

Austin College Student Scholarship Conference

March 18-20 2021



Welcome

Welcome to the Austin College Student Scholarship Conference! Though this is our ninth conference, it is the first to be fully virtual and includes a livestreamed recital and a synchronous panel discussion with our CREATE (Center for Research, Experiential, Artistic, and Transformative Education) ambassadors. We are excited about these new additions. Whether in person or virtually, ACSC is a celebration of our students' intellectual curiosity and their persistent pursuit of new knowledge and new achievement. Not even a global pandemic could stop them!

One of the hallmarks of an Austin College education is our belief that learning takes place everywhere. Our students go beyond the boundaries of the classroom and into the laboratory, the studio, the stage, and the community. The work presented here demonstrates how students have extended their learning across many disciplines and methods of study.

Research and scholarship, the achievement of new knowledge, are valuable for their own sake and for society as a whole. The process itself is also a vehicle for growth. Students develop a variety of communication skills to present their results. They gain perseverance, patience, and commitment by testing their own hypotheses, considering alternate solutions, and seeing their own original research questions through to completion. All of these efforts serve students well in whatever future interests they pursue.

Another hallmark of an Austin College education is the individual mentoring relationships our students find here. Faculty members demonstrate their own intellectual curiosity through academic pursuits and also create structures that both engage students and provide opportunities for them to embark on independent study. Without faculty support and guidance, this conference would not be possible. Thank you to all faculty members for their support of our students. I would like to particularly thank the Conference Planning Committee for the time and energy they spend providing a showcase for student achievement of such depth and breadth.

I hope you enjoy this opportunity to encounter new ideas and celebrate our students' achievements.

Sincerely,
Steven P. O'Day, J.D.
President

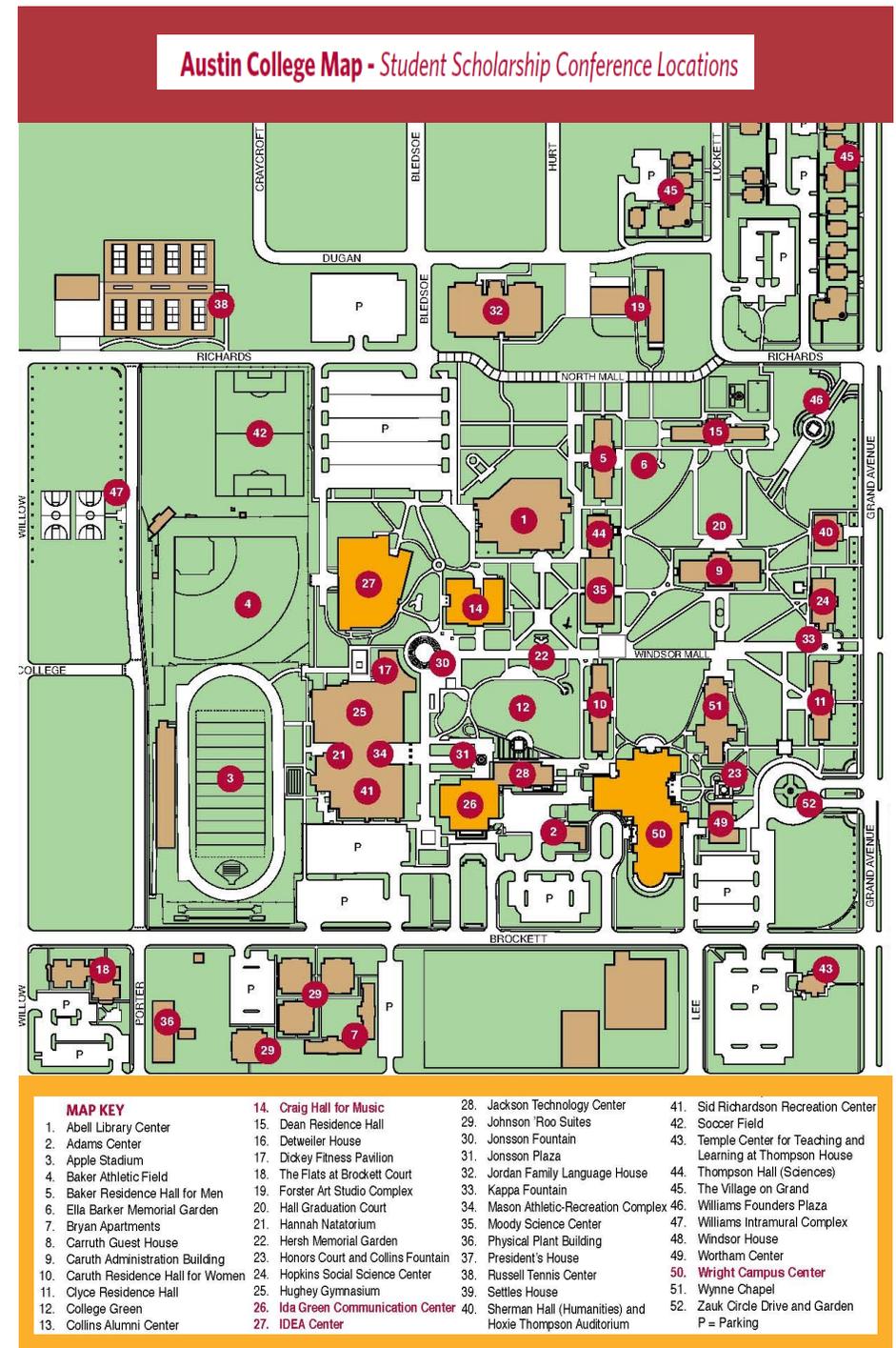


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Schedule of Events

Thursday

11:00 a.m. - 12:00 p.m.

Live Author Q&A

Elizabeth Parker, Odalys Sarabia, Taiton Fox,
Hallie Dickerson, Emily Aller

12:00 p.m. - 1:00 p.m.

CREATE Ambassadors Panel

Madeleine Reinhardt, MacKenzie Bolen, Hallie Dickerson,
Jessica Hoffman, William McCarthy, Freyja Coe

4:00 p.m. - 5:00 p.m.

Live Author Q&A

Jaran Rudd, Matilyn Perry, Alyssa Longaker,
Caroline Fullerton, Megan Goyal

7:30 p.m.

Emilie La Marquise Du Chatelet Defend her Life Tonight
Directed by Abigail Goodman

Friday

12:00 p.m. - 1:00 p.m.

Live Author Q&A

Zoya Waheed, Sita Ramasamy, Electra Coffman,
Ariana Quirino, Matthew Li

1:00 p.m. - 2:00 p.m.

Live Author Q&A

Freyja Coe, Makayla Dunlap, William Koelzer, Ndzania Mpunga,
Saif Ahmad, MacKenzie Bolen

2:00 p.m. - 3:00 p.m.

Live Author Q&A

Zoe Garrett, Elizabeth Pack, Sydney Versen, Caroline Glaister,
Madeleine Reinhardt, Priya Shah

4:00 p.m. - 5:00 p.m.

Live Author Q&A

Joshua Himelfarb, Mandy Eckhardt, Prithvi Kalkunte,
Tawfeeq Shaik, Veronique Tessier, Jessica Hoffman

4:30 p.m.

Music Recital - Livestream

Anna Long

Schedule of Events

Saturday

10:00 a.m. - 11:00 a.m.

Critical Intersections Panel

Sonia Charales, Delice Dembe, Makayla Dunlap,
Haydee Fuentes

Live Author Q&A

James Cowan, Matilyn Perry, Ruthann Schmiege,
Elizabeth Munns

11:00 a.m. - 12:00 p.m.

Culture & Creativity Panel

Anna Rajagopal, Haydee Fuentes, Sonia Charales,
Zuni-Ire Rubio

Live Author Q&A

Brett Skinner, Michelle Ramirez, Ruthann Schmiege,
Andrea Selkow, Aguiela Ndoungal Fobasso Awah

12:00 p.m. - 1:00 p.m.

Darker than Night Panel

Kirsten Munson, Jake Tidwell, Johnathan Biffar

Live Author Q&A

Tanner O'Dwyer, Maxwell Dodd, Taiton Fox,
Malcolm McLeod

1:00 - 2:00 p.m.

Scarbrough Research Panel

Leslie Erwin, Allen Mankin, Samuel Marsh, Joshua Himelfarb

Live Author Q&A

Megan Frank, Emma Solis, Emily Davis,
Mia Hibner, Michelle Ramirez

2:00 - 3:00 p.m.

The Last Girl Panel

Madison Messerle, Yaminah Martinez, Siena Wyse,
Shannon Fischer, Vivianna Denittis, Sonia Charales

Student Contributors

Saif Ahmad
Emily Aller
Aguiela Ndoungla Fobasso Awah
Johnathan Biffar
Mackenzie Bolen
Sonia Charales
Freyja Coe
Electra Coffman
James Cowan
Emily Davis
Delice Dembe
Vivianna Denittis
Hallie Dickerson
Maxwell Dodd
Makayla Dunlap
Mandy Eckhardt
Shannon Fischer
Taiton Fox
Megan Frank
Abbey Franke
Haydee Fuentes
Caroline Grace Fullerton
Zoe Garrett
Caroline Glaister
Megan Goyal
Astrid Grouls
Annie Gunter
Mia Hibner
Joshua Himelfarb
Jessica Hoffman
Raehannah Jamshidi
Rachel Jimenez
Sarah Joseph
Jessica Junginger
Prithvi Kalkunte
Aarthi Kannan
William Koelzer
Varun Kotipalli
Matthew Li
Anna Long
Alyssa Longaker
Keara Malone
Samuel Marsh
Allen Mankin
Yaminah Martinez
Katherine McBroom
Malcolm McLeod
Brittany McMillen
Madison Messerle
Ndanzia Mpunga
Elizabeth Munns
Kirsten Munson
Adam Myers
Brian Nguyen
Keegan Nichols
Spencer Nystrom
Tanner O'Dwyer
Elizabeth Pack
Elizabeth Parker
Matilyn Perry
Evan Powell
Ariana Quirino
Shruti Raghavan
Anna Rajagopal
Sita Ramasamy
Michelle Ramirez
Madeleine Reinhardt
Zuni-Ire Rubio
Jaran Rudd
Odalys Sarabia
Ruthann Schmiege
Chloe Schnaible
Michael Selby
Andrea Selkow
Priya Shah
Tawfeeq Shaik
Kylee Shanks
Brett Skinner
Anna Sliz
Emma Solis
Harsha Tamtam
Veronique Tessier
Jake Tidwell
Paola Torres
Sydney Versen
Zoya Waheed
Connor Watson
Siena Wyse

Committee

Coordinator

Renee Countryman

Associate Coordinator

Ashley Tharayil

Humanities Representatives

Tom Blake

Scott Langton

Fine Arts Representatives

Ricky Duhaime

Mark Monroe

Kirk Everist

Sciences Representatives

David Aiello

David Whelan

Social Sciences Representative

Ashley Tharayil

Renee Countryman

Student Support

Aneurin Minson

Hector Diaz

Administrative Support

Amy Parsons

“Art Contest Winner”

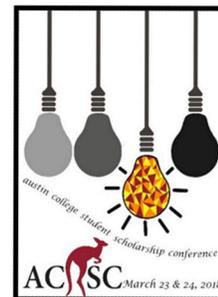
Congratulations to the Winner of the 2021
Abstract Book Cover Artwork
Design Contest

Rachel Young '21

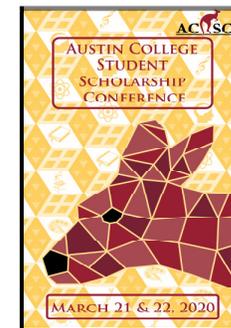
Major: English

Minor: English, Philosophy, Anthropology

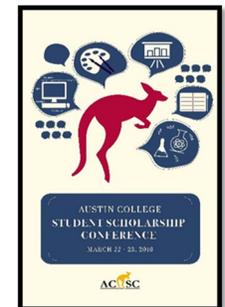
If you are interested in seeing your art work on our cover or on the posters we will use to advertise our 2022 Austin College Scholarship Conference, please keep in mind that next year's due date will be at the beginning of the Spring 2022 semester.



2018 Winner Rachel Thompson



2020 Nadia Hannon



2019 Winner Phung Banh

Emilie

LA MARQUISE DU CHATELET
DEFENDS HER LIFE TONIGHT

By Lauren Gunderson
Directed by Abbey Goodman

MARCH 18-20, 2021
7:30 PM

LIVE PERFORMANCES IN THE
NATION THEATRE
AND STREAMING VIRTUALLY

PERFORMANCE BY THE AUSTIN COLLEGE IMPROV TROUPE TO FOLLOW EACH LIVE SHOW



SCAN ME

In Person and Virtual Tickets
available for free online at:
<http://actheatre.booktix.com/>

IN PERSON TICKETS AVAILABLE FOR
STUDENTS/FACULTY ONLY

"Emilie: La Marquise Du Châtelet Defends Her Life Tonight" is presented by arrangement with
Concord Theatricals on behalf of Samuel French, Inc. www.concordtheatricals.com



A Collaboration Recital

Program

Frauenliebe Und Leben, Op. 42

Robert Schumann
1810-1856

1. Seit ich ihn gesehen
2. Er, der Herrlichste von allen
3. Ich kann's nicht fassen
4. Du Ring an meinem Finger
5. Helft mir, ihr Schwestern
6. Süßer Freund
7. An meinem Herzen
8. Nun hast du mir den ersten Schmerz getan

Anna Long

Le Prisonnier

Maria Malibran
1808-1836

Anna Long & Sylvia Rivers

Timothy Jenkins, Piano
Sylvia Rivers, Lecture

Friday, March 19 4:30pm
Craig Recital Hall

Poster and Oral Presentations

Anthropology

How Covid-19 has Deepened the Environmental Crisis Among the Kichwa:A Discourse Analysis

Jaran Rudd & Brian Watkins
Anthropology, Austin College
Oral Presentation

NOTES

This project considers how the cascade effect of Covid-19 on top of the environmental crisis caused by development is affecting the Kichwa indigenous community of the Amazon in Ecuador. Through an exploration of the discourses of, and corresponding practices that emanate from, neoliberal development and that of the political-economic philosophy of the Kichwa, the Sumak Kawsay (the good living), I will uncover the limitations of development projects in making the lives of this indigenous group better, and unravel the socio-cultural significance of the agency and collective resistance with which the Kichwa embody in order to survive and protect their way of life. I give particular detail to the investigation of the garden project that they've started to recuperate ethnobotanical nutritional resources lost due to oil spills.

Author Q&A

Thursday, March 18, 2021 from 4:00 pm - 5:00 pm

Biology

PA28 γ Plays a Role in Apoptosis following Genotoxic Stress

Electra Coffman, Emily Aller, Raehannah Jamshidi, Anna Sliz,
Astrid Grouls, Annie Gunter, & Lance Barton
Biology, Austin College
Poster Presentation

Proteasomes are multi-catalytic proteases that regulate various processes in the cell including mitosis and apoptosis. Proteasome activators, such as PA28 γ , have been found to be highly expressed in cancerous cells with apoptotic resistance. Murine Embryonic Fibroblasts (MEF's) lacking PA28 γ are more susceptible to spontaneous apoptosis, suggesting PA28 γ plays a role in programmed cell death. To determine how PA28 γ affects the caspase-9 mediated apoptotic signaling pathway, MEF's deficient in PA28 γ were induced to enter apoptosis by various cytotoxic stimuli. PA28 γ did not show a consistent pro- or anti-apoptotic role, with PA28 γ sensitizing the MEFs to some stimuli and conferring resistance to others. These variable roles for PA28 γ indicate that it plays a role upstream of the apoptosis pathway's commitment step. Notably, out of the tested stimuli, PA28 γ only seemed to regulate apoptosis in treatments known to induce DNA damage, suggesting that PA28 γ may induce or inhibit apoptosis primarily via repair of DNA damage. Furthermore, treatment with a proteasome inhibitor resulted in a decrease of apoptosis and the elimination of differences in the amount of apoptosis between PA28 γ +/+ and PA28 γ -/- cells. These data suggest that PA28 γ regulates apoptosis in a proteasome-dependent mechanism. Inhibiting PA28 γ may be a promising target to enhance the effects of some chemotherapies, but this benefit will be dependent on both the mechanism of action and cellular characteristics.

Author Q&A

Friday, March 19, 2021 from 12:00 pm - 1:00 pm

The Function of the Oncogene c-Myc is affected by PA28 γ in Cancer

Emily Aller & Lance Barton
Biology, Austin College
Oral Presentation

Cancers are identifiable by the demonstration of ten hallmarks, such as increased proliferation and capacity for metastasis. Proteins contributing to multiple hallmarks are generally more likely to be altered by mutation in cancers making them appealing targets for the development of chemotherapies. One such protein affecting multiple hallmarks is c-Myc, a transcriptional regulator involved in growth, proliferation, metabolism, and differentiation. Meta-analysis of gene expression data indicates a correlation between cellular levels of c-Myc and the proteasome activator PA28 γ in multiple cancers. Recent studies have demonstrated contradicting roles for PA28 γ in regulating c-Myc's cellular abundance, with one study indicating that it degrades c-Myc via the ubiquitin-independent proteasomal protein system (UIPPS), and another indicating that it stabilizes c-Myc via an unknown mechanism. This project investigated the relative importance of the ubiquitin proteasome system (UPS) and the UIPPS in regulating c-Myc's stability in cancer. Using normal and cancer cell lines expressing differing amounts of PA28 γ , I identified a correlation between elevated PA28 γ expression and increased c-Myc levels in breast cancer. Increased c-Myc levels, however, are not due to alterations in UPS-mediated c-Myc degradation nor alterations in UIPPS function alone. Therefore, further analysis of PA28 γ function in these cells is required to determine its viability as a chemotherapy target.

Author Q&A

Thursday, March 18, 2021 from 11:00 pm - 12:00 pm

Life History and Hibernation Patterns of Thirteen-lined Ground Squirrels across a Latitudinal Range

Emily Davis, Hallie Dickerson, Emma Solis,
Adam Myers, & Jessica Healy
Biology, Austin College
Poster Presentation

The 13-lined ground squirrel (TLGS) is a small burrowing mammal that hibernates. The species ranges from southern Canada to northern Texas, and between the Rocky Mountains and Great Lakes. This study focuses on investigating life history characteristics of the species across a latitudinal gradient. In summer 2019, animals were live trapped from populations in TX, OK, KS, IA, and MN, and blood and tissue samples were taken, as well as sex and morphometric observations. Additionally, a data package that measured body temperature every 4 hours for 1 year was implanted into trapped squirrels of both sexes. Temperature data loggers were also buried at trap sites to record soil temperature, and a soil sample was collected. During the summer of 2020, 3 TLGS (from OK, IA, and MN) were re-trapped and data logger packages were retrieved. Overall, the hibernation season of the 3 recaptured squirrels lengthened with increased latitude and decreased with overwinter soil temperatures. Males in MN had higher testosterone levels than males in other states, suggesting a delayed breeding season as compared to other states. The hunger hormone ghrelin was significantly lower earlier in the summer compared with samples collected later in the season, indicating a trigger in a fat-storage period directly prior to entering hibernation. This is the first record of hibernation patterns in free-living TLGS across a latitudinal gradient, and provides information that may help explain their disappearance.

Author Q&A

Saturday, March 20, 2021 from 1:00 pm - 2:00 pm

Effects of Ambient Temperature and Gonadal Hormones on Torpid Ground Squirrels

Emma Solis, Adam Myers, & Jessica Healy
Biology, Austin College
Poster Presentation

Hibernation is a period of lowered body temperature and metabolic rate (MR) during times of resource scarcity in harsh weather conditions. Species such as the thirteen-lined ground squirrel (TLGS) hibernate for months by relying on fat stores to survive. As the ability to amass excessive fat (>30%) is adaptive in hibernators, hormones involved in energy balance (e.g., the hunger hormone ghrelin and the female sex hormone estradiol (E2)) are regulated seasonally. In this study we explored the effects of added E2 on 4 female TLGS. Animals were implanted subcutaneously with vehicle or vehicle+E2 capsules in the spring just after hibernation. For 3 weeks, food intake was measured & blood samples taken/tested for levels of E2 and ghrelin. Animals began re-entering hibernation in August and were kept in constant darkness at 20°C. In October measurements of oxygen consumption and water vapor production (i.e., MR and arousal status) were taken over 4 weeks as ambient temperature was lowered from 20°C to 5°C. Preliminary results suggest that added E2 had no discernible effect on food intake and blood hormone levels, nor on torpid MR. However, animals aroused from torpor quicker and had higher metabolic rates when hibernating at 20°C than at 5°C. Understanding at which temperature hibernation is most efficient is key in evaluating the “ideal” conditions for hibernation, and whether or not those conditions will continue to exist within the species range of TLGS with climate change.

Restoration Prairie Terrestrial Animal Survey and Progress Using Small Mammal Populations and Distribution

Hallie Dickerson & Jessica Healy
Biology, Austin College
Oral Presentation

Tallgrass prairie is characterized by a grass dominated landscape with a large forb variety and very few shrubs and trees. Almost all the tallgrass prairie in North America has been lost to agriculture which produces less ecosystem services: ground water absorption, soil accumulation, carbon sequestration, etc (Rowe 2010). Prairie ecosystem benefits have led many to see the gain from prairie restoration. Prairie restoration is the attempt to convert land back into its natural ecosystem of grasses and forbs with minimal trees. I will investigate the restoration progress of Sneed prairie (formerly a farm) in Sherman, TX using multiple methods not previously applied systematically at this location. Initially, I will complete an in-depth terrestrial vertebrate (small mammals & herpetofauna) and invertebrate census. Then I will compare the small mammal species found at Sneed to those found at the Lyndon B. Johnson National Grassland field location of National Ecological Observation Network (NEON). I will use the LBJ National Grassland small mammal trapping data as a reference to assess the restoration progress of Sneed, while considering general differences between the locations. The field treatments at Sneed (prescribed burning, grazing, and mechanical management) will allow me to compare the species present in each field treatment type and identify if a certain type of prairie management is associated with higher diversity or abundance of vertebrate populations.

Author Q&A

Saturday, March 20, 2021 from 1:00 pm - 2:00 pm

Screening and Isolation of Cancer Cells Containing a CRISPR Deletion of PA28 γ

Jessica Hoffman, Brian Nguyen, Varun Kotipalli, Michelle Ramirez, Brittany McMillen, Emily Aller, & Lance Barton
Biology, Austin College
Poster Presentation

PA28 γ is a proteasome activator that is overexpressed in several cancer types and positively correlated with cancer severity. Moreover, PA28 γ deficient mice treated with a topical tumor inducing agent form fewer and smaller tumors as compared to wild type mice, further suggesting that PA28 γ might play an important role in tumorigenesis. In order to determine whether the overexpression of PA28 γ is essential to maintaining tumorigenic properties within cells, the CRISPR/Cas9 genome editing tool was utilized to engineer homozygous and partial heterozygous deletions of the psme3 gene, which encodes for PA28 γ , in four murine tumorigenic or carcinogenic cell lines. Clones are in the process of being screened by multiple identification steps using PCR, T7EI digestion, western blotting, and sequencing.

Author Q&A

Friday, March 18, 2021 from 4:00 pm - 5:00 pm

Determining the Function of the Transcription Factor Cmr3 in Wild Type *Saccharomyces cerevisiae* and its Role in the *spt4* Δ -Mediated Rescue of *pgm2* Δ Phenotypes

Mandy Eckhardt & David Aiello
Biology, Austin College
Oral Presentation

Phosphoglucomutase (PGM) is an enzyme responsible for the interconversion of glucose-1-phosphate (G1P) and glucose-6-phosphate (G6P) in *Saccharomyces cerevisiae*. A mutant yeast strain lacking PGM2, the major isoform of PGM, exhibits several defective phenotypes relating to metabolism and Ca²⁺ homeostasis when the cells are grown on galactose media. EMS mutagenesis was utilized to isolate mutant alleles that rescue *pgm2* Δ growth defects. SPT4, which encodes a transcription elongation factor, was identified through this screen. Loss of SPT4 rescues all Ca²⁺ related phenotypes observed in the *pgm2* Δ mutant. We undertook an RNAseq analysis to identify candidate genes that show differential expression between the *pgm2* Δ strain relative to wild type and *pgm2* Δ *spt4* Δ strains. Further, the DREME analysis tool has identified the transcriptional activator, Cmr3, whose binding sequence shows increased representation in the promoters of genes more highly expressed in *pgm2* Δ than wild type or *pgm2* Δ *spt4* Δ . The *pgm2* Δ *cmr3* Δ strain grows slower on galactose media, indicating that CMR3 likely contributes to the viability of the *pgm2* Δ mutant. Eight genes have been identified that have altered gene expression in the *pgm2* Δ mutant and are potentially regulated by Cmr3. Current efforts seek to determine the roles of these genes in the survival of the *pgm2* Δ strain, and chromatin immunoprecipitation is being utilized to determine if Cmr3 is binding to the promoter regions of these genes.

Author Q&A

Friday, March 19, 2021 from 4:00 pm - 5:00 pm

Pesticidal Determinants on Zebrafish Development

Mia Hibner & Kelli Carroll
Biology, Austin College
Poster Presentation

Pesticides have emerged as a global public health concern due to their wide usage and the frequency of human exposure. They are found in numerous places including groundwater and as residues on crops. Understanding the effects these chemicals have on human development is crucial as humans frequently come into contact with them. Zebrafish are an ideal model organism to study developmental biology because of their rapid and transparent development. In order to identify specific pesticides for future study, we used a list from the Environmental Protection Agency of the fifty most commonly used pesticides in the USA, with an emphasis on those that had a potential effect on neural development and function. The top pesticides of interest are Glyphosate, Atrazine, Paraquat, Dicamba, Methyl Bromide, Bifenthrin, Malathion, Metolachlor, Chloropicrin, and Pendimethalin. For each pesticide, zebrafish studies as well as studies using other model organisms were utilized to provide important background information on dosing and morphological abnormalities seen after embryonic exposure. In addition, case studies of high-dose human exposure provided information on the effect these pesticides have on adult physiology. Promising candidate drugs will undergo a deeper analysis with behavioral assays and an in-depth characterization of organogenesis, as well as identification of the modes of action for each drug. Lastly, combinatorial treatments may also be conducted in the future.

Author Q&A

Saturday, March 20, 2021 from 1:00 pm - 2:00 pm

Analysis of Cancer Biology CURE-generated Data regarding Faculty and Student Benefits

Michelle Ramirez, Emily Aller, & Lance Barton
Biology, Austin College
Poster Presentation

Incorporating Course-based Undergraduate Research Experiences (CUREs) into the classroom can provide numerous benefits to both students and faculty. While the student benefits have been well researched, few studies have investigated the faculty benefits. The purpose of this study was to provide insight on faculty benefits of CUREs by investigating the quality and usefulness of CURE-generated data. The Cancer Biology CURE asked students to investigate a gene and its role in early carcinogenesis by performing karyotyping, transwell migration assays, and wound-healing assays. Overall, analyzed data demonstrated high variability, but they tended to follow the general trends observed in published literature. As such, while the student-generated data may not meet the standards for peer-reviewed publication, they can inform projects that may be pursued outside of the course in the faculty member's research lab. Additionally, the CURE-generated data have provided an opportunity for the faculty member to gain more publicity and awareness for their project. Beyond faculty benefits, this study confirmed the CURE was providing the expected student benefits. Student demographics and development were analyzed for students who were enrolled in the CURE to the students in all STEM related courses. Overall, this study suggests that CUREs can benefit students and faculty.

Author Q&A

Saturday, March 20, 2021 from 11:00 am - 12:00 pm

Investigation of Correlation between Expression of PA28 γ and Cell Susceptibility to Cisplatin

Michelle Ramirez & Lance Barton
Biology, Austin College
Oral Presentation

PA28 γ is a proteasome activator that has been seen to be overexpressed in many cancers. It is associated with many characteristics that help develop cancer otherwise known as hallmarks. Some of these hallmarks include evading growth suppressor, sustaining proliferative signaling, resisting cell death, genome instability and mutation, and activating invasion and metastasis. Cancers with higher PA28 γ expression are shown to be more aggressive. Aggressive cancers have also been seen to be more susceptible to drug resistance. A conventional drug used to treat cancer is cisplatin, however, cells treated with this drug can also be susceptible to it. Therefore, the goal of this project is to determine whether there is a correlation between the expression of PA28 γ in certain cell lines and cisplatin resistance.

Author Q&A

Saturday, March 20, 2021 from 1:00 pm - 2:00 pm

Examining the effects of extracellular Ca²⁺ and Methylglyoxal on HACS and LACS mutants in *S. cerevisiae* mutants lacking PGM2.

Ndanzia Mpunga, Harsha Tamtam, Michael Selby,
Aarthi Kannan, & David Aiello
Biology, Austin College
Poster Presentation

The major isoform of phosphoglucomutase, PGM2, interconverts glucose-1-phosphate (G1P) and glucose-6-phosphate (G6P) in carbohydrate metabolism. *S. cerevisiae* mutants lacking PGM2 exhibit an increase in the G1P:G6P ratio from an inability to interconvert between the two metabolites. Furthermore, the *pgm2* Δ mutant displays slow growth on galactose-containing media, sensitivity to CsA, increased induction of the unfolded protein response, and higher levels of intracellular Ca²⁺. Calcium influx into the plasma membrane is mediated by two systems: LACS (Low-Affinity Ca²⁺ Influx System), comprised of only one known protein encoded by FIG1, and HACS (High-Affinity Ca²⁺ Uptake System) consisting of a complex of integral membrane proteins encoded by MID1, CCH1, and ECM7. Loss of individual HACS genes exacerbated the slow growth phenotype of *pgm2* Δ on galactose with combinations of HACS gene deletions being near lethal. However, addition of extracellular Ca²⁺ rescued galactose-specific growth defects of HACS mutant strains in the context of *pgm2* Δ . Paradoxically, we observed an increase in total cell Ca²⁺ in *mid1* Δ and *cch1* Δ mutants, further amplified in *pgm2* Δ strains. Previous work with methylglyoxal (MG) demonstrates a rescue of *pgm2* Δ growth defects by increasing cytosolic Ca²⁺ levels through vacuole- and ER-independent mechanisms. Addition of MG rescued growth of HACS mutant strains in the context of *pgm2* Δ . The data suggest there are additional Ca²⁺ influx mechanisms for yeast cells.

Author Q&A

Friday, March 19, 2021 from 1:00 pm - 2:00 pm

Investigating the Role of Crz1p and Rlm1p on Altered Gene Expression in *S. cerevisiae* Mutants Lacking PGM2

Ruthann Schmiede & David Aiello
Biology, Austin College
Poster Presentation

In *Saccharomyces cerevisiae*, the enzyme phosphoglucomutase (PGM) facilitates the interconversion of Glucose-1-Phosphate (G1P) and Glucose-6-Phosphate (G6P). For cells grown on galactose-containing media, the loss of the major isoform of phosphoglucomutase, encoded for by PGM2, results in increased G1P relative to G6P when compared to wild-type (wt) cells. In addition, *pgm2Δ* mutants show defects in calcium homeostasis and sensitivity to cyclosporin A. The current working model of the lab hypothesizes that the altered G1P to G6P ratio results in abnormal uptake and accumulation of calcium within the cell which, in turn, hyperactivates various stress signaling pathways that alter gene expression. A list of genes that showed altered gene expression between wt and *pgm2Δ* strains, compiled using RNA-Seq and DESeq-2 analysis, was analyzed using DREME analysis to determine potential transcription factors that might be coordinately regulating subsets of these genes. Crz1p and Rlm1p were identified as potential transcriptional activators involved in upregulating a number of these genes. Crz1p is the major effector of calcineurin-driven gene expression while Rlm1p is a mediator of the cell integrity MAPK pathway. To experimentally confirm the proposed Crz1p- and Rlm1p-mediated upregulation of genes in the *pgm2Δ* mutants, this project is using chromatin immunoprecipitation (ChIP) to confirm the presence of these transcription factors at the promoters of genes of interest.

Author Q&A

Saturday, March 20, 2021 from 11:00 am - 12:00 pm

Determining a Role for CMR3 in Regulating Gene Expression due to Stress Responses caused by the *pgm2Δ* Mutation

Sita Ramasamy, Mandy Eckhardt, Keara Malone,
Spencer Nystrom, Rachel Jimenez, & David Aiello
Biology, Austin College
Poster Presentation

Spt4 is a transcriptional elongation factor that 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 phosphoglucomutase, 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, high levels of Ca²⁺. Deletion of SPT4 was shown to rescue the Ca²⁺-related growth defects in the *pgm2Δ* background, but this rescue is indirect. Data collected by RNASeq have shown that Spt4 is important in regulating the expression of genes mediating stress responses such as those created by the imbalanced levels of G1P:G6P found in *pgm2Δ* mutants when grown in galactose. Using bioinformatics tools analyzing our RNASeq data, we have identified various target genes, and transcription factors predicted to coordinately regulate subsets of these stress-induced genes. These are hypothesized to be essential for viability in *pgm2Δ* mutants. Many of these genes exhibit increased expression in *pgm2Δ* and *pgm2Δcmr3Δ* mutants to confirm target gene regulation by Cmr3 and to examine the hypothesis that these stress-induced genes promote the survival of the *pgm2Δ* mutant.

Author Q&A

Friday, March 19, 2021 from 12:00 pm - 1:00 pm

Identifying Novel Developmental Genes Using the Undiagnosed Disease Network

Sydney Versen & Kelli Carroll
Biology, Austin College
Poster Presentation

Many individuals with rare disorders struggle to receive a diagnosis for their disorder or to find treatments that improve their quality of life. The Undiagnosed Disease Network, a nationwide collection of researchers and clinicians, aims to help these individuals by identifying predicted genetic causes for their disorders, leading them to a subsequent diagnosis. Many predicted disease-causing variants in genes from UDN participants have been identified, making them a potentially rich source of future study. We performed preliminary literature research on each of the genes predicted to cause disease in order to identify those that are potentially important in human development with the ultimate goal of studying these genes further in the lab. We paid particular attention to the genes that might have a role in the development of the nervous, cardiovascular, and musculoskeletal systems. The top three genes that we are interested in exploring are TANGO6, MRTF A/B, and CHD2. Future studies in the lab will aim to determine the role that TANGO6 and CHD2 have in the development of zebrafish through the examination of gene expression patterns and the creation of knockout (null) lines. We will also be comparing MRTF A/B functionality between zebrafish and mice to elucidate the conservation of the genes between organisms and their role in cardiac and skeletal muscle development.

Author Q&A

Friday, March 19, 2021 from 2:00 pm - 3:00 pm

Examining Growth Phenotypes of the *pgm2Δ* Mutation in *Saccharomyces Cerevisiae* Lacking or Overexpressing *TPSI*, *NTHI*, and *ATHI*

Zoya Waheed, Shruti Raghavan,
Katherine McBroom, & David Aiello
Biology, Austin College
Poster Presentation

Phosphoglucosyltransferase (PGM) is the enzyme that is responsible for interconverting glucose-1-phosphate (G1P) and glucose-6-phosphate (G6P) in *Saccharomyces cerevisiae* carbohydrate metabolism. Yeast lacking PGM2 (*pgm2Δ*), the major isoform of PGM, exhibit slow growth, calcium homeostasis defects, and an accumulation of glycogen when metabolizing galactose as a carbon source. The overexpression of a glycogen breakdown gene, *GPH1*, partially rescued *pgm2Δ* mutants. We hypothesized that the partial rescue was due to an increase in trehalose levels, a carbohydrate source that is often produced in the absence of glucose. To further investigate these findings, trehalose-6-phosphate synthase I (*TPSI*) was knocked out and overexpressed in *pgm2Δ* mutants. The overexpression of *TPSI* was shown to successfully rescue *pgm2Δ* growth sensitivities; concomitantly, the *tps1Δ* mutation exacerbates *pgm2Δ* mutant phenotypes. These results reveal a potential link between trehalose synthesis and glycogen accumulation. There are two enzymes that hydrolyze trehalose to free glucose: an acid trehalase encoded by *ATHI* and a neutral trehalase encoded by *NTHI*. To further examine the link between carbohydrate metabolism and calcium homeostasis, we examined the hypothesis that *nht1Δ* and *ath1Δ* mutations would exacerbate *pgm2Δ* growth defects due to the lack of free glucose generated from the breakdown of trehalose, whereas the overexpression of these genes would suppress growth defects by mobilizing more free glucose.

Author Q&A

Friday, March 19, 2021 from 12:00 pm - 1:00 pm

Synthesis of Anisucoumaramide

Andrea Selkow & Ryan Felix
Chemistry, Austin College
Poster Presentation

Chemistry

Coumarins are used widely in medicine because of their pharmaceutical versatility, such as the ability to act as an anticancer, antibacterial or immune system activating drug. Anisucoumaramide is a recently discovered coumarin derivative found in *Clausena anisum-olens* with monoamine oxidase-B (MAO-B) inhibitor potential. Artificially synthesizing this compound in lab would enable the further investigation of anisucoumaramide's biological properties, as harvesting the molecule from *C. anisum-olens* gives very low yields. The work reported here is specifically aimed at trying to develop a way to synthesize the furanone half of the molecule by starting with the methylation, allylation and eventual decarboxylation of a keto-ester. A ring expansion reaction that would transform an epoxide into a five membered furanone ring was also explored. While the synthesis is currently incomplete, these steps provide insight on how anisucoumaramide might be synthesized and provide a foundation for future research, which aims to complete the synthesis and improve yields.

Author Q&A

Saturday, March 20, 2021 from 11:00 am - 12:00 pm

B2microglobulin Aggregation

Elizabeth Pack & John Richardson

Chemistry, Austin College

Friday, March 19, 2021 from 2:00 pm - 3:00 pm

Poster Presentation

Beta-2-microglobulin (β_2m) is a small single domain protein that is 99 amino acids long. When this protein misfolds it binds with other misfolded proteins to form aggregates. These aggregates form amyloid plaques that are seen in patients with kidney disease, type II diabetes, and Alzheimer's and Parkinson's disease. Previous research has hypothesized that when the residue region 62-70 becomes exposed, it initiates the aggregation process due to the high aromatic amino acid content. The aggregation of two mutants, Y66H and L65D, were compared to that of wild type β_2m using Thioflavin T assays. The assays ran for 10 hours at 25°C at pH 2.5. From the assays wild type β_2m aggregated much quicker than either Y66H or L65D. L65D showed no signs of aggregation after the 10-hour period.

Author Q&A

Friday, March 19, 2021 from 2:00 pm - 3:00 pm

Evolutionary Significance of Palindrome in Proteins

Saif Ahmad & Jim Hebda

Chemistry, Austin College

Poster Presentation

The function of a protein is fundamentally determined by its peptide sequence. This sequence can thus predict the function of a protein to an extent. Palindromes are sequences that remain unchanged when reversed. A nine residue amino acid palindrome found in human alpha B-crystallin has been hypothesized to function as the site of dimerization for the protein, allowing for the protein to have two inverted but nearly identical interactions. We hypothesize that this strategy could be extended to other proteins in various organisms. A program was written in the Python programming language to conduct proteome-wide analysis of palindromes, including their sequences and relationship to each other. Sequences were compared to those of randomized proteomes, of which the same analysis was performed, to determine the evolutionary bias of palindromic sequences in proteins. Palindromes appeared more often in nature than by chance, suggesting that protein palindromic sequences are evolutionarily conserved and therefore have biological significance.

Author Q&A

Friday, March 19, 2021 from 1:00 pm - 2:00 pm

Classical & Modern Languages

Early-Modern Travel Writings: Evliya Çelebi and André Thevet

Tawfeeq Shaik, Abbey Franke, & Stacey Battis
French, Austin College
Oral Presentation

In the early modern period, there were almost always clear motives for travel writing, with such accounts often being carefully engineered to support the beliefs and goals of the royal courts hiring the explorers, turned travel writers. In the case of André Thevet, a French explorer, the motive was clear: describe the Brazilian natives as barbaric animals who needed to be saved by the “civilizing light” of France so as to justify French colonization of the area. Given the ubiquity of this narrative engineering in European travel writing during the Renaissance, I expected to find a similar pattern in Ottoman travel writing as the Empire was a colonizing force, much like Europe, at the time. This was not at all the case. The travel writings of Evliya Çelebi, a prominent Ottoman explorer, are arranged as haphazard, personal accounts in his *Seyahatnameh* that inconsistently judged foreign places and people. There wasn’t a clear “point” that Çelebi was trying to argue about the Other like Thevet was. Rather, there was a deep emphasis on the emotional experience of encountering the Other, whether it be an experience of fascination or horror. It is this freely emotional narrative style in Evliya Çelebi’s *Seyahatnameh* that I’ve analyzed in this project in comparison with André Thevet’s pointed narrative style in *Les Singularitez de Brésil* in order to form a firmer understanding of travel writing across the East-West divide.

Author Q&A

Friday, March 19, 2021 from 4:00 pm - 5:00 pm

Ecocritique in French Literature

Zoe Garrett & Colin Foss
French, Austin College
Poster Presentation

Écocritique is a field of study in French literature which examines the relationship between writing and the natural world. Literature shaped the formation of many modern ideological frameworks; meaning that ideas that were historically fundamental to environmental thought in postcolonial and romantic periods still exist in environmental theory today.

East Asian Studies

Author Q&A

Friday, March 19, 2021 from 2:00 pm - 3:00 pm

Steeped in Culture: Tea Tourism in Japan

Elizabeth Munns & Mindy Landeck
East Asian Studies, Austin College
Oral Presentation

This research explores the concept of “tea tourism” as a central facet of Japan’s domestic and international tourism industry. In the postwar era, a niche market has sprung up revolving around the cultivation, marketing, and consumption of domestically-produced Japanese tea, both as a commodity and as a site for making cultural meaning. This project examines the history and importance of tea in Japanese culture, highlighting key drivers for tea-related tourist experiences and sites, including patterns of consumption and collection, the desire to acquire or display cultural expertise, a national interest in exploring Japanese identities through traditional arts and culture, and/or commercial interests in the international tea market. The educational and profit-driven interests of Japanese producers and host industries will be factored into a consideration of how tea has come to operate as a unique signifier of Japanese heritage, history, and culture, and how this commodity may be effectively marketed to tourists. I’ve applied a cross-cultural approach that also draws comparisons to the Chinese tea industry and the similar manner in which tea functions as a site for “cultural tourism” in yet another East Asian context. Such an investigation necessarily spans disciplinary methodologies derived from anthropology, economics, national history, and material culture.

Author Q&A

Saturday, March 20, 2021 from 10:00 am - 11:00 am

Taiwan Democracy in Light of the Coronavirus

Elizabeth Parker & Jennifer Johnson-Cooper
East Asian Studies, Austin College
Oral Presentation

Taiwan’s government has long stood as a leader in democracy in East Asia. Through a study of the formation and history of Taiwan’s democracy, this essay will explore Taiwan’s current place in the world and how this place is exhibited in Taiwan’s response to the novel coronavirus. As the coronavirus erupted in China, Taiwan government officials enacted several emergency policies that were created after SARS. Through these policies, along with new technological systems, Taiwan’s government displayed both power and independence in their actions responding to the virus. This essay will argue that these actions demonstrate an independent, strong Taiwan through an intellectual exploration of democratization theory. In looking at Taiwan’s modern history, its unique relationship with China, and its current standing in international institutions, this essay will raise the question of whether or not the international stage should officially recognize the success and presence of an independent Taiwan.

Author Q&A

Thursday, March 18, 2021 from 11:00 am - 12:00 pm

Nestorianism in Tang China

James Cowan & Mindy Landeck
East Asian Studies, Austin College
Oral Presentation

A mysterious Christian Stele was discovered in 1625 in the ancient capital of Xi'an, China. The Xi'an stele was erected by Nestorians, a theological doctrine grounded in early Christianity. Tracing Nestorianism from its original placement in the Eastern Orthodox Church to their banishment from Constantinople. The Nestorian exodus continued its eastern expansion along the silk road whilst ending upon the borders of the Tang Dynasty. Western Christianity has long hoped and pushed for Christians to live amongst the Chinese. Finally, the predominance of the evidence shows that Christian academics can finally lay claim that Christianity long ago held some significance among the Chinese. Christianity not only reached Tang China, but flourished among the cosmopolitan elites. A far too common reality for Christians is their continued experience of persecution. The Nestorian missionaries held a long bastion of peace and security amongst the state and regional elites. Ultimately, Tang policies eventually succumbed to Buddhist nationalism, and Christianity was eradicated throughout the Tang Empire. Not since the early 2000s did Christianity return to China.

Author Q&A

Saturday, March 20, 2021 from 10:00 am - 11:00 am

トランスジェンダ: An examination of the Transgender Experience in Japan

Matilyn Perry & Mindy Landeck
East Asian Studies, Austin College
Oral Presentation

This research aims at examining the experience of transgender individuals in Japan through media representation and legal status within the Japanese government. While the government has given a path for transgender individuals to change their name and legal gender, the laws surrounding them are extensive, invasive, and require sterilization—something no other country asks transgender people to do. The popular media in Japan also pushes a heteronormative and transmedicalist idea of transgender lives and identity, and while it provides representation, it is often stereotypical or carnivalizes trans identity. Both the legal process of name and gender change and media representation have a long way to go in terms of transgender rights to include more diverse portrayals of transgender identities within Japan.

Author Q&A

Saturday, March 20, 2021 from 10:00 am - 11:00 am

Like Mother, Like Daughter: The Power and Rule of the Taiping Princess

Ruthann Schmiede & Mindy Landeck
East Asian Studies, Austin College
Oral Presentation

For over 2,000 years, China was ruled by an emperor. Throughout all that time, the position was only ever held by one woman, Wu Zetian (624-705 C.E.). Wu was greatly criticized and denounced by her contemporaries for usurping male authority, but recently she has been widely studied as a symbol of female power in ancient China. Another powerful figure that deserves greater attention is Wu's daughter, known as the Taiping Princess (665-713 C.E.). Like her mother, the Taiping Princess wielded great political power and challenged gender roles of the time period. Compiling data from multiple secondary sources, this presentation investigates the life of the Taiping Princess and how her legacy has been influenced by the largely patriarchal culture of the time that condemned female power.

Economics

Author Q&A

Saturday, March 20, 2021 from 10:00 am - 11:00 am

Do Returns to Capital Matter for Gold Prices?

**Aguiele Ndoungla Fobasso Awah
& Mikidadu Mohammed**
Economics, Austin College
Poster Presentation

Although capital exist under two forms; that is financial (dollars invested) and physical (equipment, plant, and machinery), the existing common measures of return to capital usually evaluate one form to the detriment of the other. Previous Scholars such as Bai et al (2006) and Gil and Iglesias (2019) attempted to propose an aggregate measure of return to capital but focused on physical capital. This paper proposes a novel multi-dimensional measure of returns to financial capital. We calculate this new measure of returns to financial capital for the United States (U.S.) and the United Kingdom (U.K.) using monthly data from 1999-2019. We find that the U.S. return to capital leads the U.K. return to capital by one month. Also, we evaluate the predictive capacity of the proposed return to capital in predicting the global spot price of gold. Our findings reveal that both the U.S. and U.K. returns to capital do not predict global spot gold price. Rather gold price has predictive power on the U.S. and U.K. returns to capital, although the predictive power is stronger on the U.S. return to capital. Altogether, the findings affirm the usefulness of a multidimensional approach to calculating returns to financial capital. The findings also highlight the important inter-linkages between returns to financial capital and global gold prices.

Education

Author Q&A

Saturday, March 20, 2021 from 11:00 am - 12:00 pm

Blended Synchronous Classrooms: Friend or Foe?

Matilyn Perry & Julia Shahid
Education, Austin College
Oral Presentation

Since the COVID-19 pandemic has flipped the education sector on its head, there has been a rush to try and create effective classroom environments without the risk of spreading the disease. Many schools are trying what is called a blended synchronous learning environment and this research examined one of these classes conducted here at Austin College. We know that this is all school can do with limited time and resources but I wanted to answer the question, “How does a blended—remote and face-to-face—synchronous classroom affect student learning?” The first step was a literature review of all the research done on this type of classroom. What I found was that while these environments have existed, they have not been conducted on this scale and with so little time to prepare. Throughout this project, I collected survey and interview data from students and professors in order to really understand how they are doing in these unprecedented times. I found that students and professors reported a lack of engagement and understanding with the class material when they were attending classes online, and that students would prefer attending classes in person. Most importantly, I found that a BSLE negatively impacts student learning because they and their professors are feeling stressed, frustrated, and tired while trying to learn in this environment due to the seemingly impersonal nature of remote learning, technical problems, and the lack of direct human connection.

Environmental Studies

Author Q&A

Thursday, March 18, 2021 from 4:00 pm - 5:00 pm

Survey and Analysis of Forb Abundance after Almost 20 Years of Tallgrass Prairie Restoration

Veronique Tessier & Pete Schulze
Environmental Studies, Austin College
Oral Presentation

NOTES

Almost all of the Blackland Prairie of North Texas has been degraded or destroyed, largely by the plowing and overgrazing that followed the removal of native bison and prevention of wildfires that historically allowed grasses to dominate. Since it is of conservation concern, the Sneed Prairie Restoration aims to restore this habitat on former agricultural land with different combinations of prescribed burning, cattle grazing, seeding of native plants and mowing to help reestablish the historic plant community and ecosystem services. The restoration has been ongoing for nearly 20 years, but efforts have mainly focused on reestablishing dominant grasses. I have filled a gap in previous research by measuring the abundance for over 40 species of forbs (wildflowers). I compared the species abundances of various Sneed fields to high-quality examples of Blackland Prairie.

Author Q&A

Friday, March 19, 2021 from 4:00 pm - 5:00 pm

Japanese Internment in Seagoville, Texas

Odalys Sarabia & Felix Harcourt

History, Austin College

Oral Presentation

History

The United States held citizens of Japanese descent in internment camps during World War 2. For my honor's thesis research, I am gathering information on the Seagoville Enemy Alien Detention Station, a women and family detention center, located in my hometown of Seagoville, Texas. The detention center was transferred from the Bureau of Prisons to the Immigration and Naturalization Service in 1942. Dr. Amy N. Stannard, the officer in charge of the Seagoville Detention Center, became the only woman who ran an internment camp in the United States during this time. My research can be summarized into five categories – the leadership of the camp, the policies that allowed for this to happen, what life was like for the detainees at the camp, their lives after detainment, and a close look at the Mexican and Peruvians of Japanese descent that were deported from their home countries and turned over to the United States.

Author Q&A

Thursday, March 18, 2021 from 11:00 am - 12:00 pm

Posey Leadership Institute

Service-Learning Best Practices

Ariana Quirino, Odalys Sarabia, & Martinella Dryburgh
Leadership, Austin College
Poster Presentation

In collaboration with the Center of Community and Regional Development at Austin College and the Posey Leadership Institute, a project began to gather information from local non-profit organizations in the Grayson County area to learn about their daily operations and needs. We hoped to build an online repository with this information as a resource that the community and Austin College faculty and students could use to create projects that could help build a bridge between the college and the community. However, working in the COVID-19 environment posed a real challenge as many non-profits were understaffed working under a disaster relief mode and were unable to provide us with the information needed. Through research, we have seen how service-learning has become a valuable educational tool in higher education, creating a positive impact on student academic success and a sense of civic responsibility. Thus, the purpose of this research is to provide insight on more structured service-learning models that could be adopted at the college to create an easier transition into service learning for faculty, students, and community partners. The result of this research is identifying best practices for incorporating and scaling service learning into the Austin College curriculum.

Author Q&A

Friday, March 19, 2021 from 12:00 pm - 1:00 pm

Investigating Nonprofit Funding in Sherman/Denison Relative to Prioritized Health Concerns: How Well are Public Health Nonprofits Funded?

Caroline Glasiter & Martinella Dryburgh
Leadership, Austin College
Poster Presentation

This study examines the relationship between nonprofit funding of public health 501c(3) organizations in the Sherman/Denison area in relation to the cities' prioritized health concerns. Over 25 nonprofit organizations in Sherman/Denison provide various public health services, yet both cities continue to see similar poor health outcomes. In 2017, Baylor Scott and White Health conducted a Community Health Needs Assessment through the Baylor Scott and White Surgical Hospital in Sherman to determine the prioritized health needs for Grayson County. This study investigated if the prioritized health needs were adequately funded by categorizing 25 selected nonprofits by the prioritized health needs they serve and analyzing their program expense and funding via public IRS form 990. The study found organizations which served the health needs of Chronic disease, Economic status/poverty, and Mental health had the most inadequate funding in comparison to their program expenses.

Mathematics

Author Q&A

Friday, March 19, 2021 from 2:00 pm - 3:00 pm

Using Mathematics to Optimize Distribution of Personal Protective Equipment (PPE) in North Texas

Freyja Coe & Andrea Overbay
Mathematics Austin College
Poster Presentation

During the COVID-19 pandemic, one of the major challenges facing nonprofits is access to Personal Protective Equipment (PPE), especially in rural areas like Grayson County. The Texoma Health Foundation (THF) is working to partner with regional nonprofit agencies to provide access to vital PPE. Real time data is also imperative for ensuring that health care facilities have the needed PPE to stay open in order to serve the people in Texoma. Using optimization methods from mathematics, we will work to develop decision assist software to help THF efficiently distribute PPE and collect real time data. Accurate and up-to-date data is necessary for decision assist software to make meaningful suggestions.

Author Q&A

Friday, March 19, 2021 from 1:00 pm - 2:00 pm

The Specific Genres of Steam: Using Community Detection Algorithms to Build Gaming Genres

Prithvi Kalkunte & Huy Nguyen
Mathematics, Austin College
Oral Presentation

The Video Game industry categorizes its products using genres, traditionally defined along heuristic lines by industry experts. With the growth of the online PC gaming market, however, we now have access to user-driven descriptions of games, known as “tags”, which can be categorized into communities - into genres - that can be used to define modern games. With data from the gaming platform Steam and building upon prior literature, this project aims to create a network model of tags, and apply the core expansion method of community detection to generate 15 specific and distinct genres within Steam. These genres, with reduced noise from disproportionately impactful tags and a moderate allowance for overlap, can be used to better categorize games based on user perception, for the betterment of game consumers and game developers alike.

Author Q&A

Friday, March 19, 2021 from 4:00 am - 5:00 pm

Modeling the Schrodinger Equation Numerically

Taiton Fox & Huy Nguyen
Mathematics, Austin College
Poster Presentation

In this this paper we discuss numerical analysis and the implicit Euler method. We use the implicit Euler method to plot and animate what the motion of the Schrodinger equation's probability density will look like. We first did the test of the code to see if it could handle running the Schrodinger equation when the potential energy was set equal to zero. Once tested and confident that the code could run a simple Schrodinger equation we were able to make a more realistic Schrodinger equation where the initial condition was a wave packet and all variable we in atomic units.

Author Q&A

Thursday, March 18, 2021 from 11:00 am - 12:00 pm

How to Heat A Pan: Applications of the Heat Equation using Numerical Analysis

William Koelzer & Huy Nguyen
Mathematics, Austin College
Poster Presentation

This project was developed as a response to a question I received early in my investigation of the heat equation, regarding why burners were shaped the way they were. We wanted to know if the shape of the burner , or the "orientation of heating" as we dubbed it, affected the time it took to reach a minimum temperature across the entire plate. We also were curious to see if we could find a heating orientation better than just heating the entire plate. We made a couple of key assumptions in modeling this system with the Heat Partial Differential Equation with Neumann Boundary Conditions. However over the course of our investigation, we were unsuccessful in this search for a better orientation. We tested numerous heating orientation and although the differences between them were substantial, no orientation came close to being faster just applying the heat evenly over the entire plate.

Author Q&A

Friday, March 19, 2021 from 1:00 pm - 2:00 pm

Neuroscience

SI00B and Tau as Salivary Biomarkers of mTBI and Subconcussive Blows in Asymptomatic Division III Football Players

Mackenzie Bolen & Renee Countryman
Neuroscience, Austin College
Oral Presentation

On average 3.8 million sports related concussions occur annually in the United States (McKeithan et al., 2019). However, this number is likely an underestimation due to the fact that many concussions are not reported. There is a clear socioecological pressure felt by athletes as well as coaches to quell sports-related mild traumatic brain injury (SRmTBI) and subconcussive blows (SCB) admittance and/or reporting (Baugh et al., 2014; Kroshus et al., 2014). However, there is no current objective mode of testing that circumvents subjectivity of brain injury reporting while also accurately and quickly diagnosing this complex injury. Due to this lack of objective testing many players continue to play through an injury and sustain compounded blows. If sustained over a long period of time, these repeated compounded blows can lead to long-term neurodegenerative disease like Chronic Traumatic Encephalopathy (CTE) (McKee et al., 2014). Previous researchers have validated the use of blood and cerebrospinal fluid as biomarkers of brain injury; however, these sample types are relatively expensive and not easily collected on the side of a field (Narayana et al., 2017). The purpose of this study is to identify an objective mode of diagnostic testing in order to more frequently and accurately identify SRmTBI and SCB in athletes. Specifically, this study investigated the correlation between SI00B and Tau concentration via ELISA with reported head trauma. The validation of these biomarkers is expected to increase ease of objective reporting and help to create a more sensitive recovery plan for athletes.

Author Q&A

Friday, March 19, 2021 from 1:00 pm - 2:00 pm

The Effects of Nature Walking Versus Urban Walking on Salivary Stress Markers Alpha Amylase and Immunoglobulin A in College Students

Megan Goyal & Renee Countryman
Neuroscience, Austin College
Oral Presentation

Evolutionarily, humans have lived in forest environments and benefited from the innate positive influence of nature exposure on mental and physical well-being (Hunter et al., 2019). Although these beneficial effects exist, our species have focused their efforts on urbanization. This new unfamiliar environment has caused individuals to be more prone to developing diseases and led to mind-body stress (Kaufman, 2018). Chronic stress and overactivation of the sympathetic nervous system can lead to a multitude of chronic conditions. Thus, in order to improve the quality of life and reduce stress of those in urban environments, different behavioral interventions have been explored. One of these behavioral interventions is walking and past research has found that being in green outdoor spaces can improve stress and overall health outcomes (Anotelli et al., 2019). This study will be exploring the quantitative levels of salivary stress proteins, alpha amylase and immunoglobulin A since which are implicated in being sensitive to stressors. I hypothesize that the high-stress environment of college life will naturally decrease the level of immunoglobulin A found in college students. However, through the nature walking experience, the expression of immunoglobulin A should be rescued to a higher degree than urban walking. Additionally, I hypothesize that the chronic stress found in college students should lead to high levels of salivary alpha amylase which will decrease through walking.

Physics

Author Q&A

Thursday, March 18, 2021 from 4:00 pm - 5:00 pm

Did We Detect a Planet? Exoplanet Research at Austin College's Adams Observatory for NASA's TESS Mission

Brett Skinner, Tanner O'Dwyer,
Chloe Schnaible, & David Baker
Physics, Austin College
Oral Presentation

The transit method provides the most successful technique of detecting exoplanets, or planets that orbit other stars. As an exoplanet passes between its star and the Earth, the exoplanet blocks a small amount of light from the star. Currently, NASA's Transiting Exoplanet Survey Satellite (TESS) mission uses this method in the search for exoplanets. The wide-angle field of view of the TESS space telescope affords large sky coverage but limits the precision of measurements. Observations from powerful ground-based telescopes are needed to confirm exoplanet candidates detected by TESS. Over the 2020 summer at the Adams Observatory, we observed 11 stars prioritized by TESS as potentially having exoplanets. Our follow-up observations offered three possible cases for these targets: 1) a light curve from the target star indicating a possible transiting exoplanet, 2) a light curve from a nearby star indicating a nearby eclipsing binary (NEB) star system, and 3) flat light curves for both the target and nearby stars. Of the 11 stars, 4 stars exhibited Case 1 behavior and have been elevated to Verified Planet Candidate status. 1 observation showed Case 2 behavior in which an NEB was detected, and the star has been "retired" from TESS exoplanet studies. 6 observations produced flat curves, which could indicate that the planet is too small for detection at the Adams Observatory. These data from the Adams Observatory will be used by the TESS team in the search for Earth-sized exoplanets.

Author Q&A

Saturday, March 20, 2021 from 11:00 am - 12:00 pm

The Comfy Clip: Wear Your COVID Mask in Ear-Relieving Comfort

Malcolm McLeod, Kylee Shanks, & David Baker
Engineering Physics, Austin College
Oral Presentation

Do your ears hurt after a long day of wearing your COVID-safe mask? Introducing The Comfy Clip, a product designed to relieve pressure on your ears to make mask wearing more comfortable. Our optimal design solves many issues of existing products on the market: safety, ease of use, comfort, durability, and one-size-fits-all convenience. Put an end to uncomfortable ears and ill-fitting masks, get The Comfy Clip and stay comfortable while being safe.

Author Q&A

Saturday, March 20, 2021 from 12:00 pm - 1:00 pm

Kanga Coin Holder: Access Coins in Your Car With Ease

Maxwell Dodd, Connor Watson, & David Baker
Engineering Physics, Austin College
Oral Presentation

Have you struggled to get the correct amount of change in a hurry? The Kanga Coin Holder organizes your spare change in a sleek and easy-to-use container. The Kanga Coin Holder fits on your desk, in the cup holder of your car, or anywhere you need quick access to your quarters, dimes, nickels, and pennies. Integrated tabs make removal of coins effortless. Austin College Roo Nation will love the special design on top.

Author Q&A

Saturday, March 20, 2021 from 12:00 pm - 1:00 pm

Classifying Algols A and C Using Low-Resolution Spectra

Megan Frank, Jessica Junginger, & David Whelan
Physics, Austin College
Poster Presentation

We present multi-epoch low-resolution optical spectra (3850 - 4950 Angstroms) of the Algol triple system which exhibit spectroscopic variability as a function of the close binary's orbital phase. It is possible to identify spectral signatures associated with the two brightest components, Algols A and C, so we developed an algebraic method to disentangle Algol C's contribution to the spectrum. This allows us to assign Algol C with a spectral type. Since spectral disentanglement is generally only performed on high-resolution spectra, where techniques can be used to separate lines based on their relative Doppler shifts as a function of orbital phase, this technique may be of interest to others with access to low-resolution spectra, particularly to those who are performing stellar spectral classification on spectroscopic binaries.

Author Q&A

Saturday, March 20, 2021 from 1:00 pm - 2:00 pm

The Next Level Measuring Cup: Measure the Perfect Scoop Every Time

Taiton Fox, Brett Skinner, & David Baker
Engineering Physics, Austin College
Oral Presentation

Need to measure the exact amount of brown sugar for your favorite cookie recipe? The Next Level Measuring Cup comes to your baking-disaster rescue. This all-in-one kitchen measuring device is comfortable, compact, and ensures the correct measurement every time. An adjustable wall allows for different volumes with the same tool, and an included leveler removes excess ingredients in one smooth motion. If you want to take your baking to the next level, you need the Next Level Measuring Cup.

Author Q&A

Saturday, March 20, 2021 from 12:00 pm - 1:00 pm

The Straw Cup: Revolutionize the Way You Drink

Tanner O'Dwyer, Paola Torres & David Baker
Engineering Physics, Austin College
Oral Presentation

Want to simplify your life, make it more fun, and save the environment at the same time? The Straw Cup will revolutionize the way you drink your favorite beverage. The spiral wall of the cup is the straw itself! By fusing together a straw and a cup, our product makes drinking more fun while saving space and decreasing the need for plastic straws. A special funnel at the bottom ensures that you get every last drop. You can't mess up with the Straw Cup!

Author Q&A

Saturday, March 20, 2021 from 12:00 pm - 1:00 pm

The Far-right Insurgency in the Former Soviet Republics of Eastern Europe

Joshua Himelfarb & Audrey Flemming

Political Science, Austin College

Oral Presentation

The power vacuum left in the wake of Soviet collapse generated instability and inequality in Eastern Europe. An environment of this type has cultivated an idiosyncratic far-right culture, particularly in the ex-republics of Ukraine and Lithuania, which operates electorally, socially, and institutionally. This comparative study attributes politico-economic and cultural-historic factors to the region's reactionary politics, by probing the legacies of post-communist market transformation and nation-state building processes as it relates to pre-communist identities. The former deals with resentment geared towards modernity, while the latter examines renascent, neo-Holocaust revisionism. A culmination of determinants (as mentioned above) have led to radical right mobilization, and mainstreaming, in 'new' states struggling with ontological insecurities.

Political Science

Author Q&A

Friday, March 19, 2021 from 4:00 am - 5:00 pm

Physical Attractiveness Similarity (or Dissimilarity) and Romantic Relationship Quality

Alyssa Longaker & Matt Findley
Psychology, Austin College
Oral Presentation

Psychology

This study tested the relationship between perceptions of similarity/dissimilarity in levels of physical attractiveness between partners and relationship quality. Previous findings regarding the matching hypothesis in romantic relationships are inconsistent, and there is little research that directly assesses similarity or dissimilarity in physical attractiveness and relationship quality. The current study collected data via Amazon MTurk. The survey included demographic questions, measures of subjective attractiveness, measures of relationship quality, and a measure of preferences for mate characteristics. It was hypothesized that individuals who perceive a mismatch in attractiveness between them and their partner, regardless of whether they perceive their partner to be more or less attractive than the self, will report lower relationship quality compared with those who report a match. The current study contributes to the interpersonal relationship literature by shedding light on how perceptions of physical attractiveness predict relationship quality.

Academic Entitlement, Perceived Academic Discrepancy, and Implicit Mindsets

Caroline Grace Fullerton & Peter Marks
Psychology, Austin College
Oral Presentation

Researchers recently began to study academic entitlement (AE). An established concept that interests researchers is implicit mindsets. Another novel construct may result from implicit mindset and predict AE. We term this construct perceived academic discrepancy (PAD), and define it as a student's perceived discrepancy between grades and ability. The first goal of the study was to assess the validity and reliability of the PAD scale we developed. We hypothesized that AE would be positively correlated with fixed mindset and PAD and that participants with a growth mindset, regardless of PAD level, would be low in AE. 133 undergraduates participated. Surveys measured AE, implicit mindsets, attitudes towards cheating, PAD, and ability/effort attributions. The PAD scale had a Chronbach's alpha $\alpha = .899$ and demonstrated concurrent validity with assessments of actual vs. deserved grades. The hypothesis that PAD and AE would be positively correlated was supported ($r = .300$, $p < .001$). The hypothesis that those with a growth mindset would believe that ability and effort were positively correlated was supported ($r = .274$, $p < .001$). Mindset and AE were not correlated ($r = .058$, $p = .504$). Primary study hypotheses were partly supported. While AE and implicit mindset theoretically align, they do not appear to be related. The new construct of PAD, which is both theoretically related to and theoretically distinct from academic entitlement, provides a valuable addition to the literature.

Author Q&A

Thursday, March 18, 2021 from 4:00 am - 5:00 pm

Policy Liberalism and Source of News Predict Pandemic-related Health Behaviors and Trust in the Scientific Community

Madeleine Reinhardt & Renee Countryman
Psychology, Austin College
Poster Presentation

In March of 2020, the United States was confronted with a major public health crisis caused by the coronavirus disease (COVID-19). This study aimed to identify what factors influence adherence to recently implemented public health measures such as mask-wearing and social distancing, trust of scientific organizations like the Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) on information pertaining to the pandemic, and level of perceived risk. Data were collected from June 30, 2020 to July 22, 2020 on 951 adult residents of the United States using an online survey. Multiple linear regression was used to identify the strongest predictors for compliance to pandemic-related health measures, trust in the scientific community, and perceived risk. Results showed that the strongest predictor of all variables of interest was degree of policy liberalism. Additionally, participants who consumed more conservative news media conformed less to the pandemic health guidelines and had less trust in the scientific community. Degree of policy liberalism was found to have a significant moderating effect on the relationship between gender and conformity to pandemic-related health behaviors. Males with low policy liberalism were the least likely to conform to pandemic-related health behaviors and the least likely to trust the WHO. These findings demonstrate that policy liberalism and individuals' choice of news sources predict compliance to recommended health.

Author Q&A

Friday, March 19, 2021 from 2:00 am - 3:00 pm

The Effect of Race on Stigmatization of Drug Users

Makayla Dunlap & Danielle Franks
Psychology, Austin College
Poster Presentation

Ethnic minority offenders, specifically African American males in the United States are disproportionately represented in justice systems. African American youth age 10–17 make up approximately 15% of their age group, but they represent roughly 25% of all juvenile arrests, 30% of referrals to juvenile court, 40% of all incarcerated juveniles, and almost 60% of waivers to adult criminal court (Jones & Poe-Yamagata, 2000; McCord, Widom, & Crowell, 2001). These disparities also lead to poorer health outcomes for Black Men. The majority of the individuals sentenced to prison for drug-related crimes endure poor nutrition, below-average health care, and extreme amounts of stress (Hart & Hart, 2009). Previous research has also indicated that healthcare employees handle the cases of drug users very differently from other patients (Van Boekel et al., 2013). Researchers in this study indicated that healthcare workers see these individuals as making a choice, and therefore they do not work as diligently on their cases. However, after investigating previous research, there are multiple gaps in this literature. The first of these is that none have looked at younger generations. The majority of sources instead look at individuals in their late 30s to early 40s. In addition to this, none of the available literature investigates how outside beliefs impact this relationship. Therefore, the current study will also examine how Just World Beliefs meditates the relationship between race and level.

Author Q&A

Friday, March 19, 2021 from 1:00 am - 2:00 pm

The Impact of Gender Norm Conformity on Political Candidate Impressions

Matthew Li & Michele Helfrich
Psychology, Austin College
Poster Presentation

Past research investigated the impact of candidate gender and messaging on perceptions (Li et al, 2018). Females were judged more positively when presenting community-centric rather than expertise-based statements. We hypothesized community-based messages support female gender norms and may be preferred to messages of expertise. Gender norms were manipulated by occupation and family presence to study impressions, perceptions, and voter likelihood. Students randomly assigned to conditions in a 2 (Gender: female v. male) x 2 (Occupation:educator v. fighter pilot) x 2 (Family:present v. not present) between-subjects factorial viewed male or female candidate pictures, a classroom (teacher) or fighter jet (air force pilot), and candidates' children (family) were pictured or not. Participants read candidate statements on issues, gave demographics, rated candidate character dimensions, and indicated voting likelihood. Candidates (specifically military) were perceived as more relatable, empathetic, and representative when presented with family. Participants agreed less with female candidate statements if family was present. Multiple regression showed agreement with candidates and degree of representation impacted voter likelihood. Voting likelihood correlated with several candidate characteristics. Statement framing and whether children are pictured may impact voter judgments. As more women run for office, research on how gender norms operate in the political arena are warranted.

Author Q&A

Friday, March 19, 2021 from 12:00 pm - 1:00 pm

Public Health

Assessing the Distribution of Sociodemographic, Clinical, and Health Seeking Behavioral Factors of HIV/AIDS Testing among U.S. Adults Living in Rural Areas

Priya Shah & Saritha Bangara
Public Health, Austin College
Poster Presentation

HIV/AIDS testing is a powerful tool that detects the human immunodeficiency virus (HIV) in its early stages, allowing for timely procurement of care and treatment early on in the course of the disease. This prevents the disease from advancing into the most severe stages for an individual. Since the CDC implemented a revised set of HIV testing guidelines in 2006, HIV cases have remained stable within urban areas. This is in contrast to the number of HIV cases in rural areas that have not been accounted for in recent studies. Many adults living in rural areas today still do not receive HIV/AIDS testing and therefore face severe health consequences. Data from the 2019 Behavior Risk Factor Surveillance System (BRFSS), a public dataset collected by the (U.S.) CDC, was used to examine the sociodemographic characteristics and health risk behaviors of adult participants aged 18-64 years as well as adults who report living in rural areas. Statistical analyses were performed using SPSS (Statistical Package for the Social Science) to explore variables including age, sexual orientation, household income, health care coverage, and overall health status among these adults. We expect results to inform us how to effectively implement programs that focus primarily on providing HIV testing resources to U.S. rural residents. With additional knowledge on the nature of HIV/AIDS and emphasis on the importance of testing, disparities in testing can be reduced within underserved and rural areas.

Author Q&A

Friday, March 19, 2021 from 2:00 pm - 3:00 pm

Panel Sessions

Students of Contemporary Ethnic Literatures Present Their Creative Work and Scholarship

Sonia Charales, Delice Dembe, Makayla Dunlap,
Haydee Fuente, & Virginia Wood
English, Austin College
Critical Intersections Panel

Focusing in on how writers of color reckon with contemporary issues, literary inheritance, and how stories reshape and redefine sociopolitical conversations, students of contemporary ethnic literatures explore both scholarly and creative spaces. In the process of investigating their own critical perspectives, the panelists take their places as proactive members of the conversations they research. Whether it is in original research and insight, creative stories and essays, or in combinations of both, the panel members advance the study of contemporary texts by writers of color through the lenses of Post-Colonialism, Queer Theory, Critical Race, and more. Coming from diverse backgrounds and reckoning across many territories of inquiry, the students on the panel will read from their work, discuss the implications and opportunities that come in working with both creative and literary spaces, and reckon with how the work they've entered continues beyond the page and into urgent conversations on race, religion, civil rights, and more. The ability to speak on the work is as powerful as the ability to undertake it. Do the work. Say their names. Speak it loud. If writing is, as Rudolfo Anaya famously stated, "the creation of culture", speaking our creations proudly is an assertion of ownership, agency, and undaunted visibility.

Author Q&A

Saturday, March 20, 2021 from 10:00 pm - 11:00 pm

No More Binaries - Destruction of Binary Existence in Identity: Through Race, Ethno-religion, Gender, and Language

Anna Rajagopal & Meg Brandl
English, Austin College
Culture & Creativity Panel

I have created a piece (No More Binaries) that balances the nuance of being Indian and Jewish without conceding to a binary and thus limiting form of existence. My piece also endeavors to explore the concept of the gender binary in Indian and Jewish cultures, and demonstrate the beauty of subverting the binary in favor of a more complex existence. By using Hebrew and Hindustani words in my piece, I propose the destruction of the binary of language in my own identity: Uniting languages in one poem allows me to explore a third space of existence: Judeo-Hindustani, where I can express myself far better than being limited by the dual and separate natures of either language. My poem offers my audience an opportunity: A chance at leaving behind limiting forms of being in favor of embracing multiculturalism on every level. By incorporating different aspects of my varied identity in my poem, I am able to argue for the upending of binary systems — which my poem demonstrates as oppressive.

Author Q&A

Saturday, March 20, 2021 from 11:00 pm - 12:00 pm

lingwistikS

Haydee Fuentes & Meg Brandl
English, Austin College
Culture & Creativity Panel

My short story, *lingwistikS*, is based on experiences that I've been a witness and the center of. Following through a student who is actually studying language use and history, I look into how specifically in my culture language can hold wisdom, if knowing the history—both literally from the past as equally as the unfolding—and use is in the right situation. I tried to evoke the importance of language use even through my own writing, trying to tie it to its own past (the beginning) to its end. Furthermore, language choice in my culture is also deemed important, especially when regarding relations, where having nicknames and formal addresses also demonstrating the respect to a person. In addition, playing into the use of speech and diction, I included how even identifying voice types, at least in my family, also impacts perception—whether for better or worse.

Author Q&A

Saturday, March 20, 2021 from 11:00 pm - 12:00 pm

When the Words Don't Come to Me - The Relationship Between Words and Cultural Belonging

Sonia Charales & Meg Brandl
English, Austin College
Culture & Creativity Panel

My poem, *When the Words Don't Come to Me*, portrays the realistic struggles of being bilingual and learning a new language, especially at a young age. Words are such important linguistic tools we use everyday to communicate, but they also play a major role in the cultures we belong to. The understanding and maneuvering of language itself implies status, intelligence, and belonging. Through my poetry, I relay the difficulty of learning languages and their relationship to our belonging. The piece takes inspiration from layers of moments from my linguistic development, and the emphasis lies within my elementary school memories. Such moments help with the development of the poem, including the recurring use of sensory descriptions and the relationship of language along with parts of the human body. The poem explores the journey of language within us, as ideas travel from our brains to our mouths and words are said, and how these ideas can be disrupted when the words don't come to us.

Author Q&A

Saturday, March 20, 2021 from 11:00 pm - 12:00 pm

Seasons of a Lifetime Zuni-Ire Rubio & Meg Brandl English, Austin College Culture & Creativity Panel

My poem *Seasons of a Lifetime* portrays some of my experiences and feelings as a mixed person. Structuring the poem in seasons, I go in depth about the stages in which my experiences can be divided. Summer represents a golden childhood, while autumn is the beginning of the realization of scars that external words marked during my childhood. In contrast, winter shows my experience grappling with my identity, and spring represents the start of a healing process. The poem is written in Spanish, Japanese, and English to honor my roots and show my connection to each one of them. Ultimately, *Seasons of a Lifetime* attempts to open a door of understanding for other by sharing my emotions and a fragment of my experience.

Author Q&A

Saturday, March 20, 2021 from 11:00 pm - 12:00 pm

**Darker than Night:
Student Work from the Fall 2020 MEDA 325 Film
Noir Course**

Kirsten Munson, Jake Tidwell,
Johnathan Biffar, & Brett Boessen
Media Studies, Austin College

This panel includes selected presentations from the Fall 2020 course, MEDA 325 Darker Than Night: Film Noir and Genre, taught by Dr. Brett Boessen. Johnny Biffar, Kirsten Munson, and Jake Tidwell each present a submission of theirs from the course.

Author Q&A

Saturday, March 20, 2021 from 11:00 pm - 12:00 pm

Boundaries in the Expanse

Allen Mankin & Alex Garganigo
English, Austin College
Scarborough Panel

Every ten years, in the United States the seats in Congress are redistributed according to the population of the states, and to accommodate for this change the congressional districts are often redrawn. However, the new map is selected by that state's government so these new districting maps are very susceptible to partisan gerrymandering from the state's majority party. Partisan gerrymandering is the act of selectively drawing the borders of an election district in order to manipulate the results of the election to disproportionately favor one party over the other. We frequently look at a district's strange shape when it is suspected of being gerrymandered, so we looked at methods of looking at the shapes of districts and using the convexity coefficient which quantifies the 'niceness' of each district. In this poster, we will expand on the mathematical complexities of geometrically analyzing congressional districts.

Author Q&A

Saturday, March 20, 2021 from 1:00 pm - 2:00 pm

The Far-right Insurgency in the Former Soviet Republics of Eastern Europe

Joshua Himelfarb & Audrey Flemming
Political Science, Austin College
Scarborough Panel

The power vacuum left in the wake of Soviet collapse generated instability and inequality in Eastern Europe. An environment of this type has cultivated an idiosyncratic far-right culture, particularly in the ex-republics of Ukraine and Lithuania, which operates electorally, socially, and institutionally. This comparative study attributes politico-economic and cultural-historic factors to the region's reactionary politics, by probing the legacies of post-communist market transformation and nation-state building processes as it relates to pre-communist identities. The former deals with resentment geared towards modernity, while the latter examines renascent, neo-Holocaust revisionism. A culmination of determinants (as mentioned above) have led to radical right mobilization, and mainstreaming, in 'new' states struggling with physical and ontological securities.

Author Q&A

Saturday, March 20, 2021 from 1:00 pm - 2:00 pm

The Genre of Building Confidence: Personal-Professional Writing in the Writing Center

Leslie Erwin & Lisha Storey-Daniels
English, Austin College
Scarborough Panel

Featuring a narrative voice in a professional context, personal statements are a challenging, high-stakes writing task necessary for college and career applications, graduate studies, and competitive fellowships. However, this genre is rarely taught in schools. Writers are expected to present themselves as the most qualified candidate, but they craft these essays with little to no understanding of the genre. Writing center tutoring focuses on the shape and impact of writers' work in all writing tasks. But what is the impact of writing tutoring on personal statements and their authors? How can tutors support these writers in the writing center? By hosting one-on-one tutoring sessions with writers, analyzing the effectiveness of changes made in their personal statements, and examining their survey responses about self-confidence, I have identified strategies for engaging writers in the rhetorical genre of their task in order to build writers' self-efficacy. In this presentation, I will discuss the genre features of personal statements, highlight tutoring practice that builds writers' confidence, and explain the importance of tutors exhibiting a genre approach to writing when working with personal statements.

Author Q&A

Saturday, March 20, 2021 from 1:00 pm - 2:00 pm

Missing Mothers: Foreign Feminine Influence in *Richard Coer De Lyon*

Samuel Marsh & Tom Blake
English, Austin College
Scarborough Panel

The medieval romance *Richard Coer De Lyon* dramatizes the exploits of Richard the Lionheart in a fantastical display of historical revisionism. One such insertion of fantasy is the romance's addition of Cassodorien, a demon bride who stands in for Richard's real mother, Eleanor of Aquitaine. The demon bride archetype that Cassodorien embodies can be found in many medieval folktales and is generally used to create a specific plot pattern: an eligible bachelor discovers a mysterious, wealthy, and attractive woman, the pair marries with a specific marital condition being set, the husband violates this condition, and the marriage is sundered as the demon bride flees through supernatural means. The unknown author's choice to swap Eleanor for this specific archetype of a mysterious, attractive, and ultimately demonic entity indicates an anxiety over the place female rulers occupied. Coupled with the monstrous forms of maternity common in the demon bride archetype, the Cassodorien episode can be used to create new readings of popularly analyzed sections of RCL and create new interpretations that incorporate medieval theories of gender and bodily influence.

Author Q&A

Saturday, March 20, 2021 from 1:00 pm - 2:00 pm

The Last Girl: Transnational Protest Literature and Art

Madison Messerle, Yaminah Martinez, Siena Wyse,
Shannon Fischer, Vivianna Denittis,
Sonia Charales, & Lisha Storey-Daniels
English, Austin College
The Last Girl Panel

The transnational framework allows women who have been left behind by white, liberal feminism to gain recognition and share their experiences to reshape feminist politics, and protest literature, a form of creative nonfiction, is a mode of truth-telling which conveys lived experiences using literary strategies. In Nadia Murad's *The Last Girl: My Story of Captivity and My Fight Against the Islamic State*, Murad shares her experience as a member of the targeted religious minority, the Yazidi, during a 2014 invasion of her village. . I have written an account of my experience reading and researching Murad's journey, and I other Austin College students to create a piece of visual art that captures their interpretation of her story. Through our depictions, we are participating in the process of creating art for the purpose of telling our personal truths.

Author Q&A

Saturday, March 20, 2021 from 2:00 pm - 3:00 pm

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