

FOURTH ANNUAL CELEBRATION OF STUDENT

SCHOLARSHIP

AND

CREATIVITY

3-5 PM WEDNESDAY, APRIL 24, 2013

Past Celebrations



Talk about the Annual Celebration on Twitter using **#PCAnnualCeleb**

Welcome!

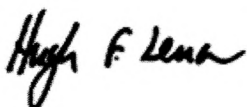
Thank you for joining us at Providence College's Fourth Annual Celebration of Student Scholarship and Creativity. One hundred and twenty-three undergraduate and graduate students (eighty-five projects), all nominated by faculty from a wide range of academic disciplines, have prepared poster, laptop and other types of presentations to showcase their exciting and innovative research and creative work.

The projects of these students, supported by their faculty mentors, are exemplary because of the depth of commitment and understanding they reflect as well as the high quality of the finished product. We congratulate both the students and the faculty on their outstanding accomplishments. We hope that their enriching experiences serve as the foundation for future academic and professional endeavors.

The Celebration of Student Scholarship and Creativity was inspired by Providence College's three-year *Fostering a Culture of Student Engagement* grant from the Davis Educational Foundation. The purpose of this grant was to strengthen student engagement in learning as a means of fulfilling the College's central mission to promote, sustain and enhance academic excellence. Providence College expresses its deep gratitude to the Davis Educational Foundation for its critical partnership in this effort.

This celebration is also an important feature of the College's Strategic Plan where student engagement is a critical step in our effort to enhance academic excellence by engaging students deeply in their learning through expanded experiential research, study, and service opportunities, and by recognizing publicly students' best scholarly and creative work.

Congratulations to all of the participants in this year's Celebration.



Hugh Lena, Ph.D.

Provost & Senior Vice President for Academic Affairs

Annual Celebration of Student Scholarship and Creativity

PROJECTS 2013

Low-cost facility and appendix components for Microflush toilets [Project 9]

Anish Agrawal, Engineering-Physics, Class of 2015

Prototype field testing of the Microflush-Biofil toilet has proven to be an effective, sustainable off-grid solution for sanitation in developing tropical rural communities. The research is focused on developing Microflush solutions at a price that is affordable to those earning less than \$3 per day. This study is part of an effort to identify and prototype alternative facility enclosure options and appendix components. The project will focus on building a Microflush valve production prototype, and building affordable user interfaces by means of reusable and locally available products in rural countries so that local people can build it by themselves.

Faculty Mentor: Dr. Stephen Mecca, Department of Engineering/Physics/Systems

Make Trade Equal: Nicaragua and the Coffee Trade [Project 4]

Collin Anderson, Global Studies and Spanish, Class of 2015

Jennifer Bell, Global Studies, Class of 2013

Kaileigh Carroll, Political Science, Class of 2015

Jonathan Hagberg, Global Studies, Class of 2015

Emily Kennedy, Global Studies, Class of 2015

Taylor Leen, Global Studies and Spanish, Class of 2013

Esteban Quijada Link, Global Studies, Class of 2013

Anne Ruelle, Global Studies and Spanish, Class of 2013

This group participated in an Alternative Spring Break Trip to Nicaragua, studying the political, economic, environmental, labor and social impacts of the coffee trade in the country and in a global market. They collected stories, pictures and videos from “seed to cup” and information on how individuals and institutions can be more ethical in their practices in buying consuming coffee.

Faculty Mentors: Dr. Richard Battistoni, Feinstein Institute for Public Service and Kathryn Stewart, Feinstein Institute

Immigration and the Rise of Right-Wing Extremism: Greece [Project 60]

Thomas Andrikopoulos, Political Science, Class of 2016

This project seeks to analyze the effects of recent immigration into Greece in the midst of an on-going economic crisis. The project also seeks to understand the relationship between recent immigration and the rise of right-wing political movements in Greek society, as well as how these movements have influenced Greek political institutions.

Faculty Mentor: Dr. Susan McCarthy, Department of Political Science

T.S. Eliot, Early and Late: Absolute Music in the pre-*Waste Land* Poetry and the *Four Quartets* [Project 21]

Abby Ang, English and Music, Class of 2013

My senior thesis focuses on Eliot’s musical references during two “periods” of his career. In the first part, I discuss how his Chopin references function as evidence of how great art had been drained of its power and significance, revealing cultural

and personal disconnections. In the second part, I argue that Eliot revisits connection in the *Four Quartets*, referring to Beethoven as he draws from a conception of music's power to communicate experiences beyond conventional language.

Faculty Mentor: Dr. William Hogan, Department of English

Spermathecae structure and ultrastructure in social wasps [Project 16]

Douglas Biancur, Biology, Class of 2013

We examined the spermatheca structures and ultrastructures in female paper wasps to characterize their morphology and to detect stored sperm. Three different microscope techniques were implemented. Gross structures were observed with the light microscope. Under the confocal microscope, sperm nuclei were detected. The electron microscope then validated our claims by observing sperm ultrastructures. Because of their reproductive system, queens can produce haploid males from unfertilized eggs or diploid females using stored sperm. This method of characterizing the spermatheca can be used to determine which one of the sometimes hundreds of females in a colony is capable of becoming a queen.

Faculty Mentors: Dr. Elisabeth Arevalo and Dr. Joseph DeGiorgis, Department of Biology

The Effects of Emotion and Message Framing on College Binge Drinking [Project 45]

Monica Broughton, Psychology, Class of 2013

Although binge drinking is normative in college, it has serious health consequences. The purpose of this study was to find an effective way of portraying binge drinking to college students. A 2 (emotional prime) X 2 (message frame) X 2 (pre-post) mixed factorial design was used to assess change in participants' alcohol intake. If students become more aware of the probable consequences of binge drinking, they may change their drinking behavior.

Faculty Mentor: Dr. Mary O'Keeffe, Department of Psychology

Isolation and characterization of mycobacteriophage ZoeJ, a K2 cluster phage [Project 31]

Melissa Brown, Biology, Class of 2016

William Cavedon, Biology, Class of 2016

Heloise Dubois, Biology, Class of 2016

Michelle Fernando, Biology and Psychology, Class of 2016

Alicia Jancevski, Biochemistry, Class of 2015

Christina Perri, Biology and Psychology, Class of 2016

Shelby Scola, Biochemistry, Class of 2016

Stephen Rogers, Biology, Class of 2015

Mycobacteriophages are pathogenic viruses that infect and kill mycobacteria, many of which cause diseases including tuberculosis and leprosy. Here we report the isolation and characterization of novel mycobacteriophages Frozone21, Phorensics, Aglet, AnnieAbelard, EGMO, eMoney, Gabriel, Inferno810, JeckyllHyde, Murray66, Rorschach, and ZoeJ. Mycobacteriophages were isolated from soil samples at Providence College via an enrichment procedure. DNA was extracted from each phage. In addition, mycobacteriophage ZoeJ was sequenced, annotated, and characterized as a K2 subcluster phage. K2 is a new subcluster consisting of ZoeJ, Mufasa, and TM4. Further genome comparison of the K2 subcluster phages reveals a gene sequence unique to ZoeJ.

Faculty Mentor: Dr. Kathleen Cornely, Department of Chemistry and Biochemistry

Courtney Burek, Accountancy, Class of 2013

A lack of understanding of a basic accounting principle by sales representatives was causing a decrease in profits for an organization. I proposed an idea of a training program to educate the employees as a solution to this issue. Through detailed analysis, I developed a successful plan to change the way the representatives approached their sales technique to produce mutually beneficial results.

Faculty Mentor: Dr. Michael Kraten, Department of Accountancy

Human malignant melanoma cells resist oxidative stress due to overactive AKT/mTOR pathway and inducible neutralization of ROS [Project 29]

David Calianese, Biology, Class of 2014

Charles Best, Biology, Class of 2014

Garrett Cammarata, Biology, Class of 2014

Katelyn Higgins, Biology, Class of 2014

Kevin Szulak, Biology, Class of 2013

Melanoma is considered to be one of the most aggressive and less treatable cancers, and the transformation from tranquil melanocytes to invasive melanoma cells remains an enigma. We compared primary human melanocytes and melanoma cells and their responses to oxidative stress. Our data provides insights into the understanding of the molecular mechanisms of the transformation from melanocytes to melanoma and support the notion of cells reducing apoptotic signals in stressful situations in order to survive in taxing environments. Focusing on how these cells neutralize ROS through these important cell-signaling pathways can identify important targets for better clinical management of melanoma.

Faculty Mentor: Dr. Yinsheng Wan, Department of Biology

Vimentin protects against endoplasmic reticulum stress induced by arsenite in human skin melanoma cells [Project 30]

Garrett Cammarata, Biology, Class of 2014

David Calianese, Biology, Class of 2014

Kevin Szulak, Biology, Class of 2013

Charles Best, Biology, Class of 2014

Brianna Lutz, Biology, Class of 2013

Katelyn Higgins, Biology, Class of 2014

Jeanine Justiniano, Biology, Class of 2016

Arsenite has been shown to induce “apoptosis” of cancer and is used mainly in the treatment of leukemia. We studied the effects of arsenite and found that arsenite inhibits cell migration, induces cell death and causes vimentin encampment of the ER. Vimentin, a major intermediate filament protein, is over-expressed in malignant melanoma and correlates well with tumor growth, invasion, and poor prognosis. The role of vimentin in cancer metastasis remains to be elucidated however. Our results support the notion that vimentin can be considered a potential bio-marker for predicting melanoma metastasis and thus, is a potential molecular target for melanoma.

Faculty Mentor: Dr. Yinsheng Wan, Department of Biology

NMR and DFT Study of the Solvent Effects on the Iron Pentacarbonyl-Catalyzed Photo-Assisted Isomerization of Allyl Alcohol [Project 19]

Hilary Chase, Chemistry, Class of 2013

The relative rates of iron pentacarbonyl-catalyzed photo-induced isomerization of allyl alcohol have been studied in hydrocarbons, alcohols, and amines using ^1H NMR spectroscopy. The rates of isomerization were efficient in hydrocarbon solvents and were very slow or completely suppressed in alcohol and amine solvents. Density functional theory calculations predicted thermodynamically favorable formation of $\text{Fe}(\text{CO})_4$ -Solvent compounds in the suppressing alcohol/amine solvents and unfavorable $\text{Fe}(\text{CO})_4$ -Solvent formation with the hydrocarbon solvents. The strong solvent ligation likely prevents formation of the $\text{Fe}(\text{CO})_3$ intermediate necessary for isomerization.

Faculty Mentor: Dr. Christopher Laperle, Department of Chemistry and Biochemistry

Memory Tokens [Project 17]

Julia Christ, Studio Art, Painting, Class of 2013

In this body of artwork, I explore my own personal history and collect past memories. These collected memory tokens, consciously or subconsciously acknowledged, trigger different emotional responses and forever influence my identity. When I revisit a place, I am brought back to events that occurred there; multitudes of past memories and feelings flicker over the actual space like a projection of light. However, new experiences cover up past ones, and the authority of our memories is called into question. Through my painting process I try to embody this affliction of forgetfulness and capture these drifting memories.

Faculty Mentor: Professor Heather McPherson, Department of Art and Art History

Purple Loosestrife and Its Genetic Diversity [Project 22]

Richard Cimini, Biology, Class of 2013

Emily Garvey, Biology, Class of 2013

Matthew Vumback, Biology, Class of 2013

Purple Loosestrife is an extremely invasive species that outcompetes other organisms native to that environment. The relatively new addition of this species to a habitat can shock the ecosystem and allow the plant to easily and rapidly reproduce. Typically, plant species reproduce hermaphroditically, resulting in swifter expansion into the environment. In the case of Purple Loosestrife, mating can only occur between individuals with different genetically-determined flower types. Our goal is to explain this somewhat contradictory phenomenon, that an invasive species has such a specific mating pattern yet still appears to thrive.

Faculty Mentor: Dr. Maia Bailey, Department of Biology

Dr. Stephen Coan [Project 20]

Rebecca Coan, Psychology, Class of 2013

The goal of the Leadership wiki was to collect information and inform others about the qualities of good leadership. Such exemplary leaders are ones who engage in a specific practice, maintain the standards of their practice against personal temptation or institutional pressures to be more efficient, seek excellence in the whole of human life by

transforming their personal desires to pursue what is truly good, and finally confront what is wrong with culture. The wiki will explain practice, practical reasoning, and virtue in general. For the Leadership wiki I chose my uncle, Dr. Stephen Coan, as my exemplary leader.

Faculty Mentor: Dr. Jeffery Nicholas, Department of Philosophy

Cormac McCarthy: A Writer to Be Reckoned With [Project 47]

Thomas Cody, English, Class of 2013

The purpose of the presentation is to show that Cormac McCarthy deserves to be counted among America's best writers, on the same level as Melville, Faulkner, Hemingway and Salinger. I will look at his popular novels, *All The Pretty Horses* and *The Road*, as well as his foray into Hollywood with the Oscar-winning adaptation of *No Country For Old Men* and a critically acclaimed HBO special, *The Sunset Limited*. I hope to show the force of his writing and the scope of his impact.

Faculty Mentor: Dr. Russell Hillier, Department of English

Republican Blood: The Irish Collective Action Frame throughout the Twentieth Century [Project 69]

Mary Kate Condon, Political Science, Class of 2013

Irish Republicans choose to make blood sacrifice a core element in their collective action frame. As children, the Irish were raised on myths of ancient heroes dying gloriously for their fellow Irishmen. As adults, they went to mass every Sunday to eat the body and blood of their savior Jesus Christ, who lived only to die for their sins. Whether one believes self-immolation is suicide or sacrificial in nature, one cannot deny its ability to win the hearts and minds of the Irish and the international community in the twentieth century.

Faculty Mentor: Dr. Susan McCarthy, Department of Political Science

Industrial Fall River: The Transformation from a Factory Town to an Industrial City [Project 57]

Melanie Cordeiro, Business Management, Class of 2014

I chose to do a case study on the American Industrial Revolution using Fall River, Massachusetts, as the historical case for my Development of Western Civilization project. I was interested in this topic because it involved the history of my hometown. All of the information included in my website, with the exception of a few sources, came directly from the archives of the Fall River Historical Society. Through my research, I learned how Fall River became the leading textile manufacturing capital of the country and why it ultimately fell.

Faculty Mentor: Dr. William Hogan, Department of English

The Effects of Single and Coeducational Schools on Student and Teacher Behavior

[Project 32]

Shelby Daley, Sociology, Class of 2013

Kathleen McGreal, Sociology and English, Class of 2015

Lindsey Provencher, Sociology, Class of 2013

Single-sex schooling has been heavily debated over the past decade. We examined the question of single-sex versus coeducational schooling, using data from the Program for International Student Assessment (PISA). Each student was assigned a country in PISA that contains a sufficient number of single-sex schools for investigation. Previous studies have examined the effects of these two types of schools on test scores; however, our focus is on student/teacher behavior within schools. Our main hypothesis is that there is less negative student/teacher behavior in single-sex schools. The poster session will display the results for each country employing descriptive and multivariate results.

Faculty Mentor: Dr. Cornelius Riordan, Department of Sociology

Mining the Genomic Palimpsest – NextGen RAD DNA Sequencing and the Evolution of Cichlid Fishes in Challenging Environments

[Project 58]

Matthew DeBlois, Biology, Class of 2013

Kelsey Garlick, Biology, Class of 2013

The tilapias of the Salton Sea, which were introduced to the lake in the 1960s, serve as both a vital food resource for the Brown Pelican of California and an interesting subject for genetic study. Next Generation RAD Sequencing is a method of reduced-representation genome sequencing for single-nucleotide polymorphism discovery that lacks many of the limitations in traditional microsatellite sequencing. It produces thousands of loci that can be used to examine the genetic diversity as well as the demographics of the tilapia. By using RAD Sequencing, we hope to affirm findings from a previous genetic analysis experiment, as well as further explore their genetic variation to answer new questions about their demographic history.

Faculty Mentor: Dr. Jeffrey Markert, Department of Biology

The Honorable Order of Flappers: A Historical Discussion on Defining the Flapper

[Project 65]

Carolyn DeDeo, History and Art History, Class of 2013

The Flapper is more than just a party girl, flirt, or fashion figure; her existence is an expression of a complicated desire for independence in the modern world. Disentangling The Flapper from the myth that surrounds her, this discussion places The Flapper in a serious historical context as an important feminist figure, especially through the life and writing of the most famous flapper, Zelda Fitzgerald.

Faculty Mentor: Dr. Jeffrey Johnson, Department of History

Yellow, Red and Blue: A Symbolic and Linguistic Analysis of Gendered Colors in XIX Dynasty Egyptian Mortuary Art [Project 66]

Carolyn DeDeo, History and Art History, Class of 2013

The complex relationship between gender and personhood is examined through three irregularities in Egyptian XIX Dynasty mortuary art: a yellow monochrome image of the sky goddess, a red image of Queen Nefertari found in her tomb, and a small blue shabti sculpture. This examination is conducted through the lens of gender and linguistics and suggests, ultimately, that in at least one strain of Egyptian understanding in the XIX Dynasty, personhood may have been androgynous.

Faculty Mentor: Dr. Deborah Johnson, Department of Art and Art History

Supporting School Libraries in Ghana [Project 10]

Elizabeth DeGaray, Physics/Secondary Education, Class of 2015

This project is used to educate those participating in the Ghana Sustainable Aid Project and Rotary Literacy Program. A form has been created to track scores and tests for the organizations participating in GSAP. Once schools have been approved based on their testing performance, they are able to receive books to create new libraries. The organizations receive anywhere from 400 to 800 books. To help support the school libraries in Ghana, instructional presentations are sent alongside the books so that the libraries will be run efficiently. This will allow for the maximization of educational opportunity for the participants of this project.

Faculty Mentor: Dr. Stephen Mecca, Department of Engineering/Physics/Systems

The Alternative Appeal [Project 27]

Courtney DeRoo, Health Policy and Management, Class of 2013

For decades Americans expressed dissatisfaction with conventional cancer treatments. I examine the appeal of biological alternatives to surgery, chemotherapy, and radiation therapy for patients with cancer. The limited effectiveness and side effects of many conventional cancer therapies led many patients to pursue a variety of unconventional therapies. To improve the quality of care for cancer patients, "mainstream" providers must better understand, and even collaborate with, alternative practitioners.

Faculty Mentor: Dr. Robert Hackey, Health Policy and Management Program

Peace-Parted Souls: An Original Play by Jeff Desisto [Project 37]

Jeffrey DeSisto, Theatre and English, Class of 2013

My goal was to write an original full-length play and showcase a draft in a staged reading presented to the Providence College community. The play follows the reunion of four friends taking the all-night train back home, as they each carry the personal weight of their recently deceased friend to her funeral.

Faculty Mentor: Professor John Garrity, Department of Theatre, Dance, and Film

Prime Labelings of Hypercube Graphs

[Project 85]

Lisa Dion, Computer Science and Mathematics, Class of 2013

A graph consists of a set of vertices and a set of pairs of vertices called edges. A prime labeling of a graph with p vertices is an assignment of values 1 through p to the vertices such that any two adjacent vertices are relatively prime. A hypercube Q_n has a vertex for each distinct binary sequence of length n and an edge between vertices whose sequences differ by exactly one bit. This project explores the possibility of finding prime labelings for hypercube graphs.

Faculty Mentor: Dr. Cayla McBee, Department of Mathematics and Computer Science

Crossing Borders Service Immersion Trip 2013 – Tijuana Mexico

[Project 40]

Jessica Di Pietro, Marketing, Class of 2014

Sean MacCarthy, Marketing, Class of 2014

Crossing Borders 2013 works with partner organization Esperanza International in Tijuana, Mexico to cultivate global citizenship through international service experiences. Fourteen PC students and one faculty-adviser traveled to Tijuana, Mexico over Spring Break to be immersed while doing service. Esperanza International provides cross-cultural service experiences that engage volunteers in work alongside marginalized families, providing the tools necessary to build sustainable housing and improve one's quality of life. Fundación Esperanza de México uses a holistic approach to development, including the components of health, housing and education.

Faculty Mentors: Fr. John Vidmar, O.P., Department of History and Heather Whitney, Feinstein Institute

The Rise of Religious Parties in Turkey and India

[Project 39]

Hannah Donovan, Political Science, Class of 2015

This project examines the rise of religious parties in secular democracies. In Turkey and India, religious parties have enjoyed electoral successes (and failures). While such parties appeal to and mobilize religious identity, their electoral fortunes are greatly affected by economic issues. The impact of coalition governments, change in political rhetoric, and relationship between government and religion in both countries are also analyzed and contrasted.

Faculty Mentor: Dr. Susan McCarthy, Department of Political Science

GSAP Microflush

[Project 11]

James Dowling, Health Policy and Management, Class of 2013

I have been working with Dr. Mecca to create a database of potential partner organizations for rural development aimed at global deployment of the GSAP Microflush Toilet. The database will inform decisions on which organizations offer the best potential for sanitation credits and community development in the deployment of an open source locally produced version of this innovative technology.

Faculty Mentor: Dr. Stephen Mecca, Department of Engineering/Physics/Systems

Constraints on the mobility of the avian coracosternal joint

[Project 83]

Regan Downey, Biology, Class of 2015

The flexible wishbone or furcula of birds is part of a complex mechanical system needed to withstand high forces during flight. The ends of the furcula are firmly attached to the coracoid bones, which means that wishbone spreading is caused by coracoid movement. In this study we test which soft tissues limit the coracoid movement by applying a force to the shoulder after removing various soft tissue components of pigeon carcasses. Surprisingly, neither the furcula nor membrane complex surrounding the joint appears to limit coracosternal movement. Instead, smaller ligaments located at the base of the coracoid primarily restrict movement.

Faculty Mentor: Dr. David Baier, Department of Biology

“Go, Going, Gone”: Anti-Chinese Sentiment in the Washington Territory, 1885-1886 **[Project 68]**

Naomi Eide, History, Class of 2013

This thesis is a sophisticated and original work that traces Anti-Chinese sentiment in Washington State during a very specific time (and centering, in particular, on racial violence in 1885 and 1886 around Puget Sound). The central argument, ultimately, is that racism and anti-Chinese attitudes and violence (and the negative public relations consequences) slowed Washington’s quest for statehood.

Faculty Mentor: Dr. Jeffrey Johnson, Department of History

Christian Conversion: The Spiritual Transformation of Eastern Pagan Structures in Late Antiquity **[Project 55]**

Alexandra Fallone, Art History, Class of 2013

This paper explores the rarity and significance of the Early Christian conversion of particular pagan religious and secular structures into churches. In the Eastern Roman Empire of the 3rd through the 7th centuries, specific pagan structures were chosen by the Christian communities of individual cities to be preserved and sanctified as places of worship for a variety of reasons.

Faculty Mentor: Dr. Deborah Johnson, Department of Art and Art History

Shoulder girdle movement during alligator strides (alligator mississippiensis)

[Project 77]

Brigid Garrity, Biology, Class of 2015

Christopher Pellichero, Biology, Class of 2013

Alligators have played a significant role in evolutionary studies of archosaurs. Given that several major shifts in forelimb function (including two origins of flight) occur within this group, the relatively basal position of crocodylians is of particular importance in evolutionary studies of archosaur locomotion. In this study, x-ray reconstruction of moving morphology

(XROMM) is used to measure movement of the shoulder girdle bones of walking alligators by combining X-ray videos with CT scans. Initial analysis suggests that both sternal and coracosternal rotations contribute to scapulocoracoid movement.

Faculty Mentor: Dr. David Baier, Department of Biology

Dark Parallels: Labor Strike Tragedies in Patagonia and Colorado, 1914-1922 [Project 42]

Ethan Gentes, History and Spanish, Class of 2013

This project seeks to uncover political and economic similarities between the US and Argentina, focusing on the evolution of democracy and the domestic political forces that coalesced in each country in response to labor movement tragedies. My historical research at archives in Argentina and Washington, D.C. revealed the degree to which the complacency and political influence of “management” (the Rockefeller family in the case of the 1914 Massacre at Ludlow, CO, and the conservative landowning class in the case of the 1920-22 Tragic Patagonia strike in Santa Cruz Province, Argentina) allowed labor abuses to occur in both countries. However, Argentine and US capitalists in the early twentieth century faced fundamentally different demands for social and political accountability - whereas John D. Rockefeller Jr. testified before Congress and invented the science of “public relations” to defend himself in the wake of the Ludlow Massacre, no investigation and few, if any, consequences for responsible parties followed the crushing of the Tragic Patagonia strike in Argentina.

Faculty Mentor: Fr. David Orique, O.P., Department of History

Chiral alkynamides as substrates for intramolecular [4+2] cycloadditions [Project 41]

Stacy Thomas, Biochemistry and Biology, Class of 2014

Jennifer Giulietti, Biochemistry and Biology, Class of 2015

The use of chiral auxiliaries for the preparation of non-racemic substrates is a well-developed branch of organic synthesis. Methods for the attachment of chiral auxiliaries to organic substrates, their subsequent use as stereocontrol elements in chemical reactions, and their ultimate removal are both diverse and sophisticated. The Evans' oxazolidinone-based auxiliaries, developed more than thirty years ago, are the standard bearer in stereoselective synthesis and they have recently been used for intermolecular [4+2] cycloaddition reactions involving dienes and terminal alkynamides. We report herein our progress towards extending this methodology to two other types of reactions: intramolecular [4+2] cycloadditions and [2,3]-Wittig rearrangements.

Faculty Mentor: Dr. Seann Mulcahy, Department of Chemistry and Biochemistry

Feinstein Institute ASB Trip to the Dominican Republic [Project 59]

Megan Grammatico, Biology/Neuroscience, Class of 2015

Mackenzie Miller, Biology, Class of 2015

During Spring Break 2013, 11 PC students and Dr. Todd Olszewski traveled to Monte Cristi, Dominican Republic to work with an organization called Outreach 360. Outreach 360 is a nonprofit organization dedicated to providing sustainable educational opportunities to children in rural areas of the DR. Their mission is to enable students to live a life of choice, and to put a “kink” in the poverty cycle that plagues rural communities. PC volunteers taught English, community health, and nutrition classes at a “learning camp” for the week. They were also educated about the customs, traditions, and culture of the Dominican Republic.

Faculty Mentor: Dr. Todd Olszewski, Health Policy and Management Program

Social Workers: Unfaithful Angels or Disciples of Locke, Rousseau, and Owen? [Project 48]

Abigail Hevert, Social Work, Class of 2015

As the mother of social work, Jane Addams fulfilled the calls of some of the first social and political activists, John Locke, Robert Owen, and Jean Jacques Rousseau, to politically advocate for the masses. As the profession developed, though, it became more clinical. Therefore, there is speculation about the profession's intent to stay true to its roots of political activism as clinical practices, especially in the form of therapy, became more popular in the field.

Faculty Mentor: Dr. Paola Cesarini, Department of Political Science

What Motivates Us? [Project 82]

Jessica Ho, Studio Art, Photography and Digital Imaging, Class of 2014

Self-discovery is a process through which we achieve understanding of ourselves, or awaken. Honesty leads to clarity, and it requires courage. Once we are aware of our feelings and are in touch with the environment, then our opportunity to change and to contribute to our community increases. We do not judge. We discover, we inquire, and we try to understand and accept the differences. We should not look at this world as black and white, but with compassion and with empathy. My project will be an unpretentious effort to capture architectural designs that are familiar to us, to remove the superimposed images that are associated with them, and to bring a different perspective to light.

Faculty Mentor: Professor Eric Sung, Department of Art and Art History

Shewanella oneidensis Hfq promotes exponential phase growth, stationary phase culture density, and cell survival [Project 23]

Taylor Hunt, Biology, Class of 2015

Meghan Keane, Biology, Class of 2014

Nick Mazzucca, Biology, Class of 2015

Shewanella oneidensis is a bacterium that can utilize a wide variety of heavy metals in the place of oxygen when grown under anaerobic conditions. The RNA chaperone Hfq plays a key role in the function of regulatory non-coding small RNAs (sRNAs). To characterize sRNA function, we have deleted the *hfq* gene in *Shewanella*. Hfq loss results in defects in growth, metal reduction, and oxidative stress response, suggesting roles for sRNAs in many important cellular processes.

Faculty Mentor: Dr. Brett Pellock, Department of Biology

Disinfection of Blackwater [Project 13]

Justin Iadarola, Pre-Engineering, Class of 2015

Thomas Koulopoulos, Physics, Class of 2015

The aim of our research is to study the efficacy of the disinfection of blackwater through the use of urine. The idea of blackwater disinfection from the use of urine stems from the chemical breakdown of urea releasing ammonia, which causes a rise in the pH to a level above the bacteria's ideal living condition. By running tests on *E. coli* under different

conditions, such as varying concentrations of urine and multiple temperatures, we will determine the logical kill rate over time of E. coli due to the urine. We will then find the rate of disinfection of blackwater using urine.

Faculty Mentor: Dr. Stephen Mecca, Department of Engineering/Physics/Systems

Listen Carefully: A Study of Ageist Stereotypes and Undergraduates' Desire to Work with Elders [Project 71]

Genevieve Ilg, Health Policy and Management, Class of 2014

The study identifies and assesses how prior experience with elders and ageist stereotypes informs the degree to which undergraduates are inclined (or disinclined) to consider geriatrics as a potential career. Current literature indicates a lack of interest among social workers and other allied-health professionals in working with this demographic. The data gathered suggest that exposure to actual work with elders and debunking false, negative stereotypes about the elderly are key in attracting professionals to work in geriatrics.

Faculty Mentors: Dr. Todd Olszewski, Health Policy and Management Program and Dr. Michael Hayes, Department of Social Work

Louis Sullivan: Influence and Innovation [Project 73]

Elisabeth Jeffcote, Art History, Class of 2013

Louis Sullivan disrupted continuity and tradition, striving to create and define a unique American architectural style. His contribution to the World's Columbian Exposition, the Transportation Building does just that. I examine how classicism influenced Sullivan. This is done through formal analysis, citing specific buildings that Sullivan was aware of and commented on. This results in a study that respects Sullivan's innovative genius, while acknowledging the place occupied by the architectural past in his life and work.

Faculty Mentor: Dr. Deborah Johnson, Department of Art and Art History

PC Entrepreneurship Society [Project 67]

Joshua Kasper, Accountancy and Finance, Class of 2015

Alexander Acunzo, Management, Class of 2015

Julia DePalma, Marketing, Class of 2015

The Providence College Entrepreneurship Society has created a community comprised of entrepreneurial-minded students, faculty, and alumni who share the Dominican ideals and strive to solve the problems of today and tomorrow through innovative ventures. Our largest project thus far has been the establishment of the first Providence College virtual incubator. This web-based accelerator enables students to be paired with coaches and mentors to help them advance their innovative ideas.

Faculty Mentor: Dr. Sylvia Maxfield, School of Business

A Sense of Hospitality: The North Platte Canteen

[Project 23]

Emily Keenan, Finance and Management, Class of 2015

This project is an interview-based documentary featuring members of the North Platte Canteen. From 1941 to 1946, the Canteen operated to provide food and friendship to six million military personnel traveling on their way to war. The women provided coffee, baked goods, fried-chicken, fruit, and birthday cakes, in addition to magazines, books, cigarettes, and friendly conversations. Even during rationing, the women sacrificed and offered a sense of hospitality as the men headed to war.

Faculty Mentor: Dr. Paola Cesarini, Department of Political Science

Synthesis of Isomeric Carbolines by Metal-Catalyzed [2+2+2] Cyclizations

[Project 7]

Satyam Khanal, Biochemistry, Class of 2016

Jonathan Varelas, Chemistry, Class of 2015

Michael O'Donnell, Biology, Class of 2015

Carbolines are a specific class of heterocyclic amines that contain two nitrogen atoms within a fused, three-ring system. These molecules have been shown to have exquisite biological properties, but their preparation poses a significant challenge to the field. We will describe a synthetic strategy that involves a metal-mediated [2+2+2] cyclization reaction to form the pyridine ring of these molecules. Depending on the substitution pattern of the starting substrates, each of the various carboline isomers may be obtained. Our preliminary results toward the synthesis of b-carbolines via an intramolecular reaction will be described.

Faculty Mentor: Seann Mulcahy, Department of Chemistry and Biochemistry

The Role of Cul3 as a Tumor Suppressor in Breast Cancer

[Project 76]

Michael Kondik, Biology, Class of 2014

Jenna Perry, Biology, Class of 2013

Control of mitotic factors is crucial for the proper regulation of cell division through ubiquitin-mediated protein degradation. Cul3 aids in the ubiquitination of CyclinE by targeting it for destruction. CyclinE regulates the G1/S transition of the cell cycle; when overexpressed, cells are unable to proceed through mitosis normally. Interestingly, cells derived from many breast cancers over-express CyclinE. Using the correlation between reduced Cul3 levels and overexpressed CyclinE, we hypothesized that mouse mammary tissues with a conditional knock-out of Cul3 should have increased CyclinE levels that may be responsible for the increased tissue growth observed.

Faculty Mentor: Dr. Cristina Cummings, Department of Biology

Best Practices Regarding Homelessness and Mental Illness

[Project 34]

Brittany Kowaleski, Social Work, Class of 2013

Preliminary research indicates that homelessness is a growing problem in the United States, especially in Rhode Island. It is very common for those who are homeless to also be affected by a mental illness. This qualitative research collected

stories from homeless individuals in Rhode Island regarding their perceptions of services that work best to overcome homelessness and other related problems. This is a local and national problem, and understanding the stories from those who “live” the experience of homelessness is valuable for practice and policy considerations.

Faculty Mentor: Dr. Katherine Kranz, Department of Social Work

Growth Functions of Finitely Generated Algebras [Project 54]

Daniel Kubala, Mathematics, Class of 2014

Last summer I studied the growth of finitely presented two-generator monomial algebras. In particular, I sought to improve a pre-existing upper bound on a defined growth function. My search lead to a connection to De Bruijn graphs and a dramatically improved upper bound.

Faculty Mentor: Dr. Liam Donohoe, Department of Mathematics and Computer Science

The Potential of Slow Sand Filters for the Disinfection of Blackwater [Project 12]

Emily Labattaglia, Pre-Engineering, Class of 2015

Slow Sand Filtration is an early method used to eliminate pathogens from contaminated fluids. Its use has been considered in adjunct with the Microflush toilet to improve the quality of black water exiting the digester bed. This experiment involved constructing a physical model of a slow sand filter. A main objective in fabricating the system was to use low-cost materials that are available in under-developed countries. *Escherichia coli*, commonly known as *E. coli*, served as a preliminary bacterium to test the biological efficacy of this method. The project also consisted of modeling and designing the prototype using CAD software.

Faculty Mentor: Dr. Stephen Mecca, Department of Engineering/Physics/Systems

Fostering Meaningful Literacy Learning: Writers from Our Community, a Culturally Relevant Literature Project [Project 4]

Taylor Leen, Global Studies and Spanish, Class of 2013

The project stems from a partnership between Providence College students and high school students from the MET. It entails a book circle entitled “Writers from Our Community,” in which we explore the novel *The Brief Wondrous Life of Oscar Wao* by Junot Díaz. This project focuses on service learning as a means to promote English language literacy and cross-cultural understanding. It highlights the impact of community engagement and emphasizes the role of culturally relevant and linguistically accessible works in order to foster meaningful literacy learning.

Faculty Mentor: Dr. Nuria Alonso García, Department of Foreign Language Studies

A Plagued Mind: Maximilien Robespierre's Union of Principle and Violence

[Project 64]

Kevin Lynch, History and Theatre, Class of 2013

This project explores Robespierre's justification for the Reign of Terror during the French Revolution. At the start of his revolutionary career, Robespierre stood against the death penalty, autocratic governments, and trials without due process. As the Revolution progressed, however, Robespierre increasingly came to favor the use of all three of these aspects. The project offers an explanation of why the highly-principled Robespierre would come to favor them. It also offers an explanation as to how he justified their use with his political and moral principles.

Faculty Mentor: Dr. Matthew Dowling, Department of History

Re-Member the Rez: An Alternative Spring Break Trip

[Project 44]

Susan Malone, Psychology, Class of 2013

In its inaugural year, Re-Member the Rez aimed to increase awareness in the Providence College community of the current situation on Pine Ridge Indian Reservation, South Dakota. Ten students and one faculty member travelled to Pine Ridge and worked with the non-profit Re-Member, building bunk beds, skirting trailers, and building an outhouse while learning about Lakota history and culture.

Faculty Mentors: Dr. Eric Hartman, Global Studies Program and Heather Whitney, Feinstein Institute

An Exploration of Art Song and Aria: Historical Influence and Performance Practice **[Project 1]**

Eliza Mandzik, Music and Political Science, Class of 2013

Classical voice performance is a field that is truly interdisciplinary in its scope. To credibly and meaningfully perform a work, the performer must demonstrate not only a poignant emotional connection to the music and text, but also a sense for historical context, performance practice, voice pedagogy, foreign languages, and music theory, among other considerations. This project explores the musical and extra-musical elements of the performance process, examining works by composers including Bellini, Debussy, and Purcell.

Faculty Mentors: Dr. Catherine Gordon-Seifert and Dr. T.J. Harper, Department of Music

"No one Tells Me": Families' Perceptions of the Care of their Incarcerated Youth **[Project 56]**

Kaitlyn Monast, Social Work, Class of 2013

Can temporary absence alleviate criminal activity? Can paper stop bullets? This study strives to answer these questions. Fourteen families were interviewed to ascertain their perceptions of care of their incarcerated youth, including their perspectives on the challenges youth face, the failings of the incarceration process, and the factors that continue to impact youth criminal activity.

Faculty Mentor: Dr. Michael Hayes, Department of Social Work

Non-Western Perspectives on the Development of Western Civilization

[Project 78]

Aubrey Moore, Global Studies and Political Science, Class of 2015

For my project I created a new annotated syllabus for DWC, which follows most of the same topics discussed in 3rd semester DWC, but instead uses almost all nonwestern sources for reading material. The purpose was to gain a better understanding of western civilization while providing an alternative to how people learn about the society they live in, to better understand other societies, and help to put historical events into a broader context.

Faculty Mentor: Dr. Paola Cesarini, Department of Political Science

The Effect of Journaling and Personality Type on Classroom Discussion

[Project 80]

Justine Morris, Master of Education, Class of 2013

This study examines the effect of journaling and student personality type on engagement in classroom discussion. Items considered during the study were: the effect personality type has on journal length, willingness to participate, understanding of material, the number of times a student volunteers in class, and how the use of journals aids students in participation and understanding. The findings of this study will not only allow educators to improve pedagogy, but also to accommodate the needs of all students by allowing them to see whether their personality type affects their learning, and how that information can benefit them.

Faculty Mentors: Dr. Andrea Bilics and Br. Patrick Carey, PACT Program

Socialist Utopian Communities in the U. S. and Reasons for their Failures

[Project 38]

Elizabeth Nako, History, Class of 2015

The focus of my research is on why socialist utopian community experiments could not last in capitalist America. Even though people lived in these isolated communities, they still relied too much on the "outside world". Leadership/followership problems and financial difficulties ultimately led to the demise of these utopian communities. I researched two utopian communities in New England, the Northampton Association and Brook Farm, which were both part of the transcendental movement and the "Fourierism" ideology.

Faculty Mentor: Dr. Paola Cesarini, Department of Political Science

Diffusion of Mobile Payment Systems among Microentrepreneurs in Kenya and Tanzania **[Project 49]**

Dionne Nickerson, Master of Business Administration, Class of 2013

The rapid rise of Kenya's mobile payment system, M-PESA, has grasped the attention of policy makers and private enterprise alike. In just six years M-PESA has transformed how money flows throughout Kenya, and similar systems are gaining traction elsewhere in Africa. This project examines the impact of mobile payment system adoption on the economic advancement of Kenyan and Tanzanian microentrepreneurs. This work will further the understanding of mobile payment systems' contribution to the economic growth of microenterprises, which may have implications for poverty reduction in these two nations.

Faculty Mentors: Dr. Daniel Horne and Dr. Mark DeFanti, Department of Marketing

Returns to Schooling: A Quantile Regression

[Project 63]

Arman Oganisian, Quantitative Economics, Class of 2013

This paper contributes to the body of economic literature that attempts to estimate the returns to schooling by using quantile regression to estimate the effect of an additional year of schooling on monthly wage for earners in different income quantiles. Using data from the National Longitudinal Survey, the paper attempts to control for ability, family background, geography, and race, and finds that the returns to schooling is approximately 3.49% for men. Furthermore, the paper finds that while the effect of education on earnings is not significantly different from quantile to quantile, the significance of education increases with earnings.

Faculty Mentor: Dr. Leo Kahane, Department of Economics

“Respect.Empower.Include.Repeat.” How the Obama Campaign Created the Next Generation of American Activists

[Project 84]

Laura O’Neill, Political Science and Public and Community Service, Class of 2013

Today, far fewer Americans report that they engage in traditional forms of political participation than in the past. It is therefore critical that traditional forms of political engagement are remodeled in order to appeal to the interests of future generations. President Obama’s 2012 grassroots organizing campaign, Organizing for America, was far more successful at incorporating Americans into the electoral process than any other campaign in history. However, it is clear from interviews with volunteers and field staff that grassroots political campaign work is far more likely to inspire people to be political activists rather than formal public officials.

Faculty Mentors: Dr. Joseph Cammarano, Department of Public and Community Service and Dr. Richard Battistoni, Feinstein Institute for Public Service

A Study of Titanium Electrodes in Lithium Ion Batteries Using EQCM

[Project 6]

Ashwin Paudel, Applied Physics, Class of 2013

This experiment explores the electrochemistry of Li ion batteries by measuring mass changes on titanium electrode surfaces during battery cycles between 2.8V and 0.5V using a technique called EQCM (Electrochemical Quartz Crystal Microbalance). During the preliminary stages of the experiment, the design, fabrication and preliminary testing of the EQCM system was done, and the Sauerbrey Equation, which relates frequency to mass, was verified as a valid method for measuring the adsorbed mass in a liquid environment. In current work, a Ti electrode deposited on a QCM crystal serves as the anode, and a lithium disk serves as the cathode in a cell filled with lithium electrolyte. Based on our experiments to date, the amount of mass deposited on a ½” Ti disk during the intercalation phase of the first cycle ranges from 19.6 μg to 35.6 μg . The first cycle is the most important because during it, the Solid Electrolyte Interphase (SEI) layer, a permanent insulating layer, forms. The SEI layer plays a vital role in the longevity of the battery. In subsequent cycles, a comparatively very small amount (0.88 μg to 1.41 μg) of Li is deposited onto the Ti, and most of it is removed during the deintercalation phase of the cycle.

Faculty Mentor: Dr. Theresa Moreau, Department of Engineering/Physics/Systems

Kevin Peloquin, History/Secondary Education

Historians of 1960's America concur that most of the collective actions of "the counterculture" failed to bring about practical social change because they lacked focus, direction and sustained effort. Even the underground press movement, which at its peak included more than 400 periodicals, fizzled fast under a barrage of arrests and criminal indictments for obscenity. However, one Boston-based periodical, *Avatar*, an underground magazine produced by a commune in inner-city Boston, sustained multiple arrests and battled obscenity charges all the way to the Massachusetts Supreme Court. Surprisingly, until now, the story of *Avatar's* legal marathon -- and eventual victory -- has gone largely untold.

Faculty Mentor: Dr. Dara Mulderry, Department of History

The Heretical Beatrice: Feminine Voice, History, and Heresy within Mary Shelley's *Valperga*
[Project 52]

Jordan Plavnicky, English, Class of 2013

Valperga, Mary Shelley's second novel, is at once both historical and expansively fictional. This paper looks at Shelley's editing of the historical source material she consulted while writing the novel in order to make room for the presence of women within written history. It argues that, through the creation of two fictional female characters, Euthanasia and Beatrice, the second of whom is a heretic, Shelley offers two feminine alternatives to male despotic power and expresses the extent to which heresy affords clarity to the female voice.

Faculty Mentor: Dr. Bruce Graver, Department of English

Programmable control of a test Microflush digester to effect tropical temperature conditions
[Project 14]

Brett Provance, Pre-Engineering, Class of 2014

As a member of what has become known as Dr. Mecca's "Toilet Group," my research consists of programming various controls in a Microflush test digester. These controls are comprised of, but are not limited to, reading and adjusting temperature and humidity conditions within the test bed. These efforts are made to sustain a tropical environment within the digester, as this is where the device is meant to be deployed.

Faculty Mentor: Dr. Stephen Mecca, Department of Engineering/Physics/Systems

Transformations and Disappearances: The Presence of the Artist in the Work of Francesca Woodman
[Project 33]

Michael Rose, Art History, Class of 2013

This paper explores selected works produced by photographer Francesca Woodman (1958-1981) through the lens of second-wave feminism in order to change common impressions viewers have of the images Woodman created of herself. Woodman committed suicide at the age of 22 in 1981, and, consequently, many of her self-depictions are viewed as

testaments to her troubled psychological state. This paper seeks to adjust that view and prove that Woodman's choices were based on standing traditions in feminist imagery and not on her own psychological problems.

Faculty Mentor: Dr. Deborah Johnson, Department of Art and Art History

Female Students' Risk for Sexual Victimization in the College Environment [Project 81]

Nicole Sadoski, Social Work, Class of 2013

This study explored female students' perceptions of sexual victimization in the college environment. By integrating methods used by researchers in the past, the researcher attempted to conduct a comprehensive study about sexual victimization at a mid-size, Northeastern, Catholic, liberal arts college. Participants' recommendations for ways in which colleges can educate students and provide better resources for survivors were a significant result of the study, along with findings concerning the role of alcohol in sexual victimization.

Faculty Mentor: Dr. Katherine Kranz, Department of Social Work

Portfolios in Creative Writing in Poetry [Project 2]

Kevin Salvaggio, Creative Writing, Class of 2014

My collection explores the seductive and harrowing quality of blood. Two of my pieces vividly explore the concept of the biological liquid within us. Also, my poems tackle issues such as divorce and war in a concise and clear manner. I like to intensify my work with rich language and get lost in my own imagination and see what can happen.

Faculty Mentor: Professor Jane Lunin Perel, Department of English

Teaching The Civil Rights Movement in an Urban Third Grade Classroom [Project 75]

Lauren Salvucci, Elementary and Special Education, Class of 2013

I student taught in a third grade general education classroom in Ella Risk Elementary School in Central Falls, Rhode Island, a socioeconomically depressed urban community. Currently, there is no social studies curriculum, but the students yearn for it. Therefore, I taught a unit on the Civil Rights Movement. Students participated in stimulating activities that encouraged them to reflect on racial segregation from the point of view of individuals from the Civil Rights era. The results show that students are extremely compassionate towards victims of segregation. I believe that students' backgrounds contribute to their ability to feel empathy towards those who were treated unfairly.

Faculty Mentor: Dr. Jeri Gillin, Department of Elementary and Special Education

Black Robes and Bile: Jesuit Catechizing Efforts in Seventeenth Century Acadia [Project 28]

Heather Sanford, History, Class of 2013

This paper examines the relationship between French Jesuits and their Wabanaki converts in seventeenth century Acadia, the region that constitutes modern-day northern Maine, Nova Scotia, and New Brunswick. Unique in its analysis of missionary activity in this part of New France, this work draws upon missionary accounts to assess Jesuit conversion strategies, particularly their use of medicine, miracles, and healing. While baptismal registers ultimately reported modest success, European and specifically Christian healing efforts proved beneficial to Jesuit missionary and Wabanaki native alike.

Faculty Mentor: Dr. Edward E. Andrews, Department of History

Developing Direction: *The Illusion* at Providence College [Project 26]

Patrick Saunders, Theatre Arts and English, Class of 2013

I was selected to co-direct the TDF production of Tony Kushner's play, *The Illusion*. The role of the director is to engage the text, envision the production and guide the process of exploration with collaborating artists, from conception and design through rehearsal with the acting company, in order to ensure that the efforts of the creative team result in an innovative and unified story before a live audience.

Faculty Mentor: Professor John Garrity, Department of Theatre, Dance, and Film

William Blake and the "Female Will": A Discussion of Enitharmon, Thel, and Oothoon as Perpetuators and Victims of Systematic Female Repression [Project 72]

Celeste Scollan, English, Class of 2013

My presentation looks at three female characters in William Blake's works—Thel, Oothoon, and Enitharmon—in relation to what many critics have cited as the "female will." I discuss these women as being victim to, and products of, the female will as it leads to the perversion of human sexuality, particularly as it encourages the worship of the natural world, in the maternal principle, and of virginal refusal, which, for Blake, breeds chaos.

Faculty Mentor: Dr. Bruce Graver, Department of English

Sixty Years of Scientific Discovery: Henrietta Lack's Immortal Legacy [Project 51]

Maria Camila Serna, Psychology, Class of 2016

Amina Vargas, Biology, Class of 2016

In 1951 Henrietta Lacks was diagnosed with carcinoma of the cervix. At that time, researchers were debating what qualified as cervical cancer. Samples of living cancer cells were not available to test the theories about the disease. It was not until a sample was taken from Ms. Lacks that the first immortal human cell strand was discovered. The cells have helped to develop drugs for the treatment of leukemia, influenza, hemophilia, tuberculosis, and polio. Although great achievements have been made possible because of Henrietta Lacks, she never willingly provided a cell sample for scientific research. This absence of consent raises important ethical questions.

Faculty Mentors: Dr. Jeffrey Markert and Dr. Charles Toth, Department of Biology

The Effects of Flipping the Classroom [Project 70]

Margaret Shaia, Masters of Education, Class of 2013

In a typical math classroom, the teacher presents new material each day and sends students home with an assignment. Students complain that they understand the material in class, but not at home. This means that most of the next class is spent going over homework, reviewing the previous lesson, and attempting to move on to the next topic. In a flipped classroom students study a video tutorial to learn basic mathematical concepts at home and apply them in the classroom. Flipped classrooms provide students with hands-on learning that encourages them to take an active role in their math education.

Faculty Mentors: Dr. Andrea Bilics and Br. Patrick Carey, PACT

Facility and Appendix Components for the Microflush Toilet [Project 8]

Andrew Shoemaker, Pre-Engineering, Class of 2014

Kaitlin Hill, Pre-Engineering, Class of 2015

The Microflush-Biofil toilet has proven to be an effective sustainable off-grid solution in developing communities. Yet, facility and appendix components result in a prototype price of \$1200, which is too high for such communities. This study focuses on identifying and prototyping alternative facility enclosure options and appendix components required for the full operation. The project will focus on physically soft enclosure designs, including the use of weighted waterproof curtains, shrinkable poly sheeting and a recycled PVC billboard fabric. Furthermore, a PVC pipe aerator will be designed to accommodate a simple sink and day tank fashioned from recycled materials.

Faculty Mentor: Dr. Stephen Mecca, Department of Engineering/Physics/Systems

Restore Providence [Project 79]

John Smith, Social Science, Class of 2013

Restore Providence is a documentary film about the vision and efforts to restore an historical working class neighborhood close to down town Providence, RI. The project is a student/faculty effort between Fr. Ken Gumbert and John Smith with John Smith shooting most of the footage and doing all the editing, including interviews with city and state politicians, architects and city planners as well as Smith Hill CDC personnel and the clients who live in these newly renovated homes. This film intends to educate the general public about the work of the Smith Hill CDC and advocate that communities continue to invest in affordable housing by utilizing existing stock and preserving historical buildings, neighborhoods and landscapes.

Faculty Mentor: Fr. Kenneth Gumbert, O.P., Department of Theatre, Dance, and Film

Should a Program of Sex Education Be Mandatory in Public Schools from 4th-12th Grade? [Project 43]

Tara St. Onge, History and American Studies, Class of 2013

Sexual education is the process of acquiring information to form attitudes and beliefs about sex, sexual identity, relationships and intimacy. The question of whether or not a program of sexual education should be mandatory for

students in public schools is a topic of heated debate. Sexual education has been implemented as part of curricula in public school systems in response to concerns about the high rates of teen pregnancy, as well as increasing rates of sexually transmitted infections. For this reason a program of sexual education should be required for students in public schools in the fourth grade and continuing through grade twelve.

Faculty Mentor: Dr. Josephine Ruggiero, Department of Sociology

The Role of Islamist Political Parties in Tunisia and Egypt in the Wake of the Arab Spring [Project 46]

Sean Sweeny, Political Science and Spanish, Class of 2013

The Arab Spring, with a call for a more democratic system of governance, was a phenomenon that will continue to shape the political and social spheres of the Arab world for generations to come. This paper focuses on answering the question of to what extent Islamist political parties, having recently won majorities within the preliminary governments in the two countries, will adapt into their policies an ever-changing Islamic religion within the formation of their fledgling governments and constitutions.

Faculty Mentors: Dr. Susan McCarthy and Dr. Jeffrey Pugh, Department of Political Science

Investigation of Potential Barriers to College Student Use of Counseling Services [Project 53]

Thomas Thrift, Psychology, Class of 2013

This study explored college students' attitudes toward participating in mental health counseling. Participants (n = 97) were asked to read a clinical vignette about a hypothetical college student experiencing symptoms of dysthymia (chronic depression) and complete a questionnaire about the student's potential involvement in counseling. Findings suggest the college student participants were more likely to advise the distressed student to seek counseling than to avoid needed services and that participation in counseling was viewed favorably against several known barriers to counseling involvement (e.g., stigma, worries, attitude toward counseling).

Faculty Mentor: Dr. Kevin O'Connor, Secondary Education Program

***Raw Island* [Project 18]**

Caitlyn Treem, Public and Community Service, Class of 2013

Raw Island is a documentary focusing on Providence, Poverty and its relationship to Violence. Its purpose is to use storytelling as a means to facilitate change in attitude and prejudice against the community that surrounds us. The documentary's subjects include current and former gang members, streetworkers from the Institute for the Study and Practice of Nonviolence, community leaders, students and faculty of Providence College and the Providence Police Department. The goal of *Raw Island* is to open the eyes of Providence College students to the reality of growing up in urban, impoverished areas and the effect it has on the lives and choices of individuals.

Faculty Mentors: Dr. Joseph Cammarano Department of Public and Community Service and Dr. Richard Battistoni, Feinstein Institute of Public Service

Anarchy In the U.K.: Punk Rock Counterculture in 1970s Great Britain

[Project 61]

Michael Velazquez, History and Spanish, Class of 2013

Many believe that the goal of the punk movement was to support nonconformity or anarchy. While nonconformity was preached, conformity was practiced. Punk is misinterpreted as nonconformity or anarchy because it did not adhere to traditional society, but it was actually conformity that adhered to unique standards. The true goal of the movement was to become a frightening counterpoint to traditional society based on values that were polar opposites to the values held throughout mainstream British society. However, the conformity that was necessary for the movement's rise also inevitably led to its fall.

Faculty Mentor: Dr. Matthew Dowling, Department of History

Perversion of Pink: A Poetry Portfolio in its Progression

[Project 3]

Diana Vlavianos, English, Class of 2015

Poetry is a means of allowing the soul to speak. My portfolio, *Perversion of Pink*, was written during my Creative Writing Poetry workshop with Professor Jane Lunin Perel, and its progression and evolution allowed me to discern my identity. The spirit in my portfolio speaks from femininity, and the progress of the poems was able to shape that. This presentation allows viewers to witness the process of writing and rewriting countless drafts of poetry in order to allow the soul to speak in a beautiful and unique way.

Faculty Mentor: Professor Jane Lunin Perel, Department of English

Impacting Student Attitudes toward Mathematics through Project-Based Learning: A Multiple Intelligence Based Approach

[Project 74]

Andrea Wade, Masters of Education, Class of 2013

When I reflected on my first year of teaching math at a diverse Catholic high school in New England, the biggest hindrance to my students' progress seemed to be that they strongly disliked the subject. This action research project, completed in my second year of teaching, discusses the impact of implementing project-based learning grounded in Multiple Intelligence theory in hopes of improving student attitudes towards mathematics.

Faculty Mentors: Dr. Andrea Bilics and Br. Patrick Carey, PACT Program

Learning with HeLa

[Project 50]

Shannon Walsh, Biochemistry, Class of 2016

Craig Wilson, Biology, Class of 2016

Valeria Zarate, Biology, Class of 2016

This past fall, the Freshman Common Reading Program encouraged incoming students to read Rebecca Skloot's *The Immortal Life of Henrietta Lacks*, a book that delves into the forgotten history of HeLa cells. Biology 103 labs took the reading program even further, as the exploration of HeLa cells was integrated into the lab curriculum. During four lab

exercises, we focused on various applications of biology and biotechnology involving HeLa cells. We visualized HeLa chromosomes through DNA karyotyping, a method utilized to detect chromosome characteristics and abnormalities. We then isolated the HeLa DNA through a process called DNA extraction and used this purified DNA in a complex reaction called Polymerase Chain Reaction (PCR) to make copies of these pieces of DNA. For our third exercise we placed the copies of DNA in a gel electrophoresis to determine the various sizes. In our last lab project we used bio tools to search national DNA databases to identify the genes we sequenced.

Faculty Mentors: Dr. Jeffrey Markert and Dr. Charles Toth, Department of Biology

Tools vs. Textbooks: How Do Alternative Break Trips Compare to Class-Based Service-Experience? The Academic and Developmental Impact of Immersion Service-Learning Trips [Project 35]

Annie Wendel, Public and Community Service, Class of 2013

Over the past twenty years research has shown the increasing trend of alternative break programs available to university students. These alternative breaks are programs focused on social issues that students confront through weeklong, hands-on projects in the local community. Yet, few existing studies of these programs examine what specifically in the experience leads to the potential outcomes identified in the existing research. Therefore, this study is designed to examine what elements in a service-learning immersion program influence student learning and development before, during, and after the experience.

Faculty Mentor: Dr. Joseph Cammarano, Department of Public and Community Service

Inhibitory Control in Preschoolers' Prosocial Behavior [Project 24]

Arielle Wezdenko, Psychology, Class of 2013

The relationship between inhibitory control and prosocial behavior in preschoolers was examined in this study. Participants completed tasks of both types in varying orders to test the hypothesis that engaging inhibitory control would impair children's subsequent prosocial behavior. Results suggest the opposite: inhibitory control actually increased prosocial behavior.

Faculty Mentor: Dr. Jennifer Van Reet, Department of Psychology

Climate Effect on Plant Sex Expression [Project 25]

Natasha Zupkus, Biology, Class of 2013

In gynodioecious plant species, individuals can be hermaphrodite, producing both pollen and seeds, or female, producing just seeds. In many of these species, there is a correlation between the proportion of females in a population and its latitude. We are growing a gynodioecious wildflower, *Lobelia siphilitica*, which has a higher ratio of females in lower latitudes, in two incubators mimicking the climate from Indiana and Ontario. We measure pollen viability counts to determine whether this sex ratio pattern is the result of hermaphrodite genotypes responding differently to different climates.

Faculty Mentor: Dr. Maia Bailey, Department of Biology

Acknowledgments

Celebration of Student Scholarship and Creativity Planning Committee

Christine Baccari

Brian Bartolini

Julia Camp

Mark Caprio

Amy Goggin*

Chuck Haberle

Bryan Marinelli

Siobhan Ross

* The planning committee for this year's celebration would like to thank Amy Goggin in the Office of Academic Services for her countless contributions. Without her superior commitment and attention to every detail, this year's celebration would not be possible.

We graciously thank the following individuals for their important contributions to this year's Celebration:

Kathy Ashton

Paul Bienvenue

Michael Desmarais

Alexi Drago

Rachel Golub

Kristen Lainsbury

Christiane Marie Landry

Chris Machado

Alana Riley

Jenn Shurkus

Lauren Shimmel

John Smith (PCTV, Class of 2013)

Funding Opportunities for Student Engagement and Undergraduate Research Projects

Undergraduate Research Grant Program – 2013-2014

Grant funds are available for eligible students who wish to conduct a research project under the direction of a full-time faculty member.

Eligibility/Priority

- Sophomore, junior or senior standing
- Students from all academic disciplines are encouraged to apply
- Preference will be given to students enrolled in a credit earning research course
- Mentor must be a full-time faculty member at Providence College
- 3.00 min GPA required

Funding for Undergraduate Research

Funds are intended to cover costs related to conducting individual research. Most awards are expected to be up to \$500, although funding may be granted up to a maximum of \$1,000 if the student's project warrants greater support and funds are available. Items that may be funded (if not already supported through other sources) include:

- General, lab or media supplies, or other expendable materials related to research;
- Archival copying, photocopying printing, postage, telephone or communication expenses related to research project or presentation of findings;
- Software, data sets, books, and small equipment, if necessary to conduct research and otherwise unavailable;
- Travel to libraries, archives, museums, field or research sites, laboratories, research centers, or approved educational institutions to conduct research.

Please see <http://www.providence.edu/student-engagement/Pages/default.aspx> (scroll to the Undergraduate Research section) for the grant application, additional information, and deadlines.

Student Name	#	Presentation Title
Alex Acunzo	67	PC Entrepreneurship Society
Anish Agrawal	9	Low-cost facility and appendix ...
Collin Anderson	4	Make Trade Equal
Thomas Andrikopoulos	60	Immigration and the Rise ...
Abby Ang	21	T.S. Eliot, Early and Late
Jennifer Bell	4	Make Trade Equal
Charles Best	29	Human malignant melanoma cells...
Charles Best	30	Vimentin protects against ...
Douglas Biancur	16	Spermathecae structure...
Monica Broughton	45	The Effects of Emotion ...
Melissa Brown	31	Isolation and characterization ...
Courtney Burek	62	Shaping Human Decisions...
David Calianese	29	Human malignant melanoma cells ...
David Calianese	30	Vimentin protects against...
Garrett Cammarata	29	Human malignant melanoma cells...
Garrett Cammarata	30	Vimentin protects against ...
Kaleigh Carrol	4	Make Trade Equal
William Cavedon	31	Isolation and characterization of mycobacteriophage ZeeJ, ...
Hilary Chase	19	NMR and DFT Study...
Julia Christ	17	Memory Tokens
Richard Cimini	22	Purple Loosestrife and its Genetic Diversity
Rebecca Coan	20	Dr. Stephen Coan
Thomas Cody	47	Cormac McCarthy: A Writer to be Reckoned With
Mary Kate Condon	69	Republican Blood
Melanie Cordeiro	57	Industrial Fall River
Shelby Daley	32	The Effects of Single and Coeducational Schools on Student and Teacher...
Matthew DeBlois	58	Mining the Genomic Palimpsest...
Carolyn DeDeo	65	The Honorable Order of Flappers
Carolyn DeDeo	66	Yellow, Red and Blue
Elizabeth DeGaray	10	Supporting School Libraries in Ghana
Julia DePalma	67	PC Entrepreneurship Society
Courtney DeRoo	27	The Alternative Appeal
Jeff DeSisto	37	<i>Peace-Parted Souls</i>

Student Name	#	Presentation Title
Jessica Di Pietro	40	Crossing Border's Service Immersion
Lisa Dion	85	Prime Labelings of Hypercube Graphs
Hannah Donovan	39	The Rise of Religious Parties in Turkey and India
James Dowling	11	GSAP Microflush
Regan Downey	83	Constraints on the mobility of the avian coracosternal joint
Heloise Dubois	31	Isolation and characterization of mycobacteriophage ZeeJ, ...
Naomi Eide	68	"Go, Going, Gone": Anti-Chinese Sentiment in Washington Territory...
Alexandra Fallone	55	Christian Conversion
Michelle Fernando	31	Isolation and characterization of mycobacteriophage ZeeJ, ...
Kelsey Garlick	58	Mining the Genomic Palimpsest...
Brigid Garrity	77	Shoulder girdle movement during alligator strides
Emily Garvey	22	Purple Loosestrife and its Genetic Diversity
Ethan Gentes	42	Dark Parallels: Labor Strike Tragedies in Patagonia and Colorado, 1914-1922
Jennifer Giulietti	41	Chiral alkynamides as substrates for intramolecular [4+2] cycloadditions
Megan Grammatico	59	Feinstein Institute ASB Trip to the Dominican Republic
Jonathan Hagberg	4	Make Trade Equal
Abigail Hevert	48	Social Workers: Unfaithful Angels or Disciples of Locke, Rousseau, and ...
Katelyn Higgins	29	Human malignant melanoma cells...
Katelyn Higgins	30	Vimentin protects against ...
Kaitlin Hill	8	Facility and Appendix Components for the Microflush Toilet
Jessica Ho	82	What Motivates Us?
Taylor Hunt	23	Shewanella oneidensis Hfq promotes...
Justin Iadarola	13	Disinfection of Blackwater
Genevieve Ilg	71	Listen Carefully
Alicia Jancevski	31	Isolation and characterization of mycobacteriophage ZeeJ, ...
Elisabeth Jeffcote	73	Louis Sullivan: Influence and Innovation
Jeanine Justiniano	30	Vimentin protects against ...
Joshua Kasper	67	PC Entrepreneurship Society
Meghan Keane	23	Shewanella oneidensis Hfq promotes...
Emily Keenan	36	A Sense of Hospitality: The North Platte Canteen
Emily Kennedy	4	Make Trade Equal
Satyam Khanal	7	Synthesis of Isomeric Carbolines by Metal-Catalyzed [2+2+2] Cyclizations
Michael Kondik	76	The Role of Cul3 as a Tumor Suppressor in Breast Cancer

Student Name	#	Presentation Title
Thomas Koulopoulos	13	Disinfection of Blackwater
Brittany Kowaleski	34	Best Practices Regarding Homelessness and Mental Illness
Daniel Kubala	54	Growth Functions of Finitely Generated Algebras
Emily Labattaglia	12	The Potential of Slow Sand Filters for the Disinfection of Blackwater
Taylor Leen	4	Make Trade Equal
Taylor Leen	5	Fostering Meaningful Literacy Learning
Brianna Lutz	30	Vimentin protects against ...
Kevin Lynch	64	A Plagued Mind
Sean MacCarthy	40	Crossing Border's Service Immersion Trip
Susan Malone	44	Re-Member the Rez
Eliza Mandzik	1	An Exploration of Art Song and Aria
Nick Mazzucca	23	Shewanella oneidensis Hfq promotes...
Kathleen McGreal	32	The Effects of Single and Coeducational Schools on Student and Teacher ...
Mackenzie Miller	59	Feinstein Institute ASB Trip to the Dominican Republic
Kaitlyn Monast	56	"No one Tells Me": Families' Perceptions of the Care of ...
Aubrey Moore	78	Non-Western Perspectives on the Development of Western Civilization
Justine Morris	80	The effect of Journaling and Personality Type on Classroom Discussion
Elizabeth Nako	38	Socialist Utopian Communities in the U.S. and Reasons for their Failures
Dionne Nickerson	49	Diffusion of Mobile Payment Systems among Microentrepreneurs...
Michael O'Donnell	7	Synthesis of Isomeric Carbolines by Metal-Catalyzed [2+2+2] Cyclizations
Arman Oganisian	63	Returns to Schooling: A Quantile Regression
Laura O'Neill	84	"Respect.Empower.Include.Repeat." How the Obama Campaign Created ...
Ashwin Paudel	6	A Study of Titanium Electrodes in Lithium Ion Batteries Using EQCM
Christopher Pellichero	77	Shoulder girdle movement during alligator strides
Kevin Peloquin	15	Avatar Magazine: The Underground Fight for Free Speech in 1960s Boston
Christina Perri	31	Isolation and characterization of mycobacteriophage ZoeJ, ...
Jenna Perry	76	The Role of Cul3 as a Tumor Suppressor in Breast Cancer
Jordan Plavnicky	52	The Heretical Beatrice
Brett Provance	14	Programmable control of a test Microflush digester ...
Lindsey Provencher	32	The Effects of Single and Coeducational Schools on Student and Teacher...
Esteban Quijada Link	4	Make Trade Equal
Stephen Rogers	31	Isolation and characterization of mycobacteriophage ZoeJ, ...
Michael Rose	33	Transformations and Disappearances

Student Name	#	Presentation Title
Anne Ruelle	4	Make Trade Equal
Nicole Sadoski	81	Female Students' Risk for Sexual Victimization in the College Environment
Kevin Salvaggio	2	Portfolios in Creative Writing in Poetry
Lauren Salvucci	75	Teaching The Civil Rights Movement In An Urban Third Grade Classroom
Heather Sanford	28	Black Robes and Bile: Jesuit Catechizing Efforts in Seventeenth Century Acadia
Patrick Saunders	26	Developing Direction: <i>The Illusion</i> at Providence College
Shelby Scola	31	Isolation and characterization of mycobacteriophage ZoeJ, ...
Celeste Scollan	72	William Blake and the "Female Will"
M. Camila Serna	51	Sixty years of scientific discovery: Henrietta Lack's Immortal Legacy
Margaret Shaia	70	The Effects of Flipping the Classroom
Andrew Shoemaker	8	Facility and Appendix Components for the Microflush Toilet
John Smith	79	Restore Providence
Tara St. Onge	43	Should A Program Of Sex Education Be Mandatory in Public Schools From 4th-12th Grade?
Sean Sweeney	46	The Role of Islamist Political Parties in Tunisia and Egypt...
Kevin Szulak	29	Human malignant melanoma cells...
Kevin Szulak	30	Vimentin protects against ...
Stacy Thomas	41	Chiral alkynamides as substrates for intramolecular [4+2] cycloadditions
Thomas Thrift	53	Investigation of Potential Barriers to College Student Use of Counseling ...
Caitlyn Treem	18	Raw Island
Jonathan Varelas	7	Synthesis of Isomeric Carbolines by Metal-Catalyzed [2+2+2] Cyclizations
Amina Vargas	51	Sixty years of scientific discovery: Henrietta Lack's Immortal Legacy
Michael Velazquez	61	Anarchy In the U.K.: Punk Rock Counterculture in 1970s Great Britain
Diana Vlavianos	3	Perversion of Pink: A Poetry Portfolio in its Progression
Matthew Vumback	22	Purple Loosestrife and its Genetic Diversity
Andrea Wade	74	Impacting Student Attitudes Toward Mathematics ...
Shannon Walsh	50	Learning with HeLa
Annie Wendel	35	Tools vs. Textbooks
Arielle Wezdenko	24	Inhibitory Control in Preschoolers' Prosocial Behavior
Craig Wilson	50	Learning with HeLa
Valeria Zarate	50	Learning with HeLa
Natasha Zupkus	25	Climate Effect on Plant Sex Expression

Career Services

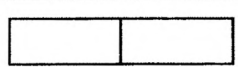
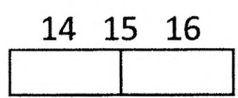
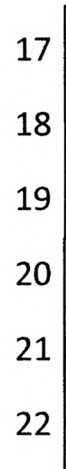
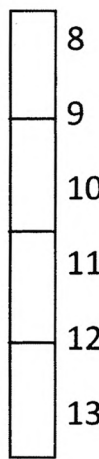
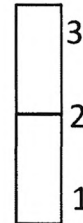
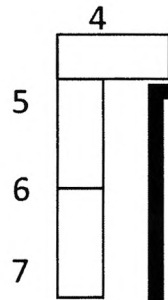
Overlook Lounge

Presentations
3:15—4:45

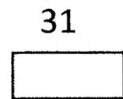
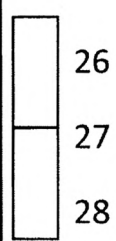
STAIRS

Info Desk

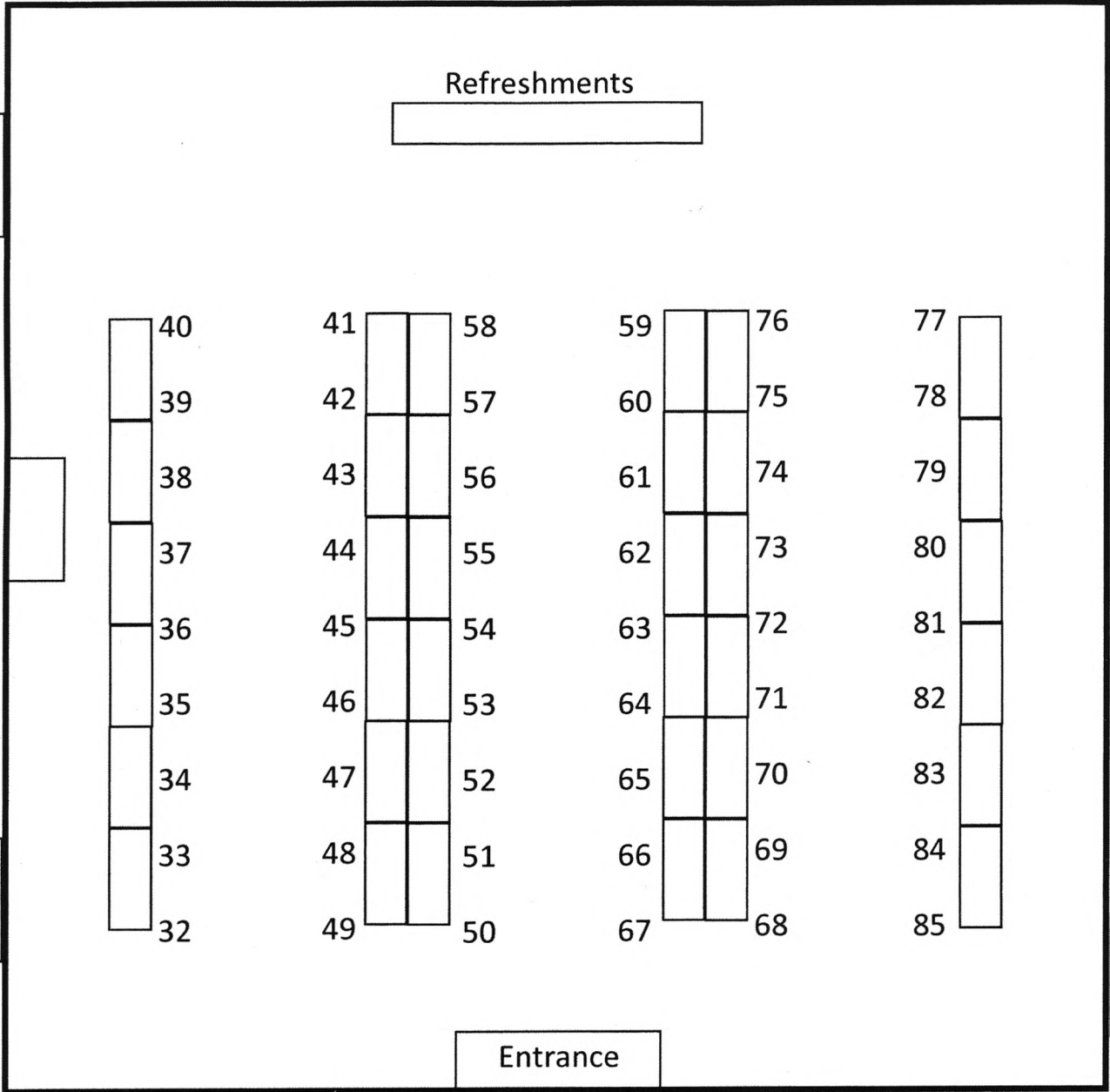
Refreshments



29 30

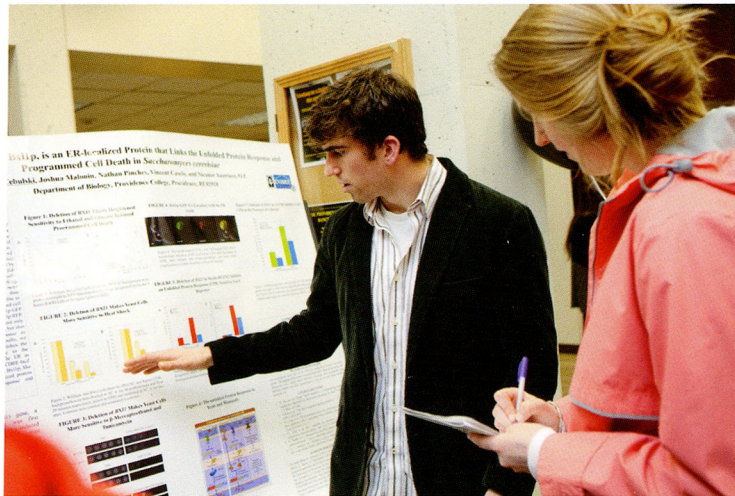


'64 Hall



'64 Hall

Past Celebrations





PROVIDENCE
COLLEGE