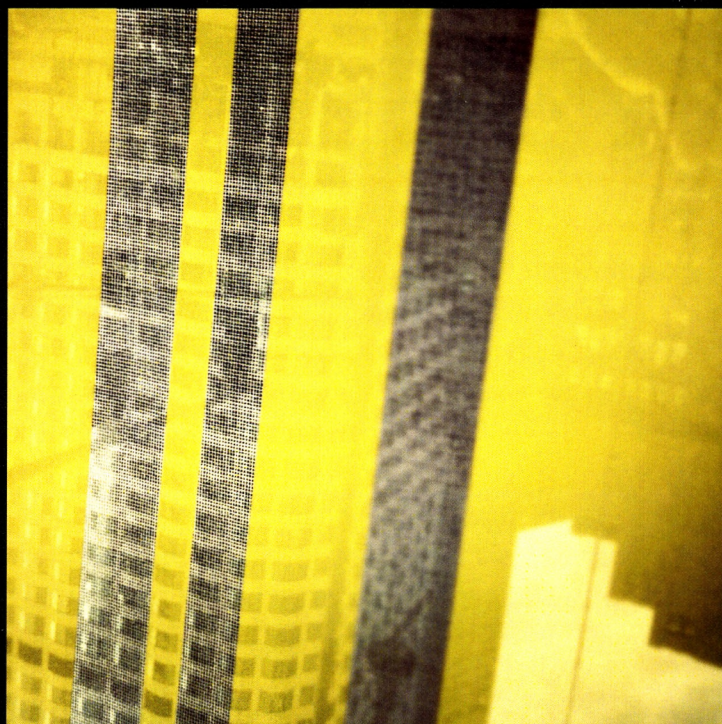


Third Annual Celebration of Student Scholarship and Creativity

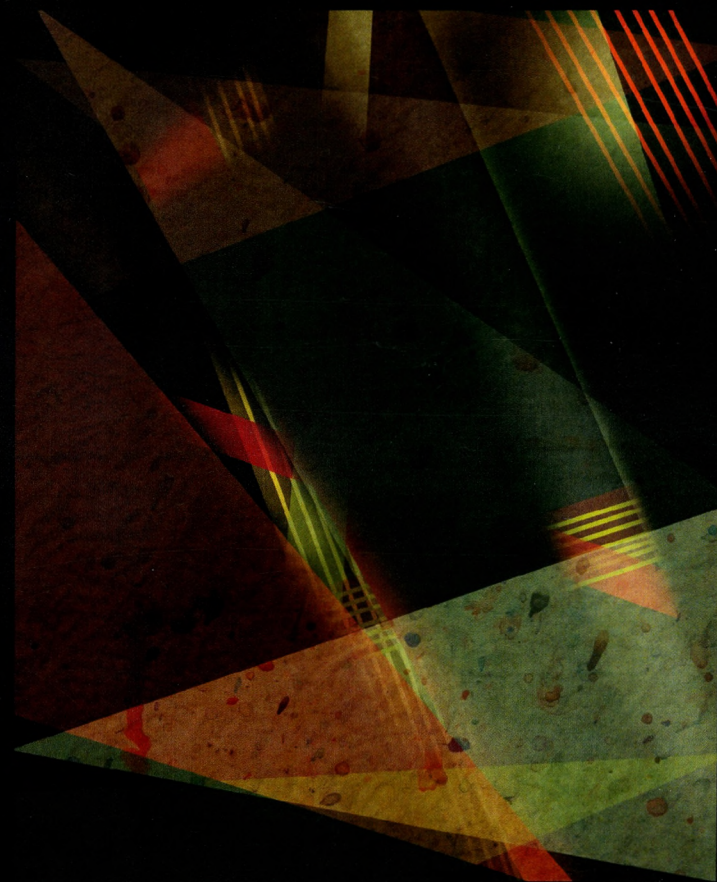
Bridget Reed



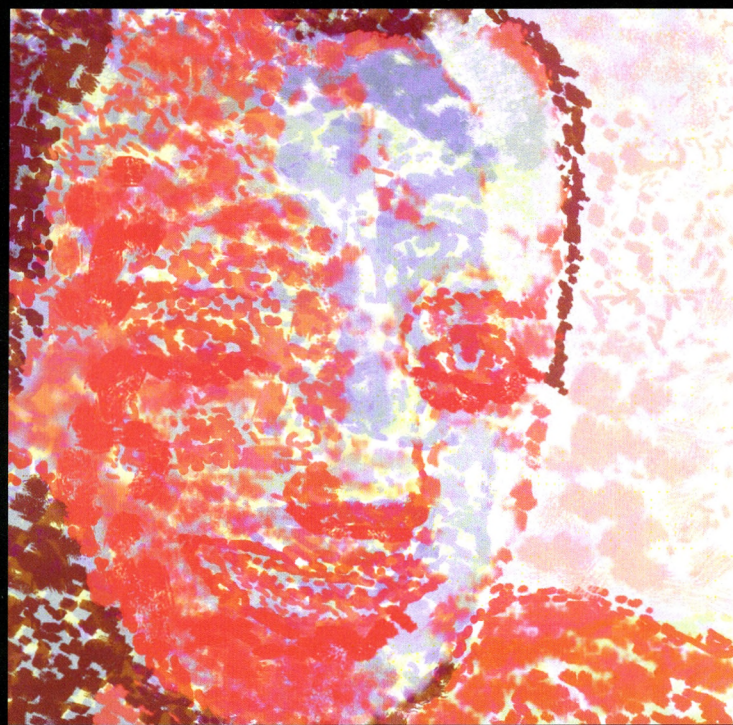
Justine Harrington



Adrian Mascena



Blair Rohan



Slavin Center. Providence College.
April 25, 2012

Welcome!

Thank you for joining us at Providence College's Third Annual Celebration of Student Scholarship and Creativity. More than ninety undergraduate students, 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.

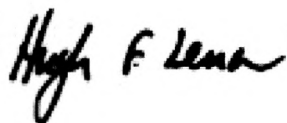
The projects of these students, supported by their faculty mentors, are exemplary because of the depth of commitment and understanding they reflect as well as the high quality of the finished product. We congratulate both the students and the faculty on their outstanding accomplishments. We hope that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

The Annual Celebration of Student Scholarship and Creativity was inspired as a result of the College's three-year Fostering a Culture of Student Engagement grant from the Davis Educational Foundation. The purpose of the grant is to deepen students' engagement in their learning as a means of fulfilling the College's central mission to promote, sustain, and enhance academic excellence. Providence College expresses its profound gratitude to the Davis Educational Foundation for its 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.

Sincerely,

A handwritten signature in black ink that reads "Hugh F. Lena". The signature is written in a cursive, flowing style.

Hugh Lena, Ph.D.
Provost & Senior Vice President for Academic Affairs

Annual Celebration Student Projects

Talk about the Annual Celebration on Twitter using #PCAnnualCeleb

The IN-DWC Project: “Defining World Citizens”

Thomas Abbood, Finance, Class of 2014

Mark Dushel, Philosophy, Class of 2014

Spencer Georgiades, Marketing, Class of 2014

Tessa Kehoe, Psychology, Class of 2014

Alyson Johnson, Public and Community Service, Class of 2014

Mitchell Mordarski, Accountancy and Management, Class of 2014

Emily Smith, Art and Art History, Class of 2014

Fiona Stack, Accountancy, Class of 2014

Meagan Sullivan, Health Policy and Management, Class of 2014

Moirra Sweeney, Management, Class of 2014

Maddie Walsh, Health Policy and Management, Class of 2014

The IN-DWC (I’m Not Done With Civ) Project was first envisioned two years ago when a similar project was introduced to students. Now streamlined and more advanced, the Project asks students to re-envision their role in the classroom as they seek to demonstrate the actual effect that DWC has had on their lives and their thinking over the past two years. Each Project group is divided into four teams: Messaging, Copy, Video/Media Procurement, and Editing. A final presentation is made by a group consisting of one member from each team. The Project asks them to create a five-minute short film which highlights the nature and scope of the DWC program while also attempting to explain how specific texts, thinkers, and ideas have changed the way that they view the world. The winning group shown above presented its film, “Defining World Citizens” and explained how DWC helped them appreciate not only an increasingly globalized culture, but also the difficulty and challenge of standing up for values and principles in an increasingly broken world.

One of the goals of our seminar experience was to get students accustomed to presenting material and articulating their own thought. I just flipped the presentation concept on its end and introduced more variables into the equation: group dynamics, management problem solving, accountability to peers, and the demand to use creative technology. The final product markets DWC for all of its best qualities—for transforming the thoughts and beliefs of its students. — Faculty Mentor: Rev. R. Gabriel Pivarnik, O.P., S.T.D., Department of Theology

Student Managed Investment Fund

Jesse Aversano, Finance, Class of 2012

Tim Meyers, Finance, Class of 2012

Patrick Murphy, Finance and Accountancy, Class of 2013

Ngoc Pham, Finance and Business Management, Class of 2012

Michael Signorelli, Finance, Class of 2012

Ana-Maria Sima, Finance, Class of 2012

PC’s first Student Managed Investment Fund class (Fin 495) gave students opportunities to engage in investment research and portfolio management, and manage “real” money contributed by the PC Endowment. Students invested approximately \$120K in an analyst fund benchmarked against the S&P 500 Index. Each student made stock recommendations for companies falling within his/her sector. Students gained exposure to aspects of

investing such as security selection, risk control and compliance, trading, reporting, performance measurement and evaluation, and marketing and distribution. The Students also had multiple opportunities to enrich their knowledge through various activities outside the classroom.

Faculty Mentors: Dr. Christopher Alt and Dr. Vivian Okere, Department of Finance

The Role of Temperature in the Microflush-Biofil Toilet

Catherine Beley, Mathematics, Class of 2012

Ashwin Paudel, Pre-Engineering, Class of 2013

The Microflush-Biofil (MB) relies on macro- and micro-organisms in an aerobic digester. It is suspected that the spatial distribution of certain macro-organisms in an equilibrium waste environment can be explained by the steady state temperature profile in the digester. The hypothesis has been tested by solving the heat conduction equation in three dimensions for the geometry and boundary conditions of the system. Results indicate that temperature is a significant factor explaining the distribution of *eisenia fetida* in the MB digester.

The results will make an important contribution to understanding the spacial distribution of microorganisms in aerobic digesters. — Faculty Mentor: Dr. Stephen Mecca, Department Engineering-Physics-Systems

Isolation and Characterization of a Novel Mycobacterial Phage, Job42, and the Annotation of Its Genome

Molly Berning, Biology, Class of 2015

Mary Burak, Biology, Class of 2015

Danielle Cascione, Biology, Class of 2015

Colleen Cassidy, Biology, Class of 2015

Sarah Corley, Biology, Class of 2015

Ryan Frazier, Biology, Class of 2015

Jennifer Giulietti, Biology, Class of 2015

Alfredo Gonzalez, Biochemistry, Class of 2015

Taylor Hunt, Biology, Class of 2015

Alicia Jancevski, Biochemistry, Class of 2015

Keara Jones, Biology, Class of 2015

Benjamin Lichtenfels, Biology, Class of 2013

Dylan Nalaboff, Biology, Class of 2015

James O'Brien, Biology, Class of 2015

Jordan Rego, Biology, Class of 2015

Stephen Rogers, Biology, Class of 2015

Victoria Schwartz, Biology, Class of 2015

The mycobacteria include several human pathogens that cause tuberculosis and leprosy. Mycobacteriophage Job42 is a novel bacterial virus isolated from soil collected at Providence College in Providence, RI, that infects and kills the model organism, *Mycobacterium smegmatis*. It appears to be a lytic phage belonging to the siphoviridae that have double-stranded DNA genomes and long, flexible non-contractile tails. Genome sequencing revealed that Job42 is an F1 subcluster mycobacteriophage that has a 59,626 bp genome with 105 putative open reading frames.

Faculty Mentors: Rev. Nicanor Pier Giorgio Austriaco, O.P., Ph.D., Department of Biology and Dr. Kathleen Cornely, Department of Biochemistry and Chemistry

Characterization of the RNA chaperone *Hfq* in *Shewanella oneidensis*

Christopher M. Brennan, Biology, Class of 2013

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 better understand mechanisms of sRNA function, we have constructed a null allele of the *hfq* gene in *Shewanella*. Deletion of *hfq* results in slow growth and a variety of other metabolic phenotypes.

Faculty Mentor: Dr. Brett Pellock, Department of Biology

Blackwater Treatment and Water Purification for Rural Water Sanitation

Robert Bretz, Applied Physics, Class of 2012

Solar disinfection (SODIS) has been a viable treatment option for purifying water for domestic needs at the household level. This project involves creating a model for analyzing the effectiveness of SODIS parameterized for various design conditions. Both ultraviolet and thermal kill processes are considered. Simulations are presented for both dry- and wet-season conditions in a sample country, Ghana. The potential for SODIS as a blackwater treatment process is presented in connection with the low-volume blackwater from a Microflush-Biofil toilet.

Problem solving at its best; if successful, it will contribute to sanitation in the developing world together with the related health, development and education benefits associated with the conditions of WATSAN in the world.

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

The City and Its Youth

Sarah Caputo, Social Science, Class of 2012

Nicole Coelho, Psychology, Class of 2012

Molly Driessen, Public & Community Service, Class of 2012

“The City and Its Youth” is part of a multi-year, collaboratively designed and taught open course between Providence College, College Unbound, and other local community organizations in Providence, Rhode Island. The seminar is premised on the importance of creating space for conversation with engaging speakers and community-based organizations that are conducting civic innovation efforts in the Providence area. Through the use of directed readings, invited speakers, dialogue among participants, and several engagement projects we explored: What are the everyday lives of youth in Providence like? What is “working” to engage young people in Providence in meaningful ways? What is the potential for building on the history, shape, and character of Providence to create a local youth movement? These questions were then examined through the creation of a reflective, open learning community, and collectively develop a multi-media, web-based wiki site that maps the ecology of youth development in Providence.

This impressive research project illustrates the power of collaborative learning, new technology, and reciprocal relationships. — Faculty Mentors: Dr. Nicholas Longo and Dr. Keith Morton Department of Public and Community Service Studies

Women Tell All: Women's Perception of the Impact of Feminine Leadership Characteristics

Rachel Chazanovitz, Management, Class of 2012

While women have begun to take on leadership at all levels in today's workplace, it is clearly still less common at higher levels. The more common leadership image continues to be masculine. In the past, male leaders, as well as their leadership characteristics have most often been seen as commanding, controlling and aggressive, while women leaders are more likely to be seen as emotional, relatable, and communicative. Studies have shown, however, that women are expected to behave like men in leadership positions, yet then are harshly judged for doing so. This study explores how women leaders perceive what have been identified as 'feminine leadership characteristics', and how they believe these characteristics either enhance or constrain their ability to become a top manager or leader in the workplace? Data for this study is nineteen interviews with women leaders, which are analyzed using standard thematic qualitative analysis. The analysis is used to discuss the women leaders' perception of feminine and masculine leadership characteristics, and their impact on women's leadership in the workplace.

Rachel's qualitative research focuses on women leaders who bring a different understanding of and approach to leadership to organizations, and was presented at the National Conference on Undergraduate Research. — Faculty Mentor: Dr. Karen Whelan-Berry, Department of Management

Purple Loosestrife and its Genetic Diversity

Richard Cimini, Biology, Class of 2013

John Savasta, Biology, Class of 2012

Jack Sporer, Biology, Class of 2012

Purple Loosestrife is a very successful invasive weed with negative effects on the environment. Low genetic diversity has been shown to limit adaptation to new habitats. Low genetic diversity should also affect its mating system. In Purple Loosestrife mating can only occur between individuals with different genetically determined flower types. We are testing our prediction that there will be a correlation between diversity of genetic markers and flower diversity in small Rhode Island populations.

Faculty Mentor: Dr. Maia Bailey, Department of Biology

A New Way of Balancing: Exploring Generation Y's Understanding of Work-Life Balance

Megan Corcoran, Class of 2012

With the 76 million members of Generation Y entering the workforce, companies are being forced to think more creatively about work life balance, because for these new 20-something year old employees, the line between work and home often blends seamlessly. Baby Boomers and Generation X focus on a traditional model of dedication to work and more separate work and life spheres (Welsh & Brazina, 2010). However, for Generation Y, the understanding of work life balance is quite different than in prior generations because of their experiences with mega-traumas such as terrorism and natural disasters, and their increased access to technology and new forms of communication (Welsh & Brazina, 2010). Data on this topic will be gathered through approximately 100 surveys gathered from full time employees in mid to large sized companies on the East coast. This analysis and discussion will explore how the understanding and meaning of work life balance is shifting for Generation Y. It will specifically explore generation Y's view of work life balance which has been shaped by a keen desire to live in the now, a seamless view of work and life, a desire for more time off, and the importance of friends.

Megan's research explores one of the top motivating factors and human resource management issues - work-life balance, as well as a current organizational issue - the entry of Generation Y into the workforce in significant numbers, and was presented at the National Conference on Undergraduate Research. — Faculty Mentor: Dr. Karen Whelan-Berry, Department of Management

Influence of Creative Media on Medical Error Risk Perception

Emily-Ann Croke, Psychology, Class of 2012

Medical error is a leading cause of death in the United States. The purpose of this study was to determine the influence of creative media on the perception of risk of medical error and precautionary behavior. Students in a Health Psychology class were invited to attend "Love Alone" at the Trinity Repertory Company. A 2 (pre/post) x 2(play/no play) factorial design was used to determine the effect of the play on student perceptions and intentions.

This project represents a novel and creative approach to a significant medical issue. Ms. Croke is a Psych Major with a film minor. She has a long-standing interest in using non-traditional, creative interventions for health promotion. — Faculty Mentor: Dr. Mary O'Keeffe, Department of Psychology

The Politics of Memory of the Columbine High School Shooting

Joseph Dalli, Political Psychology, Class of 2014

Meaghan Lambert, Economics and Business Studies, Class of 2014

The story behind the Columbine shootings provide for an interesting topic of research. My field of study as Political-Psychology major and Meaghan's deep interest in the study of memory support our collective attention to this dynamic issue. Introduced during our DWC Colloquia, theories behind the precursors to school violence

have had a widespread effect on our society, especially in terms of gun legality and the ‘psychosis of today’s violence-obsessed youth’. Our project involves an analysis of these possible catalysts and a dissection of the lingering memory.

Meaghan and Joe’s project explores the collective memory of the 1999 Columbine massacre in an attempt to understand why, although all Americans recall that event with great sadness, different groups continue to draw opposite lessons from the same event. — Faculty Mentors: Dr. Paola Cesarini, Department of Political Science and Dr. Colin Jaundrill, Department of History

Pre-Service Teachers’ Perceptions of Middle School Students

Christina D’Angelo, Psychology, Class of 2012

This study explored the perceptions pre-service teachers have of middle school students. Participants ($n = 56$) were asked to complete the *Adjective Checklist (ACL)* by endorsing the words they considered most characteristic of a typical middle school student. Items most frequently endorsed indicated a predominantly negative perception (e.g., “awkward,” “confused”). However, a paired-samples *t*-test comparing participants’ scores on the *ACL*’s favorability and unfavorability scales indicated an attitude toward the population that was neutral in valence.

The study holds promise for future publication and is being conducted with a high level of conscientiousness by Christina. It represents true student scholarship that I believe fits well with this call for proposals. — Faculty Mentor: Dr. Kevin J. O’Connor, Secondary Education Program

Reclaiming Fat

Emilie DeBaie, Health Policy and Management, Class of 2012

“Reclaiming Fat” was written for my Health Care and Popular Culture seminar class to look at obesity through a different lens. I explore what it means to be defined as overweight if there are no legitimate guidelines to define what a normal weight actually is. I used examples of American society’s past and present perspectives of overweight and obese people to make a case for fat studies. From my research, fat studies must reclaim the word ‘fat’ in an effort to re-educate America on what it means to healthy at any size.

*Emilie grappled within a new and unconventional literature in preparing a first-rate paper for my seminar on Health Care in Popular Culture (HPM 480) in the Fall 2011 term. Her application of theory to analyze portrayals of overweight individuals in popular shows such as *The Biggest Loser* and *Chelsea Settles* was unusually well done, as was her careful unpacking of one of the principal measures of obesity today--the *Body Mass Index*. Emilie exposes the implications of using BMI as a measure of ideal body type, and her paper encourages us to reassess the conventional wisdom about how we think about those who are overweight and obese. — Faculty Mentor: Dr. Robert B. Hackey, Department of Health Policy and Management*

Is Islam the Solution? The Muslim Brotherhood and the Search for an Islamic Democracy in Egypt

Erica Devine, Political Science and History, Class of 2012

Since the removal of President Mubarak in 2011, the role of the Muslim Brotherhood as a political force within Egypt has grown exponentially. During the 1970s and 1980s, the Brotherhood underwent a gradual transformation of its ideology towards the blending of civil and religious agendas. Their promotion of a constitutional system of governance within the constraints of Islamic law is a source of hope for the Brotherhood's future participation in a democratic state.

Given the dramatic events of the Arab Spring of 2011, followed by the political upheaval in Egypt, the eyes of the world are on the Muslim Brothers and the role that they will play in the post-Mubarak era. Erica's work on the evolution of the Brothers' theology and political philosophy will be very helpful for our PC community in assessing the future of Egypt and the region as a whole. — Faculty Mentors: Dr. Margaret Manchester and Dr. Thomas Grzebien, Department of History

Computer Monitored Problem Solving Dialogues

Lisa Dion, Mathematics and Computer Science, Class of 2013

This project “looks over the shoulder” at students engaged in a math problem-solving activity. To mechanically classify student sentences, we produced a classifier that examines them and is 55% accurate at identifying utterances as containing certain bits of knowledge. Classification was achieved by comparing new, unknown sentences with pre-built bundles of manually tagged sentences, one bundle for each classification. The context of this work is a quantitative problem-solving course where student groups work out problems. Our goal is for the computer to notice some of the same aspects of the activity that a teacher walking around the classroom might observe.

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

Changing the Game Down Under: An Examination of Virgin Australia's Migration from Low-Cost to Full-Service Carrier

Timothy Donohue, Management and Finance, Class of 2012

The Game Change Program, a corporate strategic change initiative and plan, was developed in August of 2010 to reconfigure Virgin Australia within the global aviation industry and grow into the domestic airline of choice in Australia (Virgin Blue Holdings Limited 2010). Using primarily case methodology, with supplementary, qualitative interviews with Virgin managers and employees, this paper will examine Virgin Australia's migration from low-cost to full-service carrier. The Virgin Australia case will focus on the Game Change Program and its

implementation, as well as perceived progress and expected progress. In addition to interviews, annual Reports, industry publications, media releases, and other publicly available information will be used in developing the case. In particular the case will focus on operations, product portfolio, and internal culture within the framework of the change process. Discussion will include an evaluation of the global and domestic industry landscapes, pre-change organization, proposed change, post-change outcomes, both desired and actual, and adherence to best practices in the change literature.

Tim's research is on a current organizational change, which is a somewhat unusual research opportunity, was presented at the National Conference on Undergraduate Research, and builds on his career interests as he plans to work in the airline industry. — Faculty Mentor: Dr. Karen S. Whelan-Berry, Department of Management

Dare to Dream

Erin Dooly, Management, Class of 2012

Ryann Nolan, Management, Class of 2012

Colleen Saporito, Marketing, Class of 2012

Ian Sutherland, Management and Finance, Class of 2012

Jason Zandrow, Management, Class of 2012

As a group of five seniors, we came together in a joint class effort creating, organizing, and implementing a series of fundraising activities to benefit the Make-A-Wish Foundation and fund the wish of a child with a life threatening disease. Beginning with a goal of \$6,500, we were determined to make a difference in a child's life and surpassed this goal, raising \$7,016 in one semester. We "dared to dream" and continue to work with the charity to make the child's wish a reality.

Faculty Mentors: Dr. Thomas King, Department of Management and Dr. Daniel Horne, Department of Marketing

Outreach360 Health Corps Volunteers: Helping those in need in the Dominican Republic - Spring Break 2012

Jessica Estanislau, Biology, Class of 2013

For the week, we will be teaching public health education in a local elementary school with a focus on related English vocabulary and proper hygiene practices. As volunteers, our main responsibility is to empower the children, helping them to, as Outreach360 says, "Release the hero within." However, in doing so, we will be releasing the hero within ourselves as well. We hope to learn from these children and their community, affecting changes within ourselves.

Faculty Mentor: Dr. Joseph DeGiorgis, Department of Biology

A Life of Potter Stewart: The Formation of Judicial Ideology

Valerie Ferdon, Political Science, Class of 2012

Former Justice Potter Stewart was at the forefront of considering American civil liberties throughout his tenure on the Supreme Court. This paper explores the formation of Stewart's legal ideology, focusing on how his early background in journalism contributed to his approach to the Constitutional provision of individual freedom of speech. Research was conducted at the Yale University Sterling Memorial Library, where Potter's personal documents and manuscripts were recently opened to the public.

Faculty Mentor: Dr. J.T. Scanlan, Department of English

Crossing Borders Mexico - Alternative Spring Break

Kiely Flynn, Health Policy and Management, Class of 2013

A student-led service immersion trip to Tijuana, Mexico, in collaboration with the Feinstein Institute of Public Service. Participants worked alongside a local community of impoverished families to build sustainable and dignified homes for families in need. Students explore issues relating to immigration and Mexican culture by visiting an orphanage, a migrant home and a tour of the Mexican border.

Faculty Mentor: Heather Whitney, Feinstein Institute for Public Service

The Nature and Extent of the French Resistance Against Nazi Occupation During World War II

Jeffrey Folker, History, Class of 2012

Comprehensively covers a very misunderstood and myth laden part of the history of WWII. This thesis makes it clear, from a comprehensive review of primary and secondary literature, that the resistance offered by the French to Nazi Occupation was largely insignificant and its effectiveness overblown during and after the war. As you can imagine this is a very sensitive issue for some and the author handles the complications and implications deftly but without compromise.

Faculty Mentors: Dr. James McGovern and Dr. Matthew Dowling, Department of History

Connotations: An Exploration of iPhoneography

Justine Harrington, Studio Art, Class of 2012

Connotations has been an ongoing pursuit of discovering images from the camera on my iPhone which speak a personal “visual vocabulary.” Using the mobility of the iPhone, I realized subtle visual patterns surfacing in the process of collecting hundreds of images. Images that most strongly reinforced my visual opinions were then extrapolated upon through a process of digitally drawing and manipulating colors, textures and forms to more clearly define my particular aesthetic. This was an unpretentious pursuit, concentrating less on the technology that inspired the images and more on defining my visual interpretation of the snapshots. Much of my work abstracts and interprets the nature of objective reality, notably in visual relationships between space, lines and edges. These pieces are extensions of a distinct and personal visual language, and the intended vocabulary by which I abstract and compose is communicated in a systemized manner similar to language forms.

Faculty Mentor: Professor James Janeczek, Department of Art and Art History

Genome Reduction in Yeast Involves Programmed Cell Death

Matthew D. Hurton, Biology, Class of 2013

Emily Roblee, Biology, Class of 2013

Genetic Reduction, the most common form being meiosis, is involved in numerous biological activities, including malfunction during cancer growth. Our project has involved studying a possible connection between genomic reduction in yeast and apoptotic programmed cell death. We have shown with various ploidies and yeast strains that cell death occurs upon induction of genome reduction, and that this death is apoptotic. Further research should yield a general trend and be useful in understanding meiotic mechanisms.

Faculty Mentor: Rev. Nicanor Pier Giorgio Austriaco, O.P., Ph.D., Department of Biology

Examining Medical Error: Causes, Consequences and Checklists

Laura Keaney, Health Policy and Management, Class of 2012

This paper examines some of the causes of medical error and proceeds to show how a broad scale implementation of surgical checklists, such as the one designed by Dr. Atul Gawande, could drastically reduce the rate of medical errors. The paper incorporates two portrayals of medical error in *Grey's Anatomy*, and then uses Gawande's, *The Checklist Manifesto*, to analyze how those errors could have been avoided with the help of a checklist.

Laura's paper is a case study of student growth. After writing three different drafts, and having several heart to heart conversations, Laura chose to analyze portrayals of medical malpractice in popular television medical dramas. The end result was so good that I cited her application of Atul Gawande's Checklist Manifesto to Grey's Anatomy in my forthcoming book from the University Press of Nevada, Cries of Crisis: Rethinking the Health Care Debate. This is, simply put, a remarkable undergraduate paper. — Faculty Mentor: Dr. Robert B. Hackey, Department of Health Policy and Management

Creative Writing in Poetry: Poetry Portfolio by Mary Kate Kelly

Mary Kate Kelly, Art History, Class of 2012

This was the culmination of a semester-long creative writing seminar in poetry. I will show the progression of a poem from assignment to inspiration, then original idea and first draft, through peer editing and final cuts, to a final finished polished product. I will display one poem prominently and shows its development in this way, trying to display the creative process as best I can.

Faculty Mentor: Professor Jane Lunin Perel, Department of English and Women's Studies

Financial Capabilities: A Service Learning Project

Catherine Lynch, Accountancy, Class of 2012

Michelle Salmo, Accountancy, Class of 2012

Hayley Smith, Accountancy, Class of 2012

As stated in its mission, Providence College prepares its students to be responsible and productive citizens to serve in their own society and the greater world community. This project is to provide us with the opportunity to reach out to the community in ways that will benefit both the College and the statewide not-for-profit community. We are currently a part of the development of a service learning course which will promote financial capabilities within community agencies.

The Project gives the students the opportunity to use their academic abilities to serve their community. — Faculty Mentors: Professor Judith Morse and Professor Margaret Ruggieri, Department of Accountancy

Fostering Choral and Solo Singing: A Comparative and Cooperative Approach

Eliza Mandzik, Music and Political Science, Class of 2013

Choral singing is a valuable musical opportunity that enriches the lives of musicians and individuals both young and old. However, there exists a far-too-common misconception that choral and solo singing are somehow incompatible or even that choral singing is detrimental to vocal development. This project, through a series of interviews conducted with exemplary American choral directors and vocal pedagogues in Fall 2011 and through the researcher's own literature review, outlines the specific modifications to be made in order to transition from solo to choral singing in the healthiest and most fulfilling way possible.

The purpose of this project is to outline concrete steps that undergraduate vocalists may take in order to facilitate healthy choral singing as a solo singer. The results of this research will help to facilitate more fulfilling choral and solo singing experiences, increased dialogue between choral conductors and vocal pedagogues, and, ultimately, enhanced musical outcomes. — Faculty Mentor: Dr. T. J. Harper, Department of Music

Beauty and Violence in Early Modern Spain

Isabelle Margenot, Spanish and Global Studies, Class of 2012

This project, “Beauty and Violence in Early Modern Spain” investigates the position of women during the 17th century of Spain; and urges readers of Spanish literature to take a different perspective on the perception of beauty in early modern Spain, and how during this era, women lived under the lens of a predatory society.

Isabelle’s lexicographical, literary and sociolinguistic analysis of “hermosura” (female beauty) yielded fascinating results and helps illuminate issues surrounding sexual violence in the 16th century as well as offers important comparisons with our contemporary views on the subject. — Faculty Mentor: Dr. Alison Caplan, Department of Foreign Language Studies

Something Out There: Digital Studies in Light Structure

Adrian Mascena, Art History, Class of 2012

This project appeals to the fact that we, as humans, no matter how knowledgeable we find ourselves, cannot simply be aware of everything. Through varying processes of Digital Imaging, I have constructed images that fill the viewer with feelings of curiosity, wonder, and perhaps frustration and unease at the fact that the forms are hidden by shadows and darkness, and are only just visible through fantastic, irregular lighting.

Faculty Mentor: Professor James Janecek, Department of Art and Art History

Moths and Meadows

Christopher Mattioli, Mathematics and Computer Science, Class of 2012

As part of an REU in “Eco-Informatics” at Oregon State University, four machine learning algorithms were used to create moth species distribution models: random forest, logistic regression, boosted regression, support vector machines. They are theoretically distinct, and the results varied. Random forest and boosted regression performed the best with an AUC (measure of accuracy) of 0.607 and 0.606 respectfully. Another algorithm, PRESENCE, was used which accounted for imperfect detection. The results improved slightly, but it is possible there is problem of over-fitting. More data is necessary for building accurate species distribution maps, however, certain algorithms perform better than others.

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

The Cognitive Representation of Pretense Versus Fantasy

Colleen McInnis, Psychology, Class of 2012

Do our minds process fantasy, pretense, and reality differently? Participants read fantastical (Snow White eating an apple), pretend (a girl pretending to be Snow White), or realistic (a girl eating an apple) vignettes. Participants' reaction to a property of each vignette's realistic context (apple as delicious) or its unrealistic context (apple as poisonous) was measured by a computer program. Differences in reaction time indicate differences in how fantasy, pretense, and reality are mentally represented.

By discovering that fantastical thought is a unique mental process, Colleen has revealed something entirely new about human cognition. — Faculty Mentor: Dr. Jennifer Van Reet, Department of Psychology

Teaching in the Dominican Republic - Outreach Service at Providence College

Cayla McKernan, Psychology, Class of 2013

The Feinstein Institute sponsors Alternative Spring Break trips each year for students who wish to immerse themselves in service and international culture. My name is Cayla McKernan, a junior Psychology major and Biology/Pre-health minor, and I am leading the Dominican Republic Education trip to Monte Cristi. By staying with an organization called Outreach 360, PC students will travel to the local schools to teach less fortunate children English and collectively share the experience of a lifetime.

Faculty Mentor: Dr. Joseph DeGiorgis, Department of Biology

HPV Vaccine Acceptance Among Male Providence College Students

Sarah McPartlon, Psychology, Class of 2012

Gardasil (vaccine for Human Papillomavirus) was recently approved for males by the FDA, yet male acceptance rates are less than 1%. The purpose of this study was to identify factors that influence male HPV vaccine acceptance. Participants were exposed to one of two HPV information sheets; one showed the benefits of male immunization (gain-framed) and the other showed the costs of not being immunized (loss-framed). The influence of cost and target disease was also examined.

Vaccine acceptance is an under-studied area in health psychology. Sarah has a long standing interest in vaccine acceptance, and has designed a study to look at this issue with a newly approved vaccine that currently has very low acceptance rates. — Faculty Mentor: Dr. Mary O'Keeffe, Department of Psychology

The Organization of American States (OAS) in Rhetoric and Reality

Elizabeth Moore, Political Science and Spanish, Class of 2012

The purpose of this study is to examine how well the countries in the Western Hemisphere translate Organization of American States' (OAS) agreements and treaties into actual meaningful state action, and how international discourse influences, or does not, domestic policy. This study will utilize the data program QDA Miner in order to better analyze texts of legislation and highlight the correlation between different types of rhetoric, and meaningful state action. Data will be gathered primarily from the OAS' own data bases and compiled into the QDA software for analysis. After the texts are analyzed, regression analysis will be run using SPSS 19.1 IBM software. This software will allow for the interpretation of whether or not there is a correlation between competing types of international discourse and the domestic policies of member states.

Both substantively and methodologically, Liz Moore's project is an outstanding representation of undergraduate research at PC, as she builds on real-world experience at the Organization of American States and combines it with a quantitative content analysis of OAS resolutions to untangle the relationship between rhetoric (the language used to frame issues in international resolutions) and the likelihood of implementation. — Faculty Mentor: Dr. Jeffrey Pugh, Department of Political Science

Shooting Arrows Through Myth and History: The Evolution of the Robin Hood Legend

Kathleen Mulligan, History, Class of 2012

My paper examines the development of the legends of Robin Hood through both historical and popular culture perspectives, analyzing the similarities and differences between the two fields as they evolved over the centuries. I study the contextual influence of the history of each time period on the particular popular culture media as well as the historical works, and discover when history and literature split paths with regards to the character of Robin Hood.

Faculty Mentors: Dr. Richard Grace and Dr. Donna McCaffrey, Department of History

Genetic Characterization of the Mechanism of Action of Sulforaphane in the Yeast, *Saccharomyces cerevisiae*

Michael Murphy, Biology, Class of 2013

Stacy Thomas, Biochemistry, Class of 2014

Douglass Tucker, Biology, Class of 2013

Sulforaphane (SFN), isolated from broccoli and other cruciferous vegetables, is a potential chemotherapeutic agent. The method by which SFN kills cells remains elusive at this time. In order to identify genes that may be involved in a cell's response to SFN, we have initiated an experiment to identify loss of function mutants that

are sensitive to SFN using the model organism *Saccharomyces cerevisiae*, or bakers yeast. Our results suggest confirmation of earlier findings from our lab that yeast cells lacking *ATG1*, a protein essential for autophagy, are also sensitive to sulforaphane, suggesting a possible role for autophagy in the method of SFN-induced death in yeast.

Faculty Mentor: Rev. Nicanor Pier Giorgio Austriaco, O.P., Ph.D., Department of Biology

Women & Health Peru - ASB

Lauren O'Loughlin, Biology and Psychology, Class of 2014

Rafael Tavares, Business Management and Global Studies, Class of 2013

The Women & Health ASB is a student-led service immersion trip to Peru, in collaboration with the Feinstein Institute for Public Service. Participants visit a shantytown on the outskirts of Lima and assist with outreach programs about issues of health, nutrition, and education, particularly with women and the elderly. Volunteers learn about the needs, struggles, and ambitions of people living in poverty as well as the stark disparities that exist in Peruvian society. ASB Peru also facilitates cultural understanding through pairing community service activities with educational outings of historical, social, and recreational importance.

After the trip participants explored issues of poverty and health in the communities they visited, we reflected about the experience, including what it means to enter a new community and varying definitions of service. —

Faculty Mentors: Heather Whitney, Feinstein Institute for Public Service and Dr. Edgar Mejia, Department of Foreign Language Studies

Effects of Violent Video Games on Social Perceptions and Empathic Responses of College-Aged Youth

Christian Orr, Social Work, Class of 2012

This quasi-experimental study looked at the effects of violent video games on empathetic responses and pro-social behavior of college students. While numerous studies have been conducted regarding similar effects of violent video game usage, research has been largely inconclusive and, at times, contradictory. The 24 students within the test group were administered a 26-item instrument, and then participated in a 30 minute session in which they were administered a violent game. After playing the game, they were then re-administered an identical instrument. Additionally, a 24 person control group was administered a nonviolent game and asked to go through the same process. Results showed that video games had a negative relationship with both empathy and pro-social behavior in the test and control group.

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

The Galway Rambler: Antoine O Raifteiri and the Roots of Irish Cultural Identity

Caroline O'Shea, English, Class of 2012

My project looks at the impact of Anthony Raftery, a century blind poet and fiddle player from Co. Mayo, Ireland, upon Ireland's cultural landscape upon his 'discovery' by Irish writers Lady Gregory and Douglas Hyde. A major part of the project is the performance component, where Raftery's poems and other music/poetry connecting to Ireland will be presented.

This is an exciting and original project that will truly stand out at the celebration. Caroline knows her stuff, and is a professional-level Irish folk musician. — Faculty Mentor: Dr. Bruce Graver, Department of English

Pigment Granule Move within the Photoreceptors of the Squid Retina

Ryan Paranal, Biology, Class of 2013

In squid photoreceptors, pigment granules migrate from the base of the receptors to the distal tips in response to light. These granules act as molecular sunglasses that shade the photosensitive parts of the cell from receiving too much light. Pigment granule movement relies on the microtubule "roads within the cells", and our project focuses on identifying the molecular motor proteins that power this process.

Faculty Mentor: Dr. Joseph DeGiorgis, Department of Biology

Aerobic Digestion and Filter Design for the Next Generation Microflush-Biofil Toilet

Ashwin Paudel, Pre-Engineering, Class of 2013

The Microflush-Biofil (MB) toilet is proving to be an effective solution to the menace of sanitation in Ghana and is expected to function as well in other rural communities in tropical climates around the world. The toilet relies on both macro- and micro-organisms in an aerobic digester. The process of aerobic digestion for a particular geometry and structure is analyzed because it is believed that by modeling the aerobic digestion process for the MB system and then replicating the performance that is observed in the field, the model can be used as a basis for scaling up and down the present system in optimal geometries. The effectiveness of a lighter porous plastic to replace the existing heavy filter in the MB system is also studied, so that the digester can be made more transportable for moving to commercial scales.

If successful, the filter design will be employed in the next generation of the Microflush-Biofil digester. The model will be a first of its kind representation of the dynamics of macro-organism fueled aerobic digestion in a defined space. It has the potential for optimizing the design and operation of future versions of the Microflush-Biofil system. — Faculty Mentor: Dr. Stephen Mecca, Department of Engineering-Physics-Systems

“An Image Comforting the Mind”: Emotion Theory and Tennyson’s *In Memoriam*

Melanie Pavao, English, Class of 2012

In my Senior Thesis, I examine Tennyson’s poem *In Memoriam* through the lens of Cicero’s Stoic theory of emotion. The first part of my thesis is an overview of this emotion theory and Martha Nussbaum’s method of using literature as therapy. In the second part I analyze Tennyson’s description of grief in the poem and discuss the ways in which it is a useful form of emotional therapy, both for the poet and for the reader.

Melanie applies Stoic theories of emotion to Tennyson’s poem in an original and convincing way. No one has demonstrated so clearly this poet’s reliance on Roman Stoicism. — Faculty Mentor: Dr. Bruce Graver, Department of English

Pennsylvania Noir

Bridget Reed, Studio Art, Class of 2012

I examine my biographical past through various scopes by extracting key memory perceptions for further investigation. The mental process of recollection is enacted through physically building models of memories. Memories are devoid of logical progression and become muddled which creates passages that can be fleshed out by intuitive impulses. This leads to a unique perspective of realism and an entirely new narrative. I use photography as a convention to document reality by altering the scale and flattening the image so the viewer can contemplate its origins and draw conclusions of its purpose. The photographs are informed by the history of film, particularly the genres of Film Noir and French New Wave.

Faculty Mentors: Professor James Janecek and Professor Heather McPherson, Department of Art and Art History

Effects of a Witnessing History on the Female Ability to Negotiate Romantic Relationships: A Retrospective Study

Kimberly Rodrigues, Social Work, Class of 2012

Research suggests that witnessing domestic violence (DV) in childhood may have long-term negative effects as a person enters adulthood. This exposure may hinder the ability for adults to build healthy romantic relationships. In an effort to better understand how a witnessing history affects adult romantic relationships, this study focused on the retrospective stories of women who were in recent domestically violent relationships and who also reveal witnessing DV as children. Participant’s narratives were analyzed for themes relating to their witnessing history, such as type of violence witnessed, frequency of violence witnessed, and whether or not participants felt their witnessing history has affected their ability to negotiate romantic relationships.

This student listened to the stories of women who have endured domestic violence. Their testimony can further the discussion about a critical social issue and provide meaningful ways to address it earlier. — Faculty Mentor: Dr. Katherine M. Kranz, Department of Social Work

One Face

Blair Rohan, Studio Art, Class of 2012

We as people all have unique facial features, but there are universally common characteristics of the human face. After all, everyone has a nose, mouth, and eyes. In my work, I want to emphasize that when completely different faces are superimposed, they can form one coherent face. By using short brushstrokes and similar palettes for each portrait, I am able to make all the features on the face of four different portraits similar in gender and age become one ordinary facial appearance. Looking at these works, I want a viewer to recognize that though we all have unique exteriors, we really look more alike than we think.

Faculty Mentor: Professor James Janecek, Department of Art and Art History

New World Rivals: The Role of the Narragansetts in the Breakdown of Anglo-Native Relations During King Philip's War

Lauren Sagar, History, Class of 2012

On June 28, 1675, King Philip's War officially broke out between the Native Americans and English colonists of southern New England. The English immediately sought an alliance with the Narragansett tribe of Rhode Island due to their vast power in the area. However, English actions during this quest for alliance would ultimately turn the Narragansetts into enemies. The diplomatic and military encounters between the Narragansetts and English serve as a lens to understand dispossession, intercultural conflict, and colonialism during this period.

Sagar's work rediscovers the diplomatic and military networks that ran through southern New England during a tumultuous period in Anglo-Indian relations. Her work is gracefully written, rooted in primary, archival material, soundly argued, and clearly organized. — Faculty Mentors: Dr. Edward Andrews and Dr. Adrian Weimer, Department of History

A Union of Negatives: Ayatollah Khomeini and the Mobilization of Dissent in the Iranian Revolution of 1979

Nicholas Sumski, History, Class of 2012

The Islamic Revolution of 1979 installed Ayatollah Khomeini as the leader of Iran's new Islamic Republic. However, the revolutionary forces were not strongly unified under Khomeini's radical Islamic vision. In fact, many facets of the opposition were against the imposition of the Islamic Republic but were forced to join the Ayatollah's movement as the only legitimate means to overthrow the reign of the American-supported Shah, Mohammad Reza Pahlavi. A complex fusion of economic concerns, the Shah's political blunders, the responses from the Iranian intellectuals, and police brutality enabled the relatively unknown Ayatollah to galvanize the many dispirited segments of the opposition into a unified force, ultimately enabling his rise to power as the first leader of the Islamic Republic.

Given the tensions between the US (and its partners and allies) and the current regime in Iran over nuclear weapons and access to the Straits of Hormuz, Nick's research is very timely in understanding the sources of these deep divisions that could potentially lead to a military confrontation. His work also challenges commonly-held assumptions that the Iranian Revolution was Islamic in its origins and design. — Faculty Mentors: Dr. Margaret Manchester and Rev. David Orique O.P., Ph.D., Department of History

The Politics of Memory of the 1968 Olympics

Nick Wallace, History and Political Science, Class of 2014

Aaron Wyngowski, History/Secondary Education, Class of 2014

The image of Tommie Smith and John Carlos on the podium after the 200-meter sprint at the 1968 Olympics has become one of the most iconic images in American history. Although the Civil Rights Movement led to African Americans receiving more rights, our project attempts to study how this iconic moment has been remembered throughout the years. We aim to study people of different races and generations to uncover varying memories on the event.

Nick and Aaron's project is an original exploration of the Civil Rights Movement that focuses on the collective remembrance of an iconic, but generally understudied event: Tommie Smith and John Carlos' "black power" salute at the 1968 Olympics. — Faculty Mentors: Dr. Paola Cesarini, Department of Political Science and Dr. Colin Jaundrill, Department of History

APP of Alzhiemer's Disease Clusters on the Surfaces of Axoplasmic Organelles

Rylie Walsh, Biology, Class of 2012

Mutations of the Amyloid Precursor Protein (APP) are implicated in several familial forms of Alzheimer's disease. However, APP's biological function remains largely unknown. Here we show via transmission electron microscopy that APP localizes to the surfaces of axoplasmic organelles, extruded from the squid giant axon. We also use confocal microscopy to show that APP is distributed on the post-synaptic side of lamprey spinal synapses. These results could help in deciphering the function of APP.

Faculty Mentor: Dr. Joseph DeGiorgis, Department of Biology

Caught in Cultural Limbo?: A College Student's Perspective on Growing Up with Immigrant Parents

Melissa Weiss, Social Work and Spanish, Class of 2012

Much recent scholarship of immigrants, has found a second-generation disadvantage, or an "immigrant paradox" instead of a "second generation advantage". In contrast to past studies, this study employed qualitative methods to explore mental health and risky behavior variables of the immigrant paradox among college-aged children of immigrants who attend a private, liberal arts institution to gain a more meaningful understanding of this "paradox". No strong evidence suggesting an "immigrant paradox" in terms of these variables was found, but instead participants expressed cultural pride.

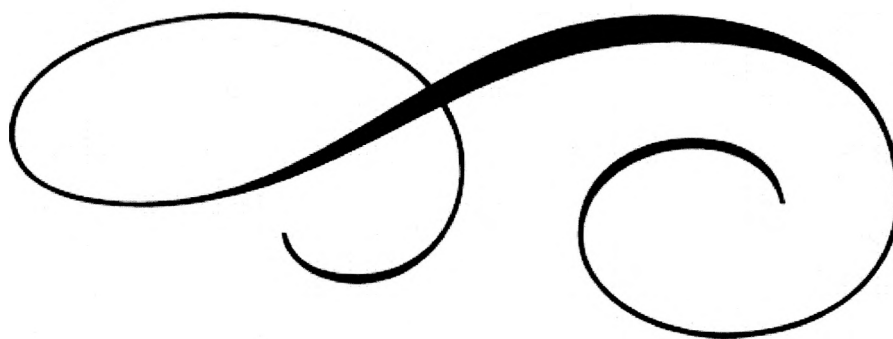
This is a timely project raising awareness of the struggles and triumphs of second-generation immigrants. —
Faculty Mentor: Dr. Katherine M. Kranz, Department of Social Work

Does climate affect sex expression in plants?

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 incubators mimicking climate in different latitudes to determine whether this sex ratio pattern is caused by climate.

Faculty Mentor: Dr. Maia Bailey, Department of Biology



Acknowledgments

Celebration of Student Scholarship and Creativity Planning Committee

Nuria Alonso-Garcia

Christine Baccari

Brian Bartolini

Julia Camp (Co-Chair)

Mark Caprio (Co-Chair)

Joe DeGiorgis

Sarah Dowling (GA)

Amy Goggin

Laurie Grupp

Chuck Haberle

Bryan Marinelli

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Laurie Grupp

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Bryan Marinelli

Siobhan Ross

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

Paul Bienvenue

Alex Cachecho (PCTV, Class of 2012)

Dan Demmons

Vicki-Ann Downing

Chris Gubata

Charles Joyce

Chris Judge

Liz Kay

Chris Landry

Chris Machado

Hailie Posey

Alana Riley

Jenn Shurkus

Michael Williams

Funding Opportunities for Student Engagement and Undergraduate Research Projects

Undergraduate Research Grant Program – 2012-2013

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

- 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

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/academic-affairs/> (scroll to bottom of page) for the grant application, additional information, and deadlines



Fostering A Culture Of Student Engagement At Providence College