



Macalester College
Senior Honors and Awards

2022

May 2022

Macalester College is fortunate to have an abundance of creative, thoughtful and engaged students. The graduating seniors who have completed honors projects and received departmental awards have further distinguished themselves through these accomplishments. They deserve our congratulations and gratitude.

The first half of this booklet describes the honors projects completed by the Class of 2022. These compelling and original works, completed under the guidance of dedicated faculty sponsors, were judged worthy of honors by an examining committee in accordance with the standards of their fields. A copy of each project will become part of the DeWitt Wallace Library's permanent collection, joining those completed by previous honors graduates.

The second half of this booklet describes the awards and prizes departments have bestowed on their graduating seniors. These awards are made possible through the generous financial support of donors, who chose to demonstrate their appreciation for the college by honoring student academic excellence.

It is with great pride I make these achievements public and wish the Class of 2022 the very best in the years to come.

Ann Minnick
Director of Academic Programs and Advising

HONORS PROJECTS

Zoe Virginia Allen

Ginanaandawi'idizomin: Anishinaabe Intergenerational Healing Models of Resistance

Since the early 2000s, the opioid epidemic has had a devastating sweep across Indian Country. The White Earth nation declared the epidemic as a public health emergency back in 2011. Since then White Earth has developed community based harm reduction and culturally grounded models of intervention into substance use disorder that continue to influence Native Nations across the U.S.

This project centers Anishinaabe approaches to the ongoing opioid public health crisis but also elaborates on Anishinaabe forms of healing and resistance. My primary method was conducting oral histories with White Earth community youth-workers and advocates. My research project asks: what are the cultural frameworks and practices that inform and shape substance abuse interventions in White Earth, specifically for Indigenous youth? My research and interviews revealed that culturally informed, intersectional approaches to Indigenous wellness and healing— healing across generations—requires continual resistance to ongoing settler colonial and white supremacist, heteropatriarchal violence.

Honors Project in American Studies

Advisor: Kirisitina Saliata

American Studies Department

Aiym Bakytbaikyzy

Competitive Success of *Fomitopsis betulina* as a Wood-degrading Fungus

Brown rot wood-decaying fungi have a chemical and biological nutritional mode that is very distinct from those of white rots. The former selectively degrade carbohydrates and leave most of the lignin (organic polymer in the plant cell wall) intact in soil residues, while the latter generate oxidized residues that have little lignin left. Studying the competition between wood-decaying fungi with different nutritional modes is important because their early assembly history (fungal community composition and advancement) has a huge effect on the rate of decomposition and the fate of carbon in soils. 80% of Earth's aboveground biomass carbon is stored in wood, so understanding how fungi decay wood will enhance the models for loss of biomass and carbon accounting. In this study, I researched competitive success of *Fomitopsis betulina* (brown rot) in mesocosms with soil and logs of *Betula papyrifera*. This new nested experimental design included three categorical independent variables (soil, log, and inoculum), where the binary was whether the log and/or the soil were sterilized, and whether the log was inoculated with *Fomitopsis betulina*. Lignin:density loss (L:D; higher for white rot) values were calculated to infer the rot type in the samples. The results illustrate that competitive interactions between fungal species affect colonization success, which in turn has significant consequences

on the outcomes of wood decomposition. I saw predictable patterns that are in line with the life history of *Fomitopsis betulina*; however, there was a lot of variability in the L:D values. Moreover, the mesocosm design led to some unavoidable contamination. The next step is to perform targeted DNA comparisons within the nested design to examine the effects of the microbial community on competition within the wood.

Honors Project in Biology
Advisor: Sarah Boyer
Biology Department

Freddy Andrew Barragan

Statistical Genetics for Pediatric Leukemia: Characterizing Racial Disparities in Pediatric Acute Lymphoblastic Leukemia

There are pronounced survival disparities by race/ethnicity in children with B-cell acute lymphoblastic leukemia (B-ALL), where Black children carry a disproportionately high risk of death, despite having some of the lowest risks of disease. While previous B-ALL studies have found these differences remain after adjustment for structural factors, the absence of statistically robust and ethically-sound methodologies has limited work on B-ALL. Using genetic ancestry — a measure of heredity that is distinct from race — we identified new risks of death and discovered genes that may help explain the disparities in B-ALL.

Honors Project in Mathematics, Statistics, and Computer Science
Advisor: Kelsey Grinde
Mathematics, Statistics, and Computer Science Department

Gage Thomas Barroso

New Synthetic Route for Peptidomimetics and Design of Ester Hydrolysis Peptide Catalysts

Proteins have desirable functionality in applications other than that of their biological origin, such as enzymes, which may be applied to industry. However, proteins are often unstable outside of their natural environments, making them difficult to use in an efficient manner. One way to relieve this is the use of protein-mimetics, which can have increased stability outside biological environments while also retaining functionality. In this thesis, I approached protein-mimetics from two different angles. The first mimic was a structural peptidomimetic that was synthesized using a pre-monomer approach. This is a solid phase synthetic strategy that separates the backbone elongation from the addition of the side chain functionality. The key thiol-ene coupling reaction for this approach was optimized to result in over 95% reaction conversion. The

second type of mimic focused on catalytic activity of short peptide catalysts for ester hydrolysis and investigating the role of secondary structure on that activity. We found that the secondary structure's role is dependent on the design scaffold through analysis of two separate β -hairpin scaffolds.

Honors Project in Chemistry
Advisor: Leah Witus
Chemistry Department

Adam Daniel Bass

Synthesis of Linear Dicarboximides on Aromatic Hydrocarbon Scaffolds

Rylene diimides (RDIs) are a class of organic compounds notable for their electron affinities charge carrier mobilities, and stabilities under oxidative and thermal conditions. These properties make these compounds items of interest in the world of organic electronics, notably as electron-transporters (as opposed to the more commonly seen class of organic compounds which function as hole-transporters). This work focuses on the development of a synthetic route to a related class of compounds, linear dicarboximides and linear tetracarboximides – specifically those on aromatic hydrocarbon scaffolds. While the properties of these novel molecules are not yet fully understood, we hypothesize that they are similar to those of the more well-known RDIs. It is also of interest to obtain linear dicarboximides which have different functional groups substituted from their imide nitrogens, since these imide sidechains are known to alter RDI properties.

Honors Project in Chemistry
Advisor: Dennis Cao
Chemistry Department

Connor Bass

Crystal Graphs for the Symmetric Group

The object of our study is a bijective algorithm that turns a word in $\{1, 2, \dots, n\}^k$ into a sequence $(T_0, T_{1/2}, \dots, T_k)$, where the subsequence (T_0, T_1, \dots, T_k) is a sequence of standard Young tableaux on n boxes, and each successive tableau is gotten by deleting a box and reinserting it. These tableaux index bases of irreducible modules for the symmetric group S_n , and this bijection gives a combinatorial model for the decomposition of the tensor space $(V_{S_n}^{perm})^{\otimes ck}$ into irreducibles. The algorithm embeds the crystal graphs of these irreducible modules into

$\{1, 2, \dots, n\}^k \subset \mathbb{R}^k$, and we explore connections between the algebra and the geometry of this embedding.

Honors Project in Mathematics, Statistics, and Computer Science
Advisor: Tom Halverson
Mathematics, Statistics, and Computer Science Department

Nethmi Sachithma Perera Bathige

Food Security and Dietary Diversity Among Conventional and Organic Tea-Smallholders in Central and Southern Sri Lanka

In Sri Lanka, smallholder tea producers grow 70 percent of the country’s tea and bring in significant export earnings. However, when the country moved towards a more liberalized economy in 1977, growing cash crops such as tea for exports increased. As a result, there was a cut-back in food crop agriculture as farmers made space to grow more commercial crops. This research treats tea smallholder households as a unit of study. It looks at how economic status (average income and wealth rankings), level of crop diversity, and method of tea farming (organic or conventional) have influenced food security and dietary diversity outcomes. I use data collected in the summer of 2021 from 47 organic and 67 conventional tea smallholders in six rural communities of Southern and Central Sri Lanka. My findings show that organic farming is associated with greater dietary diversity among tea smallholders than conventional farming, growing a greater variety of cash crops is associated with greater dietary diversity and increasing household incomes through selling crops result in greater levels of dietary diversity. I also examine how the transition to organic farming works best with more time and planning. The country’s recent ban on imports of chemical fertilizers used by conventional tea farmers has impacted their dietary diversity and food security outcomes, since this was done in a rather haphazard manner causing declines in tea and food crop yields. Furthermore, I examine how the smallholder tea sector has felt the effects of the COVID-19 pandemic and the looming economic crisis in Sri Lanka.

Honors Project in Geography
Advisor: William Moseley
Geography Department

Henry George Bell

Custom Calibration and Correction of Photoemission Electron Microscope Images Using Graphene

The Photoemission Electron Microscope (PEEM) is a full-field electron microscope that utilizes the photoelectric effect to image a surface. Due to a spatial resolution on the order of 10 nanometers and its ability to image both the morphology of a surface and its band structure, it is a useful tool for understanding the properties of materials for use in electronic devices. To correct for random sample misalignment and the experimental frame of reference in the spectroscopy mode of the PEEM, the 3D dataset must be rotated in both the momentum and energy coordinates which requires pixel calibration and energy alignment. I have created custom Python scripts to both automate this process and standardize the calibration and correction procedure to streamline data analysis for users of the PEEM. Graphene was utilized as an initial calibration material due to its distinct electronic band structure. The 6 Dirac cones of graphene were used as iso-energy points to align the frames on the energy axis and a series of matrix operations were utilized to rotate the image in the momentum axis to correct for sample misalignment. I used the corrected dataset to estimate the Fermi velocity and compared it to theoretical predictions.

Honors Project in Physics and Astronomy
Advisor: James Heyman
Physics and Astronomy Department

Lana Berry

Abundance

My Studio Art honors project identifies a parallel between the standards of ceramic beauty and human beauty. Symmetry, a smooth surface, perfect curves, weightlessness and clear functionality all contribute to the “perfect” ceramic vessel and similarly the “ideal” human form. *Abundance* is a rebellion against these standards. I investigate how ceramic forms can appear heavy and drooping under gravity, and how bumpy textures and speckled glazes intensify forms’ deviation from the standard. Alluding to fatness, my project took the final form of semi-figurative wall-hanging ceramic protrusions, which serve to disrupt the flat, smooth, white gallery wall with overflowing color, texture and weight.

Honors Project in Art (Studio)
Advisor: Summer Hills-Bonczyk
Art and Art History Department

Andrew Bradford

The Limits of White Reading in 19th Century African American Literature

I examine representations of Black narrators speaking to white audiences in 19th century African American short fiction to illuminate the desires of white audiences to take authority over the narrative situation and how Black narrators use those desires to destabilize this authority. Frederick Douglass' novella, *The Heroic Slave*, reveals that because white subjects depend on narratives of black hardship to produce their own whiteness, white subjects desire to transcend narratives of black suffering as a sublime spectacle. By manipulating the audience's desire to hold authority over Madison, Douglass' formerly enslaved protagonist and narrator, the text prevents the audience from definitively knowing or controlling Madison's narrative. In Charles Chesnut's short story, *Dave's Neckliss*, the narrator, Julius, simultaneously reproduces racial stereotype to make his white listeners laugh and imbues the stereotypes with an uncanny aura that interrupts the laughter of his white audience. Julius' double movement destabilizes his listener's attempt to reduce his narrative to a single, stereotyped meaning. In doing so, he disenchantments – in Sylvia Wynter's sense of enchantment – the illusion of whiteness as self-present autonomy and indicates the limits of white readers to know about a Black narrator.

Honors Project in English

Advisor: James Dawes

English Department

Johanna Nicole Caskey

Invalidation & Emotion Regulation: How Does Emotional Invalidation Relate to the Efficacy and Endorsement of Emotion Regulation Strategies?

Past research has reliably shown that emotional invalidation poses a threat to one's capacity for successful emotion regulation, though the relationship between the two is complex. This pair of studies sought to understand how perceptions of emotional invalidation relate to the efficacy (Study 1) and endorsement (Study 2) of emotion regulation strategies. Study 1 did not provide support for the prediction that perceptions of invalidation would undermine the success of the particular emotion regulation strategy of affect labeling, generating a new hypothesis: invalidation may be more related to how we conceive of the process of regulating our emotions, rather than whether a specific strategy is successful. Study 2 tested this hypothesis and found that invalidation (defined generally) is associated with higher endorsement of suppressive emotion regulation strategies and lower endorsement of the strategies of problem-solving and social support. This study also examined whether the relationship between invalidation and emotion regulation differed as a function of the source of invalidation (family vs. friends). Invalidation from family members in particular was also associated with increased endorsement of rumination, a relationship that was not exhibited in the case of invalidation from friends. A

continued understanding of the relationship between invalidation and emotion regulation is invaluable to the understanding of emotional well-being broadly defined.

Honors Project in Psychology
Advisor: Jaine Strauss
Psychology Department

Daniel Chechelnitsky

Don't Beep At Me: Using Google Maps APIs to Reduce Driving Anxiety

Stress while driving is a significant issue that causes automobile incidents. Along with the physical injuries, there is often baggage and trauma associated with these accidents. Wearable health monitoring technology, like Smartwatches, has a real possibility to help people further understand the stress inducing processes of driving. Thus to help with this issue, I propose a Google Maps app extension called: "Don't Beep At Me". This project creates a map that is layered by heart rate instead of speed limit and has great potential to be useful for reducing driving anxiety.

Honors Project in Mathematics, Statistics, and Computer Science
Advisor: Susan Fox
Mathematics, Statistics, and Computer Science Department

Lu Chen

Queering Pina Bausch: Tanztheater for Queer BIPOC Artists

Pina Bausch's *Tanztheater* ("dance-theater" in English) revolutionized global dance theater performance. From a feminist perspective, Bausch mixed movement with theatrical design elements and film techniques to express emotions and sentiments of women-men relationships, and the boundary between performing and being displayed. Inspired by German Expressionism and New York City avant-garde movements, her movement language and text were visceral in expressiveness through repetition, alienation, montage technique, and emotive gestures (Helden 134). In this essay I explore how Bausch's approach to dance-theater can welcome dancers who stand outside of the German choreographer's identity as a white European woman. For example, what does a safe creative space look like for queer Black, Indigenous, People of Color (BIPOC) with disabilities? Queer performance art, cyborg theory, and queer temporality theory have encouraged queer artists to reimagine a reality with gender fluidity and to reject binary thinking (Haraway 3). This essay first discusses the aesthetics and methods of Bausch, cyborg theory, and queer dance, to explore how we may create Bausch-inspired

performance by and for queer BIPOC movers with limited rehearsal time, technique training, and disabilities.

Honors Project in Theater and Dance
Advisor: Wynn Fricke
Theater and Dance Department

Wei-Chieh Chen

“Land is Life”: Settler Colonial Governance of National Parks and Hunting in Taiwan

This thesis situates Taiwan as a settler colonial state by examining the discourse around the governance of national parks and the criminalization of Indigenous hunting. Placed in the context of historical patterns of land dispossession and cultural genocide, these two issues represent the ongoing process of settler colonialism and the reproduction of settler colonial relations through environmentalism. I focus on the narratives around three case studies: the controversial and ultimately unsuccessful campaign for the Maqaw National Park, the Tumpu Daingaz buluo’s struggle with the Yushan National Park, and the Tama Talum Indigenous hunting constitutional reinterpretation case. I argue that settler colonial framings of Indigenous/environmental issues enable the continued enactment of colonial relations and policies. Settler narratives and environmentalism perpetuate settler colonialism through what Métis scholar Max Liboiron explains as the assumption of access to Indigenous land, cultures, and knowledge. These cases are often framed as a progressive and benevolent government inclusion of Indigenous cultures and ecological knowledge. However, a settler colonial lens of analysis demonstrates that these moves of settler inclusivity serve to preserve settler legitimacy and futures in Taiwan while deeper contentions over Indigenous sovereignty remain unresolved. Indigenous voices within these stories reveal a throughline of ongoing resistance and resurgence, offering alternative understandings that center Indigenous land and life. While settler narratives portray and encourage limiting frameworks that prioritize settler interests, Indigenous narratives and activism expand the ways for Indigenous self-determination, futures, and land relations.

Honors Project in Environmental Studies
Advisor: Chris Wells
Environmental Studies Department

Hannah Conner

Réunion: Haven or Hostile Land?: A Translation of a Complex Documentary in Pursuit of Reclaiming Identity

In 2012, the documentary film *La Réunion : terre d’asile ou terre hostile* was first screened at the Comorian International Film Festival (CIFF). The film, directed by Comorian filmmaker Saïd-Ali Said Mohamed, explores the experiences of Comorians on the island of Réunion, a Department of France in the Indian Ocean. It not only discusses the complex, interwoven histories and identities of the Comoros and Réunion, but the film itself is part of a broader movement to reclaim the representation of Comorians. This project, a French to English subtitling of the film and an accompanying analysis, seeks to fully appreciate the many linguistic, cinematographic, and cultural nuances of the film.

Honors Project in French and Francophone Studies
Advisor: Joëlle Vitiello
French and Francophone Studies Department

Paul Gabriel Lingal Cosme

King Behind Colonial Curtains: Kasilag and the Making of Filipino National Culture

Filipino National Artist Lucrecia “King” Kasilag sought to preserve folk cultures and melded these with her Western training to produce works—scholarly, pedagogical, and compositional—that shaped national music and culture. This thesis is a critical biography that combines perspectives from postcolonial studies, political economy, and musicology to highlight forces that shaped Kasilag’s life while illustrating her successes and shortcomings on national culture. Through this biography, I argue, Filipino national culture must originate from intersectional struggles and negotiation among elites and masses; that this culture is about both resistance and acceptance—a national culture that is syncretic and quintessentially dynamic.

Honors Project in International Studies
Advisor: Ahmed Samatar
International Studies Department

Paul Gabriel Lingal Cosme

The Sounds of Home: A Composition Portfolio

What does home sound like? I have spent most of my recent life outside my homeland, the Philippines, especially during the Covid-19 pandemic, and this question of what home is has become a persistent thought, if not, a necessary inquiry. This composition portfolio attempts to answer that question in three varying pieces. The first, *The Sounds of Home*, is a string quartet in three movements where each one tells a personal story by invoking Filipino folk and indigenous themes. The second, *Commuting in Manila*, is a wind septet that sonically emulates the commuting experience in Manila from the viewpoint of a working-class Filipino. The third, *The Fantasy of the Consoled*, is a solo piano piece that reflects the way I see the process of consoling and being consoled during difficult times through an inventory of my improvisations and mannerisms on the piano. In sum, these pieces together probe the idea of home in three ways: as nation, as landscape, and as self.

Honors Project in Music
Advisor: Randy Bauer
Music Department

Lily Beatrice Denehy

Creating Cowboys and “Playing Indian”: Football and White Supremacy from 1890-1980

This honors thesis argues that football is a location of leisure which reinforces and (re)creates a comforting white male supremacist American empire through its use of imaginary frontiers, distortion of Native imagery and culture, and its development of mythic cowboy-heroes— which serve as escapes from ubiquitous national anxieties. I use textual and visual analysis of primary sources from the 1890s, 1920s, and 1970s to describe how football developed as a comforting space of leisure for white people in the face of national crises of masculinity, rights movements, and disillusionment with America’s empire.

Honors Project in History
Advisor: Katrina Phillips
History Department

Nicholas Di

Gendered Labor Market Outcomes During COVID-19: Evidence from Early Withdrawal of Federal Pandemic Unemployment Compensation

Despite their importance in the social safety net, Unemployment Insurance (UI) benefits are expected to increase unemployment duration. I find that males, on average, face a greater drop in unemployment than females when (UI) is no longer offered in their respective state. Male's unemployment rate dropped more by a magnitude of 0.7 percent compared to female's, which consists of about 11.5 percent of male unemployment during UI. Females who were married, were in lower family income brackets, or had children saw smaller changes in unemployment when UI programs were exhausted.

Honors Project in Economics
Advisor: Amy Damon
Economics Department

Arthur DressenWall

Sharp Inequalities of the X-Ray Transform and the Competing Symmetries Argument

We examine the $k=1$ case of a conjecture by Baernstein and Loss pertaining to the operator norm of the k -plane transform from $L^p(\mathbb{R}^d)$ space to $L^q(\mathcal{M})$ space. Previous work on this problem by Carlen and Loss, as well as by Drouot, has used an iterative technique known as the “competing symmetries argument ” to prove this conjecture in the $q=2$ and $q=d+1$ cases. We summarize the conjecture and this proof technique, then perform work that strongly suggest that no sufficiently “nice” transformation exists that can be used to apply the competing symmetries argument to other cases of the conjecture.

Honors Project in Mathematics, Statistics and Computer Science
Advisor: Taryn Flock
Mathematics, Statistics, and Computer Science Department

Henry Elsenpeter

Imperator Novus: Charting the Transfer of Rome's Imperial Past to the Papacy's Eighth Century Present

When did Roman imperial iconography become part of the position of pope? This thesis will highlight the eighth century as a time of notable change in papal authority and identity. The

developing papacy — in competition with rival contenders for Rome’s past — produced two key documents that portrayed the pope as an inheritor of the Roman Empire. In these sources, the bishop of Rome took on an entirely new identity as an *imperator novus*. While the eighth century continued, the pope gradually appeared increasingly imperial, concluding with a coronation that crowned emperor and pope, alike.

Honors Project in Classical Mediterranean and Middle East
Advisor: Beth Severy-Hoven
Classical Mediterranean and Middle East Department

Alice Endo

Theater as National Memorial: How *Angels in America* Remembers

Applying a framework of audience experience and scenographic analysis, this paper explores the connections between public memorials and performance. The Vietnam Veterans Memorial in Washington, D.C. uses scenography to present itself as a “linking object,” gaining its meaning through audience projection. *Millennium Approaches*—part one of Tony Kushner’s two-part epic *Angels in America: A Gay Fantasia on National Themes*—produced at Macalester College in 2021, also functions as a public memorial. Its scenography situates the play in a heightened, and specifically American, space and time. It becomes a receptacle for audience memory, reconstructs that memory, and ultimately reconstructs ideas of American nationhood.

Honors Project in Theater and Dance
Advisor: Mina Kinukawa
Theater and Dance Department

Jonah Goulet Esty

Schumann, Barthes and Deleuze: Three Strangers

My honors project is based on 2 essays on the music of Robert Schumann from Roland Barthes’ collection *The Responsibility of Forms*: “Loving Schumann” and “Rasch”. In “Loving Schumann”, Barthes refers to Gilles Deleuze as a "Schumannian," and my project is based on this idea. Since Deleuze never wrote about Schumann, what was it about his theory and Schumann's music that led Barthes to make this connection? I analyze Barthes’ understanding of what constitutes a “Schumannian,” the substance of Schumann’s music that supports this

understanding, and the aspects of Deleuze's theory that are reminiscent of Barthes' understanding of Schumann.

Honors Project in Music
Advisor: Mark Mazullo
Music Department

Rebecca M. Gallandt

Quilted Archives

Memory and identity are rooted in the experience of being in material spaces and the process of remembering is often prompted by associative places. Quilted Archives is a series of four collages that combine the mediums of printmaking and oil painting in the pursuit of exploring nostalgia. In each work I use brightly colored intaglio aquatint prints, sepia intaglio etchings, patterned linocut prints, and oil paint to embed memories of childhood play and pretend in the flora of the landscapes where each memory takes place. The flora is collaged in a colorful geometric style to reference quilting and is used in tandem with embossed pattern prints to explore the warped nature of remembering through visual fragmentation. These collages are records of delightfully simple scenes that work to uncover, celebrate, and archive the beautiful ordinary.

Honors Project in Art (Studio)
Advisor: Ruthann Godollei
Art and Art History Department

Annabel Traudie Gregg

Rural Resiliency: The Cause and Effect of Minnesota's Maternal Health Crisis

The United States is experiencing a maternal health crisis that disproportionately affects those who give birth in rural communities. Rural birthing people have higher maternal mortality rates, increased risk of postpartum hemorrhage, non-indicated cesarean sections, and other adverse health outcomes. Despite the enhanced risk of rural birth, rural communities are losing access to hospital-based obstetric care at an unprecedented rate. The state of Minnesota has vast rural territory, with one-fourth of its population living outside the urban sphere -- making it a strategic area of study. As of July 2021, 31% of Minnesota's 91 rural hospitals were at risk of closing. The repercussions of obstetric loss reverberate through rural communities, leaving indelible physical, emotional, and economic impacts. This paper seeks to identify why American rural communities are experiencing the loss of hospital-based obstetric services and

how local communities in rural Minnesota respond to the lack of maternal healthcare. Using a mixed-methods approach, this paper compares findings from a systematic literature review to survey responses and ethnographic interviews from birth workers and birthing people across Greater Minnesota. This research intentionally seeks out and uplifts rural knowledge as a means of highlighting the resiliency of Greater Minnesota. Preliminary findings from interviews suggest that communities identify macro-level issues as barriers to equitable high-quality care and Minnesota's rural communities respond to the maternal health crisis with place-based and community-specific public health measures. This study highlights the lived experiences and local knowledge that is collectively held by rural communities and provides critical insights into the reality of rural birthing in Minnesota.

Honors Project in Geography
Advisor: Holly Barcus
Geography Department

Katherine Ann Herrick

Breaking Things: Origins and Consequences of Racialized Hate Speech on Facebook

This thesis seeks to bring attention to the ways in which the effects of hate speech--specifically racialized hate speech--transcends digital platforms. It will begin by connecting the phenomenon of racialized hate speech on Facebook to specific psychological tendencies that the company consciously amplifies for its own financial benefit. The first chapter interrogates the common narrative that violent rhetoric indicates a flaw in the platform's design, instead arguing that proliferation of such content is encouraged by Facebook's algorithm. From there, the second chapter examines what happens when a technology giant leverages human psychology for corporate greed. A true worst-case scenario, the Rohingya genocide in Myanmar elucidates Facebook's negligent behavior and illustrates the consequences of failing to proactively mitigate hate speech. Finally, the third chapter discusses existing and proposed efforts to regulate Facebook and similar platforms. As an issue that encompasses ethical dilemmas, policy predicaments, and business implications, reducing the prevalence of racialized hate speech on Facebook poses challenges for all regulatory actors, from the United Nations, to sovereign states, to the corporation itself. In the end, the most effective means of protecting human rights on digital networks may not rest upon the United Nations, nor individual nations, nor private corporations, but upon social media users themselves.

Honors Project in International Studies
Advisor: James von Geldern
International Studies Department

Alexander Barnes MacLeod Hopkins

How Does the Crowd Affect Home Field Advantage? Evidence from COVID Affected Seasons in the Top 5 European Soccer Leagues

It is well documented that home field advantage is a significant determinant of team success. The specific mechanism of this advantage is difficult to identify. Is it players' superior knowledge of the home field, the convenience of not having to travel, or the cheering fans of the home crowd? Prior to the COVID-19 pandemic, there was no direct way to isolate the crowd's effects on home field advantage. Due to the pandemic, the top five European soccer leagues barred fans from their stadiums. The pandemic created a quasi-natural experiment to study a crowd's effects on the match outcome and refereeing. Using data from Football Reference and FiveThirtyEight from 2015 through the 2021 season, I use a stadium fixed-effects model to better understand crowds' effect on goal differential (a proxy for match outcome). Similarly, I use a three-way fixed effects model on stadium, season, and referee to test the crowd's effect on the referee. With an extra season of data (previous research only used until the 2020 season), I found that fans are worth 0.23 more home goals than away goals across all leagues. I also found that fans were worth 0.46 more yellow cards in favor of the home team, and the other referee outcomes follow this trend. However, in both cases, league-specific results vary. The results support the hypothesis that fans influence match outcome and refereeing, though any conclusion must be tempered with the disclaimer that COVID changed many factors in addition to the absence of fans.

Honors Project in Economics
Advisor: Gary Krueger
Economics Department

Shea Alexander Husband

This Way Kids: The Role of Locativity in Korean Queer Identity Creation

The study of queer linguistic practices in East Asia as a whole, and especially in Korea, is an area in desperate need of scholarship. While extensive research exists on the linguistic practices of people with non-heteronormative sexual identities in an English-speaking context (see Bucholtz and Hall, 2004; 2005; Eckert and McConnell-Ginet, 1992 as examples), only two papers touch on queer identity in a Korean linguistic context, namely King (2008) and Kim (2016). King's paper discusses the roles queer identity plays in English learning among three Korean gay men in Seoul, and Kim's paper deals with the othering of queer Korean voices through television. This paper seeks to begin to fill the immense gap in understanding of queer linguistic practices in a Korean context by proposing an analysis of the locative phrase *ijjok*, meaning this way or this direction, as well as non-standard English use as resources for queer identity creation in Korean. Using Bucholtz and Hall's tactics of intersubjectivity (2004) and interactionist (2005) frameworks as a theoretical framework, this paper analyzes speech produced by queer streamers and seeks to show that *ijjok* serves the following functions: (1) as

an indirect index for queer identity; (2) as a mechanism through which to maintain conversational harmony and aesthetics; (3) as a mechanism to authenticate queer identity and in-group membership; (4) to project the social alienation and erasure of queer Koreans onto abstract linguistic space; and (5) to subvert the hegemony of earlier queer self-reference terms. Furthermore, this paper grounds itself in ethnographic research and dialogues with post-structural, feminist, and queer theories.

Honors Project in Linguistics
Advisor: Christina Esposito
Linguistics Department

Gabrielle Rose Isaac-Herzog

From Handmaids to Princesses: How Identity and Politics Impact Definitions of Biblical Rape

The politics of sex in the Bible are complex. They are impacted and limited by the time of the stories, as well as the political landscape and laws of the region. However, since many modern religions have emerged from the text of the Hebrew Bible, it is important for scholars to continue the work of critically examining the texts in the contemporary context. This paper offers a textual analysis of several biblical stories through a feminist and decolonial lens. Through the generation of a taxonomy by which these stories can be categorized, this paper posits that the biblical definitions of rape serve to protect the ancient patriarchal power structures, instead of the victims of sexual violence.

Honors Project in Classical Mediterranean and Middle East
Advisor: Nanette Goldman
Classical Mediterranean and Middle East Department

Nicholas Peter Jacobson

Bamboozled: Evaluating Bamboo Coverage Within a Fragmented Semi-deciduous Forest Landscape in Coastal Ecuador

As bamboo is increasingly considered as an environmentally friendly, socially equitable, and economically viable alternative land use in coastal Ecuador, it has become increasingly necessary to map its spatial distribution. In this study, I evaluate the geographic extent of bamboo cover in a portion of Manabí Province, coastal Ecuador, a region purported to have the most bamboo cover in Ecuador and an area critical to biodiversity conservation and poverty alleviation efforts. Utilizing a novel integration of PlanetScope (satellite) and UAV (unmanned

aerial vehicle; drone) imagery, I develop two Random Forest (RF; ensemble learning) land-cover classification models across the wet and dry seasons. Classification accuracy was higher for the dry season model at 82.7% compared to 75.7% for the wet season model. The land-cover map produced with the dry season model indicates that the average size of bamboo patches is small, between 1 and 5 ha. Total bamboo coverage in the study area of 134,700 ha was estimated at 26,440 ha, or 19.6% of the study area. The dry-season land-cover map also indicates that bamboo is commonly found in association with fluvial systems and farms, concurrent with the uses of bamboo as an erosion control mechanism and a source of building material. These results provide critical baseline information for further bamboo socio-ecological research, the work of bamboo-related non-profits, and governmental policies as Ecuador begins to develop its bamboo sector and pursue the potential environmental and social benefits of bamboo. Furthermore, this study adds to the growing methodology on the integration of UAV and satellite imagery and advanced classifiers like RF to classify complex vegetated landscapes.

Honors Project in Geography
Advisor: Xavier Haro-Carrión
Geography Department

Jared Matthew Jageler

Did the Clean Air Act Improve Environmental Justice Disparities?

This paper analyzes the differential impacts of the 1990 Clean Air Act Amendments (CAAA) on the racial pollution exposure gap, also known as the Environmental Justice (EJ) gap. I test whether CAAA non-attainment status and resulting State Implementation Plans decreased pollution in high-percentage Black and Hispanic versus the rest of the population. My results confirm that the CAAA reduced overall pollution concentrations in the U.S. and decreased the absolute level of the Environmental Justice gap. A heterogeneity analysis provides evidence that the results are primarily driven by air quality gains in Black communities in California and the Rust Belt.

Honors Project in Economics
Advisor: Gabriel Lade
Economics Department

Ayize Kimani Ming-Lee James

“Abolition as Presence”: An East Bay CA Case Study of Black Food Geographies

Using abolitionist methodologies, this research project argues that food activism contests “food deserts” by making food present through sources alternative to supermarkets. I examine how racialized class formations have generated landscapes of food inaccess in the East Bay that are historically and actively contested through case studies of food activism. To understand how organized abandonment creates food deserts, I consider the history and present-day context of spatially-uneven food inequities in Oakland and the East Bay. I then present three case studies to argue that abolitionist organizing by Black and Indigenous peoples in Oakland has continually made food present in places demarcated as food deserts: an abolitionist discourse analysis, an urban feminist Indigenous land trust and a Black grocery cooperative. This research builds on scholarship that rethinks issues of the environment and environmental justice with critical attention to carceral society, settler colonialism, and racial capitalism. In particular, I build on the work of Ruth Wilson Gilmore and Nik Heynen to consider food’s necessary and transformative role in abolition geography and abolition ecology. I conclude by contributing a vision for abolitionist food systems that interconnects carceral abolition, food sovereignty, Black feminisms and the return of Indigenous land.

Honors Project in Environmental Studies
Advisor: Roopali Phadke
Environmental Studies Department

Alexander Philip Barron Johanson

Tracking a Late Cretaceous River: Subsurface Extent and Expression of the 80 Ma Nonmarine Sequence Boundary in Montana and Alberta

I studied 1,500+ geophysical well logs to identify and track a previously recognized nonmarine sequence boundary (referred to as SBSS) in the subsurface over 125 km along strike over 40 km along dip. In subcrop data the SBSS averages ~15 m thick, and it can be traced more or less continuously from northern Montana into the plains of southern Alberta. ArcGIS allows for a 3-D representation of the body that highlights the impact of western subsidence in the foredeep. These results enrich our understanding of a significant base level change in the Western Interior Basin that occurred ~80 Ma.

Honors Project in Geology
Advisor: Raymond Rogers
Geology Department

Gwyneth John

“It was Real to Me Too”: Emotional Storytelling and Character Development Through Motivic Relationships in the *Black Widow* Soundtrack

Since her introduction into the Marvel Cinematic Universe in the 2010 film *Iron Man 2*, Natasha Romanoff has not had a strong musical identity. The 2021 film *Black Widow* changes this trend as Natasha assumes the role of the titular character rather than that of a supporting character. *Black Widow*'s soundtrack allows the absurd superhero film to tell a personal story of familial bonds, struggles with individual identity, and childhood trauma through motivic relationships and the changes in various iterations of themes and motifs as they appear in the film.

Honors Project in Music
Advisor: Victoria Malawey
Music Department

Yiğit Can Kahyaoglu

Reference without Acquaintance: Naming and Thought in Fiction and Science

Mill thought the semantic content of proper names is simply their referents. This is true even for objects we are not acquainted with, even though many contemporary Millian theories appeal to causal connections to account for the reference and thus the meaning of such names. However, in certain contexts, we refer to objects that we are not causally related to — moreover, we seem to be able to think about such objects, as well. Such cases appear in science and fiction, especially when we talk about hypothetical objects and fictional characters. In this thesis, I will examine the naming practices in fiction and science, and look at how reference is fixed when speakers are not acquainted with the objects they are referring to. I will argue that reference can be fixed in many ways, and due to the close relation between reference and thought, we can think and talk about objects without acquaintance constraints, as long as we participate in the relevant social practices.

Honors Project in Philosophy
Advisor: Janet Folina
Philosophy Department

Aram Kavoussi

Audio Virology and Affect Contagion in the Times of Preemptive Power and Sonic Futurism: The Sonic Warfare of Fatima Al Qadiri

This project explores sound as a battleground of moods, feelings, and intensities--affects as explored in affect theory. Drawing on Steve Goodman's notion of sonic warfare as the production and deployment of acoustic vibrations toward the manipulation of affect, this project examines affective deployments of sound by State military and police apparatuses as well as by the rhizomatic network of digital cultural production. Moving through the cultural-political paradigms of preemptive power and sonic futurism, this project then analyzes the music of Fatima Al Qadiri as it intervenes sonically and affectively in the State aestheticization of warfare and criminalization of protest.

Honors Project in Media and Cultural Studies
Advisor: John Kim
Media and Cultural Studies Department

Kalala Christine Kiwanuka-Woernle

Let the People Speak: How Verbatim Theater Allows Historically Marginalized Groups to Tell Their Stories (essay)
motherhood: the good, bad, and ugly (creative component, playwriting)

motherhood: the good, bad, and ugly was born out of my research of Verbatim Theater, specifically the practices of Anna Deavere Smith, The Tectonic Theater Project, and Eve Ensler; and the lack of fully fleshed out mother characters represented in theatre. In my research, I focused on how these different playwrights crafted their plays, identified the topic or event they wanted to explore, and the selection of their subjects. During the pandemic, I had the idea to create a theater piece that would tell the good, the bad, and the ugly of motherhood because in the media especially in the theater I only saw the two extremes of the selfless mother who had zero identity beyond her children and the evil stepmother. I find this trope to be very problematic because it perpetuates the monolithic narrative that once someone has a child, they must put everything else on hold so they can care for their child and be a "good mother".

Like in the works of *Twilight: Los Angeles, 1992*, *The Laramie Project*, and *The Vagina Monologues* it was important to me to have stories from various racial, ethnic, socioeconomic, ages, marital statuses, and sexual orientations, but due to time restraints, I recognize that my play does not have examples from all of these identities. To begin my process, I came up with a series of questions like, "Tell me about the day you found out you were pregnant?" and "What are your plans for after your kids move out?", to prompt my interviewees. My interview process was a bit different from the playwrights that I researched because I conducted one on one interviews and four talking circles that ranged from three participants to six. To select my subjects, I reached out to all the mothers I knew and encouraged them to suggest mothers who they thought would be

interested. My reasoning for utilizing different mediums was to make my subjects feel comfortable and also generate as much material as possible in a short period of time. Over the course of the interview process, I interviewed twenty mothers via Zoom and used the software Otter.ai to transcribe their words. The one-on-one interviews ranged from twenty minutes to an hour, while the talking circles were a set hour, however, they could have gone on for much longer. Following the interviews, I went back to the transcripts generated by Otter.ai correcting mistakes and identifying speakers. Like The Tectonic Theater Project's process, with the Macalester Theater Collective, the group read the collected material aloud and identified moments that stuck out to them or moments that were confusing or redundant. After receiving their feedback, I went through four drafts which were overseen by my advisor Miranda Rose Hall, who would give me weekly feedback. We need to make space for mothers to tell their stories free of guilt and shame, but instead with acceptance and love.

Honors Project in Theater and Dance
Advisor: Cláudia Tatinge Nascimento
Theater and Dance Department

Zoe Kross

Is Title IX Enough?: Analyzing Feelings of Institutional Betrayal Among College Students Who Experienced Sexual Assault

Institutional Betrayal reflects the failures of an institution to accurately prevent or respond to students after sexual violence has occurred. Previous literature shows that survivors of sexual assault are at an increased risk of PTSD and anxiety. The goal of this study was to understand what supportive services Macalester survivors want/need and to analyze if students feel supported by their institution. Grounded in analyses of the domestic violence movement, hookup and rape culture, the neuroscience of trauma, the history of Title IX, and commonly used survivor support services, the goal of this study was to understand what survivors of sexual assault at Macalester want from the institution. This study is based on an analysis of data provided by 79 undergraduate college students (41.7% of whom reported having experienced sexual violence), who reported their opinions anonymously about Macalester's role in supporting survivors of sexual assault and feelings of institutional betrayal. Students who identify with a marginalized identity expressed high levels of institutional betrayal; especially those who identify as 1) Lesbian, 2) Black, Asian, or LatinX, and/or 3) having a disability. Findings highlight that Macalester should invest in more supportive services for survivors that are not directly linked to Title IX. Findings result in a call of action to the college to implement policy changes consisting of, but not limited to: using Title IX's \$300,000 grant to fund transformative and restorative justice initiatives and student health services, cultivating campus-wide cultural

change surrounding sexual violence, and focusing on transitioning into anti-carceral activism in the years to come.

Honors Project in Women's, Gender and Sexuality Studies

Advisor: Joan Ostrove

Women's, Gender, and Sexuality Studies Department

Shelby Marie Kruger

“I give you all of my soul”: Translating Feminine Intimacy in George Sand’s *Isidora*

Despite the fame of prolific French author, George Sand, some of her works remain untranslated and inaccessible to anglophone readers today. This project examines Sand’s 1846 novel *Isidora* and provides a partial English translation of the text, exploring reasons for its obscurity in comparison to her other works, and arguing its relevance to 21st century anglophone readers. Overall, I argue that the crux of *Isidora*’s relevance and excellence lies in its intimate female relationships. Providing a translation of *Isidora* through a queer, feminist lens reveals the endurance of these themes for modern readers, and the singularity of her work among other novels of its time.

Honors Project in French and Francophone Studies

Advisor: Juliette Rogers

French and Francophone Studies Department

Zhaoheng Li

A Comparison of Stacking Methods to Estimate Survival Using Residual Lifetime Data from Prevalent Cohort Studies

Prevalent cohort studies are widely used for their cost-efficiency and convenience. However, in such studies, only the residual lifetime can be observed. Traditionally, researchers rely on self-reported onset times to infer the underlying survival distribution, which may introduce additional bias that confounds downstream analysis. This study compares two stacking procedures and one mixture model approach that uses only residual lifetime data while leveraging the strengths of different estimators. Our simulation results show that the two stacked

estimators outperform the nonparametric maximum likelihood estimator (NPMLE) and the mixture model, allowing robust and accurate estimations for underlying survival distributions.

Honors Project in Mathematics, Statistics and Computer Science
Advisor: Vittorio Addona
Mathematics, Statistics and Computer Science Department

Greer Marybeth Lichtenberg

Looking Up and Playing Down: The Paradoxes of Performing Wealth at a Liberal Arts College

Colleges and universities bring together people with varied economic backgrounds, but sociologists have demonstrated that social class and family resources stratify students' experience of higher education. In this paper, I examine how consumerist and activist cultures influence the meaning of money which, in turn, influences those who perform wealth. Using interview data from twenty-four students at a small liberal arts college in the Midwest, I find dynamics of both displaying and playing down wealth which associate with guilt about money and family wealth and attempts to distance oneself from the "oppressive" economic class while still engaging in the culture around consumerism.

Honors Project in Sociology
Advisor: Erik Larson
Sociology Department

Yifan (Albert) Liu

Investigation of the Role of Turn Residues in β -hairpin Catalytic Peptides of Aldol Reactions

Peptides are intriguing catalysts because they occupy a middle ground between enzymes and small-molecule organocatalysts. Although too short to form tertiary and quaternary structures, peptide catalysts can incorporate secondary structures that have potential benefits for catalytic activity. Our group specifically focused on peptides that can form β -hairpins. A β -hairpin is a structural motif of peptides and proteins that contain two antiparallel β -sheets with turn residues at the bend. Peptides that contain β -hairpin structures have been reported to catalyze a variety of organic reactions. We have been interested in the aldol addition reaction between 4-nitrobenzaldehyde and hydroxyacetone catalyzed by a four-residue peptide that has the potential to form a minimal β -hairpin. More specifically, we aimed to test and compare how

the initial rates of reaction and stereoselectivity varied based on different catalyst sequences with the same catalytic group (primary amine in the N-terminus) but different i+1 and i+2 turn residues. We used Nuclear Magnetic Resonance Spectroscopy (NMR) to identify peptide secondary structures, determine peptide concentration and record reaction kinetic data under controlled concentrations. We observed significant variation in the initial rates of reactions catalyzed by peptides with different turn residues, indicating the significant role of structure on catalytic activity. Our studies of peptide catalysts may lead to the discovery of design principles that could be used for the development of next generation catalysts.

Honors Project in Chemistry
Advisor: Leah Witus
Chemistry Department

Connor Max Martin

Ozonolysis of the New Refrigerant: Trans-1,3,3,3-Tetrafluoropropene

Recent investigations by Dr. Max McGillen into the ozonolysis of hydrofluoroolefins have shown that trans-1,3,3,3-tetrafluoropropene, also called 1234ze(E), has a much higher global warming potential than previously believed. To understand this, the energetics of the ozonolysis of 1234ze(E) were studied and then used to perform master equation simulations. These simulations show that, in its ozonolysis, the majority of the population of 1234ze(E) molecules breaks down into fluorofrom, which has a very high global warming potential of 11,700 and a long atmospheric lifetime of 270 years.

Honors Project in Chemistry
Advisor: Keith Kuwata
Chemistry Department

Katherine Rosenberg McCarthy

Sum Christiana: Perpetua's Patriarchy-Defeating Agency

The early Christian text, *Passio sanctarum Perpetuae et Felicitatis*, outlines the martyrdom of Vibia Perpetua and fellow catechumens in North Africa in 203 B.C. By looking at the original Latin text and contextualizing the story in its Carthaginian context and focusing on the words exchanged between Perpetua and her *paterfamilias* and the descriptions concerning them, this deeper analysis situates Perpetua's agency. Perpetua inverts the role of the *paterfamilias*, which can be seen through her language choice. Moreover, Perpetua's *paterfamilias*' change in word choice reflects Perpetua's ability to make her own choices in the

male-dominated Roman society. Perpetua defies societal, gender, and familial roles and finds her own sense of patriarchy-defeating agency while continuing to profess her faith, *sum Christiana*.

Honors Project in Religious Studies
Advisor: Susanna Drake
Religious Studies Department

Logan Thomas McCutcheon

Prospecting Just Down the Street: Fossils in the Ordovician Decorah Formation, St. Paul, Minnesota

Fossiliferous slabs recovered from the Late Ordovician Decorah Formation exposed in St. Paul, Minnesota, yielded tiny, phosphatic “mystery fossils.” Dissecting microscopy, scanning electron microscopy, and micro-XRF analyses indicated 8 different morphs of these mystery fossils. After comparing these morphs with other fossil groups that biomineralize phosphatic skeletons, two of the specimens can be assigned to specific genera of phosphatic bryozoa. *Graptodictya* had already been documented in the Decorah shale, but *Anaphragma* is a new addition to the Decorah Formation faunal list. Several still unidentified phosphatic morphs may represent additional bryozoans, conodonts, palaeoscolecid worms, or ostracoderms.

Honors Project in Geology
Advisor: Raymond Rogers
Geology Department

Claire Elise McHenry

Species Effect on the Ecohydrology of a Floodplain Forest in the Upper Mississippi

Shifting flood regimes coupled with low canopy diversity places floodplain forests among the most at risk under a changing climate. Intense, less frequent precipitation events and the invasive species *Agrilus planipennis* are threatening floodplain forests along the Mississippi River. In response, three alternative strategies for managing forests in a changing climate are being tested: resistance, resilience, and transition. This project aims to understand the effect of two of these strategies on the ecohydrology of Crosby Farm Regional Park: resistance (planted with native species) and transition (planted with future-adapted species). We measured soil volumetric water content using a HydroSense II in the rooting zone of species in these treatment plots two, four, and six days following a precipitation event. We found that soil moisture was significantly higher in transition than resistance treatments suggesting that there is likely a tree

species effect. We found that in both treatments, soil moisture below *Betula nigra* was lower than that of other species. When accounting for topographic differences across the floodplain, there was no significant difference in soil moisture between the two treatments. To attempt to derive soil moisture availability from satellite images, we explored the use of Landsat 8 images. Findings suggest that the 30x30m resolution of Landsat is insufficient to capture field moisture variation of this floodplain. This study provides insights into the use of remote sensing for soil moisture assessments and suggests that topography and species selection drive large- and small-scale soil moisture variability across the floodplain respectively.

Honors Project in Geology
Advisor: Anna Lindquist
Geology Department

Adèle Knut McLees

Narrating the Migrant Experience “Otherwise”: A Cross-Analysis of Three Francophone Novels

Today, the French state and media aim to silence African immigrants or appropriate their words to different ends. The novel genre, however, provides space for migrants to speak for themselves, countering dominant negative narratives and giving a human face to the menacing mass of immigrants French media portrays. *Le ventre de l’Atlantique* by Fatou Diome, *Comment immigrer en France en 20 leçons* by Luc Bassong, and *Debout-Payé* by Gauz exemplify this counter-hegemonic capacity. These novels’ representations of their characters’ subjectivity, performance of the roles attributed to migrants, and deconstruction of ethnographic stereotypes humanize the African immigrant in France.

Honors Project in French and Francophone Studies
Advisor: Moustapha El-Hadji Diop
French and Francophone Studies Department

Tara Renee Masangya Mercene

The Stars Told Me About You: Reclaiming Filipino Mythology Through Film

Since I was young, I always had vivid dreams of relatives who passed, especially of my mother’s parents. She would tell me that these dreams were visions that I had inherited from my grandfather who could speak with those in the “other world.” Whether I believed her or not, I saw this as a connection to my culture and grandfather. This motivated my research into Filipino mythology and folklore, and its role in Filipino contemporary art as a form of healing from

colonization and remembrance of indigenous beliefs. Ultimately, this research resulted in a film project, specifically a pilot episode inspired by Filipino folklore and deities. Each of the characters are named after and inspired by Philippine mythological and prominent figures, such as José Rizal and Tala, the goddess of stars. This story centers around Tala as she navigates through her newfound ability to see into the near future while helping Rizé, a life coach, get out of debt.

Honors Project in Media and Cultural Studies
Advisor: Tia-Simone Gardner
Media and Cultural Studies Department

Jacey Michie Moriguchi

Feelings are Hard: The Influence of Parent Emotion Socialization, the Social Sharing of Emotions, and Emotion Regulation Strategies on Peer Relationship Quality

Emerging adulthood (ages 18 to 29, typically in western cultures) is a period of high emotional volatility and shifts in peer relationships. Therefore, the current studies primarily explore the links between emotion regulation strategies (reappraisal, distraction, rumination, and suppression) and peer relationship quality in emerging adults, while also relating these links to parent emotion socialization and the social sharing of negative emotions. Study 1 found that reappraisal mediated the relationship between supportive parent emotion socialization and communication, suggesting that supportive parent emotion socialization teaches children to use reappraisal, an effective emotion regulation strategy that is related to healthy communication in friendships. Study 2 explored whether the social sharing of negative emotions explained the relationships between emotion regulation strategies and peer relationship quality. Results showed that the quality of social sharing, but not the number of times participants socially shared, mediated the relationship between suppression and average peer relationship quality, indicating that the usage of suppression as an emotion regulation strategy predicted less social sharing, which predicted lower peer relationship quality. Given these findings, supportive emotion socialization and the (qualitative) social sharing of negative emotions are important when examining the relationships between emotion regulation strategies (specifically, reappraisal and suppression) and peer relationship quality.

Honors Project in Psychology
Advisor: Steve Guglielmo
Psychology Department

Phoebe Isabel Morris

Alteration of Volcanic Ash in a Miocene Rhinoceros Bonebed (Ashfall Fossil Beds, Nebraska): Does a Rotting Rhino Matter?

Ashfall Fossil Beds State Historical Park is a Miocene-aged bone bed in northeastern Nebraska that is filled with an assemblage of mostly rhinoceros (*Teleoceras major*), horses, and camels preserved in volcanic ash. Ash texture and color vary with distance from vertebrate skeletons. Scanning Electron Microscopy reveals tiny anomalous pitting features on ash shards in several distinctive morphologies. These features are larger and more complex in samples taken close to bones, smaller and less complex further away. The decomposition of the animals, resulting microbial activity, and fluctuating environment may have mediated these pitting features.

Honors Project in Geology
Advisor: Kristi Curry Rogers
Geology Department

Emily Morse North

Living Space

The living room is a place where people can feel comfortable, interact with each other, and display some of their most prized possessions. This project uses five pieces of furniture to create a room; an armchair, chaise lounge, bookcase, coffee table, and lamp. These elements, combined with textiles, wall art, and knick knacks come together to make a warm and inviting space that I feel represents myself, and my love of nostalgia, heirlooms, and handmade items.

Honors Project in Art (Studio)
Advisor: John Fleischer
Art and Art History Department

Lucien O'Brien

Peer Reviewing the World: Increasing Civil Society Participation in the United Nations Universal Periodic Review

The Universal Periodic Review (UPR) is an exceptional mechanism within the framework of international human rights. The fact that it evaluates all UN member states' human rights records on a universal basis sets it apart from other enforcement mechanisms that do not

give equal time to all countries or do not seek to cover all human rights. Following the introduction of hybrid modalities in the third cycle, the UPR faces a turning point in terms of who is included in the process and how. Drawing on semi-structured interviews with UN officials, diplomatic mission members, NGO/NHRI representatives, and academics, as well as personal reflections on my experience attending the 40th session of the UPR in Geneva, this project examines the participation of states and civil society actors throughout the existence of the mechanism. In regard to state participation, it finds that as states have learned “what to expect” out of the UPR process, they have become increasingly adept at using the language of human rights to make it appear as though they are engaged, while maintaining ultimate control over their fate in the outcome of their review. Conversely, while civil society actors possess limited agency within the formal UPR process, their strong engagement with the mechanism through informed, specific recommendations demonstrates their potential to exert “public pressure” on states if given the platform to do so. Given these findings, as well as the solidification of the mechanism after fifteen years of existence, I argue that publicly visible civil society participation at the Working Group stage of the Universal Periodic Review is a risk worth taking.

Honors Project in Political Science
Advisor: Wendy Weber
Political Science Department

Molly C. O’Brien

The Relationship Between Blast-Related Mild Traumatic Brain Injury and Executive Function is Associated with White Matter Integrity

This project details the outcomes of mild traumatic brain injury (mTBI) including injury mechanism, immunological response, and cognitive performance. The study investigates if the integrity of certain brain regions influences the association between remote mTBI and executive function. Based on data from 182 veterans from the Minneapolis VA Medical Center, an association between blast severity and executive function was found to be moderated by the white matter integrity of the right hippocampal cingulum in veterans with blast exposure history, such that those with higher blast severity showed a greater effect of the association between lower integrity and worse performance.

Honors Project in Neuroscience
Advisor: Darcy Burgund
Neuroscience Program

Susannah Paine

Hunting for Fast Radio Bursts from Messier 82: Exploring the FRB--Magnetar Connection

Body of abstract Fast radio bursts (FRBs) are short-duration radio pulses of cosmological origin. Among the most common sources predicted to explain this phenomenon are bright pulses from a class of extremely highly magnetized neutron stars known as magnetars. In 2020, a Galactic magnetar produced an FRB-like burst, allowing researchers to constrain the Galactic magnetar burst rate. We assume that the magnetar burst rate scales with star formation rate and test an important prediction for similar bursts in nearby galaxies. Messier 82 (M82) has a star formation rate 40 times that of the Milky Way, implying that the magnetar burst rate would be quite high. We observed M82 with the 20 meter telescope at the Green Bank Observatory for 28.2 days. We found 291 candidate bursts, but none of those candidates had a signal-to-noise ratio greater than 10. An S/N of 10 is required for a candidate burst to be considered an FRB. Additionally, none of the repeating dispersion measures (DMs) we found had enough bursts to constitute a confidence level of 5 sigma. Using these constraints, we determined an upper bound for M82's magnetar burst rate to be 0.035 day^{-1} . Based on this result, we determined that star formation rate cannot scale with magnetar burst rate in the case of M82.

Honors Project in Physics and Astronomy
Advisor: John Cannon
Physics and Astronomy Department

Rock C. Park

Forgiving Without Forgetting? Privacy in an Age of Digital Permanence

The 21st Century has been marked by increasing digital globalization, and an extensive, complete record of most individual's public and private lives. This posed enough of a risk to individual privacy that in 2014, the European Union began to outline and articulate the digital privacy rights of European citizens in a set of policies known as "right to be forgotten" laws. As of 2018, these right to be forgotten protections had been codified into the General Data Privacy Regulation for the EU (GDPR). This paper explores the construction of privacy and subsequent adoption of the right to be forgotten specifically in France, relative to the divergent evolution of privacy—and lack of digital privacy protections—in the United States. Namely, this paper compares the right to be forgotten as a potential tool of rehabilitation and intentional forgetting in conjunction with criminal expungement practices and considers the connections between a punitive criminal justice system and digital remembering.

Honors Project in Political Science
Advisor: Patrick Schmidt
Political Science Department

Francesco Pecere

Greenhouse Gas Production in the Ozonolysis of Z-1,3,3,3-Tetrafluoropropene

The ozonolysis of *Z-1,3,3,3-tetrafluoropropene* in the troposphere results in the production of trifluoromethane, a strong greenhouse gas, and carbon dioxide. The purpose of this research was to map out this reaction's pathway, calculate the energies of the intermediates and transition structures, and determine the yield of trifluoromethane and carbon dioxide. Earlier studies had determined a reaction pathway for the simultaneous fission of the C-C and O-O bonds in the primary ozonide. Computational analysis of this pathway did not agree with experimental studies by Dr. Max McGillen. The fission of just the O-O bond in the primary ozonide was added to the reaction pathway and tested for agreement with experiment results. The energies of the intermediates were studied with WebMo, using the function Optimize + Vibrational Frequencies, the ω B97X-D theory, and the cc-pVTZ basis set. The energies of the transition structures were studied with WebMo, using the function Transition State optimization, the ω B97X-D theory, and the cc-pVTZ basis set. The yields will be determined using RRKM/master equation simulations.

Honors Project in Chemistry
Advisor: Keith Kuwata
Chemistry Department

Ngọc Phạm

Tenement Lullabies: Poems

Tenement Lullabies: poems is a 27-page chapbook on the Vietnamese diasporic experience. The poems revolve around themes of family, belonging and displacement, multilingualism, and intergenerational trauma. The chapbook explores a wide array of poetic forms, including the sestina, ghazal, sonnet, and blank verse.

Honors Project in English
Advisor: Benjamin Voigt
English Department

Inge Pham-Swann

Beyond Vegan: Producer and Restaurant Involvement in the Mainstreaming of Plant-Based Meat

Insights from organizational and economic sociology predict the emergence of new product categories is not simply a matter of developing something novel, but also the result of a cultural process making claims about these products. The recent pursuit of sustainable consumption exemplifies one of these processes, linking ethical qualities and claims to create connections between products and the people who consume them. Plant-based meat, as an emerging market contextualized by the ideas of ethical consumption surrounding the broader plant-based food movement, provides a unique opportunity to explore how lifestyle movements and novel ideas result in the creation of new product categories. Drawing on ethnographic observations and interviews with plant-based meat producers and restaurants that serve these products, this project explores the emergence of plant-based meat as a set of products and as a market. I find that there is variation in how plant-based meat producers position their products based on the extent to which they connect their products to broader social movements. Despite these differences in production, restaurants understand these different products as belonging to the larger plant-based meat category and present them not on the ethical basis of producers but by using different standards of judgment based on how the restaurants position themselves to their consumers. Together, producers and restaurants engage in an interactive process to generate and integrate new products in the act of mainstreaming plant-based meat beyond an ethical project.

Honors Project in Sociology
Advisor: Erik Larson
Sociology Department

Helen Radović

Decolonizing and Diversifying French Curriculum in Twin Cities K-12 Schools

French classes in United States K-12 schools are still largely Paris-Centric and targeted towards a white/upper-class student demographic. The purpose of this study is to examine K-12 French teacher's strategies in promoting diversity in their classrooms, and what effect this has on student engagement. Participants include eight K-12 French immersion teachers in the Twin Cities (Minnesota). Results from the study are complex and varied, however, they indicate that use of authentic resources and connection to students' personal interests and culture are major ways in which the French curriculum can be reshaped to promote diversity and engagement.

Honors Project in French and Francophone Studies
Advisor: Juliette Rogers
French and Francophone Studies Department

Alyssa Kathryn Rauschenberger

Special Fitting Approach for Collective Thomson Scattering Experiments on an Extreme Ultraviolet Plasma Light Source

Modern computer chips as well as the entire semiconductor industry rely on Extreme Ultraviolet Lithography (EUVL) at $13.5 \text{ nm} \pm 2\%$ to create finer resolution features. In the industrial settings, the 13.5 nm photons are generated by a plasma following the interaction of 20-30 μm diameter molten tin droplets with focused CO_2 pulsed laser beams running at kHz repetition rates. Although the 13.5 nm light generation process has already been comprehensively studied numerically, only a handful of experimental studies report simultaneous measurements of the plasma parameters relevant to the production of the highly charged ions Sn^{8+} – Sn^{14+} responsible for the EUV light. Time-resolved collective Thomson scattering measurements, probing simultaneously the electron and ion features would provide a complete picture of the physics at play. To prepare experimental data analysis, a MATLAB-based fitting tool was developed for real-time inference of the electron density, electron temperature and average charge state from Thomson scattering experimental spectra. Least-squares fitting using *lsqcurvefit* from MATLAB is deployed in conjunction with the analytical expression of the Thomson scattering spectral density function to perform a non-linear regression model for the fitting of the experimental data.

Honors Project in Physics and Astronomy
Advisor: James Doyle
Physics and Astronomy Department

Maya Dass Reddy

In a Bathtub, Upside Down: How Screendance Embraces What Cannot Be Done on Stage

Due to the recentness of the field of dance filmmaking, little research exists on the difference between dance films designed to be watched as films (referred to as screendance) and dance videography (videos of performances created to be viewed by a live audience). This paper contends that what separates screendance from dance videography is the unique appeal screendance has for the viewer. Through the use of instantaneous location changes or inaccessible locations, unusual camera perspectives (such as a birds' eye shot) that allow the viewer to feel as if they or the dancers are defying gravity, and technology-mediated changes to bodies and surroundings, dance films show the viewer the impossible happening on screen. This impossibility factor enables the viewer to experience the work as a captivating visual spectacle. Rather than looking down on this as 'low art,' I suggest that the visual appeal has positive psychological effects on its viewers, which allows screendance to be used to create entertainment (music videos) and sell products (advertisements). This research has implications for dancers, choreographers, and dance filmmakers, particularly those interested in making their work — or

dance in general — more accessible to audiences that may not conventionally seek out dance performances.

Honors Project in Theater and Dance
Advisor: Jill Lile
Theater and Dance Department

Julia Frances Ricks

**Fossil Eggshell Highlights Hidden Diversity of a Coastal Cretaceous Ecosystem,
Judith River Formation, North Central Montana**

The Cretaceous Judith River Formation of Montana preserves abundant vertebrate microfossil bonebeds (VMBs), concentrations of small hard parts used to reconstruct paleofaunas. I analyzed sub-millimeter to millimeter eggshell fragments to reconstruct the diversity of egg-laying vertebrates in the Judith River ecosystem. I recovered over 1,000 eggshell fragments and categorized each using surface morphology, radial thin sections, and scanning electron microscopy. Three types of crocodile eggshell, three types of turtle eggshell, and four types of dinosaur eggshell are present. These results are consistent with the near-shore depositional setting and taxonomic diversity of the Judith River Formation.

Honors Project in Geology
Advisor: Kristi Curry Rogers
Geology Department

Paige Susan Robertson

Enumerating Maximal Binary Triangles

We study a subfamily L_n of binary triangles with weakly increasing columns and the preexisting partial ordering it inherits from the larger binary triangle family. Through the study of this subfamily's structure we show that the maximal elements of L_n are enumerated by the Fibonacci numbers. We then examine those maximum elements of L_n which also have maximum total sum and show that this subset is enumerated by OEIS sequence A209561 and the corresponding sums are given by OEIS sequence A023536. We conclude with two methods of constructing these maximal elements with maximum sums, one recursive and one explicit.

Honors Project in Mathematics, Statistics and Computer Science
Advisors: Andrew Beveridge and Kristin Heysse
Mathematics, Statistics and Computer Science Department

Madeline Elizabeth Rodemeier

Copper(II) Interaction with Zinc Fingers: Feasibility of Copper(II)-based Drugs

Oxidized copper has recently gained attention as a potential therapeutic drug based on its potent redox ability to generate reactive oxygen species (ROS). Therefore, it is important to know how Cu(II) will interact with biomolecules. Zinc fingers (ZFs) are metalloproteins that require a zinc ion to maintain structure and function. Owing to the prominence of ZFs in biology and because copper has similar binding characteristics as zinc, exogenous copper complexes might interact with ZFs. This thesis explores the interaction between Cu(II) and two variations of the classical ZF and a RING domain via UV-Vis and fluorescence spectroscopy. Results show that Cu(II) is reduced to Cu(I) and binds to the thiolate site of the ZF, displacing the Zn(II) ion. ZFs also obstruct the copper catalyzed production of ROS through copper binding. A Cu(II) stabilizing ligand complex increases the efficiency of ROS production in the presence of ZFs relative to free Cu(II) ions. This could suggest the stabilized ligand complex prevents the copper from immediately binding to ZFs and becoming redox silenced. Collectively, these results show that ZFs might be considered a potential target for Cu(II) drugs.

Honors Project in Chemistry
Advisor: Kathryn Splan
Chemistry Department

Sophia Minette Sahn

Schooling on the East-West Divide: Educational Weaponization During the Final Phase of the Cold War

During the Cold War, the United States and Soviet Russia focused on spreading their distinctive ideologies across the globe, and in doing so, came in direct competition with one another. In this study, I employ content analysis of two major U.S. and Soviet education reports and reforms from 1983 to 1991, namely A Nation at Risk and Fundamental Directions of General and Vocational School Reform, to explore and illustrate how the two states wielded their youth as weapons in a battle for ideological supremacy. My findings add nuance to the conversation surrounding education as a method of state control.

Honors Project in Political Science
Advisor: Lesley Lavery
Political Science Department

Nicholas I. Salvato

Bloodshed, Baptism, Beer: Racial Capitalism and Settler Colonialism on the Medieval Baltic

Scholarly and popular usage of the term “racial capitalism” has increased exponentially over the past decade, but the validity and implications of its use remain hotly contested. The late Cedric Robinson is the undisputed popularizer of this phrase and is referenced widely by both the slogan’s detractors and proponents. Despite this, little work has been done to engage with the core of his argument about racial capitalism: that capitalism is inalienably racial due to the racialism of the medieval European societies that spawned it. Debates over Robinson’s ideas have thus disregarded the substance of his deployment of the phrase and eliminated his historicist critique of the European social sciences. This paper attempts to correct this lacuna through a case study of racial extractivism in a colonial region of medieval Europe: the German Ordenstaat of Livonia. I draw on the methodologies of radical historical geographers within Black Studies to generate a synthetic analysis of regional historical literatures about premodern Catholic colonialism. I find that structural racism was central in funding and organizing the institutional antecedents of the capitalist world-system which emerged in the 16th century. Ultimately, I argue that Robinson’s historicist critique disrupts many ontological assumptions about the motivating forces, developmental trends, and leading protagonists of capitalism as a theoretical object.

Honors Project in Geography
Advisor: William Moseley
Geography Department

Bergen Sosnkowski Schmidt

Protected Places: Comparing Valuations of Public Lands in U.S. Conservation Legislation

Across American history, the federal government has chosen to protect over 600 million acres, nearly a quarter of the country’s total land acreage, as public lands. This paper considers the process of valuation — where institutions organize competing value frameworks to determine worth — and how new cultural formations prompt a new process of valuation. Through a comparative study of the *Wilderness Act* of 1964 and the *Great American Outdoors Act* of 2020, this paper analyzes which values justify the protection of public lands. I find that public lands are valued in their use for humans, which stems from their designation as protected. In the *Wilderness Act*, public lands were worth protecting because of their separation from the industrial landscape; in the *Great American Outdoors Act*, this worth came from the land’s

integration into the post-industrial landscape. These acts represent two starkly different cultural formations, and, therefore, two distinct justifications for the worth of public lands.

Honors Project in Sociology
Advisor: Erik Larson
Sociology Department

Kira Isabelle Schukar

Queering the Ear: Podcast Aesthetics and the Embodied Archive in *S-Town*

Despite podcasts' rising popularity over the last twenty years, literary scholars are only beginning to focus on their affective potential as multimedia texts. In this thesis, I argue that even mainstream podcasts are productively intertwined with queer theories and aesthetics of belonging. Using the 2017 podcast *S-Town* as my case study, I examine the aural aesthetics of queer failure, temporality, archives, embodiment, and desire as key elements in this complex medium. Putting these theories and aesthetics into practice, I describe my process of research-creation, presenting a podcast I made about my road trip to Woodstock, Alabama, *S-Town*'s place of origin.

Honors Project in English
Advisor: Amy Elkins
English Department

Chinhsan Sieng

Neutrino Oscillations in the Presence of a Magnetic Field

We calculate oscillation probabilities in the presence of an external magnetic field in a one-generation neutrino framework that includes both Majorana and Dirac mass terms. First, we write down the Euler-Lagrange equations and obtain a system of eight differential equations coupling together eight different neutrino states that can be distinguished by helicity, chirality, and particle/antiparticle-ness. We then solve this system of differential equations in various special cases, exhibiting different types of oscillations. When the magnetic field is in the direction of momentum, there are only four oscillation channels as helicity flip is forbidden. We observe that chirality flips are suppressed by a factor of m^2/E^2 , whereas the transitions involving active neutrinos and sterile antineutrinos are not while having a form similar to two-generation flavor oscillations.

Honors Project in Physics and Astronomy
Advisor: Tonnis ter Veldhuis
Physics and Astronomy Department

Aron Joseph Smith-Donovan

Passing Time and Syncing Secrets: Demonstrating Covert Channel Vulnerabilities in Precision Time Protocol (PTP)

Covert channels use steganographic approaches to transfer secret digital communications; when applied to network protocols, these strategies can facilitate undetectable data exfiltration and insertion attacks. Because covert channel techniques are protocol- and implementation-specific, individual case studies are necessary to assess for vulnerabilities under different conditions. While several investigations have been published evaluating covert channel potential in infrastructure- and manufacturing-based contexts, no existing research explores Precision Time Protocol (PTP), a time synchronization protocol commonly used in industrial control systems. This study aims to fill this gap by demonstrating the feasibility of a covert channel-based attack on a PTP-enabled network.

Honors Project in Mathematics, Statistics, and Computer Science
Advisor: Abigail Marsh
Mathematics, Statistics and Computer Science Department

Maya Sobchuk

Information Imperialism as Hybrid Warfare: The War on Ukraine

My research examines the power of information warfare in the context of Ukraine's colonial history and the current war. Focusing specifically on the manipulation of information through traditional news sources and social media, I paint an image of an informationscape so taken advantage of by those in power in Ukraine and outside of it that truth is seldom to be found, leading to a state where democracy is compromised, conflict flourishes, and hope is minuscule. While possible solutions are discussed, the true answer is clear: until freedom to truthful, independent information is a value upheld as necessary for a successful country, both by those in power and greater society, peace and democracy will be impossible.

Honors Project in International Studies
Advisor: James von Geldern
International Studies Department

Kian Rostam Sohrabi

An Application of Prospect Theory: The Effect of Trailing at Halftime on Winning NFL Games

Trailing in sports is associated with losing, but can trailing operate as a powerful motivator that leads to winning? Based on research by Berger and Pope (2011), this study applies Prospect Theory and loss aversion to football to test if trailing by a small margin can motivate success. This relationship is analyzed based on teams' point differentials at halftime since halftime operates as a salient reference point and a time for teams to regroup and strategize. Analysis of over 12,000 NFL games found no significant effect of trailing at halftime on the likelihood of winning. That is, there is little evidence that Berger and Pope's (2011) finding for a motivational effect of losing in basketball exists in football. I offer several reasons why key differences between football and basketball may account for the null result in football and suggest that future research is needed in prospect theory's application to football on a play-by-play basis.

Honors Project in Economics
Advisor: Peter Ferderer
Economics Department

Kian Rostam Sohrabi

The Effect of Race on the Evaluation of Quarterbacks

Black quarterbacks have faced stereotypes and biases about their performance for decades. While Black quarterbacks are more common in the NFL nowadays, it is not clear whether their performance is being evaluated without bias. Black quarterbacks are often discussed in ways that emphasize their physical abilities but criticize their mental attributes. This current study sought to investigate the effect of race on quarterback evaluation. Study 1 examined the effect of race on fans' evaluations of quarterbacks; Study 2 looked at the effect of race on evaluations by high school football coaches. Participants completed an online experiment in which they were presented with identical player profiles, except for manipulations of race and perceived athleticism, then were asked to listen to in-game commentary about the player and evaluate his performance. Player race affected the fans' evaluations of quarterbacks, but not coaches' evaluations. Future research would benefit from the use of visual stimuli and samples of participants who work in higher levels of football to increase generalizability of findings.

Honors Project in Psychology
Advisor: Joan Ostrove
Psychology Department

Elika Somani

The Value of Education: Unpacking School Policy Decisions During the COVID-19 Pandemic

During the COVID-19 pandemic, lacking national U.S. policies, wide variation and conflict over chosen public school policy decisions emerged. The key research question is what factors and guidelines informed the decision-making process in K-12 public schools during the COVID-19 pandemic and who were the key stakeholders? This study examines three school district types – urban, suburban, and rural – across Minnesota as case studies to unpack how policy decisions were made during the pandemic. Stakeholder interviews uncovered that the school decision-making process was a) connected to a district's political opinions, b) made by the superintendent and school board, c) primarily influenced by then current-day health and safety concerns, and d) justified using ethics, emotions, and take-your-pick science. In the absence of formal decision-making frameworks, school administrators justified policies based on ethical and political opinions with scientific evidence, state guidance, constituent support, and ethics. This led to conflict over the perceived 'right' choice and worsened the divisiveness of public COVID-19 opinions. Additionally, varying levels of disagreement with the U.S.'s education governance structure, particularly on local control vs state/federal imposition, emerged. This research identifies the individual nature with which COVID-19 school policies were formed and suggests a need for developing ethical decision-making frameworks for future scenarios.

Individually Designed Honors Project in Global Health and International Development
Advisor: Eric Carter
IDIM in Global Health and International Development

Elena Montserrat Stanley

By the Power Vesta-ed in Me: The Power of the Vestal Virgins and Those Who Took Advantage of It

Vestal Virgins were high ranking members of the Roman elite. Due to the priestesses' elevated standing, Romans made use of their inherent privileges. Through analyses of case studies from ancient authors and archaeology, I identify three ways Romans wielded Vestal power: familial connections, financial and material resources, and political sway. I end by exploring cases of *crimen incesti*, the crime of unchastity, which highlight all three forms. The Vestals were influential women who shared access to power in different ways. The Vestals were active participants in the social and political world of Rome.

Honors Project in Classical Mediterranean and Middle East
Advisor: Beth Severy-Hoven
Classical Mediterranean and Middle East Department

Carter Jefferson Swift

The Interaction of Topological Defects in Anisotropically-Elastic Nematic Liquid Crystals

Topological defects are very well understood so long as the medium in which they exist is isotropically-elastic. They lead to director fields which are easy to calculate and superpose linearly so that a system with any number of defects is analytically treatable. They also have an interaction which is simple in form and can be accurately described by the Peach-Koehler force. In an anisotropically- elastic medium, however, such defects are poorly understood outside of the single-defect case which was solved by Dzyaloshinskii. In this project, numerical and approximate analytical techniques are applied in order to better understand the interaction between two defects in an anisotropically-elastic medium and how it differs from the well-understood isotropically-elastic case.

Honors Project in Physics and Astronomy
Advisor: Tonnis ter Veldhuis
Physics and Astronomy Department

Alexander Mathew Thomas

Reflections of Rondo

Reflections of Rondo is a temporal exploration of the I-94 freeway’s relationship with and implications on the Rondo neighborhood in St. Paul, Minnesota. Once a thriving Black community with families, businesses, and a strong cultural identity, the Rondo neighborhood was disrupted and fragmented by the highway. Drawing on historical records, oral histories, and conversations with community members from Rondo, the artworks consider the past, present, and potential futures of the neighborhood. Each artwork is inspired by conversations with community members who spoke of their fondest memories, their vividest experiences, and their most hopeful dreams of what they see in Rondo.

Honors Project in Art (Studio)
Advisor: Megan Vossler
Art and Art History Department

Zoé Isabel Nicole Tkaczyk

**Dietary Power and Self-Determination among Female Farmers in Burkina Faso:
A Proposal for a Food Consumption Agency Metric**

While food security is traditionally defined with four pillars, there are increasing calls for an additional two (agency and sustainability) so that we may more comprehensively conceptualize all dimensions of food security. However, the challenge is that it is difficult to effectively measure agency, a person's control over their food system. Measuring women's agency is especially critical in Africa South of the Sahara where women play prominent roles in farming and food preparation. This honors thesis explores the feasibility of creating a metric to measure agency within food systems and gender relations using data related to food security and dietary diversity among Burkinabé female rice farmers. First, I explore the literature on agency at a variety of scales and in different situations related to autonomy and sovereignty. Then, I develop an index based upon a subset of questions in the Household Food Insecurity Access Scale (HFIAS). I also consider how including agency as a dimension of food security can positively transform our understanding of food security. I achieve this by relating agency to the existing pillars of food security to understand how agency fills the gaps in our conceptualization of such systems. Lastly, I ask whether a connection exists between the level of agency, food security, and individual dietary diversity scores. I explore the correlation between the scores within the entire sample of interviews as well as analyzing individual women as case studies. Ultimately, I conclude that agency can be quantified in a way that increases its accessibility to policymakers to create more just food systems, with the aim of expanding how we understand and approach food justice.

Honors Project in Geography
Advisor: William Moseley
Geography Department

Maria Candelaria Torres Jimenez

**Educating to Compete: Pandemic-Era Patterns of Technology Incorporation in the
Southern Cone**

Education has become a championship match. Global competition has defined many periods in history, but in the last two decades it has emerged within the knowledge economy, shaping education systems across the world. During the COVID-19 pandemic, the different levels of perceived educational resilience exhibited by states shaped their global competitiveness. Focusing on the Southern Cone of Latin America, this thesis explores the connection between globally competitive educational systems, access to Information Communication Technologies (ICT) and educational resilience during the pandemic through a multivariate regression model. Considering the profound disruption of education caused by the pandemic, I utilize a comparative study to explore the political history of education public policy on ICT in Argentina and Uruguay as well as how these countries handled contingency plans during 2020. In order to

explain the varying levels of educational resilience that the international community perceived it is necessary not only to analyse the effectiveness of ICT-oriented responses but also the way these countries ensure education continuity for the most vulnerable sectors of the population. My findings hint at patterns of global positioning in both the degree of pre-pandemic ICT incorporation in education as well as the differentiated educational priorities addressed during 2020.

Honors Project in Political Science
Advisor: Paul Dosh
Political Science Department

Sun Morhso Tun

Taphonomy of Fossil Eggshell in Vertebrate Microfossil Bonebeds From The Upper Cretaceous Judith River Formation, Montana

Vertebrate microfossil bonebeds (VMBs) are concentrated assemblages of small vertebrate hard parts, including bones, teeth, and eggshells. Fossilized eggshell fragments recovered from VMBs in the Judith River Formation in Montana broaden our understanding of amniotic diversity in these fossil ecosystems. Taphonomic analysis is critical to understanding eggshell preservation. Here, I investigate the relative abundance, size, and preservational quality of 395 eggshell fragments recovered from five different VMB localities in order to test the hypothesis that eggshell preservation varies between pond/lake and river channel environments. Pond/lake environments record higher abundance and better overall preservation quality of smaller-scale eggshell fragments.

Honors Project in Geology
Advisor: Kristi Curry Rogers
Geology Department

Xinyi Wang

Did K-12 School Closure and Reopening Policies in Response to Covid-19 Enlarge the Gender Employment Gap?

The COVID-19 pandemic hit female workers the most. This impact on the United States' labor market can be attributed to the limited availability of childcare and schooling options (Stefania and Jiyeon, 2021). With limited resources for childcare and schooling, parents, especially mothers, had to exit the labor force or reduce working hours to stay at home and take care of their children. My study will contribute to understanding the effect of the child penalty,

especially under the COVID-19 pandemic and study the impact of school closure and reopening policies. Using data from Current Population Survey and Annual Social and Economic Supplement of the Current Population Survey, combined with Covid-19 related data and school closure and reopening data, I conduct both static and dynamic models from both extensive and intensive margins. I found that for a worker, who has at least one child in the household, compared to a worker with the same occupation, same state/county, same industry, he/she is around 80% less likely to be employed when school has been closed while a female worker tends to be 30% more likely to be employed than a male worker after the school has been reopened.

Honors Project in Economics
Advisor: Felix Friedt
Economics Department

Aidan Michael Williams

Plague! Public Health, Community Memory, and HIV/AIDS

How does individual trauma influence collective memory? Within queer communities, key social institutions are responsible for communalizing experiences of suffering, forming group narratives of trauma that are shared across vast spatial and generational gaps. These narratives continue to influence individual behavior years after the initial trauma, informing ideas of collective identity within the queer community. In my analysis of 5 interviews, I examined how experiences during the COVID-19 pandemic were influenced by understandings of HIV/AIDS. My interviewees were self-identified members of the queer community spanning many age groups; some of my participants were old enough to remember the height of the HIV/AIDS pandemic in America, while others had only learned of it through second-hand information. I observed that those who had lived through the height of the HIV/AIDS pandemic drew on personal experiences when comparing the two pandemics, reflecting more specific, individualized trauma. However, the institutions through which older participants processed this trauma, namely gay bars, schools, and family networks, created and spread broader, more general narratives of HIV/AIDS that younger interviewees related to their COVID-19 experiences. All of my respondents made comparisons between COVID-19 and HIV/AIDS mitigation strategies that reflected greater awareness of public health policy within the community, generating greater investment in public health. These findings suggest that pandemics are trauma-generating, with lasting, intergenerational effects that impact a community's future public health outcomes.

Honors Project in Sociology
Advisor: Erik Larson
Sociology Department

Audrey Carla Wuench

“Hillbillies”, Country Legends, and God’s Green Earth: Understanding the Sister Tourism Meccas of Branson, Missouri and Pigeon Forge, Tennessee

For decades, tourism in Branson, Missouri and Pigeon Forge, Tennessee has thrived on marketing towards a narrow, conservative demographic by appealing to country music and the two places’ respective “hillbilly” stereotypes. Through geographical and historical methods, this thesis unpacks the historical context of tourism in Branson and Pigeon Forge and how it has aligned with the history of country music’s increasing association with conservatism. By excluding certain groups of people in their conservative marketing, this thesis argues that a narrow targeted focus can hinder places like Branson and Pigeon Forge from practicing sustainable tourism.

Honors Project in Geography
Advisor: Laura Smith
Geography Department

Audrey Carla Wuench

Sounding the Silent Majority (1964-1974): A Country Fan’s Journey to Understand Their Favorite Genre’s Conservative Legacy

The conservative reputation of mainstream American country music began in the 1960s when the genre became aligned with Richard Nixon’s “silent majority.” By looking into the artists and songs that defined the genre’s stances on the Vietnam War, women’s liberation, and civil rights, this “tough love” project consists of a ten-episode podcast that explores country music’s conservative legacy. It details how it has less to do with something inherently present in the genre and is more about how different factors and players play into a system and industry that has allowed and even encouraged this stereotype to endure for decades.

Honors Project in History
Advisor: Katrina Phillips
History Department

Zinan Yang

Implications of Metalinguistic Awareness on Early Childhood Word-Referent Mapping

Children exhibit word-referent learning mechanisms like statistical learning (SL) proposed by Yu and Smith (2007) and propose-but-verify (PBV) mechanisms proposed by Medina (2011), but prior work has yet to investigate how children develop metalinguistic awareness within these two approaches. To evaluate the differences in corpus data predictions of the SL and PBV mechanisms, this study proposes a learning bias: an Extralinguistic Reference Bias. Statistical learning predicts a constrained trajectory of children's development of metalinguistic awareness. Children younger than approximately age 5 have limited access to metalinguistic language use while they are engaged in the initial mapping of forms to their primary, extralinguistic meaning. Children will acquire *metalinguistic* language use only after first understanding *extralinguistic* reference through word-referent learning mechanisms. Using data from the Child Language Data Exchange System (CHILDES), this corpus-linguistic study coded every token of four metalinguistic verb lemmas (*say, ask, tell, talk*) across all corpora of mainstream North American English varieties with random forest classification. Prior to age 5, if children have limited access to metalinguistic reference as suggested by Piaget (1928) and Vygotsky (1962); their metalinguistic verb use is in fixed constructions that refer to speech acts, like *say cheese*, rather than reported speech. Furthermore, some of the isolated tokens that appear to be reported speech are instances of children's imitations of parents' modeled speech. Additionally, the development of metalinguistic awareness is different within the SL and PBV approaches. For the SL mechanism, children would disregard any forms without an observable extralinguistic referent, whereas for the PBV mechanism, children would produce seemingly metalinguistic tokens without observable extralinguistic correlates.

Honors Project in Linguistics
Advisor: Kevin Schaefer
Linguistics Department

Jessica Yates

Challenging Oppressive Expectations in American Theatre from Within: A Comparative Analysis of Whitney White and Elizabeth LeCompte

What does it mean to be a theater director with identities and social positions that do not align with those of 19th century, Western European directors? Inspired by the incredible lack of qualitative information on most female directors and directors of color, the scholarly component of this Honors project consists of an analysis of the directing processes of Elizabeth LeCompte and Whitney White, in particular LeCompte's *Hamlet* and White's *An Iliad*.

For that, I draw from documentation on LeCompte's and White's filmed materials of their work, hours of recorded interviews about their processes, and articles about their productions. Both directors have a history of creating productions that defy typical expectations of how an artist should stage "classic" texts: they take old, well-known Western scripts by white

male playwrights to devise performances that include experimental text and performance styles. As an early-career theatre director, I am deeply interested in these directors' aesthetic visions and methods of directing adaptations. They were influential to the creative component of my directing honors project, a production of Tori Keenan-Zelt's *Seph* in the spring of 2022. In *Seph*, Tori Keenan-Zelt reimagines the Greek myth *Persephone* as she reconstructs the characters and dynamics familiar to the original Greek mythology introduced by Hesiod and Homer. In this essay I identify artistic patterns in LeCompte's and White's productions that informed my own artistic style in directing *Seph*.

Honors Project in Theater and Dance
Advisor: Cláudia Tatinge Nascimento
Theatre and Dance Department

Kexin Zhang

Extended Hetero- and Azaacene Chromophores Derived from a Non-linear Aromatic Diimide

Linear aromatic diimides play an important role in building color-intense chromophores and semiconductors. In order to explore more in this area, our lab focuses on the angled isomer mellophanic diimide (MDI). Combining MDI with various reactants into heteroacenes can lead to molecules with higher electron affinities. Changing between different heteroatoms in the structure of heteroacenes provides different physical and chemical characteristics to the molecule. In this project, we focused mainly on the **NOON** and **NNNN** series of reactions, and other interesting derivatives. These hetero- and azaacenes were investigated through UV-vis and fluorescence spectroscopy, and density functional theory calculations. The MDI derivatives were found to exhibit high molar absorptivities (up to $214638 \text{ M}^{-1} \text{ cm}^{-1}$ for **oxNOON-CI-EtHex**), high quantum yield (up to 70.8% for **oxNOON-H-Bn**), narrowed bandgaps (down to 2.5 eV for both **oxNOON-H-Ph** and **oxNOON-CI-EtPh**), and significantly lowered HOMO and LUMO levels.

Honors Project in Chemistry
Advisor: Dennis Cao
Chemistry Department

Xunwen Zou

Racialization of Foreigners and Self in the Chinese Immigration Project

With the Western invasion and colonization during the 20th Century, China began its internalization of the Western Enlightenment values, leading the country to an identity crisis that paved the way for its race to modernity. Attempting to understand the world and itself, China

developed a new racial order largely shaped by the Western discourse and distinctly different from its ancient racial understanding. Based on 18 semi-structured interviews, this study explores the contemporary racialization in China and its application in the racial project of immigration. I found that racial understanding in China is based on a racial/cultural hierarchy. The hierarchical top, Whites/Europeans, represents development and modernity. The hierarchical bottom, Blacks/Africans, symbolize backwardness, poverty, and cultural threats. China locates itself in the middle of the hierarchy, while in a constant quest to seek validation from the West, which is particularly visible in the immigration project. Nevertheless, China's cultural/racial understanding is an unfinished project, shaped by the diverse discourse of natives and subject to the consequence of the social remittance of foreign-socialized individuals.

Honors Project in Sociology

Advisor: Erik Larson

Sociology Department

Brian Zou

From Atoms to Drugs: An Exploration of Organic Syntheses and Other (Bio)Chemistry Involving Mellophanic Diimides

Aromatic diimides (ADI) are a common class of scaffolds used for research in pharmaceuticals and organic materials. In this work, we report an improved solution-phase synthesis to a less-widely explored scaffold of a non-linear ADI called mellophanic diimide (MDI) that is reproducible and generalizable. Modifications to the aromatic core and the imide functional group can lead to interesting optical, electrochemical, and potentially biochemical properties. MDI shares many similarities with its cousin compound, naphthalene diimide (NDI) which has shown successful interaction with biomolecules and demonstrated to be a successful DNA intercalator that serves as a promising anti-cancer therapeutic. Thus, we also propose MDI has a potential to be likewise developed and researched as a therapeutic scaffold and performed initial explorations of its interaction with DNA oligomers. Additionally, other preliminary experimentation that explores MDI as a monomeric unit for coupling reactions and other chemistry to expand the family of MDIs (with substitutions at the halogen and imide sites) are detailed in the work.

Honors Project in Chemistry

Advisor: Dennis Cao

Chemistry Department

PRIZES & AWARDS

The prizes and awards listed below are being given to graduating seniors of the Class of 2022.

AMERICAN STUDIES

THE AMERICAN STUDIES AWARD FOR CREATIVITY AND SOCIAL RESPONSIBILITY– Awarded by the faculty of the American Studies Department to a senior major who has demonstrated outstanding academic achievement in scholarly, cultural, and civic engagement.

*Cathy Kiều My Truong
Haley Vien*

THE MANNING MARABLE MEMORIAL AWARD IN AMERICAN STUDIES—Awarded by the faculty of the American Studies Department to a senior major who has demonstrated outstanding academic achievement in the study of race, ethnicity and the American experience.

*Zoe Virginia Allen
Adam Marquardt*

ANTHROPOLOGY

THE DAVID W. McCURDY AWARD FOR EXCELLENCE IN ANTHROPOLOGICAL RESEARCH—Presented annually to a student who demonstrates special excellence in anthropological research.

Matthew Tarr Wilkinson

SONIA E. PATTEN DISTINGUISHED SERVICE AWARD—Established in honor of Sonia Patten, Anthropology Professor Emerita. Dr. Patten, a Minnesota native, specialized in medical anthropology, conducting brilliant research in Ghana as well as the United States for many years. Awarded to a senior anthropology major who has contributed most to the formal and informal programs of the Anthropology Department.

Lily Beatrice Denehy

JAMES P. SPRADLEY RESEARCH AWARD—Established in memory of James P. Spradley by colleagues, family, and friends. Presented annually to a senior majoring in anthropology who has demonstrated outstanding scholarship in anthropological course work and/or research.

Antonio Barreras Lozano

THE JACK WEATHERFORD PRIZE--Given to the student who has produced the best capstone paper, as judged by a panel of faculty in the Department of Anthropology. It is named in honor of Professor Jack Weatherford, who designed the Senior Seminar course which includes independent research by each student culminating in a synthesizing capstone research paper.

Zeyu Wen
Matthew Tarr Wilkinson

ART AND ART HISTORY

DONALD D. CELENDER ART HISTORY PRIZE--Established in honor of Edith M. Kelso Professor of Art Donald D. Celender who taught in the department from 1964-2005 and chaired the department for many years. The prize is awarded to a senior art major for outstanding work in art history.

Jiwen Fan

ART DEPARTMENT MERIT AWARDS--Book awards presented to graduating art majors for outstanding achievement in the areas of studio art or art history.

Distinguished Merit Award in Art History:
Nicole Salazar

Joan Mondale Ceramics Award in Studio Art:
Lana Berry
Mikayla Dae Larson Ennevor

Distinguished Merit Award in Studio Art:
Lana Berry
Mikayla Dae Larson Ennevor
Rebecca M. Gallandt
Emily Morse North
Kanyana Norah Ntagungira
Alexander Mathew Thomas

ASIAN LANGUAGES AND CULTURES

CHINESE LANGUAGE AND CULTURE PRIZE--Established by alumni to recognize a student who has shown outstanding ability and promise as a learner of Chinese language and culture.

John Griffin Pflaster

JAPANESE LANGUAGE AND CULTURE PRIZE--Established by alumni to recognize a student who has shown outstanding ability and promise as a learner of Japanese language and culture.

Nicholas Halligan Mesa

ASIAN STUDIES AWARD FOR ACADEMIC EXCELLENCE—This prize is awarded to the student who demonstrates the greatest depth and breadth of critical engagement with Asian Studies.

Zhenxiao Wang

BIOLOGY

AMERICAN CYANAMID ENDOWED PRIZE—Established by the American Cyanamid Company, the prize is awarded to upper-class students enrolled in pre-medical courses in preparation for medical school.

*Kai Salas Akimoto
Henry Elsenpeter*

WILLIAM R. ANGELL FOUNDATION PRIZE—Named for the president of the Continental Motors Corporation to honor outstanding seniors majoring in biology.

*Aiym Bakytbaikyzy
Nathaniel Henry Winchell Moyes
Sophia Vischer*

MARK DAVIS ECOLOGY PRIZE—Established by Mark Davis, DeWitt Wallace Professor of Biology, the prize is awarded to a senior biology major who has excelled in ecology courses and research.

*Kean James Kearney
Aleah Wong*

HPAC AWARD—Established by the Macalester Health Professions Advisory Committee (HPAC) to honor students who are going into a medical profession.

*Anushka Thomas Fernando
Abdullgadir A. Hayir
Dat Nguyen
Sarah Estelle Noble
Victor Wang*

O. T. AND KATHRYN WALTER AWARDS—Established by former students of Dr. O.T. Walter, chair of the Biology Department for 41 years, the awards are given to students who show promise of success in medicine related fields.

*Julian Bonilla Diaz
Elisabeth Landgren
Qingyue Qian
Amy (Xiaoyu)Wu*

CHEMISTRY

AMERICAN INSTITUTE OF CHEMISTS AWARD—Awarded to a senior chemistry major who has demonstrated outstanding scholastic achievement, leadership ability and character. The recipient receives both a certificate and student associate membership in the American Institute of Chemists.

Yifan (Albert) Liu

THE TRUMAN SCHWARTZ CHEMISTRY PRIZE—Established in 2011 by Dr. A. Truman Schwartz, DeWitt Wallace Emeritus Professor of Chemistry, and Beverly Beatty Schwartz, the prize recognizes a student who has demonstrated academic excellence and exceptional service to the Chemistry Department and its students as a teaching assistant, laboratory assistant, or tutor. The recipient has shown expertise in the discipline and outstanding effectiveness in and commitment to helping other students master concepts and excel in their learning.

*Madeline Elizabeth Rodemeier
Kexin Zhang*

CHESTER H. SHIFLETT ENDOWED PRIZES—Established by former students and colleagues to honor Dr. Shiflett, Professor of Chemistry at Macalester 1929–1966. Given to outstanding seniors majoring in chemistry.

Kexin Zhang

EMIL J. SLOWINSKI AWARD IN EXPERIMENTAL CHEMISTRY—Established in honor of Professor Emil J. Slowinski who taught chemistry at Macalester from 1964-1988. Awarded to students conducting noteworthy, experimental work in chemistry.

Gage Thomas Barroso

UNDERGRADUATE AWARD IN ORGANIC CHEMISTRY—This award is intended to recognize a senior student who displays a significant aptitude for organic chemistry and to encourage further interest in the field.

Brian Zou

UNDERGRADUATE AWARD IN PHYSICAL CHEMISTRY—Awarded by the Physical Chemistry Division of the American Chemical Society to a senior chemistry major who has excelled in the area of physical chemistry.

Riley Waters

IOTA SIGMA PI--Nomination to the national honor society for outstanding women chemistry majors and biology (biochemistry emphasis) majors upon completion of either (1) six semesters of chemistry with a grade point average of 3.0 or above or (2) four semesters of chemistry with a grade point average of 3.5 or above.

Imaan Azeem
Ruyin Guo
Healeam Jung
Shreya Nagdev
Sophia Ah-hei Oldfield
Kourtney Lynn Robinson
Madeline Elizabeth Rodemeier
Riley Waters
Kexin Zhang

PHI LAMBDA UPSILON--Nomination to the national honor society for seniors who achieve excellence in chemistry. Requires completion of chemistry major with a minimum grade point average of 3.5 in all of their Macalester classes.

Imaan Azeem
Gage Thomas Barroso
Adam Daniel Bass
Abdullgadir A. Hayir
Healeam Jung
Yifan (Albert) Liu
Connor Max Martin
Francesco Pecere
José Rolando Antonio Perez Sigüenza
Kourtney Lynn Robinson
Madeline Elizabeth Rodemeier
Rafael Viana Furer
Riley Waters
David Ken Williams
Kexin Zhang
Brian Zou

CIVIC ENGAGEMENT

GEORGE STANLEY ARTHUR PRIZE FOR COMMUNITY SERVICE--Established by Andrew William Arthur, '83, and his father, Robert Arthur. Awarded annually to a graduating senior with a grade point average of 3.7 or above who best exemplifies Macalester College's historic commitment to community service.

Angela Thi Nguyen
Shouayee Vue
Matthew Tarr Wilkinson

FRANK AND MOLLIE STEUDLE PRIZE—Established anonymously in memory of Frank and Mollie Steudle, who committed their lives to family and community service. Awarded annually to a senior who has demonstrated distinguished work in interdisciplinary studies in physical, mental, and emotional wellness. The recipient should also be active in community service, interested in working with the elderly, and planning a career dedicated to helping others.

Dat Nguyen

CLASSICAL MEDITERRANEAN AND MIDDLE EAST

VIRGINIA McKNIGHT BINGER PRIZE—Awarded to an outstanding student who demonstrates an exceptional proficiency in classical languages and/or ancient history.

Gabrielle Rose Isaac-Herzog

JEREMIAH REEDY PRIZE IN CLASSICS--The Jeremiah Reedy Prize in Classics recognizes students who have made significant contributions to the Classics Department. It was created to honor Jerry Reedy, who taught Classics at Macalester from 1968-2004, founded a charter school in St. Paul, and helped to create innumerable other opportunities for humanities students of all ages.

*Andrew Robert Pauly
Elena Montserrat Stanley*

ECONOMICS

ROBERT L. BUNTING PRIZE IN ECONOMICS—Established in honor of Robert L. Bunting with gifts from his colleagues and friends. Robert Bunting taught in the Economics and Business Departments from 1969-1984 and held the F.R. Bigelow Professorship of Economics for many years. Awarded annually to an exceptional graduating senior who will likely conduct graduate work in economics and/or business, has an enduring interest in the political economy, and plans to pursue a career in academia.

*Lucas J. Leiter
Wenwen (Rita) Liu*

JOHN M. DOZIER PRIZES IN ECONOMICS—Established in 1974 with personal gifts from members of the Board of Trustees of Macalester College in honor of John M. Dozier, Macalester Vice President for Financial Affairs from 1966–1974. Awarded annually to students majoring in economics who have demonstrated academic competence and an interest in a financial administration career.

Maxwell Luce Dodge
Grace Ellsworth
Alisa Folen
Sarah Beatrice Gotbetter
Vaja Kldiashvili
Cameron Stith Payne
Heeth Surana
Tony Vigliaturo
Tshering Wangchuk
Zixuan Zheng

ELAINE GARTNER PILON AWARD—Established by Elaine Gartner Pilon '45 in 1973 to recognize outstanding scholastic achievement by a senior majoring in economics. Considered one of the department's highest awards, it is given to the senior economics major with the highest overall and economics grade point averages. It includes a year's subscription to *Fortune* magazine.

Yunze Wang

BRIAN KRAMER AWARD-- The Economics Department created this award in the name of Brian Kramer '00, a department student worker who went well beyond the call of duty to assist faculty and staff in navigating the countless tasks involved in running the department. The department awards it occasionally, to honor a student who contributed time, energy, and creativity to serve the greater good of the department and the college.

Aaron Salot

MIKE McEWEN PRIZE—Established in 1993 in memory of Mike McEwen, '77, by his finance classmates. Mike was highly respected and well-liked by both his peers and the Macalester faculty. During his senior year, he played first-string guard on the basketball team. Awarded annually to an outstanding scholar-athlete who is majoring in economics and who participates in intercollegiate athletics.

Dana Grace Gustafson
Grady Munro
Eric Kiran Sathy

DAVID MEISELMAN PRIZE—Established by an anonymous donor in honor of David Meiselman who taught in the Department of Economics from 1966-71. The prize is awarded annually to a graduating senior for outstanding accomplishment in macroeconomic theory or policy.

Haoming Liu

3M SCHOLAR AWARDS—Established by the Economics Department with a grant from the 3M Company in 1982. Awarded to those seniors who have demonstrated outstanding academic achievement in their economics courses at Macalester College.

*Zirui Han
Haotian Lyu
Franco Martin Salinas Meza
Phoebe Wang
Xinyi Wang
Justin White*

VASANT SUKHATME ACADEMIC EXCELLENCE AWARD— Established in 2011 to honor the long service and numerous contributions of Professor Vasant Sukhatme, who taught students the value of clear thinking, hard work and dedication to the highest academic standards.

Alexander Barnes MacLeod Hopkins

OMICRON DELTA EPSILON--National honor society in Economics. Students are elected who have an overall grade point average of 3.0 or better. Members receive the *American Economist* for one year and a scroll and are eligible to wear the key of the fraternity.

*Alexander Barnes MacLeod Hopkins
Grace Ellsworth
Sarah Beatrice Gotbetter
Dana Grace Gustafson
Alexander Lawrence Bockrath Hamann
Brett Adam Hunsanger
Karanja Kubunya Karubiu
Haotian Lyu
Grady Munro
Cameron Stith Payne
Franco Martin Salinas Meza
Eric Kiran Sathy
Rohit Dimple Shah
Benjamin Wagner
Toby Elise Walecka
Justin White*

EDUCATIONAL STUDIES

RICHARD B. DIERENFIELD ENDOWED PRIZE FOR EDUCATION—Established by J. W. Fahlgren, '60, to honor Richard B. Dierenfield, professor and chair of the Education Department from 1951-1988. Awarded to a senior student who has shown outstanding potential as a teacher in a secondary school.

Gaocha Ia Lee
Sena Takashima

THE ALMA M. ROBINSON EDUCATION PRIZE—Established in honor of Alma M. Robinson, '56, by her husband, Robert, and their friends and family. Mrs. Robinson devoted her life to teaching and loved Macalester. Given annually to a Macalester student pursuing a career in teaching.

Clare Mazack
Sophia Minette Sahn

THE MARY WHITCOMB FAHLGREN ENDOWED PRIZE—Established by James W. Fahlgren, '60, in honor of his mother, Mary Whitcomb Fahlgren. Awarded to a student who has demonstrated outstanding potential as a teacher in secondary education.

Madeleine Elisabeth Alexandra Hufford

ENGLISH

ACADEMY OF AMERICAN POETS COLLEGE PRIZE—Awarded annually under the aegis of the Academy of American Poets to a Macalester student for the best poetry submitted to the English Department and judged independently by a representative of the Academy.

Winner:
Ngoc Pham

Honorable Mention:
Elyssa Kealani Cook

LIVINGSTON-PATNODE PRIZE—Established in 1992 by an anonymous donor in honor of Ray Livingston and Jack Patnode, who both taught in the Macalester English Department. Professor Livingston taught at Macalester from 1956-1967, and Professor Patnode taught from 1946-1972. Presented to a graduating senior who has made a special contribution to the college as an English major.

Kira Isabelle Schukar

NICK ADAMS SHORT STORY CONTEST—Named for the young hero of many Hemingway stories, this prize was given by an anonymous donor to encourage young writers who are students at ACM colleges and is awarded for the best story by an ACM student.

Winner:

Alfredo Araujo
Danielle Elizabeth Freshwaters

WENDY PARRISH POETRY AWARD—Established by Stanley and Marian Parrish and the English Department in memory of Wendy Parrish, '72. Wendy was an instructor in the English Department and a poet of considerable merit. Many of her poems were published in journals and a book of her poems, *Conversations in the Gallery*, was published posthumously. Presented to a student who exemplifies, like Wendy, a commitment to poetry and demonstrates excellence in writing.

Elyssa Kealani Cook
Ngoc Pham

HARRY SCHERMAN WRITING AWARD—Established by Harry Scherman to honor students in the English Department for their literary essays and creative writing.

Creative Prose:

Danielle Elizabeth Freshwaters
Chloe Urnes

Literary Analysis:

Alice Ruth Asch
Dalton Edward Greene
Kira Isabelle Schukar

Poetry:

Elyssa Kealani Cook
Ngoc Pham

ALPHA RHO THETA--The Macalester chapter of SIGMA TAU DELTA, International English Honor Society. Open to students who have completed at least three semesters of college work and a minimum of two college courses in the English language or literature beyond the usual requirements in freshman English. They must also have a grade point average of 3.65 or above and rank at least in the highest 35 percent of their class in general scholarship.

Alfredo Araujo
Alice Ruth Asch
Elyssa Kealani Cook
Brennan Hoyt Drake
Chloe Urnes
Rachel Katherine Vander Weit
Audrey Carla Wuench
Haotian Lyu
Grady Munro
Cameron Stith Payne
Franco Martin Salinas Meza
Eric Kiran Sathy
Rohit Dimple Shah
Benjamin Wagner
Toby Elise Walecka
Justin White

ENVIRONMENTAL STUDIES

ENVIRONMENTAL STUDIES CITIZENSHIP PRIZE—Awarded for academic excellence in multidisciplinary studies of the environment.

Christine McCormick
Rachel Yang Li Percy

ENVIRONMENTAL STUDIES SCHOLARSHIP PRIZE—Awarded to students who exhibit academic excellence in multidisciplinary studies of the environment.

Matthea Najberg

ENVIRONMENTAL STUDIES JUSTICE AWARD—Awarded to a student whose curricular and co-curricular efforts have sought to identify and address environmental problems that disproportionately impact communities of color and/or low-income communities.

Wei-Chieh Chen

FRENCH AND FRANCOPHONE STUDIES

HÉLÈNE PETERS PRIZE FOR STUDY IN A FRENCH-SPEAKING COUNTRY—Established in 1992 by colleagues, alumni and friends, in honor of Hélène Peters, Professor Emerita of the French Department and founder of the French Study Abroad Program. Awarded to a deserving student with a concentration in French to support international study in a French-speaking country.

*Danielle Elizabeth Freshwaters
Mo O'Laughlin*

KARL C. SANDBERG ENDOWED PRIZE—Established in memory of Karl C. Sandberg by alumni, colleagues, and friends. Professor Sandberg served as Dewitt Wallace Professor of French and Humanities from 1968-1992. His primary areas of interest were literature, philosophy, and the ideas and art of 17th- and 18th-century France. Awarded to a senior with a concentration in French who has demonstrated an engagement with the literature and philosophical ideas of France and their relationship to the arts.

*Hannah Conner
Shelby Marie Kruger
Helen Radović
Adèle Knut McLees*

PRIZE FOR EXCELLENCE IN FRENCH STUDIES – LEVEL I—Book awards to recognize outstanding accomplishment in the study of French at the elementary and intermediate levels.

Matthew Tarr Wilkinson

PRIZE FOR EXCELLENCE IN FRENCH STUDIES – LEVEL III—Book awards to recognize outstanding accomplishment in the study of French at the elementary and intermediate levels.

William Moscato

GEOGRAPHY

DAVID A. LANEGAN AWARD—Named after the department's longest serving faculty member, presented annually to senior geography majors in recognition of their significant contributions to the community life of the department.

*Nethmi Sachithma Perera Bathige
Annabel Traudie Gregg
Karson Philip Hegrenes
Grace Eleanor Robinson Jones*

MACALESTER GEOGRAPHY AWARD FOR EXCELLENCE OF SCHOLARSHIP–The Award for Excellence of Scholarship is awarded annually to an outstanding senior majoring in geography. Criteria used in identifying nominees include: academic performance, GTU membership and participation, departmental service, dedication, and enthusiasm.

Marley Kehew

GAMMA THETA UPSILON--National honor society in Geography. Third-semester students of Macalester College are eligible who have a recommended overall grade point average of 3.0 and who have completed three courses in geography with a 3.0 grade point average.

*Jack R. Acomb
Grace Elizabeth Armon
Nethmi Sachithma Perera Bathige
Quinn Francis Frankovsky
Annabel Traudie Gregg
Karson Philip Hegrenes
Riley Arin Hinklin
Gabrielle Rose Isaac-Herzog
Alexander Philip Barron Johanson
Celia Rose Frances Johnson
Anne Kaldjian
Cameron Stith Payne
Eleanor Kay Richter
Tenley Linden Smith
Zoé Isabel Nicole Tkaczyk
Marisa Sarah Williamson
Audrey Carla Wuench*

GERMAN AND RUSSIAN STUDIES

EVELYN ALBINSON AWARD FOR ACADEMIC EXCELLENCE IN THE STUDY OF GERMAN–Established in 1977 in honor of Dr. Evelyn Albinson by colleagues, friends, and alumni. Professor Albinson contributed immensely to the Germanic languages and literature program at Macalester over the course of a long and successful career. Awarded annually to a student who has a high grade point average, a distinguished record in German Studies, and who has qualified for Phi Beta Kappa.

Audrey Bentch

VIRGINIA McKNIGHT BINGER PRIZE–Awarded to an outstanding student who demonstrates an exceptional proficiency in German language and related studies.

Aron Joseph Smith-Donovan

DELTA PHI ALPHA—National honor society in German. Student members are chosen from senior German majors who attain at least a 3.5 grade point average in Macalester German courses and have an overall grade point average of 3.0 or greater.

*Audrey Bentch
Aron Joseph Smith-Donovan*

HISTORY

THE YAHYA ARMAJANI PRIZE IN GLOBAL HISTORY—Established by the History Department to honor Yahya Armajani. Awarded to distinguished senior history majors.

*Elizabeth Gehling
Hafsa Assad Yusuf*

THE KENNETH L. & MARTHA S. HOLMES PRIZE IN HISTORY OF THE AMERICAS—Established by the History Department to honor former, distinguished colleagues. Awarded annually to distinguished senior history majors.

Theo Michael Britton

KATHLEEN ROCK HAUSER PRIZE IN WOMEN’S AND GENDER HISTORY—Established by the Women Historians of the Midwest, Dr. Donald Rock, and Mrs. Irene Rock in the memory of Kathleen Rock Hauser, ‘62. Awarded to a student who has made a significant undergraduate contribution to women’s history.

*Katherine Elizabeth Chin
Lily Beatrice Denehy
Brooke A. Sapper*

ERNEST R. SANDEEN MEMORIAL PRIZE—Established in memory of Ernest R. Sandeen, Professor of History from 1963-1982, by his colleagues, friends, and family. Given to a student who has completed an original, high-quality piece of research in the field of history. Additionally, the student should reflect the qualities of Sandeen himself: exceptional skill, imagination, and effort.

Audrey Carla Wuench

PHI ALPHA THETA--Students are eligible for induction into Phi Alpha Theta, the national honor society in history, if they have a 3.5 grade point average in at least twelve semester hours of work in history and have a 3.25 grade point average overall.

*Theo Michael Britton
Lily Beatrice Denehy
Joseph McMurtrey
Kate Elizabeth Schultz
Audrey Carla Wuench
Karsten Beling
Katherine Elizabeth Chin
Elizabeth Gehling
Caroline Clement Newbery
Finn Harris Sullivan
Isabelle Virginia Trueblood
Tanner Jacob Wileman
Hafsa Assad Yusuf*

INTERNATIONAL STUDIES

THE INTERNATIONAL STUDIES PRIZE FOR ACADEMIC EXCELLENCE—Awarded by the faculty of the International Studies Department to a senior major who has demonstrated outstanding academic achievement in International Studies at Macalester College.

*Paul Gabriel Lingal Cosme
Katherine Ann Herrick*

LATIN AMERICAN STUDIES

THE LATIN AMERICAN STUDIES AWARD FOR EXCELLENCE AND INNOVATION – Awarded to students majoring in Latin American Studies for academic excellence and scholarly innovation, including original field or archival research.

Michael D. Moreno

LINGUISTICS

THE LINGUISTICS PRIZE FOR ACADEMIC EXCELLENCE—Awarded by the faculty of the Linguistics Department to a senior major who has an overall high cumulative undergraduate grade point average and/or demonstrates evidence of research skills, such as the successful undertaking of a research project in linguistics or a related field.

Zinan Yang

MATHEMATICS, STATISTICS, AND COMPUTER SCIENCE

BRESSOUD PRIZE —Established by department colleagues and former Macalester students, the prize honors David M. Bressoud, who served in the department from 1994-2016 as professor and chair, and who is an award-winning expositor of mathematics. This prize is given to a senior Mathematics, Statistics, and Computer Science major in recognition of excellence in communication skills in mathematical, statistical, or computer science.

Freddy Andrew Barragan

CAMP ENDOWED PRIZE IN COMPUTER SCIENCE—This prize is awarded to a senior major in the department for meritorious academic performance in Computer Science and contributions to department culture and community. The prize honors Professor Ezra J. Camp, who was professor and chair of the Mathematics Department 1939-1970.

Elisabeth Landgren

CAMP ENDOWED PRIZE IN MATHEMATICS—This prize is awarded to a senior major in the department for meritorious academic performance in Mathematics and contributions to department culture and community. The prize honors Professor Ezra J. Camp, who was professor and chair of the Mathematics Department 1939-1970.

Paige Susan Robertson

KAPLAN AWARD FOR ACHIEVEMENT IN DATA SCIENCE—This prize is awarded to a junior or senior majoring in the department in recognition of an outstanding academic record coupled with demonstrated achievement on projects involving data science or statistics. This prize honors Professor Kaplan, who worked at Macalester from 1996-2017, and was funded by his colleagues and former students with a special gift from J.J. Allaire '91. Professor Kaplan had a profound influence in shaping the mathematics, statistics, and computer science curriculum at Macalester. He was a pioneer in bringing the field of Data Science to the liberal arts.

Zhaoheng Li

KAPLAN ENDOWED PRIZE IN DATA SCIENCE—This prize is awarded to a senior major in the department for meritorious academic performance in Data Science or Statistics and for contributions to department culture and community. This prize honors Professor Kaplan, who worked at Macalester from 1996-2017. It was funded by his colleagues and former students with a special gift from J.J. Allaire '91. Professor Kaplan had a profound influence in shaping the mathematics, statistics, and computer science curriculum at Macalester. He was a pioneer in bringing the field of Data Science to the liberal arts.

Yunyang Zhong

KONHAUSER ACHIEVEMENT AWARD—Established and funded by Frederic Deschamps '87 and family in honor of Dr. Joseph D. Konhauser, professor and chair of the Mathematics Department 1968-1991. Awarded to juniors or seniors majoring in mathematics and computer science in recognition of an outstanding academic record coupled with a demonstrated dedication to and interest in the field.

In Computer Science:
Jacqueline Ong Shao Yi

In Mathematics:
Arthur DressenWall

ROBERTS PRIZE—This prize is given by the department to honor a junior or senior majoring in mathematics or computer science in recognition of a dedication to the education of youth. This dedication will be demonstrated by work tutoring K-12 students, a keen interest in education policy, or through commitment to service teaching K-12 mathematics or computer science after graduation. This prize is established by department colleagues in honor of Dr. A. Wayne Roberts, who worked at Macalester from 1965-2005, as professor and chair of the Department of Mathematics and Computer Science, and in service as provost of the College. Through his work with Macalester students and faculty, and with the Minnesota State High School Mathematics League, which he founded in 1980 and led until 2009, Dr. Roberts has played an enormously important role in mathematics education in Minnesota.

Emily Jean Harper

WAGON COMPETITION PRIZE—This prize is given by the department to honor a student majoring in mathematics or computer science who has demonstrated the spirit of teamwork, creativity, cooperation, and a striving for excellence that we try to foster through the many competitions in which we participate. This award is named in honor of Dr. Stan Wagon, professor of Mathematics at Macalester from 1990-2012, who worked enthusiastically and tirelessly throughout his teaching career, training, inspiring, rewarding, and in all ways supporting students in their problem-solving and competition endeavors.

Connor Bass

MEDIA AND CULTURAL STUDIES

THE MEDIA AND CULTURAL STUDIES PRIZE FOR ACADEMIC EXCELLENCE—Awarded by the faculty of the Media and Cultural Studies Department to a senior major who has demonstrated outstanding academic achievement in media and cultural studies.

Hannah Conner

MULTICULTURAL AWARD

LATINA AWARD FOR EXCELLENCE—Awarded to a Latina senior woman who has demonstrated outstanding academic achievement.

Nicole Salazar

MUSIC

LILA BELL ACHESON WALLACE ENDOWED PRIZE—Established by Mrs. DeWitt Wallace, co-founder of the Reader's Digest. Awarded to an outstanding student majoring in music.

Paul Gabriel Lingal Cosme

WALTER A. LIENKE ENDOWED PRIZE—Established by the testamentary bequest of Walter A. Lienke, a Macalester parent, to recognize outstanding students majoring in music.

Anne Kaldjian

FRIENDS OF MUSIC AWARD—Awarded by the Music Department to recognize an outstanding student for performance, academic work and service.

Gwyneth John

ZENAS TAYLOR ENDOWED PRIZE IN MUSIC—Established by Hazel Taylor in 1983 in memory of her husband, Zenas Taylor, '20. After her husband's death, Hazel made great sacrifices to establish this memorial prize honoring his love of music and Macalester, where his heart found joy. Awarded to a student majoring or minoring in voice.

Eva June Birkholz

NEUROSCIENCE

THE NEUROSCIENCE PRIZE FOR ACADEMIC EXCELLENCE—Awarded by the faculty of the Neuroscience Program to a senior major who stands out for their academic excellence, commitment to advancing the field of neuroscience as exemplified by their research, scholarship, and/or community engagement, and intellectual curiosity in neuroscience.

*Sarah Barry Falkovic
Helen Marie Frieman
Hannah Kristine Lundblad
Molly C. O'Brien
Chanreaksmey So*

THE NEUROSCIENCE PRIZE FOR OUTSTANDING COMMUNITY ENGAGEMENT—
Awarded by the faculty of the Neuroscience Program to a senior major who stands out for their engagement with and commitment to the neuroscience community.

Claire Elizabeth McCabe
Molly C. O'Brien
Chanreaksmey So

NU RHO PSI—National honor society in the field of Neuroscience. Students who become members of *Nu Rho Psi* are selected based on their superior scholarly accomplishments as well as their excellent work in the laboratory. GPA of 3.6 is expected in neuroscience classes.

Samson Ray Alwin
Sherry Cheng
Sarah Barry Falkovic
Helen Marie Frieman
Tanner D. Hubbard
Hannah Kristine Lundblad
Faith Mary Milon
Pablo S. Monterroso
Molly C. O'Brien
Brianna H. Overlid
Celine Sabbagh
Chanreaksmey So
Lucas Zecker
Alex Zhu

PHILOSOPHY

THOMAS E. HILL PRIZE—Established by the faculty of the Philosophy Department. A year's subscription to a philosophical journal of the student's choice is awarded for outstanding work in philosophy.

Aiym Bakytbaikyzy

THE ROGER K. MOSVICK ENDOWED PRIZE IN PHILOSOPHY—Established by former students, Judge Jack Mason and James Fahlgren, in recognition of Dr. Roger K. Mosvick's contributions to the development of the department of communication studies and his 47 years of service to the college. Awarded by the permanent faculty of the Philosophy Department to a senior majoring in philosophy who has demonstrated academic excellence in the fields of critical thinking, argumentation and logic.

Grace K. Doyle
Yiğit Can Kahyaoğlu

THE HENRY R. WEST PRIZE IN PHILOSOPHY— Established by Macalester faculty, staff, alumni, and friends in recognition of Professor Henry R. West for his many years of teaching, scholarship, and service to the college. Awarded to a student who, in the judgment of the Philosophy Department, has written the best essay for the academic year in ethics, social philosophy, or political philosophy.

Amber Keiko Sofge

PHYSICS AND ASTRONOMY

RUSSELL B. HASTINGS AWARD—Awarded to students for achievement in physics, who also demonstrate outstanding service to the Physics Department.

*Alyssa Katherine Rauschenberger
Chinhsan Sieng*

THE SUNG KYU KIM AWARD—Established in honor of Professor Sung Kyu Kim and awarded to a physics and astronomy senior for the best capstone paper.

Carter Jefferson Swift

THE RAYMOND MIKKELSON AWARD—Established in honor of Professor Raymond Mikkelson and awarded to a physics and astronomy senior for excellence in experimental physics.

Henry George Bell

OUTSTANDING STUDENT CITIZEN AWARD—Given to the senior physics major who, in the eyes of their fellow students, stands out as being an advocate for student and departmental interests.

Jason Edward Beal

THE DR. SHERMAN W. SCHULTZ MEMORIAL AWARD—Established in memory of Dr. Sherman W. Schultz who taught astronomy at Macalester from 1958-1996. Presented to a senior physics and astronomy major with an emphasis in astronomy who has demonstrated both academic excellence and outstanding research.

Susannah Paine

POLITICAL SCIENCE

HUBERT H. HUMPHREY AND WALTER F. MONDALE ENDOWED AWARD IN POLITICAL SCIENCE—Established in 1977 to honor Hubert Humphrey and Walter Mondale. Hubert Humphrey was a Macalester faculty member, the Mayor of Minneapolis, a U.S. Senator, and Vice President of the United States. The Honorable Walter F. Mondale, '50, was the U.S. Attorney General, a U.S. Senator for Minnesota, and Vice President of the United States. The careers of these two men exemplify the highest standards of scholarship and education as well as service to society. The prize is awarded to one or more distinguished political science scholars.

*Ayana Joy Smith-Kooiman
Maria Candelaria Torres Jimenez*

PETER R. WEISMAN ENDOWED PRIZE—Established by family, friends, and alumni in memory of Peter Weisman '78 (1955–1980), who uniquely demonstrated his empathy for his fellow humans by helping them as individuals and through social and political institutions. Presented to a political science student who has demonstrated concern for and has worked with the underprivileged and is planning a career dedicated to helping others.

*Abdifatah Hadi Abdi
Aaron Woida*

BRENT WILLIAMS PRIZE—Established in the memory of Brent Williams, '73, by his parents, fellow students, and friends and relatives from Ottumwa, Iowa. Awarded to a political science major who has earned departmental honors or provided outstanding service to the department. Additionally, this student will have had experience in speech and debate and be active in the Macalester College community.

Kaitlyn Raye Brown

PI SIGMA ALPHA--National Political Science honor society. Open to juniors and seniors who have completed a minimum of four Political Science courses, three at the intermediate level and above, and who have a grade point average of at least 3.5 in Political Science and 3.2 overall.

*Kaitlyn Raye Brown
Emma Curchin
Maria Candelaria Torres Jimenez
Aaron Woida*

PSYCHOLOGY

WALTER D. MINK ENDOWED PRIZE—Established by Walter Mink, a professor in the Psychology Department at Macalester College for 38 years. Awarded to a student with a strong academic record who demonstrates great research potential and challenging plans for their senior research project. Additionally, the student will have demonstrated outstanding service to the Psychology Department, Macalester College, or the wider community.

Amy Jiamiao Xu

PATERSON AWARD NOMINEE—Macalester’s nominee for the award given by the Minnesota Psychological Association to the most promising senior in Minnesota planning a career in psychology. The student also receives an award provided by the Walter D. Mink endowed prize fund.

Johanna Nicole Caskey

JACK ROSSMANN ENDOWED PRIZE—Established in 2004 by Jack and Marty Rossman. Professor Jack Rossman taught in the Macalester Psychology Department for many years until his retirement in 2004. Presented annually to a graduating senior psychology major with an excellent academic record and distinguished contributions in the application of academic psychology through activities such as applied research, internships, or community service.

Xue Han
Alexander Douglas Poland

PSI CHI--National honor society in Psychology. Its purposes are to encourage, stimulate and maintain excellence in scholarship and advance the science of psychology. Open to juniors and seniors who have a major in Psychology and who have a cumulative grade point average of at least 3.5.

Adriana Brooke-Pike
Johanna Nicole Caskey
Avery Elyse Cooper
Sarah Beatrice Gotbetter
Xue Han
Madeleine Elisabeth Alexandra Hufford
Jenny Rebecka Ibarra
Kian Rostam Sohrabi
Jiayi Sun
Sukari P. Wright
Amy Jiamiao Xu

RELIGIOUS STUDIES

ARLINE AND ROBERT A. CAINE MEMORIAL PRIZE—Established in 1976 in memory of Arline and Robert Caine by their friends and family. Mr. Caine served Presbyterian churches in Red Wing, MN, Duluth, MN, and Rochester, NY. In addition, Mr. Caine served as a Minnesota synod executive and as a Macalester College trustee for many years. Awarded to seniors planning to pursue graduate work in religious studies.

Katherine Ann Herrick

RUSSIAN STUDIES

VIRGINIA McKNIGHT BINGER PRIZE—Awarded to an outstanding student who demonstrates an exceptional proficiency in Russian language and related studies.

David Henry Nicholas Katz

SOCIOLOGY

BERRY-RINDER-SWAIN PRIZE—Established in honor of Emeritus Professors Paul Berry, Irwin Rinder and Al Swain. Awarded to a senior major for academic excellence and positive contributions to the life of the department.

*Lauren Michelle Dunnewald
Inge Pham-Swann
Elizabeth Poor
Sena Takashima*

ALPHA KAPPA DELTA--National honor society in Sociology.

*Maria Lane Centrella
Lauren Michelle Dunnewald
Emily Jean Harper
John Griffin Pflaster
Inge Pham-Swann
Bergen Sosnokowski Schmidt
Aidan Michael Williams
Xunwen Zou*

SPANISH AND PORTUGUESE

VIRGINIA McKNIGHT BINGER PRIZE—Awarded to an outstanding student who demonstrates an exceptional proficiency in Spanish or Portuguese.

Malyn Lee Banitt-Moore

DONALD L. FABIAN PRIZE—Established by an alumnus of the Department of Spanish and Portuguese in honor of Professor Emeritus Donald L. Fabian. Awarded to an outstanding graduating Spanish major who either intends to enter graduate school in an area directly related to his or her Spanish major or to pursue a career that closely involves significant use of the Spanish language.

Sarah Estelle Noble

SPANISH AND PORTUGUESE DEPARTMENT FACULTY AWARDS—Presented to students who have demonstrated outstanding accomplishment in the study of Spanish and Portuguese language and/or literature.

Spanish Advanced Level:
Avery Elyse Cooper

Portuguese Advanced Level:
*Liliana Olivo Brunner
Rafael Viana Furer*

SPANISH AND PORTUGUESE DEPARTMENT SERVICE AWARD—Awarded to a student in recognition of significant contributions to the life of the Spanish and Portuguese Department.

*Helen Marie Frieman
Pablo S. Monterroso*

SIGMA DELTA PI--National Hispanic honor society. Open to students who have completed at least six courses above the intermediate level with a grade point average of at least 3.0 and who show strong interest in the Hispanic language and culture.

*Malyn Lee Banitt-Moore
Avery Elyse Cooper
Sarah Estelle Noble
Alexander Douglas Poland
Laura Mingyi Rapp*

PHI LAMBDA BETA—National Portuguese honor society. It offers recognition to those students with high achievement in the area of advanced Luso-Afro-Brazilian Literature and Culture. Members rank in the upper 35% of their college class, and have maintained a 3.0 or better GPA in their coursework in the Department of Spanish & Portuguese. Macalester's chapter, Mu Nu, was begun in the spring of 2017.

*Liliana Olivo Brunner
Leonardo Rocha Bucello
John Patrick Lilygren
Cecilia Soto-Licea
Rafael Viana Furer*

THEATER AND DANCE

RUTH EASTON PERFORMANCE AWARD— Given to a sophomore, junior or senior who has demonstrated a strong level of skill and artistic depth in theater performance (acting, design, directing, playwriting, technologies).

*Alice Endo
Kalala Christine Kiwanuka-Woernle
Jessica Yates*

THE DAVID WICK ENDOWED PRIZE FOR EXCELLENCE IN LEADERSHIP—Established by David Wick '91, given to a senior who has invested time and energy into guiding other students, contributing to the functioning of the dance program, and serving as a role model for commitment to dance.

Lu Chen

THE DAVID WICK ENDOWED PRIZE FOR EXCELLENCE IN CHOREOGRAPHY—
Established by David Wick '91, given to a rising junior or senior who has shown enthusiasm,
creativity and sincerity towards dance to help with the cost of creating and producing a major
choreographic work.

Maya Dass Reddy

WOMEN'S, GENDER, AND SEXUALITY STUDIES

WOMEN'S, GENDER, AND SEXUALITY STUDIES DEPARTMENT PRIZE—Established
and awarded by the faculty of the Women's, Gender and Sexuality Studies program. A cash
award to honor outstanding scholarship and significant contributions to issues of women, gender
and sexual orientation.

*Sarah Garrett-Engele
Zoe Kross*

PHI BETA KAPPA

Election to Phi Beta Kappa recognizes outstanding scholarship in the liberal arts and sciences. Election is limited to the top twelve percent of the senior class. All candidates must have demonstrated knowledge of mathematics and of a foreign language at least minimally appropriate for a liberal education.

Kiwa Anisman
Aaron Latham Backs
Adam Daniel Bass
Jason Edward Beal
Henry George Bell
Talia Rachel Berkman
Kaitlyn Raye Brown
Johanna Nicole Caskey
Mackenzie Rose Clarke
Catherine Collins
Elyssa Kealani Cook
Paul Gabriel Lingal Cosme
Emma Curchin
Nicholas Di
Grace K. Doyle
Arthur DressenWall
Jiwen Fan
Sarah Beatrice Gotbetter
Ruyin Guo
Emily Jean Harper
Alexander Barnes MacLeod Hopkins
Tanner D. Hubbard
Yiğit Can Kahyaoğlu
Marley Kehew
Shelby Marie Kruger
Lucas J. Leiter
Zhaoheng Li
Yifan (Albert) Liu
Sophie Mark-Ng
Bibiane Morakotkarn
Miranda Lyn Moulis

John M. Muller
Grady Munro
Jacqueline Ong Shao Yi
Francesco Pecere
Alyssa Thuy-Anh Pham
Inge Pham-Swann
Maya Dass Reddy
Gabriel Reynolds
Paige Susan Robertson
Franco Martin Salinas Meza
Bergen Sosnkowski Schmidt
Elizabeth R. Schnaubelt
Kira Isabelle Schukar
Pallavi Shoroff
Chinhsan Sieng
Kian Rostam Sohrabi
Kelsey Meyer Straw
Carter Jefferson Swift
Estelle Anna Timar-Wilcox
Maria Candelaria Torres Jimenez
Serena Joy Touqan
Tony Vigliaturo
Xinyi Wang
Zhenxiao Wang
Aaron Woida
Aleah Wong
Yutong Wu
Amy Jiamiao Xu
Kexin Zhang

FULBRIGHT GRANTS

Fulbright Grants are awarded with the cooperation of the Department of State, foreign governments, and private donors for study, research and assistantships in some 155 countries of the world.

Fulbright English Teaching Assistantship to Germany:

Mary Claire Liebers

Fulbright English Teaching Assistantship to Greece:

Dalton Edward Greene

Fulbright English Teaching Assistantship to Indonesia:

Angela Thi Nguyen

Fulbright English Teaching Assistantship to Panama:

Marc Alan Mutka Jr.

Fulbright English Teaching Assistantship to South Korea:

Shea Alexander Husband

Fulbright Research Grant to Brazil:

Liliana Olivo Brunner

Fulbright Research Grant to Sweden:

Brian Zou

Fulbright Research Grant to Trinidad and Tobago:

Katherine Elizabeth Chin

THOMAS J. WATSON FELLOWSHIP

The Thomas J. Watson Fellowship is a one-year grant for purposeful, independent exploration outside the United States, awarded to graduating seniors nominated by one of 41 partner institutions.

*Maija Hecht
Maya Sobchuk*