late-19th Century Great Plains politics, populist movements have played a very influential role in the history of American politics. Through holding up the “ordinary man,” populist candidates from William Jennings Bryan and Huey Long to George Wallace and Ross Perot, have garnered widespread support and have changed the face of American politics. In 1976, Donald Warren wrote *The Radical Center* and found a population demographic which he coined the “middle American radicals,” or MARs. According to Warren, the MARs represented what would be considered a demographic of politically frustrated common Americans drawn to support populist candidate, George Wallace. In 2016, Democrat Bernie Sanders and Republican Donald Trump were two populist candidates that were able to infiltrate the major political parties with anti-establishment stances with much success. Both candidates serve as an interesting case study, because, while considered populists, they represented very polarized political ideologies. In this study, the 2016 American National Election Studies Pilot Survey is utilized to determine if there was a demographic of supporters similar to the MARs that were supportive of both Donald Trump and Bernie Sanders. Statistical analysis of demographical characteristics, candidate feeling thermometers, candidate preferences by party, and issue position priorities of respondents were analyzed to isolate and identify who the “populist” voter is in the United States. Results show that populism is a very complex political movement that is filtered through the intricacies of America’s two-party system.

## Wright Campus Center 254B

### Tusk Fractures in African Elephants in Protected Areas in Northern Tanzania

Michelle Zhou<sup>1</sup>, and John Kioko<sup>2</sup>  
Biology Department, Austin College<sup>1</sup>  
School for Field Studies<sup>2</sup>

The objective of this study is to study the extent of tusk fractures in adult and subadult African elephants across protected areas. This study was done in Manyara Ranch, Tarangire National Park, and Lake Manyara National Park in Northern Tanzania. The study involved observing the prevalence of tusk fractures in African elephants, as well as the extent of tusk damage for 9 days. Data on tusk and elephant demography was recorded for 345 elephants during the month of April, 2017, in the time period of a wet season. 23.4% of elephants had tusk fractures, while 9.2% without tusk fractures had tusk damages. Approximately double the amount of adult elephants (27.8%) had tusk fractures when compared to subadult elephants with tusk fractures (14.6%). While tusk breakage was moderate in this study, its broad implication in understanding of the levels of the different tusk condition is of importance in managing elephants. Tusk breakage can give indications of ecological and health conditions in protected areas.

### Investigation of Transformed MEF Display of Cancer Hallmarks

Spencer Hankins, Katherine Johnson, and Lance Barton  
Biology Department, Austin College  
Abstract #52

More than 50% of human cancers demonstrated high rates of p53 mutation, primarily in its DNA-binding domain. This provides an oncogenic change in p53 expression, providing a hallmark of cancer. Samples of PA28 $\gamma$  knockout immortal MEFs (KOMEF) and cancer clones (KOCC) were sequenced in search of these mutations and decreased ability of p53 to bind to DNA. Interestingly, a mutation was found in the KOMEF sample that was not present in the KOCC sample. The chemotherapeutic drug SCH 529074 was added to both samples to determine whether or not the drug could successfully bind to mutant p53. SCH59074 is known to not only bind to mutant p53, but to restore normal function to oncogenic p53. We demonstrated that the drug greatly decreased viability in cancer clones, but not in immortal MEFs, indicating that it may be a viable treatment option in cancer cells with mutant p53 expression. Cancer cells can express multiple phenotypes that are classified as hallmarks. Out of ten, we expect our cancer to express enhanced proliferation, apoptotic resistance and genetic instability due to alterations to p53 function. Another hallmark, cellular invasion, is thought to be directly inhibited by accumulations of p53. We found that wild type cancer clones showed higher rates of invasion than PA28 $\gamma$  knockout cancer clones.

## Investigating the Role of PA28 $\gamma$ in NF $\kappa$ B-mediated Inflammatory and Cancer Responses

Trung Nguyen, Hannah Butterfield, Brian Nguyen, and Emma Thornburg  
Biology Department, Austin College  
Abstract #53

NF $\kappa$ B is constitutively induced in multiple cancer types and is linked to avoidance of apoptosis, increased metastasis and proliferation, and the immune response. NF $\kappa$ B family members are regulated by the Inhibitor of  $\kappa$ B (I $\kappa$ B) family members, which hold NF $\kappa$ B inactive in the cytoplasm. Activation of NF $\kappa$ B can be achieved through degradation of I $\kappa$ B by proteasomes, followed by dimerization of NF $\kappa$ B for subsequent nuclear translocation and signaling. PA28 $\gamma$  is a proteasome activator that is frequently dysregulated in cancer and may regulate NF $\kappa$ B activity. PA28 $\gamma$  has been previously associated with NF $\kappa$ B activity by promoting I $\kappa$ B degradation, and also through stabilizing the interaction of NF $\kappa$ B with its transcriptional co-activator p300. Here, we further study potential impacts of PA28 $\gamma$  on the NF $\kappa$ B pathway by assessing the levels of various implicated proteins in PA28 $\gamma$ <sup>-/-</sup> cells, as well as by assessing differences in NF $\kappa$ B transcriptional activity through downstream gene targets.

## Antibiotic-Induced Gut Dysbiosis: Impacts on Behavior and the Hippocampus

Mark N. Pernik, Isabella Kackley, and Renee Countryman  
Psychology Department, Austin College

Antibiotics are frequently overused in pediatric patients, leading to concern that they may cause disturbances to the gut microbiota – a contributor to brain development through the “gut-brain” axis. We tested whether ampicillin-induced gut dysbiosis will lead to cognitive and anxiety-related changes in adolescent rats, if daily environmental enrichment will rescue changes, and identified changes within hippocampi. We had three groups of adolescent Long-Evans rats (n=36): control, antibiotic treatment (Abx), and antibiotic + daily environmental enrichment (enriched). Rats in the Abx and enriched groups received ampicillin at approximately 50mg/kg/day. We placed enrichment rats in novel enrichment cages with toys for 4 hours/day. Rats underwent novel object recognition (NOR), Barnes Maze (BM), object placement task (OP), open field behavior (OFB), and elevated plus-maze (EPM) training. Following behavioral testing, we sliced brains and performed immunocytochemistry for BDNF and p-CREB in the hippocampus. After 9 days of treatment, the enriched rats had significantly more activity on the OFB and EPM compared to control rats ( $p < .05$ ). In both the OFB and EPM tasks, antibiotic treated rats had an intermediate level of activity. Abx and enriched rats spent less time with novel objects after a 2 hour delay, with a trend toward significance ( $p = .10$ ). Data collection is ongoing for BM, OP, and immunocytochemistry. Based on our data, a single antibiotic treatment does not negatively impact behavior as much as reported in previous studies. Daily environmental enrichment may be a promising strategy as an adjunct to antibiotic treatment, but also seems to increase activity levels.

## Flood Insurance Participation in US Coastal Counties

Cesar Ruiz and Kevin Simmons  
Economics and Business Admin Department, Austin College

The purpose of this research is to identify some of the predictive variables determining the likelihood of residents of a coastal county purchasing flood insurance. This project will focus on flood insurance policies offered by the Federal Emergency Management Agency, and participating counties in Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Texas. The factors explored will include geographic, socioeconomic, and structure data. Using this data, a statistical model will be built to aid in the prediction of FEMA flood insurance participation rates in coastal counties in the eight states.

## Peer Influence on Athletes' Willingness to Seek Medical Treatment for Injuries

Amanda Nolting and Peter Marks  
Psychology Department, Austin College  
Abstract #54

There are a large number of athletes playing at the college level, and the injury rate is high (NCAA, 2014). Despite the prevalence of such injuries, athletes regularly fail to seek treatment for them (Stadden, 2015). Very little research, has examined potential factors that could increase athletes' willingness to seek medical treatment. Since previous studies have shown that peer influence can be beneficial to recovery after injury (Lu and Yawen, 2013), and can prompt displays of harmful behaviors (Huchting et al., 2011), we examined the effects of peer influence on athletes' and non-athletes' views of seeking treatment for injuries. In this study, we examined the effects of peer influence on three different criterion variables (perceived severity, willingness to seek treatment, and the judgment of how worthwhile avoiding treatment would be) when 68 athletes and 90 non-athletes were faced with hypothetical situations involving an injury in a neutral vignette. The neutral vignette was followed by a modified vignette, where peers either discouraged or encouraged the participant to seek treatment. Measures for competitiveness, conformity, and attitudes towards seeking medical help were also included. Our results indicated: 1) athletes showed less favorable attitudes toward seeking medical help compared to non-athletes; 2) athletes judged not seeking medical treatment to be more worthwhile compared to non-athletes; and 3) the type of peer reactions (encouraging or discouraging) impacted the participants' ratings of the three criterion variables, and affected athletes and non-athletes similarly. The findings of this study help to further elucidate potential factors which could increase willingness to seek treatment for an injury among both athletes and non-athletes.

## 2008 Beijing Olympics and its Effect on China. Was it Worth it?

Logan Menocal and Jennifer Johnson  
East Asian Studies Department, Austin College  
Abstract #55

In my presentation I will discuss the history behind the 2008 Beijing Olympics and the lasting effects they had on the community. In order to have a more persuasive argument, I will also show where the money could've gone instead and how China prioritized globalization above its own citizens.

## Wright Campus Center 254A

### Transatlantic Links: Exiled Art of the 20th Century

Rachael Newsom and Elena Olivé  
Classical and Modern Language Department, Austin College

This paper analyzes the effect of homeland displacement on the work of artists exiled from dictatorships in Spain and Cuba during the 20th-century. I first give a broad definition of exile to explain its varied nature. To understand the reasons behind exile, I examine the political and sociocultural atmosphere during the totalitarian regimes of Spain and Cuba. The works of several exiled artists from those countries are then analyzed based on content, style, and technique, showing how these artists expressed their dissatisfaction with totalitarian rule, the feelings of isolation they experienced, and the historical memory of their mother country. I argue that upon crossing the Atlantic, the artists reinforced the historical link between Spain and its former Latin American colonies by reaffirming the heritage they share and introducing contemporary artistic styles to the new country. Influenced by the state of exile itself along with other accompanying factors such as religion and oppression, the artists also adopted some of the characteristics of the artistic movement in the new country. Their exodus and the resulting body of work emphasized the trans-Atlantic connection that continues to link Spain and Latin America today.

## Prostitution through the Lens of Liberalism, Feminism, and Marxism

Bonnie Worstell and Audrey Flemming  
Political Science Department, Austin College

The objective of the proposed study is to analyze whether prostitution is inherently coercive and exploitative. The ontological question is this: what does exploitative mean to each framework, and which definition corresponds the best to reality? Further, how do these theories answer the question of whether sex workers consent or are coerced into this position in society? In this study, I assess the nature of prostitution through Feminist, Marxist, and Liberal theories. In addition, I examine case studies to provide empirical support for my thesis. I use articles and original literature from the three frameworks, structure their logical arguments and what each says about prostitution, present the strengths and weaknesses of each, and compare the theoretical analyses with the empirical cases of Sweden and India. My hypothesis is that prostitution is inherently exploitative.

## Investigation of Acetylation of $\beta$ -2 Microglobulin to Trigger Misfolding

Robbie Moore and John Richardson  
Chemistry Department, Austin College  
Abstract #56

$\beta$ -2 Microglobulin (B2M) is a component of the class 1 major histocompatibility complex molecule which is an integral component of the immune system. When B2M misfolds it forms an amyloid fibril, which leads to the chronic disease dialysis related amyloidosis. It is still not known what initially triggers misfolding of this protein in the human body. However, in a separate study it was shown that changing the net charge of a protein will affect its ability to self-assemble into aggregates by optimizing the repulsive intermolecular interactions electrostatically. Conversely, the change in the net charge of a protein could also induce the self-assembly of aggregates by reducing electrostatic repulsion. Here we used acetylation to introduce a change in the net charge to test the hypothesis that reducing the net charge will increase the rate of amyloid formation. A common acetylating agent that is used in everyday life is aspirin. We chose to use acetic anhydride, a slightly stronger acetylating agent. We took purified B2M and reacted it with the acetic anhydride and analyzed it using SDS- PAGE. From the gel we could see that the acetic anhydride caused splitting in the bands of the gel. This does not confirm acetylation of the protein, however it does tell us that there is a chemical change occurring in the B2M which warrants further investigation.

## c-C<sub>3</sub>H<sub>2</sub> and CN in the Helix Nebula

Jessica A Farra and Lindsay Zack  
Chemistry Department, Austin College  
Abstract #57

The Helix Nebula (NGC 7293) is the oldest known planetary nebula (PN) roughly 12000 years into the PN stage. PNe are characterized by the intense UV radiation emitted from the central white dwarf, which should dissociate and ionize molecular content. However, despite the Helix Nebula's age, HCO<sup>+</sup>, CO, H<sub>2</sub>CO, c-C<sub>3</sub>H<sub>2</sub>, H<sub>2</sub>CO, and C<sub>2</sub>H have been observed. One explanation for these observations is the presence of thousands of dense, possibly self-shielding clumps of gas where the molecular material may survive. In this work, we investigated the distribution of c-C<sub>3</sub>H<sub>2</sub> and CN across the Helix. Both molecules were observed at 9 different locations in the Nebula. Observations were made using the Arizona Radio Observatory, 12-m radio telescope on Kitt Peak, AZ. Relative abundances were determined to be between  $7.09 \times 10^{14}$  -  $9.73 \times 10^{15}$  cm<sup>-2</sup> for CN and between  $9.73 \times 10^{11}$  -  $4.45 \times 10^{12}$  cm<sup>-2</sup> for c-C<sub>3</sub>H<sub>2</sub>.

## Cost of Caring?: Burnout, Secondary Traumatic Stress, and Empathic Response in Clinicians

Rebekah Urban and Renee Countryman  
Psychology Department, Austin College

People in helping careers often experience stress related to efforts made in personal interactions. Effective clinicians must use empathy in their relationships with clients, but these relationships can take a toll on the wellbeing of the clinician. Some issues that are seen in individuals working in helping professions include burnout and secondary traumatic stress (STS). The purpose of this study was to explore the constructs of empathy, burnout, and STS in a sample of counselors and social workers. These relationships were studied using an online survey. Participants were recruited using professional listservs and a snowball method on Facebook. The survey consisted of three scales: The Interpersonal Reactivity Index (IRI, Davis, 1980), the Professional Quality of Life Scale (Stamm, 2010), and an empathic response scale derived from the IRI. For the empathic response, participants read a short vignette from a hypothetical client, answered a free response question about how they would respond to the client, and answered the empathic response scale. Preliminary results indicate higher levels of burnout and STS are associated with higher levels of trait personal distress. Additionally, higher burnout and lower compassion satisfaction in the high empathy condition were correlated with higher levels of state personal distress, suggesting individuals experiencing these conditions might respond with personal distress rather than empathy in conditions that require more empathy from a clinician.

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### Photodegradable Organogelator

Yue (Nancy) Fu and Andrew Carr  
Chemistry Department, Austin College

This research is focusing on synthesizing a new urea-based organogel that is degradable by UV-light. Organogels have wide application including drug delivery, art conservation materials, personal hygiene products and marine oil spill cleanup. Using a photodegradable compound as an organogelator would allow the gelator to cleave, breaking the integrity of the three dimensional network responsible for gelation, thus allowing the solid to become a free flowing liquid again. This new structure could be used in the development of new materials and nanoscale devices, as long as improving the safety of inflammable material delivery.

## Examining Differences between Athletes and Non-Athletes using the Big Five

Fredre McFadden, Robert Jones III, Michael Lindsey, and Lisa Brown  
Psychology Department, Austin College  
Abstract #58

This research examined if there was a difference between athletes and non-athletes in personality traits based on the Big Five. The Big Five personality traits include Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience. We predicted that athletes would be higher in Extraversion, Agreeableness, Conscientiousness, and Openness to Experience relative to non-athletes, but non-athletes would be higher in Neuroticism. The results partially confirmed the hypotheses.

## Investigating the Effects of p53 Mutations on Cancer Phenotypes in Transformed MEF Cells

Janani Ramesh, E. Gracie Bourcier, and Lance Barton  
Biology Department, Austin College  
Abstract #59

Cancer is an accumulation of mutations in cells. Typically, cancers exhibit specific phenotypes known as the Hallmarks of Cancer; six hallmarks have been identified and include replicative immortality, and invasion and metastasis. The protein p53 has a key role in numerous pathways that are known to contribute to these hallmarks. Four cell lines, control mouse embryonic fibroblasts (MEF), mutated mouse embryonic fibroblasts, or cancer clones (CC), carcinogenic mouse fibroblasts (A9), and carcinogenic mouse mammary cells (M158), were studied to understand how mutated p53 can manifest into cancer phenotypes. These lines were tested to characterize the CC line on the continuum of increasing tumorigenic capacity. All four cell types had a mutation in the p53 coding region, however the nature of the mutations varied. Upon investigation of cancer hallmarks such as genomic and genetic instability, invasion/metastasis potential, and resistance to cell death/pro-apoptotic signals, experimental results from karyotyping, gene sequencing, and migration assays favored the prediction that the CC cell line behaved more similarly to the MEF cell line, the precursor cell type to the transformation, than the carcinogenic A9 and M158 cell lines. This was true of genetic and genomic instability, and invasion/metastasis phenotypes. A single mutational event is unlikely to result in a fully formed cancer cell, but would rather require a series of mutational events to overwhelm the ability of cells to self-regulate.

## The Beginnings of the American Dream: The Effects of Industrialization on the American Identity in Modernism

Lois Bronaugh and Greg Kinzer  
English Department, Austin College

The image of the American as one constantly working and moving towards something more-wealth, status, comfort-is nothing new; indeed, it has become a defining label for the country's ideal in the very concept of the "American Dream." The basis for the goal-oriented and fast-paced American of today's stereotype began to be formed within modernism, a movement composed of a certain group of artists and writers in response to the modern period, as one which placed value in the present and future as the constructs of their self-identification. Sherwood Anderson and Jean Toomer, two authors of this period, use their respective literary works to point out the way technology and urbanization introduced a struggle and drive in the American mentality. By doing so, the authors develop modernist rhetoric in their publications by recognizing the shift away from the past in the American mindset and embracing the present and future as means of dealing with the chaotic changes brought on by industrialization.

## "The Sheltering Heart of the Inarticulate" - Susan Howe Uncovers the Secret History of American Literary Expression

Lissie Tupper and Greg Kinzer  
English Department, Austin College

As a postmodern poet and historian, Susan Howe pursues what she refers to as "secret history," a historical form that she uplifts from the inarticulate voices of American history. Howe searches for the inarticulate voice in old archives, in notes made in the margins of books, in obscure scraps of writing, in texts with words crossed out and blurred - any piece of writing that bears the imprint of being uncertain or unsettled. Howe creates poems through these literary discoveries and in so doing attempts to connect with the true heart of American literary expression which has been suppressed by a culture that understands the uncertain voice to be negligent and opposed to progress.

## Brand Preference as it Relates to the Effects of Social and Emotional Attachments

Anastasia Acobyan, Isabella Hess, and Lisa Brown  
Psychology Department, Austin College  
Abstract #60

This correlational study set out to find if a person's brand attachment related to perceived warmth and competence of users of competitor's brands. We hypothesized that if a person is highly attached to a certain brand that they will view those who use that brand's competitor as less warm/competent., We used the warmth and competence scales developed by Cuddy et al. (2009), and a brand attachment scale created by Thomson, MacInnis, and Park (2005) in this study. We chose 10 well-known brands among college students and matched them with their competitors (example: Nike vs. Adidas), for a total of 20 brands. The results only partially supported the hypothesis as brand attachment generally had no relationship with views of users of competitor's brands.

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### Staring Into a Darwinian Abyss: Indulging in the Savagery of the Wild Man Archetype

Elijah Andes and Roger Platizky  
English Department, Austin College

“There is grandeur in this view of life—Æ from so simple a beginning endless forms most beautiful and most wonderful have been, and are being, evolved.” - Charles Darwin, *The Origin of the Species*

For many literary artists of the Victorian era of literature, the ideas represented in Darwinian natural selection represented not only an incredible upheaval in the realm of science, but also portrayed a cold, clinical, and terrifying portrayal of nature in which every organism is constantly at war with others. This interpretation of Darwinian nature caused backlash within the Victorian literary community, members of which struggled with the idea of a natural world that was not influenced by God. For these artists, Darwinism ran the risk of disrupting the ideal of nature as harmonious and beautiful. Through examining Alfred Tennyson’s “In Memoriam,” Christina Rossetti’s “Goblin Market,” and Robert Browning’s “Caliban Upon Setebos,” we can see paradoxes in the response to Darwin’s view of nature in the use of the Wild Man archetype. The Victorians were nothing if not contradictory in nature, and this archetype is a stellar example of this duality. Both protectively caged and inquisitively explored, the wild man archetype provided a breeding ground for Victorian poets either to reconcile themselves with, or to rebel against, what they perceived to be a savage and godless view of nature portrayed by Darwinian natural selection, as well as other similar Victorian theories of evolution.

## Crafting Indigeneity: Reviving Culture and the Multiple Identities of The Siraya

Shutong Hao and Brian Watkins  
Anthropology Department, Austin College

Two summers ago I had the opportunity to study the Siraya—an indigenous group of people residing in Tainan, Taiwan. Although they were indigenous, they were not recognized as so by their national government, therefore lacking all the rights such as land, education, monetary, etc., that came with the status, despite their decades of effort to acquire such identification. I spent a month with them to discover why that was the case. During my time there, I practiced participant observation, attended the events they invited me to, completed any advocacy work they needed help with, and always asked questions about their cultural revitalization efforts, their history, family, and perhaps mostly importantly, their identity. I wanted to know who they were, how they collectively identified themselves to reach their goal, and why regaining that status was so important to them. Ultimately, I realized that the way the Sirayan identity was experienced was multiple. I learned that although their perception of themselves differed between members, collectively, the modern core of who they were was built around their advocacy. To reclaim their lost identity, it was necessary to change it and perform that change for the world.

## Oral Session I: Honors Theses

March 23, 3:30 p.m – 4:45 p.m.

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## Wright Campus Center 231

### **From Cattle-woman to Entrepreneur; Clara Driscoll's Life of Activism in Texas**

Alexandra Sterken and Light Cummins  
History Department, Austin College

The purpose of this project is to offer a comprehensive look at the life of Clara Driscoll, a legendary entrepreneur in Texas History. This study will examine the facets of Driscoll's life that made her an influential figure in the history of Texas. I will analyze her philanthropic endeavors, her political activism, her historic preservationism, and her entrepreneurial ventures to establish the ways in which her life positively impacted the South-Texas region. Additionally, by studying the various aspects of her life, I will establish the ways in which her success in disparate industries worked to deconstruct some of the gendered barriers women faced in the twentieth century.

### **Initial Investigation Towards the Synthesis of of the Bioactive Coumarin, Anisucoumaramide**

Shelby Poe and Ryan Felix  
Chemistry Department, Austin College

This research explores the chemical synthesis of a newly discovered bioactive coumarin, Anisucoumaramide. Coumarins are naturally occurring phenolic substances that are found mostly in plant species and composed of fused benzene and -pyrone rings. Due to their large diversity of structures, they exhibit several significant biological activities that include, but are not limited to, antitumor, anticoagulant, anti-inflammatory, estrogenic, and analgesic properties, as well as prevention of type II diabetes. Other coumarin derivatives have been chemically synthesized in the laboratory by implementing a variety of synthetic routes, for example: electrophilic substitution, carbon-hydrogen bond functionalization, Knoevenagel condensation, and Wittig olefination. In the present investigation, the initial reactions towards the synthesis of Anisucoumaramide were explored. This is the first attempted synthesis of Anisucoumaramide.