UNDERGRADUATE RESEARCH & ENGAGEMENT SYMPOSIUM

LOYOLA UNIVERSITY CHICAGO
APRIL 18, 2015
Preparing people to lead extraordinary lives

Cover Art by Caralee Corroto,
Advertising and Public Relations (2017)
WELCOME TO LOYOLA’S 2015 UNDERGRADUATE RESEARCH & ENGAGEMENT SYMPOSIUM

Today we celebrate the research, scholarly and creative works, and community engagement of Loyola University Chicago undergraduate students!

On behalf of the Center for Experiential Learning and the Loyola Undergraduate Research Opportunities Program (LUROP), we are pleased to welcome you to the Undergraduate Research & Engagement Symposium. During this event, we bring to life Loyola’s mission of “expanding knowledge in service to humanity through learning, justice, and faith” through the lens of undergraduate student research, service-learning, internship, and learning portfolios (ePortfolios).

Loyola undergraduate students, from all disciplines across the university, spend hours outside of their classes to conduct hands-on, original research and lead community-engaged projects that not only escalate their own learning, but also advance knowledge in their disciplines and impacts the communities with whom they have worked. In the end, students are transformed through learning, knowledge co-created and communities transformed. During Loyola’s Weekend of Excellence, the theme of “Celebrating Transformative Education” is demonstrated by the students’ projects and presentations at this symposium.

The Center for Experiential Learning team continues to facilitate opportunities for students and faculty mentors to advance knowledge through research fellowships, capstone projects, learning portfolios, internships, and service-learning experiences at Loyola and across Chicago. The breadth of projects and presentations are presented today in two poster sessions, an increased selection of oral presentations, and the integration of community engagement projects and student learning portfolios with original research projects. We encourage you to take advantage of the wide array of student presentations in all symposium sessions.

We are very grateful to the faculty, alumni, staff, campus partners, and graduate students who are serving as evaluators this year and ensuring an enriching experience for our undergraduate students. We would like to thank all of the faculty, staff, and community partners who mentored and advised the impressive undergraduate students whose work is showcased here.

To learn more about the undergraduate research program or the funded fellowships through LUROP, please visit www.luc.edu/lurop. For more information about Loyola’s Center for Experiential Learning, which sponsors high-impact, engaged learning opportunities for students across the curriculum, visit us at www.luc.edu/experiential. Enjoy the learning that unfolds through the work of Loyola students at this Undergraduate Research & Engagement Symposium.

In Service,

Patrick Green, Ed.D.
Director, Center for Experiential Learning

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SCHEDULE

Poster Presentations and Community Engagement Forum (CEF): Session 1 ……11:00AM-12:30PM (Mundelein Auditorium)

Oral Presentations………………………………………………………………...12:50PM - 1:50PM (Mundelein Classrooms, Floors 2-5)

Poster Presentations and Community Engagement Forum (CEF): Session 2 ……2:00PM-3:30PM (Mundelein Auditorium)

Awards Ceremony and Reception…………………………………………………3:45PM - 4:30 PM (Sullivan Center, Galvin Auditorium/Lobby)

* Outstanding Loyola Undergraduate Researcher Award
* Langerbeck Award for Undergraduate Research Mentoring
* Graduate Student Mentor Award
* Hayes Award for Advising and Mentoring
* Loyola University Libraries Undergraduate Research Paper Award
* Community Engagement Award for Social Justice
* Community Engagement Award for Innovation in Sustainability
* Community Engagement Award for Impact

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LOYOLA UNDERGRADUATE RESEARCH OPPORTUNITIES PROGRAM (LUROP)

In addition to hosting the 2015 Undergraduate Research & Engagement Symposium as part of the Center for Experiential Learning (CEL), the Loyola Undergraduate Research Opportunities Program (LUROP) offers guides for external research opportunities, travel grants for conference presentations, workshops on research and presentation skills, and more. You can find these resources at www.luc.edu/lurop. In addition, LUROP coordinates or supports eighteen undergraduate research fellowships. Many, though not all, of the students presenting at the Symposium received support from these fellowships.

**Biology Research Fellowship Program**
The Biology Research Fellows Program funds long-term research projects under the direction of a faculty mentor in the Department of Biology. Students work for two years on their respective projects during the academic year and in the intervening summer.

**Biology Summer Research Fellowship Program**
The Biology Summer Research Fellowship funds summer research projects under the mentorship of a faculty member from the Department of Biology.

**Carbon Undergraduate Research Fellowship**
The Carbon Fellowship offers a full two-year, interdisciplinary research opportunity for science and math majors to work closely with two faculty mentors. This program is designed for students who plan to pursue research in graduate or professional schools.

**Carroll and Adelaide Johnson Scholarship**
The Carroll and Adelaide Johnson Scholarship offers rising juniors a two-year scholarship to support a research project on women, leadership, and social justice under the mentorship of a Loyola faculty member.

**Center for Urban Research and Learning (CURL) Fellowship**
The CURL Fellowship is intended to facilitate involvement of students in collaborative research projects with community-based organizations, social service agencies, health care providers, businesses, and government. Fellows are active participants in efforts to improve the quality of life of all members of the Chicago metropolitan community.

**Institute of Environmental Sustainability (IES) Undergraduate Research Fellowship**
Formerly known as the CUERP Fellowship, the IES Fellowship is for students to conduct interdisciplinary research on issues related to unsustainable natural resource uses in the greater Chicagoland region. The Center encourages research projects to combine elements of ecosystem structure and function, impacts on human health, public policy, behaviors, and other environmental factors.

**The Joan and Bill Hank Center for the Catholic Intellectual Heritage (CCIH) Undergraduate Research Fellowship**
The Joan and Bill Hank Center for the Catholic Intellectual Heritage (CCIH), in support of the Catholic Studies minor, offers a research fellowship to undergraduate students who are currently enrolled in the Catholic Studies minor program. This fellowship is dedicated to support for CCIH-funded faculty research projects, as well as CCIH’s international research projects.

**McNair Post-baccalaureate Achievement Program**
The Loyola University Chicago McNair Scholars Program is an independent program that prepares qualified undergraduate students for graduate study at the doctoral level. Students participate in scholarly activities during the
academic year and over the summer. An integral component of the McNair program is the summer research internship through which students conduct research under the tutelage of a faculty mentor.

**Molecular & Computational Biology Summer Research Fellowship**
Students in this program study a special class of viruses, called bacteriophages, that prey on bacterial hosts in Lake Michigan. These students look into the impact that these viruses have on the bacterial levels in the lake. This effort combines both molecular and computational biology.

**Mulcahy Scholars Program**
The Mulcahy Scholars Program supports over 50 College of Arts and Sciences majors in the hard sciences who are working on an individual research project with a faculty mentor, serving as a research assistant, or engaging as a member of a collaborative research team to support ongoing faculty projects throughout the academic year.

**Provost Fellowship for Undergraduate Research**
The Provost Fellowship supports over 60 undergraduate students in any academic discipline across the university conducting research with the support of a faculty mentor.

**Research Mentoring Program (RMP)**
This program is designed to partner graduate students who are working on their dissertation research with undergraduates who are interested in participating in research. This summer program is designed to support doctoral students in their dissertation research while providing an opportunity for undergraduates to learn more about graduate studies and graduate-level research.

**Ricci Scholars Program**
The Ricci Scholars Program is an innovative research and cultural immersion program organized around the theme of the meeting of East and West. The program awards selected students with scholarships for travel, research, and exploration during a junior year of study divided between two of the world’s most important cities: Rome, Italy, and Beijing, China.

**Rudis Fellowship Program**
The Anthony and Mary Rudis Fellowship provides scholarships to students whose research focuses on the comparative study of constitutions. Recipients of the scholarship will write a 20-25 page research paper during the academic year under the guidance of a faculty member in the Department of History or the Department of Political Science.

**Social Innovation/Social Entrepreneurship Fellowship**
Starting next year, this will be the newest fellowship. This fellowship is designed for undergraduate students who are developing a social innovation project or social entrepreneurship venture.

**Social Justice Research Fellowship**
The Social Justice Research Fellowship support students conducting faculty-mentored research that explores issues of social justice or contributes to social justice.

**Summer Fellowship in Neuroscience**
This summer, the Center for Interdisciplinary Thinking and Interdisciplinary Neuroscience Minor will provide students with the opportunity to work with a neuroscientist at the Lake Shore Campus. This opportunity allows students to see how questions are asked, answered, and the results disseminated.

**Women in Science Enabling Research (WISER)**
The oldest undergraduate research fellowship at Loyola, WISER is designed for undergraduate women seeking to explore research science, work closely with faculty, learn how laboratory work is conducted, and build a sense of community.
COMMUNITY ENGAGEMENT FORUM: SESSION 1

*CEF POSTERS ALONG MUNDELEIN AUDITORIUM WALLS
11:00 AM - 12:30 PM

*Poster 1*

The Hospitalist Project and its Role with Improving the Quality of Care of Inpatients with Chronic Liver Disease
Alison Hefel, Biology (2017)
Course: BIO 398
Community Partner: University of Chicago Medical Center

The Hospitalist Project at the University of Chicago Medical Center is a clinical research study that examines the quality of care of hospitalized patients. Research assistants interview patients during their stay and a month after discharge in order to analyze changes in their health. Patients can either be under the traditional teaching team (attending, resident, intern, and student) or the hospitalist team (academic hospitalists and nurse practitioners). One of the studies published using the data collected from this project compares co-management between hospitalist & hepatologist with the conventional model. The authors of this study concludes that patients under the co-management model exhibited more long-term improvement in terms of patient in-hospital mortality and readmission rates.

*Poster 2*

Learning from the Inside: Interning at the Cook County Adult Probation Department
Juley Santa Cruz, Criminal Justice and Criminology (2015)
Course: CJC 390
Community Partner: Cook County Adult Probation Department

An insight into the Cook County Adult Probation Department and how Loyola's social justice mission and Criminal Justice coursework aided in making this a memorable learning experience.

*Poster 3*

Healing through Movement
Elizabeth Modde, Dance and Biology (2015), Social Justice Fellowship
Course: DANC 394
Mentor: Sandra Kaufmann, Dance
Community Partner: Niños con Valor, Maryknoll Bolivia

How does dance influence health? In developing and implementing dance programs for children at Niños con Valor, a home for those orphaned, abandoned, or from high-risk home situations, observations were made about the impacts of movement on children with varied health histories. Dance seems to be positive channel for developing community and encouraging individual creativity, goal setting, and confidence. Elements of social and personal development may be foundations that enable or further dance as a means to improve physical, mental, and emotional health.

*Poster 4*

The Loyola Community Literacy Center – 23 years of Service to Rogers Park Adults
Heckman, Jacqueline; Grethel Huerta, English and Latin American Studies (2015); Sadiq Khwaja, Psychology (2015); Katharine Riddle, English and Spanish (2015); Kierstan Thomas, Philosophy (2017); Hannah Trout, Psychology and English (2015); Phoebe Wegmann, English, Creative Writing, and Sociology-Anthropology (2017)
Course: ENGL 393; HONR 290
Mentor: Jacqueline Heckman, English

The Loyola Community Literacy Center offers free tutoring to those adults in Rogers Park who are interested in learning English, developing their literacy skills, or working for their GED. Many of our learners are recent immigrants or international
visitors, but we also have native speakers who come for assistance. We provide one-on-one tutoring in a supportive, welcoming environment, with Loyola students serving as tutors, staff, and managers. Located in Loyola Hall, LSC, we are completing our 23rd year of service to the community. We are open for tutoring M-Th, 7-9:30 pm during the fall and spring semesters.

**Poster 5**

*Thinking Seven Generations Ahead: Zero Waste Schools*


Course: ENVS 395

Community Partner: Seven Generations Ahead

Seven Generations Ahead (SGA) is a nonprofit organization that works to build and support sustainable and healthy communities. SGA works with schools, businesses, and municipalities to provide training and support for food scrap composting initiatives and overall waste diversion. The Zero Waste Schools program aims to reduce and divert lunch waste from landfills at various Chicago Public Schools (CPS) through collaborations with CPS administrators, teachers, and students.

**Poster 6**

*An Internship with the United States Hispanic Leadership Institute*


Course: INTS 370

Community Partner: United States Hispanic Leadership Institute

I will be presenting on my internship experience with the United States Hispanic Leadership Institute (USHLI). By engaging youth through scholarships and speaking tours, as well as informing the public about the unique circumstances of Latinos through research and advocacy, USHLI serves the Hispanic population living in the US, and seeks to create the leaders of tomorrow. I will be describing my participation with USHLI’s National Conference as well as the research I have done for their Almanac of Latino Politics, and explaining how these activities are directly aligned with the stated goals of the organization, and further the Institute’s mission.

**Poster 7**

*A Reflection on my involvement with the Chicago Police Department as well as at Loyola*

**Kimberly Marroquin**, Criminal Justice and Criminology (2015)

Course: CJC 390

Mentor: Jona Goldschmidt, Criminal Justice

Community Partner: Chicago Police Department

My presentation is a reflection on my internship at the Chicago Police Department's (CPD) Area North Bureau of Detectives. Incorporated in this reflection is my involvement on campus through Department of Programming (DOP).

**Poster 8**

*Local Governance and Urban Development of Ethnic Enclaves*

**Daniel Drees**, Political Science (2017)

Course: PLSC 370

Community Partner: Ward 48 Office

This presentation will cover an introductory level of local city governance at the ward level and how urban development is planned and carried out especially in relation to ethnic enclaves. In particular, this presentation will focus on the Asian community on and around Argyle Street in the Uptown neighborhood of Chicago as a new and innovative shared-street design is in the works of being constructed.
Financial Education in the Military  
Mentored by Stacy Neier Beran, Marketing

During active duty, basic needs are paid for by the government. Therefore, active military have the ability to save money. However, they are currently lacking the financial knowledge to make educated decisions regarding their finances. This absence of financial education has led to issues for veterans such as budgeting and saving. Understanding the importance of saving for the future and learning to budget would allow active military to allocate their income for financial stability. The purpose of this project is to analyze if active military’s perception of stress will change if financial education classes were available.

How Informed are College Students about the Economic Recession, its Causes, and the Involvement by the Federal Government?  
Mentored by Suk Hun Lee, Finance

A study looking to assess the level of understanding that college students have over the recent economic recession, its causes, and the involvement by the Federal Government.

Women and Beauty Culture in Argentina and Chile  
**Mary DeHaas**, Advertisement and Public Relations (2015)  
Mentored by Pamela Morrison, Communication

This research looks at the perceptions of beauty in both Argentina and Chile. More specifically this research uncovers how women perceive beauty within their culture and how that is reflected in outdoor ads in Buenos Aires, Argentina and Santiago, Chile.

Transformative Conflict and Leadership on Loyola’s Campus  
**Danielle Sullivan**, Advocacy and Social Change (2016)  
Mentored by Gilda Parrella, Communication

Are you a leader who is advocating, educating, and acting for justice on campus? Through the collection of ethnographic data in speaking with over 20 student leaders working towards positive social change on Loyola’s campus, this research looks to better understand the ways that conflict and leadership are intertwined. We attend a Jesuit Institution that seeks to provide its students with a “Transformative Education”, why should we stop at academics? This research will help students, leaders, and those who deal with conflict to engage others in ways that transform both themselves and the world around them.
Poster 13

Insights about Late 19th and Early 20th Century Households and Urban Lifeways from a Buried Refuse Deposit on the Far Northside of Chicago

Naveen Kanji, Anthropology (2016), Provost Fellowship
Mentored by Daniel Amick, Anthropology

Long-term salvage archaeology work from nearly two decades of construction activities on the Loyola University Lakeshore Campus has documented a late 19th to early 20th century refuse dump underlying the campus which was built on unimproved beach dunes in 1908. An opportunistic artifact sample of 55 kg has been recovered from this deposit which appears to cover approximately 3 hectares. The assemblage is characterized by 1885-1910 period domestic refuse probably which seems to be coming from upper middle class homes on Chicago’s far north side. Glass containers and ceramic tableware dominate this garbage assemblage, partly altered by incineration. This informal dump is undocumented in the historic record and offers insights into households, waste disposal, and urban lifeways in Chicago during this key transformative era of modernization, consumerism, and electrification. This analysis focuses on the dietary aspects of the assemblage reflected by faunal remains and containers for foods, beverages, and medicines.

Poster 14

Diet Reconstruction of Fort Ancient Individuals

Abigail Stone, Anthropology (2015), Mulcahy Scholars Program
Mentored by Kristin Krueger, Anthropology

Fort Ancient Native Americans are thought to have relied on maize agriculture for the majority of their diet. To confirm this subsistence strategy, diet reconstruction was completed on a skeletal sample from Taylor Mound and Village Site in Ohio. Individuals were examined for a high prevalence of dental pathological lesions, which are often associated with an agricultural diet. Moreover, dental microwear texture analysis directly documented the microscopic wear patterns that resulted from interactions between food and the enamel surface. Results indicated this group may have been more flexible with their diet, and at times, relied more on foraging than agriculture.

Poster 15

Development of Folate-targeted Photodynamic Therapy Agents using a PEG linker

Kyle Sullivan, Anthropology and Biology (2015)
Mentored by Ken Olsen, Biochemistry

Photodynamic therapy (PDT) is a cancer treatment that relies on the production of reactive oxygen species by a photosensitizer to kill cancerous cells. Our goal is to develop protein-based PDT agents using chlorin-e6, as a photosensitizer, and folate, to increase uptake by cancerous cells. We are developing compounds with a BSA scaffold bound to folic acid PEG maleimide and tested these compounds within zebrafish models and cell culture. We hope the PEG maleimide linker will promote folate docking by distancing the large BSA molecule from the folate receptor, thereby reducing steric interference and increasing compound up-take by actively dividing cells.

Poster 16

Morphometric Study of Bill Variation of Vanga Birds in Madagascar

Neno December, Anthropology, Biology, and Philosophy (2016); Zuzanna Nowak; Nicole Gracias
Mentored by Sushma Reddy, Biology

The remarkable level of species diversity and endemism in Madagascar warrants a comprehensive analyses of its fauna to better understand certain aspects of evolution. The Vangidae, an endemic group of birds found only in Madagascar, are exceptionally diverse in terms of morphology and a good model system to test proposed hypotheses of adaptive radiation. Vangas evolved from a single lineage that colonized Madagascar and then radiated into several species that occupy different niches. Our objec-
tive is to conduct a wide-ranging morphological examination of bill variation across this family to identify underlying mechanisms of how their variation evolved.

**Poster 17**

*Molecular Dynamics Simulations of the Oxygen Exit and Entrance Pathways of Mutant Campylobacter jejuni Hemoglobins*

David Berkovich, Biochemistry (2015), Provost Fellowship

Mentored by Ken Olsen, Chemistry

Truncated-hemoglobins (trHbs) are small heme proteins found in bacteria, unicellular eukaryotes and higher plants, forming a group within the hemoglobin superfamily and are important for the survival of microorganisms. Locally enhanced sampling molecular dynamic (LESMD) has been used to simulate the dynamics of 15 oxygen molecules interacting with a single protein molecule. An analysis of these simulations has indicated that some of the mutations change the exit pathways of the oxygens from the protein. Current simulations involve trying to find the on pathways by surrounding the Cj-trHb with 100 oxygen molecules.

**Poster 18**

*Molecular Mechanism and Ligand Design of a PLP/GABA-dependent Bacterial Transcription Regulator GabR*

Emily Cybulla, Biochemistry (2015), Carbon Undergraduate Research Fellowship Program

Mentored by Daniel Becker, Chemistry and Biochemistry; Dali Liu, Chemistry

Antibiotic development for multi-drug resistant bacterial strains that contribute to recurring infections in Cystic Fibrosis (CF) patients is a medically-relevant area of biochemistry and medicinal chemistry research. Interdisciplinary studies on potential activators and inhibitors of GabR and PLP-dependent GABA metabolism in the nonpathogenic species Bacillus subtilis will enable us to modulate the GABA shunt pathway in the related pathogens Burkholderia cenocepacia and Burkholderia multivorans. Taking advantage of the existing PLP in GabR, we start by elucidating the recognition mechanisms of ligands, which are derived from designed inactivators of PLP-dependent aminotransferases in GabR.

**Poster 19**

*Insights into Online Ad-Blocking Technologies*

Elliott Post, Computer Science (2015)

Mentored by Chandra Sekharan, Computer Science

Advertising on the web is an exponentially growing and massive market. Last year, Google alone collected over $59 billion in advertising revenue, an 81.391% increase since 2001. Many websites provide free content in exchange for showing contextual advertisements. Although online advertising has grown exponentially, numerous technologies have been developed to thwart the presence of advertisements. We call these technologies Ad-Blockers. We researched how they work, what types of advertisements they do and do not block well, what software and hardware they run on, and if advertisers can detect and prevent Ad-Blockers.

**Poster 20**

*Degrees of Value: College Quality and Income*

Jessica Julius, Economics and Finance (2015), Connor Harlander

Mentored by Timothy Classen, Economics

Based on existing research, we are already aware of the considerable economic benefits received from earning a college degree; college graduates earn a substantially higher income than high school graduates. Typically, earnings potential is related to indi
individual ability, experience in the labor force, and years of education. Thus, a smart, high-performing individual with a college education could expect to earn more income than a similar individual who only has a high school diploma. However, we have reason to believe that there are also sizable differences in the economic returns based on the college attended. We are seeing a shift from, “are you a college graduate?” to “from which college did you graduate?” As college degrees become more common, the focus of employers has moved increasingly toward the prestige of a potential employee’s university rather than their achievements while attending the school. We explore this concept in relation to Loyola University Chicago.

**Poster 21**

*Mahdavia in Chicago: History, migration, and establishment*

*Sara Khan*, Elementary Education (2015), Provost Fellowship
Mentored by Marcia Hermansen, Theology

This project will provide information and insights into a sect of Muslims, the Mahdavis, both in historical terms and with regard to their migration and presence in Chicago. The Mahdavia community is an Islamic sectarian movement originating in 15th century India. There are an estimated two million adherents worldwide and this community is significantly large in the Chicago area, primarily due to a concentration of migrants from Hyderabad, India. The principal Mahdavi religious center has been located on Western Avenue since the 1980s. This project will bring to light facts about the Chicago Mahdavis and their evolving self-perceptions and self-presentations in the American context.

**Poster 22**

*From Research to Outreach: A Case Study on Hedgerows*

*Caitlin Dillon*, Environmental Science (2016)
Mentored by Kelly Garbach, Environmental Science

Extension and Outreach is vital to increasing adoption of farming conservation practices, however extension officers face distinct challenges in translating disparate studies into information relevant to farmers’ needs. My poster presentation will explore these challenges through the evaluation of one particular conservation practice, hedgerows. My research aimed to separate the expected benefits of hedgerows from the supported benefits through extensive literature review. I translated this knowledge into products designed to keep farmers informed. My presentation will give an in-depth look at the supported benefits of hedgerows and provide commentary on the challenges facing the Extension and Outreach field.

**Poster 23**

*Technology and Globalization in Transmission and the Diamond Age*

*Sherezaad Anwar*, History (2015), Research Mentoring Program
Mentored by Sean O’Brien, English

Science fiction narrative and hypothetical society help us understand the larger, globalized world outside of the pages through the use of advanced technology and world-building. Books like *The Diamond Age* and *Transmission* achieve this by exploring different characters and their interactions with technology. Nell in *The Diamond Age* discovers a “Young Lady's Illustrated Primer,” in Neo-Shanghai, which gives her the answers for technology to surpass that of nanotechnology. Meanwhile, Arjun in *Transmission* creates a devastating computer virus out of rage in the modern day West Coast, wreaking havoc for everyone in the world. Many branches of the world are affected, from international businessmen to Arjun’s favorite actors in the Bollywood industry.
**Poster 24**

*Enforced Disappearances and Individual Criminal Responsibility in Algeria, Turkey and Lebanon*

**Jerome Torossian**, International Studies (2017), Research Mentoring Program

Mentored by Jessica Mecellem, Political Science

My presentation will mainly discuss about the issue of enforced disappearances in the MENA region, especially in countries such as Algeria, Turkey and Lebanon. I will explain what enforced disappearances is as well as why and against who this act is practiced. Finally, I will develop and show why this act against humanity needs to stop.

**Poster 25**

*Diagram Algebras: Combinatorics and Idempotents*

**George Seelinger**, Mathematics and Computer Science (2015), Mulcahy Scholars Program

Mentored by Stephen Doty, Mathematics; Aaron Lauve, Mathematics

This presentation will outline the basics of diagram algebras and idempotents, and explain our methodologies and results, including closed forms for idempotents in smaller Brauer algebras, as well as how we plan to compute or derive idempotents of higher levels.

**Poster 26**

*Mechanism of Electric Field Guidance on Isolated Stem Cell Migration*

**Sonia Sherwani**, Molecular Biology and Communication Studies (2016), Mulcahy Scholars Program

Mentored by Hui Ye, Biology

This project explores a novel method where electrical induction can provide a biophysical and cellular mechanistic understanding of isolated, free-floating cell migration under direct current (DC, or electricity flowing in one direction) electric field. Harnessing the migratory potential of adult neural precursor cells (aNPCs) in the presence of an electrical field in vitro has the potential to enhance in vivo applications of neuro repair and tissue regeneration and thus, revolutionize modern neural trauma treatment options. Using time-lapse imaging software and kinetic analysis, and by combining biophysics, stem cell biology and pharmacology, this study will clarify the mechanism of stem cell migration under electric guidance.

**Poster 27**

*Deficit in Axonal Conduction in Brain Ischemia – A Quantitative Study*

**Pierre Radlowski**, Molecular Biology (2014), Mulcahy Scholars Program

Mentored by Hui Ye, Biology

Demyelination occurs through disease or injury to either the brain or spinal cord. Lacking in literature is a quantitative link between morphological damage and the impairment it causes in functional conduction. Using brain ischemia as a pathological condition to address this question, high magnification transmission electron microscopy (TEM), simulation tools, and electrophysiological recordings are used to determine differences between myelinated and unmyelinated axons in the corpus callosum before and after an ischemic stroke. As far as we know, this is the first integrated interdisciplinary approach combining these three techniques to quantitatively address the impact of myelin impairment in ischemic axons.
Identity development, campus climate, and student involvement are heavily studied to determine the gaps that Higher Education needs to fill in order to maximize student development. Different scholars have studied each factor in depth separately, but it is necessary to study how the three ideas work together and influence student experience in college campuses. This study explores how identity development, campus climate, and student involvement influence perceived student experience in Asian Americans and determine the knowledge that is still missing to create a holistic student experience.

**Female Agency and Empowerment: Islamic Feminism in Iran**
**Love Jordan**, Political Science (2016), Carroll and Adelaide Johnson Scholarship
Mentored by Gunes Tezcur, Political Science

The policies of the Islamic Republic following the 1979 Iranian Revolution restricted many women while simultaneously providing limited avenues of empowerment for some of the most marginalized female populations. Women who were initially mobilized during the revolutionary process have used these policies to seek greater rights. The increasing women’s movement in Iran then seems to stem from two developments: 1) the female agency rooted in the mobilization of women during the Revolution and 2) the widespread empowerment of women through policies of Islamization. The birth and rise of Iranian feminism then challenges arguments which essentially link gender inequality to Islam.

**After the Insurrection: Progress towards gender equality following the Salvadoran civil war**
**Lillian Osborne**, Political Science and History (2016), Social Justice Fellowship
Mentored by Peter Sanchez, Political Science

Women were vital to the popular and revolutionary movements of the serious political upheavals that gripped El Salvador in the 1970s and 1980s. Despite intense political repression, a loosening of the rigidity of traditional gender roles allowed women to make important sociopolitical and economic advances during the civil war. However, following the peace accords in 1992 that ended the war and created democratic institutions, Salvadoran women continue to face marginalization and violence at some of the highest rates in the world. This project analyzes how democratization has not delivered a more gender-equitable state in contrast to traditional scholarship on the potential of democratization.

**The Effect of Letter Replacement on Word Recognition**
**Benedictine Roaring**, Psychology and Biology (2015); **Anna Ulyanenkova**
Mentored by Anne Sutter, Psychology

We investigated whether replacing a letter in a word interferes with access of the word’s memory representation. Stimuli were six-letter words that were intact or had either the second or fourth letters replaced by another letter. The fixation point was controlled by placing it between the second and third, or the fourth and fifth letters of the string. Participants indicated whether the letter string was a word or not. Accuracy was recorded. The results of this experiment are compared to results of another experiment in which two letters were transposed. This comparison will allow evaluation of models of word recognition.
Poster 32

*Humor Affects Women’s Responses to Sexist Remarks*

**Karina Sanchez,** Psychology (2015)
Mentored by Robyn Mallett, Psychology

We test whether women are more critical of sexist comments when they are said in a serious manner than as a joke. We also test whether affirming, versus threatening; a person’s belonging reduces the impact of social threats on confronting. We predict that women will respond more assertively to a serious sexist remark when their belonging is affirmed compared to when it is threatened. Women’s responses towards sexist comments were affected by the sense of belonging and the use of humor. When belonging was affirmed, women challenged more when the comment was serious than humorous. This same pattern existed when belonging was threatened, but the difference was smaller.

Poster 33

*Experiencing Homelessness in Chicago: Opportunities and Resources for Lesbian, Gay, Bisexual, Transgender, and Queer Young People*

**Allison Grant,** Social Work (2015), Social Justice Fellowship
Mentored by Brandi Vigil, Criminal Justice and Criminology

Lesbian, Gay, Bisexual, Transgender, and Queer (LGBTQ) young people, many who experience homelessness, exist as a marginalized population in the U.S. as a result of oppressive systems and structures currently in place, such as emergency housing and the juvenile justice system. This exploratory research involves contacting local Chicago organizations serving LGBTQ youth experiencing homelessness in an effort to determine whether they assist this population and to what extent they affirm their identities and serve specific needs. Findings show the disparity between north and south side service providers, the disproportionate of LGBTQ-affirming organizations compared to non-discriminatory organizations, and the limited and vague discussions surrounding police and justice system involvement with LGBTQ youth experiencing homelessness.

Poster 34

*Alternatives - Youth Re-Entry*

**Zach McNealy,** Sociology (2015), Center for Urban Research Learning Fellowship

This presentation will cover the efforts of Alternatives Inc. and Howard Area Community Center in their joint project, Project Rising Phoenix. Project Rising Phoenix sought to help previously incarcerated youth re-enter their communities, and society at large through individualized case management, and providing the resources and support needed to help their participants successfully reintegrate.

Poster 35

*Photometric Classification of Supernovae*

**Dan Zimmerman,** Theoretical Physics and Applied Mathematics and Mathematics (2015), Mulcahy Scholars Program
Mentored by John Cunningham, Physics

Photometric classification of supernova cosmology samples currently depends on a limited number of core-collapse templates for both the classification and production of simulated test samples. We present the results of systematic template variations for both classification and simulation, using the sncosmo package to classify core-collapse supernovae simulated with the SNANA package. Our goal is to understand better the template uncertainties in future photometrically-classified supernova cosmology samples.
Novel Phages
Kema Malki, Biology (2015), Mulcahy Scholars Program
Mentored by Catherine Putonti, Bioinformatics

Viruses are the most abundant type of biological entity; their abundance is most notable within aquatic ecosystems. In marine environments, there are about 10 phages for each bacterial/archaeal cell present. Despite their abundance, very little is known about environmental phages and few environmental phage genomes are available online. In order to further develop our knowledge of phages and the roles they play, it is essential that we continue to isolate and sequence phage genomes. During the summer of 2013, I isolated five novel bacteriophages from the nearshore waters of Lake Michigan. These phages were grown with the host Escherichia coli. Characterization of these phages included a study of burst time, generation time, host range, and visualization through TEM. The results indicate that while three of these phages have a relatively quick generation time of ~20 minutes, one of the phages has a generation time of ~2 hours. Generation time can be indicative of larger genomes. We sequenced the phages and found the bacterial host sequences in the data. We created primers specific to the phage genomes and are currently attempting to piece the genomes together. We hope to publish these genomes to the NCBI database.

Evolutionary Changes in White Clover: DNA Sequencing and Analysis of Retrotransposon Families
Samer Martini, Biology (2015), Provost Fellowship
Mentored by Howard Laten, Biology

Transposable elements can induce advantageous structural and epigenetic changes in an organism by either inserting into or spreading control regions, resulting in evolutionary changes and increased genetic diversity. In conjunction with other lab members, I have begun sequencing and analyzing transposable element families -- which are likely candidates for playing a part in causing evolutionary change and polyploidy -- found in the white clover species under study in our lab. We plan on using data obtained from these experiments to analyze how transposon mobilization is related to interspecies hybridization and evolutionary change in different members of this species.

Mechanisms of Plant Evolution: Hybrid Formation and Mobile DNA Activation
Haley Luebke, Molecular Biology (2015), Biology Summer Research Fellowship, Mulcahy Scholars Program
Mentored by Howard Laten, Biology

Transposable elements (TE) are mobile genetic elements that constitute the majority of plant genomes and have been known to influence the adaptive evolution of plants by promoting genome reorganization and altering gene expression patterns. Hybrid formation induces TE mobilization in several plant lineages. I have developed protocols to elucidate the chromosomal insertion sites of TE families in allotetraploid white clover which originated from hybridization events roughly 100,000 years ago. The method that I have developed will be used as a model to identify and elucidate specific insertion polymorphisms, which may have contributed to the plasticity and robustness of hybrid species.

The Trophic and Tropic Effects of Neurotrophic Factors on Trigeminal Neurites Change During Embryonic Development
Matthew Russo, Biology (2015), Mulcahy Scholars Program
Mentored by M. William Rochlin, Biology

During development, axons reach their specific targets by responding to various guidance cues. Neurotrophic factors are diffusible molecules known to promote axon outgrowth and act as chemoattractants throughout the nervous system, but their effects on lingual somatosensory axons must be further clarified. My research has found that trigeminal neurites only grow in response to nerve growth factor and high concentrations of neurotrophin-3 at embryonic day 15 (E15), but respond to a broader range of neurotrophic factors at E18. Additionally, slow-release bead assays indicate that certain neurotrophic factors are also capable of attracting trigeminal neurites at E15 and E18.
**Poster 40**

*Spatial Variations in Activity and Composition of the Chicago River System Microbiome*

Margaret Sladek, Biology (2015), Biology Research Fellows Program
Mentored by John J. Kelly, Biology

The goal of this project was to characterize benthic bacterial communities in the Chicago River. Specifically, we measured nutrient chemistry, bacterial community activity, bacterial abundance, and bacterial community composition at nine sites within the North Shore Channel, North Branch and Main Stem of the Chicago River. We found significant variations in nutrient chemistry and bacterial community activity, abundance and composition, and observed a significant effect of wastewater treatment plant (WTTP) effluent from a WWTP on the North Shore Channel. The results of this study provide valuable insight into the influence of anthropogenic stressors on the microbiome of an urban river.

**Poster 41**

*Conductivity Change within Acene Thin Film Surfaces through the Diels-Alder Reaction*

Shawn Dalke, Chemistry (2015), Mulcahy Scholars Program
Mentored by Jacob Ciszek, Chemistry

Organic semiconductors are an important material in the field of electronics. These materials are not only cheaper and lighter than their inorganic counterparts but they also allow for the fabrication of flexible circuits. The conductivity of particular organic semiconductors known as acenes can be dramatically increased as a result of manipulation of the surface properties through the Diels-Alder reaction by at least three orders of magnitude to give an observed conductivity up to one microsiemen per centimeter. The reacting molecules’ substituents, electron donating and withdrawing, play an important role in the overall effect on the conductivity of the devices.

**Poster 42**

*A Phenomenological Analysis of Causality in Hume and Locke*

Elana Maloul, English and Psychology (2015), Research Mentoring Program
Mentored by Michael Gutierrez, Philosophy

The aim of our project was to apply a phenomenological critique to existing accounts of causality. Drawing primarily from Locke and Hume, we examined their examples of causal experiences. Upon examining these two philosophers we found that any accounts of causality that are dependent upon sensory information cannot give a full explanation of where beliefs about causal relations come from. We argue that the phenomenological approach is a solution to skepticism because it provides a process for breaking down the conscious experience of the world and is better prepared to give a more robust description of what causality it is.

**Poster 43**

*The Relation Between Trait Open-Minded Cognition and Trait Creativity*

Meridith Stauber, Psychology (2015), Provost Fellowship
Mentored by Victor C. Ottati, Psychology

The goal of the current study was to investigate creativity’s relationship to open-mindedness. Specifically, the current research looked for a correlation between trait creativity and trait open-mindedness. The researchers posed three hypotheses that were partially supported: 1) a positive correlation between creativity and open-mindedness will emerge in the present study, 2) a positive correlation will exist between objective measures of creativity and open-mindedness; but a negative or attenuated correlation will exist between self-report measures of creativity and open-mindedness; and 3) as the level of subjectivity in self-report measures increases, the correlation between creativity and OMC will decrease or become negative.
**Poster 44**

**The Power and Politics of ONE Northside: Exploring the Impact of Community Organizing as a Force for Social Change on Chicago's Northside**

**Maura Rocks**, Political Science and Theology (2016), Center for Urban Research Learning Fellowship

This research has engaged ONE Northside (Organizing Neighborhoods for Equality): "a mixed-income, multi-ethnic, intergenerational organization that unites diverse communities" to "build collective power to eliminate injustice through bold and innovative community organizing." Originally a project looking to evaluate the success of a merger between two organizations (Organization of the North East and Lakeview Action Coalition), this research has developed into a critical examination of the collective power and influence of ONE Northside as a whole. Particularly, this project has examined ONE Northside's impact on state and local policy, on engaging diverse groups of people in politics, and on developing powerful leaders within Chicago communities.

**Poster 45**

**lasB Expression in P. aeruginosa with Quorum Sensor Inhibition**

**Elizabeth Humphrey**, Biology (2015), Biology Summer Research Fellowship

Mentored by Domenic Castignetti, Biology

Pseudomonas aeruginosa is a Gram-negative bacterium that expresses many virulence factors, making it able to establish an infection and cause disease in humans. The expression of these factors is mediated by a quorum sensing system. Quorum sensing is the mechanism by which many Gram-negative bacteria communicate to control gene expression based on population density and environmental conditions. The bacteria make small amounts of diffusible signaling molecules to induce colony-wide gene expression of virulence factors. We hypothesize that when we inactivate these molecules with AiiB—a plant-derived enzyme—we will observe reduced expression of virulence factors in P. aeruginosa.

**Poster 46**

**Think like an Athlete: The Relevance of Perceived Athletic Competence to Psychosocial Outcomes in Urban Minority Girls**

**Jori Rappaport**, Psychology (2014), Provost Fellowship

Mentored by Amy Bohnert, Psychology; Carolyn Bates, Psychology

Physical activity (PA) levels decline during adolescence (Kimm et al., 2002), especially in low-income minority girls (Robbins et al., 2013). While programs encouraging PA appear to improve psychosocial outcomes for girls (Colchico et al., 2000), it is unclear whether PA exerts an indirect effect on these outcomes through improvements of perceptions of athletic competence (PAC). Correlations between PAC and psychosocial outcomes have yet to be examined after accounting for the effects of PA. This longitudinal study examines associations between PAC and PA on psychosocial outcomes in a sample of low-income urban minority girls participating in a summer program promoting PA.

**Poster 47**

**Investigating the Fractal Dimension of EEG Time Series**

**Joseph Westrich**, Biochemistry (2015), Provost Fellowship

Mentored by Carolyn Martsberger, Physics

The fractal dimension is a useful tool in the analysis of various physiological time series. It has been suggested that the fractal dimension of the depressed brain is different than that of non-depressed brain. EEG data collected from resting EEG clinical trials can be analyzed using theories from physics in conjunction with the programming language MATLAB™. Fractal analysis of the EEG can reveal underlying trends or correlations between depression and fractal characteristics. In conjunction with mental health surveys, this will assist in determining how depression influences the fractal dimension of an EEG. The results may be able to provide tools for clinically recognizing depression, and will contribute to the overall understanding of the fractality of a depressed brain.
Poster 48

*Ephrin-A's Repel Embryonic Taste and Somatosensory Axons*

**Randall Treffy**, Biology and Biochemistry (2016), Biology Summer Research Fellowship
Mentored by M. William Rochlin, Biology

We study axon pathfinding using the innervation of taste papillae as a model system. Axons in both the CNS and in the PNS are guided by both attractants and repellents en route to their targets. This work concerns a family of cell-attached guidance cues, ephrin-A's, that typically have a repellent role. Ephrin-A's are expressed in taste papillae during innervation and their receptors, EphA's, are expressed in the sensory axons (including taste and general sensory axons) that terminate in or near the epithelium. In vitro, stripes of ephrin-A's repel both of these types of sensory axons.

Poster 49

*Creation of a Bovine Hemoglobin-Based Oxygen Carrier for Use in Hemorrhagic Trauma*

**Dana Dahhan**, Biochemistry (2015), Mulcahy Scholars Program, Provost Fellowship
Mentored by Ken Olsen, Biochemistry

Current blood transfusions depend on a finite supply of human blood donations, which is further limited by blood typing, with the concomitant possibility of blood shortages. Our product aims to circumvent these problems using hemoglobin, the protein responsible for carrying oxygen in our blood, extracted from bovine red blood cells. Building on previous attempts by our own and other labs over several decades, our hemoglobin-based oxygen carrier is produced in two stages: cross-linking of the hemoglobin tetramer on the alpha subunits under deoxy conditions, followed by conjugation of these cross-linked tetramers to an eight-arm 40 kDa polyethylene glycol backbone.

Poster 50

*Understanding the Role of Arginine Residues with Activator of E. coli ADP-Glucose Pyrophosphorylase*

**Fidel Huerta**, Biochemistry (2015)
Mentored by Miguel A. Ballicora, Chemistry and Biochemistry

Production of starch and glycogen synthesis in plants and bacteria is regulated by the enzyme ADP-glucose pyrophosphorylase (ADP-Glc PPase). Using modeling, kinetic characterization, and crystal structures of ADP-Glc PPase from Agrobacterium tumefaciens, specific arginine residues were found to interact with activator fructose-6-phosphate. Similar studies in the Escherichia coli ADP-Glc PPase found the activator fructose-1,6-bisphosphate (FBP) has a similar binding site as A. tumefaciens. Various techniques show multiple arginine residues interact with the two phosphate groups of FBP. Alanine scanning mutagenesis shows that R52A alters activity and insight to how FBP binds to ADP- Glc PPase.

Poster 51

*Analysis of Gene Expression and Disease Model Development in Zebrafish*

**Aisosa Omorogbe**, Molecular Biology (2015), Biology Research Fellows Program, Provost Fellowship; **Carolyn Wong**; **Brienne Lubor**
Mentored by Bryan Pickett, Biology

The Retinaldehyde Dehydrogenase 2 (RaldH2) gene plays an important role in normal development by patterning the brain, vertebral column, limbs, and thoracic/abdominal organs. Through microinjection of RaldH2::YFP transposon DNA and transposase mRNA into zebrafish, we have generated stable transgenic lines, which show a variety of expression phenotypes and label cells and tissues known to express RaldH2. With this information, we have the ability to understand the role of this gene in human health, as the RaldH2 gene has been implicated as a target of Fetal Alcohol Exposure.
**Poster 52**

*Delinquency in African American, Urban Youth and the Moderating Role of Ethnic Identity*

**Michaela Mozley**, Psychology (2015)

Mentored by Maryse Richards, Psychology

African American youth living in low-income, high violent communities are at risk of developing delinquent behavior (Ingoldsby & Shaw, 2002). The current study looked at how ethnic identity may moderate the relationship between neighborhood disadvantage and delinquency. The effects of 7th grade perceived neighborhood gang problems were positively associated with higher delinquency, but only when ethnic identity orientation towards others was low. These findings show that a sense of one’s ethnic identity in relation to other ethnic/racial groups in society have an impact on youths’ behavior. In disadvantaged neighborhoods, interventions involving messages encouraging racial heterogeneity may reduce youth’s delinquent behavior.

**Poster 53**

*Epigenetic Characterization of Satellite III Subfamilies in Cancer*

**Burhan Adhami**, Psychology (2016), Provost Fellowship

Mentored by Jeffrey Doering, Biology

Heterochromatic regions were left out from the Human Genome Project. Our lab is constructing a detailed map of the short arm of the acrocentric chromosome 21 as a model for understanding the structure and function of heterochromatic regions in general. Normally unexpressed tandemly repetitive satellite sequences are rich in the heterochromatic portion of the genome. Recent work has revealed that satellite expression is highly elevated in cancer cells compared to normal tissue. Satellite III (SatIII) repeats show the greatest increase in expression. A differential change in expression has been seen in different top-level families of satellite sequence in cancer cells compared to normal cells. We have developed quantitative assays capable of studying the epigenetic state of individual SatIII subfamilies and hypothesize that all SatIII targets will display histone modifications consistent with transcriptional activation, but that different regions will display different levels of activation. So far, the data collected on Satellite III subfamilies on one cancer cell line suggests that Sat III are inactive in chromatin configuration; however, we require multiple sister cell lines of leukemia and normal to compare to. If different levels of activation are found, this could lead to the development of biomarkers for cancer detection and prognosis.

**Poster 54**

*Leadership, Mental Health and Spirituality of Women Religious*

**Jennifer Christopher**, Psychology (2015); **Anissa Vargas; Tyler Murphy**

Mentored by Jennifer Fiebig, Psychology

This study focused on the intersection between Women Religious (Sisters), leadership themes, feministic viewpoints, and the manner in which their relationship with God influences their mental health. Sisters were interviewed (M age = 72.5 years) and 119 transcripts were analyzed and coded. Results demonstrated that Sisters held various leadership positions which primarily concentrated on creating solutions to social justice issues. Sisters also emphasized leading with compassion while rejecting many mainstream feministic viewpoints. Furthermore, the results suggested that Sisters had developed religious coping skills that assisted in their recovery from negative life events while reporting high levels of life satisfaction.

**Poster 55**

*African-American Adolescents’ Exposure to Violence and Feelings of Safety in the Context of Organized Activity*


Mentored by Maryse Richards, Psychology; Arie Zakaryan, Psychology

This study examines the effects organized activity has on violence exposure and feelings of safety. 245 African-American 6th-grade students (M age = 11.6 years) answered questionnaires on violence exposure, organized activity, and safety. This study found higher levels of participation in organized activity were related to higher levels of feeling safe. Organized activity was not a significant moderator of the relationship between violence exposure and feelings of safety. To obtain a more powerful
future research should conduct studies with a larger sample. Results from this study support the literature demonstrating organized activity as a beneficial pursuit for inner-city youth.

**Poster 56**

*The Influence of Teacher Vocabulary on the Language and Literacy Skills of LM Learners*

**Dahalia Gonzalez**, Psychology (2016), Provost Fellowship
Mentored by Perla Gamez, Psychology

The present study investigates how the language used in classrooms is related to the language and literacy skills of young Latino students for whom English is not the primary home language (Language Minority Learners: LM Learners). Given the continued high rates of immigration, particularly by Spanish-speaking Latinos, it is important to understand the type of language that promotes the development of culturally- and ethnically-diverse students. Thus, we will investigate the relationship between Kindergarten teachers' language use and their LM student's oral language skills. Specifically, the study aims to describe teachers' (n=21) vocabulary and LM learners’ (n=101) oral narratives over the school year. The findings of this study can potentially lead to new teaching interventions to help LM learners reach their full academic potential.

**Poster 57**

*The Neural Correlates of a Habitual Game*

**Robert Palumbo**, Psychology (2015), Mulcahy Scholars Program, Research Mentoring Program
Mentored by Laura Stockdale, Psychology

Increases in societal violence, and in the realism of and participation in violent video games are bringing interest toward the possible long-term effects of habitual video game playing. This study used scalp electroencephalography (EEG) methods to examine emotional face processing and inhibitory control differences in habitual violent gamers and non-habitual gamers. Both groups were asked to perform a gender discrimination stop-signal task using emotional faces. Differences in early face processing as well as inhibitory control were seen in the form of event-related potentials (ERPs). These differences may demonstrate a change in certain cognitive abilities as a result of habitual gaming.

**Poster 58**

*Gender in Cross-Age Mentoring*

**Allison Shimer**, Psychology (2015), Provost Fellowship
Mentored by Maryse Richards, Psychology

The violence prevention initiative, CeaseFire, focuses on adolescents from ages 15-24 living in Chicago communities with high levels of violence. A mentoring program was created that will use elements of CeaseFire in order to decrease stress and increase coping in 4th and 5th grade African-American students exposed to violence. To measure the effectiveness of program, I will collect pre-intervention data about the perceived benefits of mentoring from a group of 20 high school mentors through interviews on how this program could potentially benefit his or her mentees, as well as how it could benefit the mentors themselves. The data will compare males and females and explore their differences in expectations for the mentoring program. Further research will offer insight into literature that suggests females experience more benefits from mentoring than males. This data will provide further information on Dr. Richards Risk and Resilience Lab’s mentoring program in collaboration with CeaseFire and how to enhance the program for the future.

**Poster 59**

*Race Impacts the Workplace Motherhood Penalty*

**River Simpson**, Psychology (2016), Provost Fellowship
Mentored by Robyn Mallett, Psychology

We test whether workplace discrimination is shaped by gender, parenthood status, and race. Participants (n = 259) were randomly assigned to review one of eight professional websites that varied target gender (woman/man), race (Black/White), and parenthood (parent/nonparent). We found a three-way interaction of target gender, race, and parenthood status on ratings of
competency, likeability, and hireability, F(1,257)s > 4.01, p ≤ .05. Parenthood gave White women a boost on competency, likability, and hireability; however, parenthood decreased all ratings of Black women. Our research indicates that the workplace “motherhood penalty” affects Black women more severely than White women.

**Poster 60**

*The Effects of Parental Psychological Control on Indian-American Students*

*Mentored by Steven Davis, Psychology*

This study explores the effects of parental psychological control on Indian-American students. Specifically, we predict that students who are raised by parents who are more psychological controlling might be more likely to struggle with integrating their Indian ethnic identity with their identity as a student in an American university, and might therefore have more adjustment difficulties. This might be especially problematic for students who have a more interdependent (vs. independent) identity.

**Poster 61**

*The Effect of Letter Transpositions on Semantic Priming in Word Recognition*

*Mentored by Anne Sutter, Psychology*

The purpose of this experiment was to investigate the importance of the order of the internal letters of a word in word recognition. The Split-Processing Model (Shillcock, Ellison, and Monaghan, 2000) proposes that as long as the first and last letters of a word have been identified, it does not matter what the order is of the internal letters, as long as they appear on the correct side of fixation (and hence, are initially projected to the correct hemispheres.) On each trial of this experiment, participants saw a prime letter-string followed by a target letter string. The prime letter string was either a word (mollen) or a nonword formed by transposing two internal letters of a word (moletn.) These letter transpositions occurred either on one side of fixation (within hemisphere) or across the fixation point (cross hemisphere.) The target letter string was either a word that was semantically related to the prime (LAVA), a word that was not semantically related to the prime (PEAR), or a nonword (AJIN.) Participants indicated by a key press whether or not the target was a word, and reaction times were recorded. The Split Processing Model predicts that within-hemisphere transpositions will not disrupt activation of a memory representation of the prime’s base word, allowing it to facilitate activation of the target when the two are semantically related, thus reducing reaction times. In contrast, this model predicts that cross-hemisphere transpositions will disrupt activation of a memory representation of the prime’s base word, not allowing it to facilitate activation of the target when the two are semantically related, thus increasing reaction times.

**Poster 62**

*Regulation of Hypoxia Inducible Factor 1α by Sprouty2*

*Spencer Suppes*, Biology (2015), Research Mentoring Program
*Mentored by Kristin Hicks, Molecular Pharmacology and Therapeutics*

Sprouty2 (Spry2) is decreased or lost in cancers of the lung, liver, prostate, and breast, which is correlated to poor patient prognosis. Hypoxic Inducible Factors (HIF) has a role in promoting tumor progression and survival processes such as angiogenesis, metastasis, and drug resistance. Spry2 reduces the stability of HIF1α by promoting the ubiquitination and proteasomal degradation. Spry2 and HIF1α can bind to and be ubiquitinated by von Hippel-Lindau protein complex (pVHL). With this in mind, we hypothesize that Spry2 enhances the proteosomal degradation of HIF1α by binding to HIF1α and bringing more pVHL in proximity to HIF1α.
Poster 63

Evaluating Loyola’s Waste Footprint: A Waste Audit Project
Juan Robles, Environmental Science (2015), Provost Fellowship
Mentored by Daniel Amick, Anthropology

From the waste audit project my purpose was to seek answers about what are the main components of waste produced by staff, faculty, and students on campus. By learning about the behaviors of someone’s trash output, we can have a much clearer understanding on how to approach recycling on campus as well as finding ways to minimize Loyola’s contribution of waste to a landfill.

Poster 64

Water Usage and Efficiency at Loyola’s Water Tower Campus
Lauren Standal, Environmental Science (2015); Amina Smajlovic; Matthew Evans
Mentored by Tania Schusler, Institute of Environmental Sustainability; Aaron Durnbaugh, Institute of Environmental Sustainability

The environmental concern of wasteful water consumption in city buildings is tied to the global problem of the limited availability of fresh water. Along with the growing concern of freshwater availability, improving water efficiency can offset the increasing water prices in Chicago. Performing an audit of the infrastructure and consumption patterns of the Water Tower Campus buildings highlights the strengths and weaknesses of Loyola’s current water practices.

Poster 65

Evaluating People’s Perception of the Dollar’s Strength
Adam Stoeppler, Finance (2015)
Mentored by Stacy Neier, Marketing

Following the financial crisis of 2008, there was a drop in the reputation of the dollar among consumers. With the economy showing signs of improvement, this project aims to find if people still believe in the global strength of the dollar, particularly compared to another prominent currency, the euro.

Poster 66

Implicit Ambivalent Sexism Activation following Businesswoman and Housewife Primes
Carrie Chouinard, Psychology (2015), Research Mentoring Program
Mentored by Kala J. Melchiori, Psychology

Hostile (HS) and benevolent (BS) sexism reflect, respectively, negative and positive attitudes toward women: both attempt to justify restricting women to traditional gender roles. We predict that businesswomen activate more HS, whereas housewives activate more BS. 195 participants were primed with a businesswoman or housewife silhouette and completed a categorization task designed to measure implicit HS and BS. Partially supporting predictions, BS was more accessible than HS, and the businesswoman prime elicited more HS and BS than the housewife prime. Our understanding of the activation of sexism is key to knowing how prejudice towards different groups of women may manifest.

Poster 67

The Quantification of Toxic Elements in Biological Matrices
Jacob Batycki, Biology and Spanish (2016)
Mentored by Martina Schmeling, Chemistry and Biochemistry

The goal of this research project is to develop a protocol for the quantification of both oxidation states of chromium in biological matrices by cation exchange and analysis by graphite furnace absorption spectroscopy. To evaluate the efficacy of the method, studies performed will analyze interference from the sample matrix, limit of detection, specificity, and reproducibility. A
similar format will be applied to arsenic. In developing an efficient and reliable method that can quantify the major oxidation states of chromium and arsenic, the results of this research will allow epidemiological studies to link toxic metal concentrations to other patient characteristics.

**Poster 68**

*Methylation of L1 Regions on the Short Arm of Chromosome 21*

*Kelly McKinnon*, Biology and Psychology (2015), Mulcahy Scholars Program; *Rwaida Izar*

Mentored by Jeffrey Doering, Biology

The human genome project left out the heterochromatic regions, which are highly enriched in repetitive sequences such as long interspersed elements (L1) elements. L1s are retrotransposons that are usually transcriptionally inactive due to high levels of DNA methylation of their promoters. Using the bisulfite PCR sequencing method, I am studying the DNA methylation patterns of these elements in placenta, where they may not be in heterochromatic structures.

**Poster 69**

*Attempting to Track the Energy Flow of Invasive Plants to Amphibians Using Stable Isotopes*

*Milica Radanovic*, Biology and Environmental Science (2016), Biology Research Fellows Program

Mentored by Joseph R. Milanovich, Biology

The purpose of this project was to determine the degree to which larval anurans (Lithobates sylvatica, Wood Frog) consume aquatic invasive plant litter (Lythrum salicaria, Purple Loosestrife) compared to native hardwood litter. Using stable isotope data of carbon (13C) and nitrogen (15N) from larval anurans and the two litter types we created Bayesian Isotope Mixing Models to determine specific litter types tadpoles were consuming. Our results suggest that although the isotopic 15N values of the invasive litter were higher compared to native litter, the fractionation of stable isotopes and contribution of either litter to the tadpoles could not be distinguished.

**Poster 70**

*Impact of Retrotransposons on Plant Evolution*

*Volodymyr Didorchuk*, Biology and Psychology (2016), Carbon Undergraduate Research Fellowship Program

Mentored by Howard Laten, Biology; Mark Albert, Computer Science

Our project aims to explore a class of chromosomal DNA elements called retrotransposons. Retrotransposons are mobile DNAs that have caused critical changes in the gene expression of organisms exposed to major stress such as excess heat, UV exposure, etc. We are evaluating the differences in retrotransposon activity, mapping the locations of the genes affected by the DNAs and determining the possible function of these genes within the white clover. When comparing the genomic sequence of the white clover to similar species, we expect to find a larger than expected divergence in their overlap, indicating a higher rate of evolution in white clover.

**Poster 71**

*Air Pollution Studies in Chicago: Multivariate Statistical Analysis & Use of a Pollution Transport Model*

*Nowruss Mohammad*, Biology (2015), Mulcahy Scholars Program

Mentored by Martina Schmeling, Chemistry; Katrina Binaku, Chemistry

The Chicago land area is notorious for experiencing the most drastic weather changes throughout the calendar year. With these drastic changes come large scaled temperature differences resulting in large lake breezes. With these lake breezes, large air masses located over the lake are transported back to land. Based on this, we hypothesize that on days with lake breeze events a different pollution pattern than on non-lake breeze days will occur, resulting in different chemical signatures for both. Lake breezes may cause a sudden influx of secondary air pollutants over Chicago, inducing short pollution episodes. Pollution transport modeling is a useful tool to run simulations based on observed pollution cases, a major aspect in our research. We plan
to determine the local atmospheric signature during summer months, field measurements on non-lake breeze and lake breeze days. Uncovering of information on relationships between local pollutant concentrations and meteorology is also an big aspect to our research. Lastly, we plan to utilize pollution transport model to simulate non-lake breeze and lake breeze day to assess differences in atmospheric signature and pollution transport during a lake breeze.

**Poster 72**

*The Role of Chemokine Receptor 4 in Neural Regeneration*

**Wasif Osman**, Biology (2016), Biology Research Fellows Program
Mentored by Jessica H. Brann, Biology

Many debilitating neural disorders that affect the brain do so primarily via neural degeneration. As such, our understanding of neural regeneration is vital given current research aims to develop clinical therapies to replace lost neurons. Several regions of the nervous system exhibit neurogenesis, but the olfactory epithelium (OE) is an ideal model system because it generates mature neurons daily and is easily accessible. Moreover, the OE is surrounded by vasculature which likely regulates neurogenesis by presenting chemokines to neural stem cells. We hypothesize that a chemokine receptor (CXCR4) is acting as a molecular switch in the activation of typically quiescent stem cells, initiating neurogenesis. We first investigated CXCR4 localization in the OE and observed with immunohistochemistry that CXCR4 is indeed found in the neural stem cells. We next used Western blotting to show that its expression declines with age in tandem with the rate of proliferation. To examine its role in regeneration we lesioned the OE with the anti-thyroid drug Methimazole, initiating neuronal death, subsequent expansion of the neural stem cell population, and neurogenesis. We have begun to investigate CXCR4 expression during the lesion recovery process, and preliminary results indicate lesion does alter CXCR4 expression. Future experiments will probe the mechanism of action of CXCR4 in an in vitro cell culture model. Our results therefore implicate CXCR4 in the regulation of olfactory neurogenesis.

**Poster 73**

*Profile of Chronic Violent Gamers and Nonviolent Gamers*

**Kavita Patel**, Biology (2016), Provost Fellowship
Mentored by James Garbarino, Psychology

Recent work with developmental psychologists has demonstrated a small but meaningful part of the population that is chronically playing video games. Excessive hours of video game play has been associated with decreased academic performance, development of attention problems, increasingly aggressive and impulsive behavior, and decreased prosocial behavior and empathy. However, few researchers have taken into account the content of the games being played most frequently. Researchers have shown that the content of the media is essential for understanding media effects. For example, exposure to prosocial video games has been related to increased prosocial behavior, but exposure to violent and aggressive video games has been associated with increased aggression. Therefore, it is vital to understand the content of the games being played. The goal of the current study is to study chronic violent video gamers and their personality characteristics. Chronic video gamers will be identified from over 1,000 LUC undergraduate students surveyed over the last two years. Correlations will be analyzed between chronic violent gamers and depressive symptoms, relational and physical aggression, empathy and prosocial behavior, academic performance, relationships with family and friends, as well as worry and anxiety.

**Poster 74**

*A Functional Analysis of Heat Shock Protein 90s on Gametocytes in Plasmodium Falciparum*

**Sandy Vien**, Biology (2015), Biology Summer Research Fellowship
Mentored by Kim Williamson, Biology

The tenacious malarial parasite Plasmodium falciparum (P. falciparum) goes through two hosts in its life cycle, the warm-blooded human and the cold-blooded mosquito. Because P. falciparum goes through drastically different host environments, the parasite needs a highly efficient cellular stress response system thus requiring heat shock proteins (Hsp). Across species, Hsps act as highly conserved molecular chaperones that fold protein into native conformations and that modulate the activity of transcription factors. Plasmodium falciparum Hsp90s interact with proteins that facilitate the parasite’s adaptation to environmental changes. If this adaptive ability is hindered, then we can prevent malarial transmission. Furthermore, PfHsp90s are
viewed as excellent drug targets not only because of their essential role in the parasite’s life cycle but also because it shares only 35-64% homology to the active site of human Hsp90s. These structural differences between human Hsp90s and PfHsp90s suggest drugs may be specially designed to inhibit the activity of PfHsp90s. We have found two chemical inhibitors NVP-AUY922 and alvespimycin that cause malarial death and we hypothesize that the drugs interact with PfHsp90s. Our goal is to create recombinant PfHsp90 proteins through expression constructs and to test NVP-AUY922 and alvespimycin to examine the effect on enzymatic activity.

+Poster 75+

**Biophysical Studies of G Protein Subunits**

**Andrea Wakim**, Biology (2017), Mulcahy Scholars Program, Provost Fellowship  
Mentored by Duarte Mota de Freitas, Biochemistry

Bipolar disorder (BD) is an illness in which one experiences frequent fluctuations in energy levels and mood, leading to states of mania and depression. Research indicating the biological influence in BD points to mechanisms at the cellular level, specifically signal transduction pathways involving guanine nucleotide binding protein. Using the techniques isothermal titration calorimetry, circular dichroism, and fluorescence, physical characteristics such as secondary structure and magnesium binding are investigated. This data will lead to more knowledge on BD and a potentially better treatment.

+Poster 76+

**Role of Laterodorsal Tegmental Nucleus Inputs to the Ventral Tegmental Area in Dopamine-Dependent Reinforcement**

**Dustin Pilat**, Biology (2016), Mulcahy Scholars Program  
Mentored by Stephan Steidl, Psychology

When experiencing food, sex, or drugs, the elevation of forebrain dopamine levels are thought to induce pleasure and reinforce reward-seeking behaviors. However, treatments for addiction directly targeting the dopamine system have been unsuccessful. Evidence suggests that specific inputs to the dopamine system modulate drug-seeking behaviors. Accordingly, our study targets the laterodorsal tegmental nucleus (LDTg). The LDTg projects its neurons to the ventral tegmental area (VTA), a major source of dopamine neurons. This experiment aims to establish which VTA dopaminergic projections contribute most importantly to the reinforcing effects of exciting LDTg inputs, which may help define targets for future addiction medications.

+Poster 77+

**Effect of Maternal Care on Recovery From Febrile Seizures**

**Zeeshan Qazi**, Biology (2016)

Maternal deprivation may increase anxiety in young mice (both control and febrile seizures) shown in lack of exploratory behavior. Data confirms greater microglial activation in febrile seizure mice compared to control mice 3 days after seizures in both groups (mat dep & mat care). There is a trend towards greater microglial activation in mice that experienced maternal deprivation, but no statistical significance.

+Poster 78+

**Teacher Professionalization in Chicago Charter Schools**

**Jennifer Burghard**, History and International Studies (2015), Research Mentoring Program  
Mentored by Beth Wright, Education

Charter schools were initially created with the intention of empowering teachers to implement school and classroom strategies in accordance with their educational expertise. However, charters are also known to have higher rates of teacher turnover and fewer numbers of credentialized, experienced teachers. In the context of shifting and contested notions of teacher professionalism, this study seeks to determine how charter schools have lived up to their theoretical promise for teacher professionalization. The study examines conceptualizations of teacher professionalization in over forty charter schools in Chicago via an analysis of
school documents. Mission statements, employment information, student handbooks, and school policy documents were collected and analyzed with the use of a coding software in order to search for themes and patterns in the way particular topics pertaining to teacher professionalization were expressed. Overall, recognition of teacher autonomy and expertise appears to vary widely, and may be influenced by the bureaucratic structures of the schools' governance.

**Poster 79**

*Characterization of Methylation Status of L1 Loci on the Short Arm of Human Chromosome 21*

*Cesare Ruggeri*, Biology (2015), Biology Summer Research Fellowship, Mulcahy Scholars Program
Mentored by Jeffrey Doering, Biology

I am studying the structure of the short arm of human chromosome 21 (HC21p) to understand heterochromatic genomic regions’ organization. To see if they are hypomethylated similarly to the L1s on the inactive X chromosome counterparts, I am studying the DNA methylation levels of L1 retrotransposons in three cell lines. I have examined DNA methylation levels of L1s in normal white blood cells (WBC), prostate cancer cells, and placental DNA. To perform these analyses, a standard bisulfite PCR technique followed by detailed sequence analysis will be done for each L1 locus in each DNA sample.

**Poster 80**

*Evolution and Sequencing of Retrotransposable Elements in White Clover*

*Kailey Becker*, Molecular Biology (2015), Biology Research Fellows Program
Mentored by Howard Laten, Biology

In order to compare the genomes of the various white clover species to see how these sequences have changed over time, we discovered and characterized RT families that are currently presumed to be functional. In one RT family that we primarily worked with, TreRT2, we found two subfamilies of transposable elements, those that contain the integrase gene and those that do not. We characterized members of both subfamilies. These retrotransposon families can be used to trace the evolutionary history of certain species of plants.

**Poster 81**

*Interactions between Phage and Host Communities in Lake Michigan*

*Emily Sible*, Molecular Biology (2016)
Mentored by Catherine Putonti, Biology

Despite indicators that freshwater ecosystems are home to some of the most biologically diverse microbial communities in the world, phage-host interactions in freshwater lakes are considerably less studied than their marine counterparts. Bacteriophages, or viruses that infect bacteria, and the relationship with their bacterial hosts, play a key role in monitoring important biogeochemical processes in Lake Michigan. Given this potentially vast diversity and the relative lack of knowledge about freshwater phages, studies comparing the presence of phage to the types of bacteria are crucial to gaining a fuller understanding of the freshwater community as a whole. Samples were collected from the near shore waters of Lake Michigan at four different beaches in Chicago throughout the summer of 2014. Using next-generation sequencing technology and computational techniques, we assessed the relative abundances of both viral and bacterial populations in order to establish a comprehensive overview of the microbial community in Lake Michigan. However, the complications of working with phages, the presence of prophages and other mobile genetic elements, suggests that one phage will not always infect one host bacteria. The results showed a large abundance of Pseudomonas phages, yet Pseudomonas bacteria were not always the most abundant bacteria present. The discrepancy implies a lack of discernment for multi-host infecting phages in the current metagenomics databases. This study will continue to explore the results in order to improve accuracy of phage sequence identification in the future.
**Poster 82**

*PdxR: Understanding the Vitamin B6 Biosynthesis Pathway in Bacteria to Combat Microbial Resistance*

Shil Punatar, Biology and Economics (2016), Mulcahy Scholars Program  
Mentored by Dali Liu, Chemistry and Biochemistry

Drug resistance presents many challenges in managing bacterial infections. Understanding vitamin synthesis is crucial to understanding virulence. My project focuses on transcription regulator protein PdxR, which synthesizes the only active form of vitamin B6. DNA segments with the PdxR gene were cloned into a vector and overexpressed in E. coli cells. These cells were grown in large quantities and sent through a series of purifications. My project entails the crystallization of PdxR in optimal conditions using crystal screen manipulation. Under the guidance of Dr. Dali Liu, further procedures use X-ray diffraction to solve the structure, thus the function of PdxR.

**Poster 83**

*Shifting Without Grinding the Gears: How Bilingualism Aids the Shifting Component of Executive Functions*

Riley Sticca, Biology and Psychology (2015), Mulcahy Scholars Program, Provost Fellowship  
Mentored by Robert Morrison, Psychology

Shifting is one executive function that is crucial for switching between tasks. Literature suggests that bilinguals have an advantage on tasks requiring shifting because they regularly switch between languages. The present study utilizes a Non-Verbal Stroop task to examine monolinguals’ (n =18) and bilinguals’ (n = 19) shifting skills, as measured with scalp electroencephalography (EEG). Extant literature suggests that the P200 event-related potential (ERP) should reflect this advantage in shifting with a shorter latency or decreased ERP amplitude. Analyses will investigate whether bilinguals show these changes in the P200, reflecting the use of fewer cognitive resources to execute the shifting task.

**Poster 84**

*A Zebrafish Model of Malignant Rhabdoid Tumor*

Unsa Shafi, Biology and Sociology (2016)  
Mentored by Rodney Dale, Biology

Malignant Rhabdoid Tumors (MRT) is a rare and aggressive pediatric neoplasm. This invasive and lethal cancer is primarily found in the kidneys and brain, but can occur at virtually any anatomical location. Most Rhabdoid Tumors have mutations in the SMARCB1 gene, a member of the SWI/SNF chromatin-remodeling complex. In order to develop more effective and less toxic treatments for MRT patients, we are creating an animal model of MRT using zebrafish (Danio rerio).

The Zebrafish genome contains two paralogs of the human SMARCB1 gene, smarcb1a and smarcb1b. The TALEN genome-editing tool has been used to mutate smarcb1b.

**Poster 85**

*The Identity of Genes Required for Biofilm Formation*

Cristina Rodriguez, Biology and Anthropology (2017), Research Mentoring Program  
Mentored by Jakob Ondrey, Microbiology and Immunology

I worked on determining the location of transposon insertions that disrupt biofilm formation by Vibrio fischeri, and on cloning genes that control c-di-GMP levels. I used well-established protocols to isolate and clone various PDE genes hypothesized to disrupt biofilm formation into plasmid vectors. I then introduced those plasmids into biofilm-forming V. fischeri cells. Lastly I tested whether the PDE genes disrupt biofilm formation by assessing the strains for the ability to form a biofilm.

**Poster 86**

*Avian Transcriptomics*

Kelly Boyd, Biology and Bioinformatics (2016), Mulcahy Scholars Program; Emma Highland; Amanda Misch
Recently, discoveries have been made that link the role of the cara mitad (cmi) gene in Drosophila to the MLL genes in humans. Mutations at the binding sites of these genes have been known to cause various types of cancer such as Non-Hodgkin's lymphoma and prostate cancer. The activity of a protein complex called the COMPASS-like complex allows for DNA to act as an enhancer for the transcription of a nearby gene. This process is mirrored with the cmi gene in Drosophila. (Chauhan, Zraly, et al. 2010). By using various sequencing techniques, it may be possible to identify the gene targets of the COMPASS-like complex.

**Poster 87**

*Anterior Prefrontal Cortex and Relational Reasoning during Adolescence: An Event-Related Potential Study*

Sarah Zaza, Biology and Spanish (2015); Amanda Sweiss
Mentored by Robert Morrison, Psychology

Neuroimaging studies have suggested that rostrolateral prefrontal cortex (RLPFC) is associated with relational integration, a capacity critical for relational reasoning. Recently, we adapted a geometric analogy paradigm for use with EEG and identified a response-locked ERP using a task subtraction to isolate relational integration (Nikitin & Morrison, 2011). The mean amplitude of this ERP was strongly correlated with reasoning accuracy. A prior neuroimaging study using this same paradigm suggested that structural and functional RLPFC changes during adolescence support changes in relational reasoning (Dumentheil et al., 2010). The present study tested 13- to 25-year-old females (adolescent group: n=13, 13.8 - 18.9 years; emerging adult group: n=16, 19.3 - 25.1 years) using this visual analogy paradigm. We also indexed participants’ fluid and crystallized intelligence using the NIH toolbox. The two age groups showed no reliable accuracy or response time differences in either the control or relational integration task. Consistent with our prior study of young adults, we found a reliable late positive response-locked ERP corresponding to relational integration. However, the adolescent group failed to show this subtraction ERP. Across all participants the subtraction was strongly correlated with fluid intelligence as measured via the NIH toolbox. These results suggest that RLPFC activity during relational integration is strongly associated with fluid intelligence and its development may be a critical factor in achieving mature relational reasoning ability.

**Poster 88**

*The Effects of Elevated Carbon Dioxide on Soil Microbial Communities*

Francis Coçjin, Biology and Bioinformatics (2016), Mulcahy Scholars Program
Mentored by John Kelly, Biology

Global atmospheric carbon dioxide concentrations are increasing rapidly due to use of fossil fuels and changes in land use. Previous research demonstrated that exposure of trees to elevated atmospheric CO2 affected below-ground soil ecosystems. To explore the effects of elevated CO2 on soil microbial communities we exposed trembling aspen trees to elevated CO2 (720ppm) in outdoor chambers for five years. DNA extraction and next-generation sequencing were used to assess the taxonomic composition of soil bacteria. Computational analysis of these data performed using MOTHUR indicated that elevated CO2 treatment did not significantly alter the composition of soil bacterial communities.

**Poster 89**

*Newborn Axon Targeting in a Genetically Labeled Population of Neurons in Aged Mice*

Majed Shaheen, Bioinformatics and Biology (2016), Provost Fellowship
Mentored by Jessica Brann, Biology

We hypothesize that during regeneration in aged mice, newborn axons of OSNs will fail to converge properly onto glomeruli in the OB. In this project we use P2tauAcZ mice to genetically label a population of OSNs, and quantify the number of new axons. We hypothesize that during regeneration in aged mice, newborn axons of OSNs will fail to converge properly onto glomeruli in the OB.
OSNs post injury induced by chemical lesion to assess the level of recovery made. Using immunohistochemistry, we trace the axonal projections of newborn neurons, and determine whether these axons generated target the appropriate glomerulus. Our overall aim is to better understand how regenerated olfactory sensory neurons differentiate and form synaptic contacts within an already mature neuronal circuit.

**Poster 90**

_Loyola4Chicago: Service, Justice, Community_

**Taylor Bradshaw; Emily Cybulla; Jen Kelso; Rachel Kelso; Nathaniel Magrath; Anna Ulyanenkova**

Mentored by Trevor Van Dyke, Community Service and Action

Loyola4Chicago is a program in the office for Community Service and Action where students provide once-weekly volunteer service in Chicago during the academic year. Students work in service teams at various sites including work with children, immigrants, persons with mental disabilities, and persons experiencing homelessness, among others. Each team is led by a student leader who coordinates meeting times and facilitates the group's reflection on their service experience. Our poster presentation provides an overview of the 2014-15 academic year's efforts for Loyola4Chicago.

**Poster 91**

_Walking Together in Faith and Solidarity: The Pastoral Challenges and Responses of the Catholic Church to North American Migration_

**Mariela Rodriguez, Social Work (2016), Provost Fellowship**

Mentored by Maria Vidal de Haymes, Social Work

The purpose of this study is to examine the various pastoral challenges and responses of the Catholic Church to the experiences and needs of migrants and their families in countries of origin, transit, and destination, along the various phases of the migratory process, which include pre-immigration, transit, resettlement, and return to country of origin. The study focuses on understanding the needs and responses from the perspective of various actors, including migrants, family members of migrants remaining in communities of origin or in destination communities separated by detention and deportation, clergy and religious, and lay leadership.

**Poster 92**

_Determining the Significance of the Absence of a Lesbian Presence within the Leadership of the Catholic Church Today_

**Elizabeth Sextro, Theology and English (2016)**

Mentored by Colby Dickinson, Theology

This presentation is focused on the combination of a feminist and a Queer critique of the Catholic Church in order to uncover the systems of patriarchy and heteronormativity that function in the hierarchy of the Church. By combining the feminist and the Queer critiques, I will approach the question of why there continues to be a problematic absence in the Church of lesbians taking leadership positions. I have begun to approach this question this year by looking at existing discourse within theology that speaks to the systems of power and marginalization of minorities that currently takes place in the Catholic Church.

**Poster 93**

_Promoting Causal Question Asking and STEM Learning in a Children’s Museum_

**Cindy Tran, Psychology (2015)**

Mentored by Catherine Haden, Psychology

We know that young children are capable of engaging in and learning about the practices of science and causality before formal schooling. This study focuses on how parents' questions about causality, such as "Why?" "How?" and "What would happen if?" affect children's engagement in a museum exhibit designed for STEM learning. Parents and their 4-8 year old children worked together to fix a wobbly structure in the first task and children worked alone to fix another wobbly structure in the second task at the Chicago Children's Museum. This presentation will focus on the frequency of parents' causal question asking and relations between the questions and children's performance while building. Implications for STEM learning will be discussed.
Dual Process Theory and the Political Belief Bias Effect  
Makiah Nuutinen, Psychology (2015), Provost Fellowship  
Mentored by Robert Morrison, Psychology

Cognitive neuroscience methods have contributed greatly to our understanding of distinct fast and slow processing systems useful for higher-level cognition. We believe these dual-processes help explain why political beliefs can make it difficult for politicians to agree on significant policy decisions. While recent research suggests that people have an immediate and intuitive reaction of skepticism to opposing political views, recent neurocognitive research (Amodio et al. 2007) suggests that liberals appear to have a more flexible cognitive style. We designed a novel political belief bias paradigm to test how logical reasoning interacts with strongly held political heuristics. We predicted that liberals would be well suited to suppressing their political beliefs in order to engage in formal logical reasoning compared to political conservatives. Our findings confirm our hypotheses.

Alternative Break Immersion  
Matthew Bayens, Theology (2016); Emily Cybulla  
Mentored by Susan Haarman, Campus Ministry

The presentation will contain basic information about the ABI program. It will include information about the sites we partner with, how the ABI program ties in to the Jesuit mission, and the descriptions of the impact that ABIs can have on students.

Science In the Basement: Histology and Pathology  
Mohammed Rahman, Biology (2015)

Understanding the science that occurs behind the scene. The important fields of Pathology and histology that is often overlooked in patient care. We will discover the intricate science that occurs in the basement of a hospital.

Building Learning: Parent-child Interactions in a Children's Museum  
Brittany Baker, Psychology (2015), Provost Fellowship  
Mentored by Catherine Haden, Psychology

This poster will focus on how parent-child conversations during hands-on activities impact children's learning in a children's museum. We look at the kinds of questions parents ask, and how this related to what children learn from an experience building in a construction exhibit. This research contributes to understanding the kinds of informal learning experiences that can be important in the development of knowledge and enthusiasm for STEM.

Environmental Justice in Chicago  
Jennifer Kelso, Environmental Science and Sociology (2015), Social Justice Fellowship  
Mentored by Kathleen Maas-Weigert, Sociology

A case study comparing environmental threats and community responses throughout three Chicago neighborhoods.
**Resplendent Light: The History and Symbolism of Madonna della Strada's Stained Glass Windows**

**Guy Valponi**, Theology (2016)

This research project focuses on the history and symbolism of Madonna della Strada Chapel. Various companies installed several sets of windows contracted by Fr. James J. Mertz over the course of twenty years. Through primarily conducting archival research and reaching out to family and friends of potential artists, previously unknown pieces of the windows’ stories have come together. Artists, who have gone unnamed, now are credited for their contribution to the beauty of the University’s chapel. Additionally, this research also addresses the symbolism and styles that the various artists used in the design of the windows.

"Inside-Out" Site Directed PEGylation of Cross-linked

**Cheyanne Frosti**, Biochemistry (2016), Mulcahy Scholars Program

Mentored by Ken Olsen, Chemistry and Biochemistry

An urgency to create a blood substitute comes from the lack of blood needed for trauma patients. Throughout animal trials, nephritic toxicity has been a concern with the dissociation of the hemoglobin tetramer. The essential reaction to prevent this toxicity is to crosslink the bovine hemoglobin. A second reaction is used to increase the volume of the HBOC. The “Inside-out PEGylation” site directed method is utilized, which includes conjugating eight XL-Hb tetramers on one eight-arm polyethylene glycol (PEG) backbone. Oxygen binding experiments showed that the PEG XL-Hb has high oxygen affinity, which has lead to future improvements with new crosslinking techniques.

**Pulsed Alternating Current Etching (PACE) Method for Ultrahigh Vacuum Scanning Tunneling Microscopy (UHV-STM)**

**Victor Valencia**, Biochemistry (2016), Research Mentoring Program

Mentored by Daniel Killelea, Chemistry and Biochemistry; Jonathan Derouin, Chemistry and Biochemistry; Rachael G. Farber, Chemistry and Biochemistry

The need for atomically sharp conductive tips in scanning tunneling microscopy (STM) has led to the development of a wide array of electrochemical preparation methods. In this study, a novel technique using pulsed alternating current etching (PACE) is used to produce atom sharp tips for STM. The number and potential of the AC pulses was determined by comparing scanning electron microscope (SEM) images of tips produced under various conditions. Additionally, tip quality was confirmed by imaging of HOPG and Ni(111) using UHV-STM.

**Biochemical Characterization of a Novel Thioredoxin-Related Protein (TrxL-1) of the Malaria Parasite Plasmodium**

**Sana Hira**, Biology (2015), Provost Fellowship

Mentored by Stefan Kanzok, Biology

We characterize a novel thioredoxin-like protein of the malaria parasite Plasmodium berghei. Conservation of the trxl-1 gene seems to be restricted to the phylum apicomplexa, which contains several important human pathogens. Quantitative real time PCR analysis revealed that pbtrxl-1 is strongly upregulated in early ookinete development in the mosquito midgut, yet is undetectable in asexual blood stages. We cloned, recombinantly expressed and purified PbTrxL-1, and demonstrated that it is redox active using the insulin-reduction assay and that it is effectively reduced by the P. berghei thioredoxin system but not by the glutathione system. Sequence alignment and homology modeling suggest that three cysteines could potentially serve as peroxidatic residues.
From Pollution to Possibility: A Sustainable Solution to Biodiesel Production Wastewater  
Amber White, Biology and Environmental Science (2016)  
Mentored by Zach Waickman, Institute for Environmental Sustainability; David Crumrine, Chemistry

In the process of making biodiesel, the final purification step produces a hazardous waste product, biodiesel wash water (BWW). Loyola’s BWW contains methanol, potassium hydroxide, and potassium salts of fatty acids (potassium soaps). This project aims to create a net-zero biodiesel production process through a three-step purification system: methanol removal, fatty acid precipitation, and potassium salt removal. Ultimately, this project hopes to recapture and reuse all the contaminants in BWW, creating a closed-loop, net-zero production process for implementation in biodiesel production systems everywhere.

Characterization of the Promoter Region of the 1-Cys Peroxiredoxin gene of the Malaria Parasite Plasmodium  
Abdul Ahad Bagasarawala, Biology (2015), Mulcahy Scholars Program  
Mentored by Stefan Kanzok, Biology

Regulation of gene expression is not well understood in the malaria parasite Plasmodium. Currently, only a few regulatory elements and transcription factors have been characterized. Recent research in our lab has shown that the parasite increases the expression of an important antioxidant defense gene, 1-Cysteine peroxiredoxin (1-Cys Prx), in response to environmental challenges, such as cytotoxic reactive oxidative species (ROS). This antioxidant stress response is vitally important for the parasite’s survival. Thus, the goal of this project is to characterize and map the promoter region of 1-Cys Prx, which regulates the expression of the gene.

MUNDELEIN 205

GabR Inhibitors as New Antibiotics for Cystic Fibrosis  
Donna Gawron, Chemistry (2016), Mulcahy Scholars Program  
Mentored by Daniel Becker, Chemistry

The Burkholderia cepacia complex (Bcc) is of particular interest in antibiotic development because of the well-documented multi-drug resistance of bacterial strains. B. cenocepacia and B. multivorans are two members responsible for a majority of the infections seen in Cystic Fibrosis (CF) patients, and are related to B. subtilis, a non pathogenic model organism. They are similar by their metabolism of γ-amino butyric acid (GABA) to produce glutamate, an essential metabolite in bacterial nitrogen metabolism. By stalling or artificially promoting indefinite GabR transcription with synthetic ligands, growth in multi-drug resistant bacterial strains causing life-threatening complications of CF in patients will be arrested.

Mobile User Experience Sentiment: Preference Profiles Across Lifestyles  
Jose Luis Rodriguez Orjuela, Mathematics and Computer Science (2015)  
Mentored by Stacy Neier, Marketing

This research aims to identify how users differ in how they measure mobile user experience, both positively and negatively. This research investigates how users who engage in different lifestyles value current/trending design patterns and will compare current trends in mobile design patterns with previous models. It will also generate mobile user interface (UI) marketing strategies based off of insights gained.

Girls of Grace Youth Center: A Strategic Plan for Member and Leadership Growth  
Robin May McMorris, Management (2015); Shawn Crump; Wendy Johnson; Jessica Peterson; Suznane Sletto; Chanel Smith  
Mentored by Patricia McNally, The School of Continuing and Professional Studies

Girls of Grace Youth Center a volunteer driven, 501C3 nonprofit organization agreed to partner with students from the Loyola University Organizational Theory & Practice (CPST 390) class to develop and deliver a strategic plan for member and leadership growth. The plan included a three to five year operational strategy for the organization. Team 390 defined organizational baselines for the current strategic plan, marketing strategy and board of director recruitment, identified gaps for improvement...
with the current strategic plan in comparison to industry standards and SWOT Analysis, which supported the delivery of recommendations to address gaps in their current operating model.

MUNDELEIN 303

Developing a 3-D Demonstration System
Akshar Kumar, Physics and Computer Science (2016), Mulcahy Scholars Program; Matthew Schmidt
Mentored by Robert Polak, Physics

Modern 3D movies display different images intended for the left and right eye of the viewer by manipulating the image’s light with circular polarization. We have developed a 3D demonstration piece where an additional phase shift is added to linear polarized light by a liquid crystal cell that is synchronized with two lasers to create left and right eye images. This demonstration allows for the user to increase the frequency and change the laser position until the left and right eye images blur into a single image in the mind, creating an illusion of depth.

Characterization of the First Inducible Malaria Promoter Using Transgenic Parasites
Sara Hammer, Biology (2015), Mulcahy Scholars Program, Provost Fellowship
Mentored by Stefan Kanzok, Biology

Regulation of gene expression in the malaria parasite Plasmodium is not well understood and few genetic regulatory elements are known. We have shown that Plasmodium upregulates an antioxidant defense gene 1-Cysteine Peroxiredoxin (1CysPrx) in response to oxidative stresses. I cloned the putative minimal promoter of this inducible gene in front of a luciferase reporter gene. I then isolated P. berghei infected red blood cells from a mouse and transfected the reporter construct into parasites. Transgenic parasites were isolated and the activity of the 1CysPrx promoter was analyzed using a quantitative luciferase assay. I will present exciting results.

Summertime’s Influence on Family Eating Patterns: A Mixed Methods Investigation of Low-Income Minority Youth
Michelle Lozano, Psychology (2015), Carroll and Adelaide Johnson Scholarship
Mentored by Amy Bohnert, Psychology

Over the summer months, adolescents’ structured school time shifts to summer camps, sports activities, and leisure time. As a result, their dietary intake may shift as well. While evidence suggests that family mealtimes may reduce risk for obesity, little is known of the role summertime plays in these associations. The purpose of this study is to develop a greater understanding of family mealtimes and dietary intake over the summer months within a population of low-income ethnic minority girls. A qualitative analysis was conducted on semi-structured interview responses from the adolescents' parents.

A Comparative Analysis of the Constitutional Representation of Ethnic Minorities in South Africa and Rwanda
Leyla Salman, Political Science and International Studies (2015), Rudis Fellowship
Mentored by Brian Endless, Political Science

Both Rwanda and South Africa have, over the past two decades, experienced drastic political change that was closely related to the status of different ethnic groups. I aim to explore how the constitutional representation of ethnic minorities in each country (Tutsis in Rwanda and Whites in South Africa) is different in post-conflict constitutions compared to older versions. In countries that are struggling to find truth and reconciliation, how does the idea of guilt affect law-making? Was privilege reattributed to the ethnic groups that had once fallen victim? Are notions of reparation or reconciliation detectable in the constitutions?

MUNDELEIN 304

If You Can, So Can I: Grit and Self-Worth among Friendship Networks of Low-Income, Urban Girls
Zareen Kamal, Psychology (2015), Carroll and Adelaide Johnson Scholarship
Mentored by Amy Bohnert, Psychology

This study examines how grit and self-worth are related within friendship networks of urban, ethnic minority females. Research
suggests that grit (perseverance and passion for long-term goals) is a better predictor of academic success than intelligence. Similarly, youth with high self-worth have greater confidence in their ability to overcome challenges. Together, the development of grit and self-worth may be particularly important for the wellbeing of low-income, urban girls, who may face disproportionate obstacles to success. Understanding how friendship networks relate to grit and self-worth may provide insight into the development of these factors and a potential avenue of intervention.

*The Catholic Imagination in Emily Raboteau's The Professor's Daughter*

**Caley Terry**, Theology and English (2015), Joan and Bill Hank Center for the Catholic Intellectual Heritage (CCIH) Research Fellowship
Mentored by Badia Ahad, English

Our research investigates the intersection between the African-American literature and the Catholic imagination in Emily Raboteau’s *The Professor’s Daughter*. Because the grotesque body is a primary device in the Catholic literary tradition and the black body has been historically positioned in Western culture as inherently grotesque, Raboteau uses the broken and disfigured bodies of her characters to re-articulate their racial and human identities through a Catholic aesthetic. These characters approach peace and reconciliation from their bodily and spiritual contexts.

*The Dilemma of the Minority Mayor*

**Sydney Steverson**, Statistics (2015), Provost Fellowship
Mentored by Twyla Blackmond Larnell, Political Science

The research focuses on where minority (i.e. black, Latino, Asian, women, etc) mayors are most likely to be elected. We hypothesized that it was in predominately minority cities that also happen to be suffering from fiscal distress. From there we focus on how this fiscal distress limits the power of the minority mayor from making meaningful changes to their community.

*The College Experiences of Black Female Alumnae of Predominantly White Institutions*

**Lauren Adams**, Women's Studies and Gender Studies (2015), Social Justice Fellowship
Mentored by Bridget Turner Kelly, Higher Education

In the U.S., the college degree attainment of Black female students has increased over time. Black females comprise the majority of the Black undergraduate student population receiving a bachelor’s degree. However, there is little research that captures what made these students college success stories. This qualitative study seeks to uncover how, if at all, did the participants’ racial and gender identities impact their undergraduate experiences. Although this study focuses on Black females, it is expected that this research will produce recommendations for student affairs professionals, faculty, and administrators that will improve the college experiences of all underrepresented student populations.

*Woven Together: Entrepreneurship and Empowerment Among Refugee Women in Chicago*

**Kait Madsen**, Anthropology (2015), Provost Fellowship
Mentored by Ruth Gomberg-Munoz, Anthropology

Refugee women face heightened vulnerabilities during the resettlement process, including language barriers, workforce exclusion, and gender-based violence. This project uses ethnographic methods to explore gendered resettlement strategies among refugee women in Chicago. In particular, I discuss the experiences of members of Loom, a refugee women’s social enterprise designed to help members gain financial self-sufficiency and a supportive community through the production and sale of handmade goods. Through interviews and participant observation with Loom collaborators, this project seeks to complicate the narrative of refugee women as mere victims by demonstrating the agency and self-empowerment refugee women use during the resettlement process.
Cura Personalis?: Analysis of Undocumented Student's Access to Higher Education at a Jesuit University
Eddie Chong, Anthropology and Sociology (2015), Center for Urban Research and Learning Fellowship, Social Justice Fellowship
Mentored by Ruth Gomberg-Munoz, Anthropology

In recent years, activism surrounding undocumented immigrants has increased with growing political visibility. In addition to citizenship and labor rights, access to higher education for undocumented students is a major concern for immigrant activists. Students and allies at several universities and colleges throughout the country have organized protests and movements toward access to education for undocumented immigrants. Several Jesuit universities have signed on in support for undocumented students citing Jesuit social values. This study incorporates interviews with student activists and faculty allies at a Jesuit university in order to gain insight into how Jesuit social values influence discourses surrounding giving access to undocumented immigrants.

Creating the Next Antibiotic: Identifying and Synthesizing Inhibitors of the Bacterial Enzyme DapE
Kaitlyn Lovato, Chemistry (2016), Carbon Undergraduate Research Fellowship Program, Provost Fellowship
Mentored by Daniel Becker, Chemistry; Ken Olsen, Biochemistry

The rising number of antibiotic resistant bacterial strains and the increasing number of deaths due to infection underline the need for research into novel antibiotics. DapE is an ideal target for the development of new antibiotics and it has been shown that deletion of the gene dapE is lethal to bacteria. A high-throughput screen led to two 7-indolinesulfonamide lead structures with promising inhibition of DapE. The objectives of this project are to identify methods to synthesize medicinally relevant analogs of the lead compounds and test their antibiotic activity. The 7-indolinesulfonamide analogs are synthesized via intramolecular formation of a cyclic sulfonylurea.

Tracing the Development of an Innovative Environmental Science Curriculum: Descriptive Research of the International Jesuit Ecology Project's "Healing Earth" Curriculum
Philip Nahlik, Chemistry (2015), Mulcahy Scholars Program, Provost Fellowship
Mentored by Patrick L. Daubenmire, Chemistry and Biochemistry

The International Jesuit Ecology Project is developing the Healing Earth curriculum to prepare students in Jesuit high schools across the world to encounter and take action on environmental problems in consideration of science, ethics, and spirituality. This research used interviews with Healing Earth contributors and teachers to provide a descriptive study of the development of the curriculum. Additionally, resources were developed for instructors to help them integrate this text into their classrooms. Such research provides vital information to begin determining and measuring the impact of this ambitious, interdisciplinary, and international project.

The Effects of Reflected Appraisals on Stress Response to Perceived Discrimination in African American Couples
Angela Serwin, Criminal Justice and Psychology (2015)
Mentored by Tracey DeHart, Psychology

The current study seeks to examine the effects of reflected appraisals on the stress response to perceived discrimination in African American couples within the Chicagoland area. Overall, we predicted that participants who report feeling more loved and accepted by their partner will report feeling less stress in response to perceived discrimination in the last 3 months. Participants who report feeling less loved and accepted by their partner will report feeling more stress in response to perceived discrimination in the last 3 months. We found that none of the main effects or interaction term was significant.

Choreography as Research: The Creation of Forbidden Fruit
Mary O’Rourke, Dance (2015)
Mentored by Amy Wilkinson, Dance

This presentation highlights the thrilling process of choreographic practice-based research and its dissemination through perfor
mance art. Based on the writings of Henry David Thoreau, the original dancework Forbidden Fruit explores technology and its numbing effect on interpersonal interaction.

**Greening the Green Roof: Performance of Green Roofs with Native Plants and Arbuscular Mycorrhizal Fungi**

Susanna Lohmar, Environmental Science (2015)

Mentored by Bala Chaudhary, Institute of Environmental Science; Brian Ohsowski, Institute of Environmental Science

Green roofs are capable of decreasing heating and cooling energy costs, lessening stormwater runoff, and improving urban biodiversity. However, green roofs, which are designed to be low-maintenance, often lose functioning over time. Using experimental green roof trays, we tested whether or not green roofs containing native prairie plants (compared to non-native sedum plants) and beneficial mycorrhizal fungi demonstrate improved insulation and stormwater retention. Six months after installation, we found no effect of plant type or mycorrhizal fungal inoculation on the water-holding capacity of the green roof. We also found that only sedum plants had a significant beneficial effect on insulation.

**MUNDELEIN 404**

**The Relationship Between Student Debt and Consumer Behaviour**

Michael Pflug, Finance and Economics (2016), Provost Fellowship; Elizabeth Spellmeyer

Mentored by Stacy Neier, Business; Michael Hewitt, Business

This research looks to examine further the high tolerance that Millennials seem to have for incurring debt during their undergraduate tenures. The national data regarding debt indicates that individual debt tolerance is on the rise, and we expect to have that increase in debt tolerance corroborated by our study. Current research indicates that undergraduate students might not understand the implications of student debt in a practical sense. Students who do not budget or account for debt while pursuing an undergraduate degree might find themselves unprepared for the real-world implications of undergraduate student debt once the debt repayment cycle commences. Accordingly, this research study seeks to explore the relationships between debt tolerance and debt level while taking into account factors like general debt awareness, reliance on credit card debt, and expressed versus exhibited concern with individual debt level.

**Family Involvement of Youth in Kinship Care with Medically Complex Needs**

Karen Aguirre, Health Systems Management (2015)

Mentored by Scott Leon, Psychology

This study examines if high levels of family involvement influence the amount of hospital stays and hospital length of stays that a foster child with medical complex needs experiences. The first stage of this study will evaluate what specific type of care helps influence and shorten the amount of hospital stays, along with any correlations found between hospital intakes and discharges. In the second stage, we draw attention to what groups of extended family help the most with positive influences in the child’s health (e.g., maternal aunt, paternal grandfather, god parents). Thus far, in this project, we have a total of 159 participants in which all youth were recruited by DCFS (Department of Child and Family services) from October 1st 2011 until June 1st 2014 in Cook County. It is anticipated that this current opportunity will analyze what has been done, what needs to be done, and what is missing in the welfare system. Which will then pin out what can be done in order to fill in these needs.

**Genocidal Motives: A False Sense of Normalcy and Community**


Mentored by Patricia Mooney-Melvin, History

How does a small group of sadistic leaders convince the average citizen to participate in genocide? A comparative historical and psychological analysis of the Holocaust, the Cambodian Genocide and contemporary North Korean concentration camps attempts to shed light on one of the darkest aspects of humanity.
Jesuit Libraries Provenance Project

**Evan Thompson**, History (2015), Joan and Bill Hank Center for the Catholic Intellectual Heritage (CCIH) Research Fellowship, Provost Fellowship; **Zachary Davis**
Mentored by Kyle Roberts, History

The presentation will be an overview of our project's goal of reconstructing the original Saint Ignatius College Library while researching the various pieces of provenance found within.

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**MUNDELEIN 406**

*The Ellacuría Tapes: A Martyr at Loyola*

**Albert Salatka**, History and Philosophy (2015), Social Justice Fellowship
Mentored by Dina Berger, History

On November 16, 1989, six Jesuit priests, their housekeeper, and her daughter were murdered in their home on the grounds of Universidad Centroamericana in San Salvador, El Salvador. Among them was Father Ignacio Ellacuría, S.J., a liberation theologian who was unafraid to publicly criticize the Salvadoran government for its brutality against its own people. I will speak on my role as lead content writer and co-designer in the creation of “The Ellacuría Tapes: A Martyr at Loyola”, a digital exhibit created in conjunction with Ignatian Heritage Month that documents Ellacuría’s time in Chicago and at Loyola.

*Active and Passive Making of the Martyr: Women's Suffrage in Britain and America*

Mentored by Kyle Roberts, History

While women's suffrage in Britain and America both radicalized in the 20th century, that radicalization manifested differently. The British movement became desperately violent while the American movement developed new peaceful protest techniques. These two movements had entirely different qualities that can be examined through the lens of martyrdom, for women on both sides of the Atlantic were shaping that identity as a means of galvanizing the public.

*The Nonviolent Cross(ing): The Catholic Left, Christian Nonviolence, and “The Four of Us”*

**Melanie Zagorski**, History and Secondary Education (2016)
Mentored by Kyle Roberts, History

In 1971, four Loyola University students, calling themselves “The Four of Us,” raided a Selective Service office in Evanston, Illinois, and destroyed hundreds of draft records by covering them with blood. The Four stayed around and let themselves get arrested afterwards. This paper attempts to situate this daring action within the context of the Catholic Left, a distinctly Catholic anti-Vietnam war movement, as the movement increasingly deviated from a nonviolent framework of surrender and sacrifice. “The Four of Us” evoked a pure form of nonviolent activism and represented the Catholic Left at its best, even amid a declining movement.

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**MUNDELEIN 407**

*Social Enterprise as Social Service*


In wake of staggering debts and harsh budget cuts on all levels of government, social service agencies are being forced more and more to innovate and sustain themselves. One such innovation is the emergence of social enterprises, social service agencies that follow a for-profit model. But how can revenue-generating entities be social service agencies? I intend to answer that question and more as I recount my internship experience with Crisp! Mobile Grocery, a social enterprise owned by Catholic Charities.
Competency, Control, and Comfort: Investigating the Influence and Limitations of Healthcare Models in the African Diaspora
Cassandra Osei, International Studies and Political Science (2015), Provost Fellowship
Mentored by Noah Butler, Anthropology

Rapid African immigration into U.S. urban cities heavily impacts neighborhoods, healthcare systems and healthcare models. The eager use of healthcare resources by Africans raises questions about the importance of culture and the limitations of the public health system. African immigration prompts healthcare providers and policy makers to reevaluate the effectiveness of healthcare models and ways to connect culture and healthcare. Yet, concepts in public health do not always account for social change and healthcare models remain generic. In order to acknowledge the importance of culture in healthcare and address existing limitations, predominant healthcare models must merge and allow for flexibility.

Philanthropy in the Application of a New Generation
Gina Champion, Marketing (2015)
Mentored by Stacy Neier, Marketing

The research will explore the role of philanthropy to Millennials in a global market. The purpose of the research is to discover the meaning of philanthropy for this generation, investigate Millennial attitudes about philanthropy, and examine the motivation driving this generation to contribute to philanthropic efforts. The research is intended to uncover potential actions to effectively engage Millennials in philanthropic efforts. Different from previous generations, Millennials have grown up with innovative technology and are comfortable with the constant use of technology around them. With the use of social media used to generate awareness for businesses, businesses market to be heard through the noise. With philanthropic organizations also moving towards personalized relationships between the consumers, social media efforts are a growing interest in order to interest Millennials in giving back to humanitarian organizations. Since Millennials grew up at a time where the global marketplace was being more highly saturated with more choices for philanthropic participation, the marketing efforts of philanthropies must target in a way to generate actions.

Ecosystem Profile Assessment of Biodiversity at Loyola University Retreat and Ecology Campus
Samantha Keyport, Molecular Biology (2016); Catherine Pacholski
Mentored by Stephen Mitten, SJ, Institute of Environmental Sustainability

An ecosystem profile assessment of biodiversity for four plots representing four distinct terrestrial ecotypes and three small calcareous ponds at LUREC were performed during June-mid August of 2014. Twenty biotic and abiotic protocols were selected. Simpson Index of Diversity and the Shannon-Weiner’s Biodiversity Index were calculated for each ecotype. We found that the buckthorn and fen plots were most diverse. Seven biotic protocols and six abiotic protocols were performed on the three ponds. We found that the third pond was the most diverse of all three ponds. The results serve as baseline data for studying ecosystem change at LUREC.

MUNDELEIN 503

How Does Current Distribute on a Two Dimensional Plate?
Alexander Rix, Physics and Mathematics (2015), Mulcahy Scholars Program, Provost Fellowship
Mentored by Asim Gangopadhyaya, Physics

Using conformal mapping techniques, we analyze the current distribution on a two dimensional rectangular sheet. This analysis yields path to the determination of the conductivity of two-dimensional material. In semiconductor industry we often need to compute electrical parameters of two dimensional surfaces, and thus this work will have significant industrial applications. This method can also be used for material that are in tubular form.
Modeling Optimal Heat Transfer Fluidization Velocity in Gas-Fluidized Beds

Thomas Predey, Physics (2016), Mulcahy Scholars Program, Provost Fellowship
Mentored by Jonathan Bougie, Physics

Fluidized bed technology is an important tool in chemical engineering and the petroleum industry, but modeling the optimal heat transfer fluidization velocity (OHTFV) has remained difficult. There currently exist many dissimilar, empirical attempts at modeling this behavior. Using a wide array of data, we are in an ongoing attempt to assess and physically justify a scaling formula for these systems.

Shocks and Patterns in Vertically Oscillated Granular Systems

Alex Gilman, Physics and Mathematics (2015), Mulcahy Scholars Program
Mentored by Jonathan Bougie, Physics

Granular systems, such as a beach full of sand, a box of marbles, or a collection of rocks on the side of a hill, exhibit interesting fluid-like properties. We use a variant of the Navier-Stokes equations, which are used to model the behavior of fluid systems, to simulate a system of vertically shaken grains. Systems that are oscillated within a given range of frequencies form interesting visual patterns. When layers of grains are oscillated at accelerational amplitudes greater than that of gravity, the layers leave the plate. Shocks are created in the system upon impact with the oscillator. We demonstrate relationships between properties associated with shocks and properties associated with the observed standing wave patterns, and present a simplified model to explain these relationships. We compare the predictions of this model to simulations of a vertically oscillated granular system.

The Power of Social Justice and Women in the Labor Movement: A Case Study of the Chicago Teachers Union

Jennifer Landes, Political Science (2015), Social Justice Fellowship
Mentored by Susan Mezey, Political Science; Ruth Gomber-Munoz, Anthropology

Women workers continue to be low paid relative to their male peers, a gap that is reduced when women join labor unions. Considering that women comprise the majority of minimum wage jobs, it is important to understand how predominantly women’s unions organize to achieve their goals. This paper will present results from a semester-long project that used ethnographic methods to explore the strategies of unions comprised mostly of women to mobilize their members to accomplish their objectives. In particular, I discuss the reasons why the Chicago Teachers Union (CTU) has been successful and continues to thrive, which I then attempt to extrapolate to understand how primarily women’s unions can achieve success as a whole. I interview CTU leaders to explain how women leaders of the organization contribute to solidarity and successful campaigns. Additionally, I examine the coalition-network the CTU has within the city to evaluate organizing strategies within the community and the role of coalition building in mobilizing Chicagoans for CTU causes. This research contributes to anthropological perspectives on women’s workplace empowerment and ability to accomplish collective goals.

Universities as Agents of Economic Change: Loyola University Chicago and the Revitalization of the Broadway Corridor

Dominic Lynch, Political Science (2015), Provost Fellowship
Mentored by John Frendreis, Political Science

This project analyzes the role of University-initiated economic policies and how those policies influence the way students spend their money on and off campus. My research focuses specifically on the planned renewal of the Broadway corridor from Devon Avenue south to Bryn Mawr Avenue that is being sponsored by the University and how certain policies shape both the University and the neighborhood. Because the goal of the University is to help revitalize the Broadway corridor an analysis showing how the University’s own economic policies are influencing the students, and by extension the neighborhood, can help the University be an effective agent of change within the neighborhood by utilizing the market power of the student body in the most effective way possible.
Molly and Brian: The Morning AMp in 60 seconds.
Mentored by John Goheen, Communications; Pamela Morris, Communications

Students Nan Li, Tony Buitrago and Morgan McDonald created a 60 second promotional piece for Vocalo's Morning AMp. The video showcases the relationship of Molly and Brian and what they mean to the community oriented radio station.

Is “Terrorism” a Magic Word?
James Stancliffe, Political Science and Economics (2016), Provost Fellowship
Mentored by David Doherty, Political Science

We report findings from a survey experiment designed to assess whether officials can affect public attitudes by invoking the term “terrorism.” The study presents participants with a vignette describing an investigation into a criminal plot that varies the details of the story along three dimensions. First, we manipulate whether officials describe the purported behavior as a “serious crime” or “terrorism.” Second, we vary severity of the crime. Finally, we vary whether the investigation yielded evidence that the suspect was, in fact, engaged in the plot. We assess the effects of these treatments—and interactions between treatments—on support for extending constitutional protections to the suspect and assessments of the likely guilt of the suspect. The findings provide insight into whether framing an event as tied to terrorism increases people’s willingness to accept government claims and more willing to support abrogating civil liberties protections for those whom the government describes as implicated in terrorist activities.

Growing Power: Combatting Chicago's Food Deserts
Dara Davis, Psychology (2017)

Growing Power is a non-profit organization whose mission is to provide "equal access to healthy, high-quality, safe and affordable food for people in all communities." This semester a few students from the Environmental Sustainability class received the opportunity to volunteer with organization. Through this organization students learned more about producing sustainable food.

MUNDELEIN 506

Differentiating Between Language Brokers and Non-Brokering Bilinguals: A Discriminant Analysis Examining Contributing Factors
Eva Gjorgieva, Psychology (2015), Mulcahy Scholars Program
Mentored by Valerie Flores, Psychology

Language brokering is understood as an extension of bilingualism, such that language brokering refers to the frequent translation of materials or conversations for family members. The present study examines how various factors within one’s environment may contribute to bilingual individuals’ likelihood of being a language broker. Participants completed a survey where they were asked to report on a host of factors that have been linked to language brokering. Discriminant analysis revealed that prediction of brokering status across cultures is largely dependent on socioeconomic status, whereas, for Latino individuals, acculturation and academic motivation are two distinct and salient factors that predict one’s likelihood of language brokering.

The Association between Exposure to Violence and Aggression in African American Youth: Anger, Poor Coping, and Aggression Beliefs as Moderators
Mirinda Morency, Psychology (2015)
Mentored by Noni Gaylord-Harden, Psychology

The current study examined the relationship between violence exposure in the community and in the family and aggressive behavior in African American male adolescents, as well as the role of anger, poor coping, and aggressive beliefs as moderators of these relationships. It was predicted that exposure to community violence and exposure to family violence would predict aggressive behavior in African American male adolescents. It was also hypothesized that anger, poor coping, and aggressive beliefs would moderate the relationship between violence exposure and aggression. Consistent with predictions, correlational analysis revealed that exposure to community violence and aggression were positively associated with one another; but contrary
to predictions, there was no significant correlation between exposure to family violence and aggression. The moderating factors, anger, poor coping, and aggressive beliefs had a positive relation to aggression but, inconsistent with predictions, there were no significant interaction effects between violence and these moderators in the prediction of aggression.

*Psychopathic Traits and Antisocial Behaviors among Male and Female Juvenile Offenders*

**Cindy Tran**, Psychology (2015)
Mentored by Ira Sommers, Criminal Justice

Research has found that adult psychopaths are more likely to reoffend. Less is known about psychopathy among juvenile offenders especially in regards to the relationship between psychopathic traits and antisocial behaviors among females. This study examines the association between gender, psychopathic traits and antisocial behaviors in adolescence. The results indicate that adolescent females and males who measured high in psychopathic traits were more likely to commit more types of non-violent violent crimes and use a variety of illicit substances at the 5-year follow-up. However, only male participants with higher psychopathic features engaged in more types of violent crimes at follow-up.

*Loyola Community Literacy Center*

**Matthew Bayens**, Theology (2016)
Mentored by Jacqueline Heckman, English

The presentation will contain basic information about the Literacy Center. It will also include some of my personal experiences working with the learners at the LC. I will also discuss the impact this work has had on me during my time at Loyola. My discussion will also include how experiences like the Literacy Center are vital to a Jesuit education.

*MUNDELEIN 520*

*Gayle Lilliana Blakely’s Experience at Loyola University Chicago*

Year Three Key ePortfolio

The Loyola Experience Year 3 focuses on engaging Chicago and the world. As such, this key focuses on the integration of a student’s engaged learning course and co-curricular experiences. Students were asked to consider the values named in the mission statement of Loyola to “expand knowledge in the service of humanity through learning, justice, and faith” and demonstrate how they have shown a commitment to one or more of these values through your engaged learning and co-curricular experiences.

*My Loyola Experience: The Discovery of My Future*

**Jacob Batycki**, Biology and Spanish (2016)
Year Three Key ePortfolio

The Loyola Experience Year 3 focuses on engaging Chicago and the world. As such, this key focuses on the integration of a student’s engaged learning course and co-curricular experiences. Students were asked to consider the values named in the mission statement of Loyola to “expand knowledge in the service of humanity through learning, justice, and faith” and demonstrate how they have shown a commitment to one or more of these values through your engaged learning and co-curricular experiences.

*Shamrocks and Ramblers: My Loyola Experience!*

**Patrick Smith**, Political Science (2015)
Year Three Key ePortfolio

The Loyola Experience Year 3 focuses on engaging Chicago and the world. As such, this key focuses on the integration of a student’s engaged learning course and co-curricular experiences. Students were asked to consider the values named in the mission statement of Loyola to “expand knowledge in the service of humanity through learning, justice, and faith” and demonstrate
how they have shown a commitment to one or more of these values through your engaged learning and co-curricular experiences.

*I Sang A Lot in College*


Year Three Key ePortfolio

The Loyola Experience Year 3 focuses on engaging Chicago and the world. As such, this key focuses on the integration of a student’s engaged learning course and co-curricular experiences. Students were asked to consider the values named in the mission statement of Loyola to “expand knowledge in the service of humanity through learning, justice, and faith” and demonstrate how they have shown a commitment to one or more of these values through your engaged learning and co-curricular experiences.

*The Virtual Dance Ensemble--ViDEo Project*

**Sarah Prinz**, Film and Digital Media Production (2015)

Mentored by Amy Wilkinson, Dance

The Virtual Dance Ensemble —ViDEo Project is a dance film experiment integrating three foundational technological and somatic research studies: 1) exploring how technology stimulates artists to present work in innovative ways 2) exploring the notion of crowd-sourcing as movement adaptation investigation 3) transforming the concept of community by bringing individuals from different backgrounds together through movement. The ultimate research mission is to create a digital community of people collaborating on a multi-layered dance film, challenge the boundaries of contemporary dance film as an emerging medium, and educate dance film as an academic medium of scholarly research.

*Chicago Outdoor Education*

**Thomas Baran**, Secondary Education and History (2016)

Mentored by Kelly Garbach, Institute for Environmental Sustainability

This semester, I am volunteering at North Park Nature Village Center as part of the engaged learning aspect of Environmental Sustainability. I have been working there since February assisting a park staff member with youth and family programs. Most of the programs focus on outdoor education. For my presentation, I would describe the emphasis that NPNVC places on outdoor education in an urban setting and how their practices align with the values of environmental sustainability.
**Experiencing More: My Engaged Learning Experience of Tutoring, Mentoring, and Research**  
**Michael DeStefano**, Italian and Biology (2016)  
Mentored by Patrick Daubenmire, Chemistry; Wiley Feinstein, Italian

This academic year I have been fortunate enough to take part in two separate Engaged Learning opportunities at Loyola: a chemistry-related research experience in the fall and an Italian-related tutoring and mentoring experience in the spring. Through my Engaged Learning experiences, I have served others through the power of learning. My chemistry research focused on the way that students learn chemistry, thereby allowing faculty to construct more efficient teaching techniques. In contrast, I have had to create my own teaching methods in order to help Italian students as part of my other Engaged Learning experience.

**5-4-2-3-1 Go! After-school program**  
**Thabata Knaak**, International Business and Economics (2017); **Audrey Michaelson**  
Course: SOWK 200  
Mentor: Karen Berg, Higher Education

We will present our experience serving Swift Elementary School. This opportunity involved creating and implementing an after school program focused on promoting physical health for 3rd and 4th grade kids. We will discuss our experience planning a curriculum, gathering resources, and communicating with our team and the institution. We will also include the importance of understanding the culture of the population we were serving, as well as how the education system functions. We will discuss how we were able to successfully engage with community, school, and most importantly the students.

**Community Engagement with Misericordia's Developmental Training as Social Justice Intern**  
**Quinn Christianson**, English and Computer Science (2017)  
Course: UNIV 390  
Community Partner: Misericordia

Discussion of experiences as a Social Justice Intern at Misericordia and work done in UNIV 390.

**Volunteer Relations Internship - Catholic Charities**  
**Evan Turpen**, Finance (2016)  
Course: UNIV 390  
Community Partner: Catholic Charities Chicago
Poster 5

My Year at Misericordia  
Samantha Dane, Health Systems Management (2015)  
Course: UNIV 390  
Community Partner: Misericordia  

I spent the 2014-2015 school year interning in the Personal Effectiveness Program at Misericordia. I supported the 17 residents in PEP through the development of life skills, educational skills, and vocational skills. This program is committed to enable all participants to attain a maximum level of vocational accomplishment and personal development. I enjoyed my time spent in 'PEP Kitchen' and getting to know each of my new friends.

Poster 6

Building a Home from Ruins: Interim Housing Social Justice Internship  
Samantha Rivera, Advocacy and Social Change (2016)  
Course: UNIV 390  

My presentation will focus on my 300-hour, 1 year internship at Catholic Charities' Madonna House Interim Housing program. I will display my ePortfolio with various reflections about leadership, social justice, and finding community assets instead of deficits.

Poster 7

Internship at Catholic Charities Immigration and Naturalization Office  
Jacqueline Mendez, Psychology and Advocacy and Social Change (2017)  
Course: UNIV 390  
Community Partner: Catholic Charities of the Archdiocese Of Chicago Immigration and Naturalization Office  

As an intern with the Immigrant Survivor Project at Catholic Charities of Chicago, I have seen the human face of immigration. I work with victims of violent crimes to help provide a pathway towards legal immigration status. Through this experience, I have heard some of the many stories of the undocumented community and have witnessed their resilience in the face of immense adversity. This experience has allowed me to further my passions for humane comprehensive immigration reform and has also sparked a new interest in women's rights and working with survivors of domestic violence.

Poster 8

Developmental Training at Misericordia  
Course: UNIV 390  
Community Partner: Misericordia  

Interning [as a Social Justice intern] at Misericordia’s developmental training department, I have had the opportunity to work with amazing individuals that have allowed me to contribute to their growth, as they have contributed to mine. Interning in the Greco Gardens, I have worked with residents in art-therapy and gardening programs allowing them to express themselves to relieve stress and raise self-esteem. In technology exploration, I have worked with residents to develop their strengths through educational interactive programs that allow them to improve on motor and coordination skills. Working alongside instructors and residents I have learned the true meaning of leadership and social justice.
Poster 9

Misericordia Recreation & Leisure Social Justice Internship
Tania Velazquez, Political Science and Advocacy and Social Change (2015)
Course: UNIV 390
Community Partner: Misericordia Heart of Mercy

An experience assisting Misericordia Heart of Mercy support individuals with developmental disabilities in maximizing their level of independence and self-determination within an environment that fosters spirituality, dignity, respect and enhancement of quality of life. I have assisted Misericordia with offering a community of care that maximizes potential for persons with mild to profound developmental disabilities via a variety of activities and programs.

Poster 10

Interning with Refugee Resettlement: Learning about Leadership and Community
Course: UNIV 390
Community Partner: Catholic Charities

Working with Catholic Charities Refugee Resettlement Department has presented ample opportunities to witness leadership and social justice issues in the community. This presentation includes interviews with community leaders and community building maps and strategies in order to form a more just society.

Poster 11

Social Justice Internship at Misericordia
Course: UNIV 390
Community Partner: Misericordia

An ePortfolio of my experience at Misericordia as a social justice intern will be presented.
Poster 12

Utilizing Blue-Light as a Therapeutic Agent for Spatiotemporal Gene Expression

Casey Erwin, Biochemistry (2016), Biology Research Fellows Program, Mulcahy Scholars Program, Provost Fellowship; Stefani Momich, Diyora Amanova, Nicholas F. Lyons

Mentored by Rodney Dale, Biology

Our laboratory has identified a gene regulator element for zebrafish homolog Type II Collagen alpha 1 (col2a1), a critical gene for vertebrate development. Using a two-tiered system, we have the LightOn system under the control of our col2a1 regulatory element and have designed zebrafish transgenic lines that will drive programed cell death when exposed to the LightOn protein. By doing so, we hoped to induce apoptosis in specific areas of the cartilage with minimal interference to neighboring cells. This would be done by using blue light induced expression of caspase-3a (casp3a) and caspase-9 (casp9) to trigger apoptosis in cartilage. The source of light used for synthetic gene expression could easily encompass the developing embryo or be focused to only a small area of cells in the specified tissues of expression. We have been able to demonstrate that specific target tissue expression and synthetic expression of the influencing proteins upon the specified tissue is possible. This work could potentially lead to a viable method to help target and drive gene expression in a desired tissue or trigger programmed cell death.

Poster 13

Characterization of PdxR Protein

Toaha Hussain, Biochemistry (2015), Mulcahy Scholars Program

Mentored by Dali Liu, Chemistry

This project will examine the PdxR protein, which has been found to play a role in pyridoxal phosphate (PLP) biosynthesis regulation by regulating the transcription of the pdxST genes that encodes the PLP synthase enzyme. We hope to find vulnerabilities in the E. coli organism and a potential workaround to treating viral E. coli without the direct use of antibiotics by manipulating the transcription of this protein. This project consisted of purification, crystallization, and an attempt at the mechanistic understanding of PdxR.

Poster 14

Role of Tyrosine 68 and 107 in the Allosteric Activation of ADP-Glucose Pyrophosphorylase of Agrobacterium Tumefaciens

Samia Khan, Biochemistry (2016), Mulcahy Scholars Program; Amanda Koenig

Mentored by Miguel Ballicora, Chemistry and Biochemistry

Energy storage as glycogen in bacteria and starch in plants is regulated at the formation of the activated glucosyl donor ADP-glucose, catalyzed by ADP-glucose pyrophosphorylase. Crystal structure data shows that tyrosine 68 and 107 are near other residues known to contribute to allosteric regulation. Kinetic assays of Y68A and Y107A mutants show a significantly lower enzyme activity compared to the wild type, indicating the importance of tyrosine 68 and 107 in allosteric regulation of ADP-glucose pyrophosphorylase. Additional kinetic assays were performed on Y68F and Y107F mutants to further explain these residues’ contribution to enzyme regulation.

Poster 15

Comprehensive Analysis of Bacteria of the Bladder

Majed Shaheen, Biology and Bioinformatics (2016); Abhiraj Bhimani; Salman Akthar; Virginia Saulnier; Arjumand Fatima

Mentored by Catherine Putonti, Biology

The bladder of humans was previously believed to be a sterile environment; recent studies, however, have identified various bacteria species present. Competitive exclusion in the urogenital tract has been observed with many bacteria and can be manipulated as a prophylaxis against bacterial disease. Strains of Gardnerella vaginalis and Lactobacillus crispatus were isolated from
patients’ urine. These isolates were then sequenced using the next-generation sequencing Illumina MiSeq platform. Using bioinformatics tools, we have assembled and annotated the full genomes. Via comparative genomics tools, the assembled genomes here were compared to publicly available genomic sequences as well as each other.

**Poster 16**

*Heat-Shock 90 Protein Affect on Gametocyte Stages of Plasmodium falciparum*

**Rana Alcheikh**, Biology (2016), Mulcahy Scholars Program; **Trina Sircar**
Mentored by Kim Williamson, Biology

Malaria affects approximately 198 million people globally each year, with the P. falciparum parasite strain responsible for the most virulent form of malaria. The parasite must undergo sexual differentiation into a gametocyte for successful transmission. Presently, efforts such as insecticide-treated bed nets and artemisinin-based combination therapies treat symptoms but do not target transmission. To target the gametocyte stages, my project focuses on the Heat Shock 90 protein, specifically one of the Plasmodium HSP90s, PF3D7_118200. My goal is to make antibodies in mice, which will help localize the protein in the cell. I will also test ATPase activity and then screen inhibitors against the protein.

**Poster 17**

*Mutation and Over-expression of Zebrafish Cardiac Troponin*

**Esteban Barajas**, Biology (2015); **Nathan Pecoraro**
Mentored by Fred Bryan Pickett, Biology

Our work concerns the regulation of heart contractile proteins in the zebrafish. We are studying the physiological and genetic basis of the Frank/Starling Law to better understand the dynamic change in contraction force required by differing pressures of blood returning to the heart. My project is focused on designing targeted nucleases to edit normal cardiac troponin genes to mimic human heart disease states.

**Poster 18**

*Wastewater Phages: It’s a Dirty Job, but Somebody’s Got to Do It!*

**Katherine Bruder**, Biology (2016), Carbon Undergraduate Research Fellowship Program
Mentored by Catherine Putonti, Biology; **Siobhan Watkins**, Biology

Bacterial evolution and diversity is largely driven by bacteriophages, making the study of phages essential to understanding any microbial community. This is especially true of wastewater treatment facilities, in which the biological activity of microorganisms is exploited for Biological Nutrient Removal (BNR). This study aims to analyze the phage community associated with these wastewater bacteria, of which little is known. We are primarily interested in auxiliary phage genes that may aid bacteria in BNR. Also of great interest is phage diversity. With this study, the researchers hope for a better understanding of the phage/host relationship in this unique ecosystem.

**Poster 19**

*Design and Synthesis of DapE Enzyme Inhibitors as New Antibiotics*

**Joanna Kuczak**, Biochemistry (2016), Mulcahy Scholars Program
Mentored by Daniel Becker, Chemistry; **Tahirah K. Heath**, Chemistry

The purpose of our research is to design, synthesize and test inhibitors of the dapE-encoded N-succinyl-L,L-diaminopimelic acid desuccinylase from Haemophilus influenzae that exhibit antibiotic activity. DapE is a pathway to lysine, which has been shown to be integral in the proliferation of H.Influenzae and lack thereof would interrupt infection. Now that the active site of DapE and potential leads have been identified, we can focus on the design and synthesis of potential inhibitors. Discovering a novel antibiotic is imperative due to the increase in bacterial immunity to current antibiotics.
**Poster 20**

*Synthesis and Characterization of an Oxidized Photosensitizer Complex for Photodynamic Therapy*

**Munira Munshi**, Biochemistry (2015), Mulcahy Scholars Program
Mentored by David Crumrine, Chemistry

The successful synthesis of photosensitizers that can be used to treat deep tissue tumors is impeded due to the inability to synthesize photosensitizers that can absorb in the 600-900 nm range. This study explores how oxidation of a photosensitizer leads to the formation of a higher absorbing complex. Since cancerous tissues over express folate receptors, a phenothiazine based photosensitizer is covalently attached to folic acid to increase selectivity and prevent impairment of healthy tissue. The final phase of this in-vitro study involves testing the photosensitizer for cell killing potential in HeLa and neuroblastoma cell cultures.

**Poster 21**

*Morphological Variation in Asian Babblers*

**Sagar Chaudhari**, Biochemistry and Bioinformatics (2016), Mulcahy Scholars Program, Provost Fellowship
Mentored by Sushma Reddy, Biology

Asian babblers are a very unique family of birds to study due to their diversity in morphological differences, particularly their beaks. My project will undertake the task of understanding why such diversity exists, as this would provide an insight into evolutionary aspects amongst the same species of birds, similar to what Charles Darwin did almost two hundred years ago. One of the most important ways in which I went about this project is by using a method called land marking. Land marking involves using software to designate eighteen different locations on the images of over a thousand babblers to then cross reference the coordinates of these marks. Earlier studies have shown that land marking is a particularly effective way to go about characterizing morphological differences between birds.

**Poster 22**

*Raman Spectroscopy and Cyclic Voltammetry of Shewanella Putrefaciens and Cytochrome C in Determining Oxidation State and Adsorption to an Electrode*

**Milomir Suvira**, Biochemistry and Psychology (2017), Provost Fellowship
Mentored by Alanah Fitch, Chemistry and Biochemistry

The recent trend towards an environmentally friendly acquisition of energy through electricity can be improved through microbial fuel cells without fossil fuel consumption. In a microbial fuel cell, the terminal electron acceptor is an anode while in natural bacterial metabolism it is oxygen. As a result, the energy harnessed by the anode can be connected to a system that creates a small electrical potential able to do work. The main purpose of my research is to acquire a clear and concise knowledge of the microbe Shewanella putrefaciens, and optimize the methodologies of high-powered imaging, Raman spectroscopy, and cyclic voltammetry.

**Poster 23**

*Designing Small-Molecule Inhibitors of the Bacterial Enzyme DapE with Antimicrobial Properties*

**Maxwell Moore**, Biochemistry and Latin (2017), Provost Fellowship
Mentored by Daniel Becker, Chemistry

Lysine and meso-diaminopimelate (mDAP) are key elements in the cell walls of most gram-positive and gram-negative bacteria. Because humans receive lysine exclusively from their diets, the inhibition of bacterial lysine biosynthesis should selectively kill bacteria without harming their human hosts. It has been demonstrated that the deletion of a key metallohydrolase in the bacterial lysine biosynthetic pathway, DapE, prevents cell growth and proliferation in H. pylori and M. smegmatis. We are synthesizing novel small-molecule inhibitors of the enzyme DapE which target its active site, a dizinc center which binds the hydroxide ion used to cleave its substrate, L,L-SDAP.
**Poster 24**

*Anthropogenic Litter Abundance on a Lake Michigan Beach*

Mentored by Timothy Hoellein, Biology

Anthropogenic litter (i.e., garbage; AL) accumulation is well studied on marine beaches, but little research has been conducted in freshwaters. We established six, 42-65 m transects on a Lake Michigan beach parallel to the shoreline, with each transect divided into zones based on habitat (pier, vegetation, and path). All AL within 1 m to either side of each transect was collected biweekly. AL was sorted by source, weighed, and counted. AL was largely from beachgoers, and greatest input occurred at the pier and the edge of the vegetated area adjacent to the water. Results will improve efficient AL mitigation strategies.

**Poster 25**

*Impacts of Biochar Amendments on Soil Microbial Community Activity and Structure*

**Nicholas Miller**, Bioinformatics (2015), Mulcahy Scholars Program  
Mentored by John Kelly, Biology

Biochar is a solid charcoal material obtained from the pyrolysis or controlled burning of biomass. It may be added to soil in order to improve soil function and reduce emissions from biomass that would otherwise naturally degrade to greenhouse gases. We investigated the chemical, biological, and physical properties of soils amended with biochar using a range of soils found in Illinois. Soils were mixed with biochar made from three different feedstocks (hardwood; corn stover, and Miscanthus) using various production methods (gassification, pyrolysis) at three different concentrations (0%, 1%, and 5% by weight).

**Poster 26**

*Exploring EEG Alpha Asymmetry in Depression with and without Comorbid Anxiety*

**Julie Flannery**, Psychology (2015),  
Mentored by Rebecca Silton, Psychology

Asymmetry in alpha EEG between the left and right hemispheres has been proposed as a marker to predict future depression. Throughout the lifetime of a depressed individual, a pattern of relatively less left than right resting frontal activity presents itself. This pattern of asymmetry remains despite changes in depressive symptoms. The current study examines alpha asymmetry in formerly depressed participants with and without ongoing depressive symptoms and with and without symptoms of anxiety. No differences in remitted depressed with or without ongoing symptoms are predicted, and both groups should show greater relative left frontal alpha power compared to right.

**Poster 27**

*Unearthing Genomic Fossils: Developing Tools for Detecting Horizontal Gene Transference*

**Jonathon Brenner**, Bioinformatics (2015), Carbon Undergraduate Research Fellowship Program  
Mentored by Cahterine Putonti, Biology; George Thiruvathukal, Computer Science

Horizontal gene transference (HGT) serves as a novel source of genetic information from the typical mode of vertical (parent to offspring) inheritance. The ubiquity of symbiotic relationships throughout evolutionary history amongst prokaryotes and eukaryotes suggests HGT should be occurring with greater regularity than currently detected. This discrepancy can be largely placed on current comparative genomic tools being ill adapted for the constraints of this unique problem; new resources must therefore be developed around reworked foundations to properly address this task. New data structures and algorithms have thus been constructed and have been employed for preliminary analysis of public genomic data.
**Poster 28**

*The Role of Chemokine Receptor CXCR7 in the Neuronal Development and Regeneration in the Olfactory System*

*Kushal Bakshi*, Psychology (2015), Provost Fellowship
Mentored by Jessica Bran, Biology

Regeneration in the central nervous system is uncommon and poorly understood. Neural regeneration occurs in the olfactory system throughout life, but it is currently unknown what factors activate the neural stem cell population in the olfactory epithelium. We hypothesize that chemokine receptors are responsible for this activation process throughout development as well as in response to injury. We have detected the expression of chemokine receptor CXCR7 in both the olfactory epithelium and olfactory bulb using Western blotting. Understanding the mechanisms underlying the activation and subsequent proliferation of stem cells to functioning projection neurons can have important scientific and clinical outcomes.

**Poster 29**

*Contributions of LDTg Glutamatergic Inputs to the VTA to the Rewarding Effects of Cocaine Conditioned Placed Preference and Locomotive Sensitization.*

*Marco Ordonez*, Biochemistry (2016),
Mentored by Stephan Steidl, Psychology

Glutamate has long been researched to take part in the Dopamine pathway of reward in the VTA. However, since different areas of the brain provide glutamate to the VTA, the mechanism of the greatest contribution of Glutamate is unknown. With optogenetic manipulation we are able to selectively target the area of interest (LDTg) and see its contribution to the VTA in cocaine conditioned placed preference and locomotive sensitization.

**Poster 30**

*Molecular Dynamics of Lead (II) Binding to Calmodulin*

*Amanda Foner*, Biochemistry (2015), Mulcahy Scholars Program
Mentored by Ken Olsen, Chemistry and Biochemistry

Lead (II) (Pb2+) is a plausible source of lead toxicity through binding with calmodulin (CaM). Currently, the exact binding mechanism is unknown. Here, we used molecular dynamic simulations to help gain insight into the Pb2+ binding process. We did this by placing both the calcium free (apo-) and calcium laden (holo-) conformations of CaM in a solvent containing a 0.4 mM Pb2+. We measured the interaction energies associated with Pb2+ binding and made structural comparisons with the holo-protein crystal structure.

**Poster 31**

*The Hospitalist Project*

*Ahmet Sakiri*, Biology and Psychology (2016); Rwaida Izar
Mentored by Stefan Kazok, Biology

The Hospitalist Project is a clinical research study that was started in 1997 to investigate quality of care at the University of Chicago. The project is evaluating multiple aspects of quality of care from healthy literacy to cost-effectiveness by gathering data from the patients, clinical teams, medical records, and billing records.

**Poster 32**

*Characterization of Avian MicroRNA*

*Mustafa Broachwala*, Biology and Bioinformatics (2015), Biology Summer Research Fellowship, Mulcahy Scholars Program
Mentored by Sushma Reddy, Biology

In this project, we will investigate the characteristics of available avian microRNA in order to further reveal evolutionary relationships and genomic characterizations of birds. Specifically, we will be predicting de novo microRNA genes in avian ge-
nomes based on known sequences. With the gathered sequences, we will also apply comparative genomic procedures in order to examine how avian microRNAs have evolved, illustrate evolutionary relationships through a phylogenetic tree, as well as to compare variations across bird species.

**Poster 33**

*Identification of the Lola Transcription Factor's Direct Targets*

**Edwin Chaharbakhshi**, Bioinformatics and Molecular Biology (2015), Mulcahy Scholars Program
Mentored by Jennifer Mierisch, Biology and Bioinformatics

We are using Drosophila melanogaster (the fruit fly) as the model organism for developing a deeper understanding regarding how distinct cell types interact during early stages of embryonic development. Our project encompasses Lola, a transcription factor containing a conserved BTB/POZ domain found in many higher eukaryotes, which regulates gene expression during gonad and nervous system development. After generating a list of potential transcriptional targets using prior studies and databases, we performed chromatin immunoprecipitation (ChIP) and are now performing quantitative-PCR to confirm which genes from our original list Lola is actually regulating in the developing embryo.

**Poster 34**

*Discrepancy between ephrin-B1 reporter expression and immunolabeling*

Mentored by William Rochlin, Biology

We are studying the role of ephrin-B1, a cell attached axon guidance cue, in the guidance of sensory axons. In vitro, ephrin-B1 repels taste and general sensory axons that innervate the rodent tongue. Using a transgenic mouse in which a reporter enzyme (β-galactosidase) under the control of ephrin-B1 promoters and enhancers had been introduced, marker staining was concentrated in taste papilla epithelium at E14.5, when sensory axons enter the epithelium. However, two antibodies against ephrin-B1 show no such concentration in papillae and instead detect ephrin-B1 in the tissue beneath the epithelium, casting doubt on the results from the transgenic mouse.

**Poster 35**

*Friends of the Sibun: Water Quality in Belize*

**Nicholas Erasmus**, Biology (2015); **Erica Becker**
Mentored by Stephen Mitten SJ, Institute of Environmental Sustainability

The goal of our study was to evaluate the water quality throughout different areas of Belize’s Sibun River, a river crucial to biodiversity within the Central Belize Corridor. Water quality was assessed using parameters such as pH, alkalinity, nitrate and phosphorous levels, oxygen solubility, turbidity and temperature. Under subjection to resource extraction, our results illustrated the damaging effects of unsustainable resource extraction on water quality along the Sibun River. Therefore, more attention must be paid to damaging extraction practices along the Sibun River, which have dire effects on water quality and the surrounding ecosystem.

**Poster 36**

*Optogenetic Control of Seizure by Manipulating GABAergic Neuron Activity in the Mouse Hippocampus*

**Ben Foote-Huth**, Biology (2015), Biology Research Fellows Program
Mentored by Hui Ye, Biology

The overall objective of this research is to clarify the physiological function of GABAergic neurons in the transition to seizure in both in vitro and in vivo rodent seizure models. Transition to seizure has been studied previously, but its underlying mechanisms are largely unresolved. Among the many cell types involved in seizure, the GABAergic neurons are of the greatest interest. The mechanism of seizure transition has been proposed to be related to the synchronization of a large neuronal population by inhibitory interneurons (Khalilov et al., 2005; Gnatkovsky et al., 2008; Beenhakker and Huguenard, 2009; Laszlo’cziz et al., 2009). We have recently shown that a shifted balance between inhibitory and excitatory synaptic transmission could be an important factor underlying seizure transition (Zhang et al., 2012). A selective control of GABAergic neuron activity in the CA3 area, an area that is believed to be responsible for the generation of epileptiform discharges in the hippocampus, will further
clarify the functional role of these group of cells in seizure. Here we test the central hypothesis that hyperexcitability in the GABAergic neurons in CA3 region is sufficient and necessary in initiating and maintaining seizure in the hippocampus.

**Poster 37**

*SDF-1 (CXCL12) Expression in the Olfactory Epithelium During Development and Following Injury*

**Claire Franklin**, Biology (2016), Mulcahy Scholars Program
Mentored by Jessica Brann, Biology

Aging and neurodegenerative diseases result in neuronal loss. Knowledge of endogenous repair systems such as neural stem cells will aid our ability to ameliorate this loss. The olfactory epithelium (OE) is well suited for studies on regeneration because it contains neural stem cells that continuously produce olfactory sensory neurons (OSNs). Two types of stem cells are found within the OE, namely the horizontal basal cells (HBCs) and globose basal cells (GBCs). Both contribute to the generation of OSNs throughout life as well as OSN regeneration post-injury. However, little is currently known about the cellular and molecular mechanisms governing the activation of these neural stem cells. Many chemokine receptors and their ligands are involved in cell migration and neurogenesis in other neurogenic systems but only one, CXCR4, has been found in the OE. The mechanisms by which chemokine receptors and their ligands aid in regeneration are largely unknown. We hypothesize neural stem cell proliferation is mediated by chemokine receptor activation. We have used a combination of Western blotting and immunohistochemistry to examine expression of CXCR4 and its ligand SDF-1/CXCL12. We have found that CXCR4 is expressed by HBCs, while SDF-1 itself may be expressed by sustentacular cells in the OE. We are currently examining expression of CXCR4 and SDF-1 following injury. We have therefore identified a new candidate governing the activation of OE neural stem cells.

**Poster 38**

*Role of the Pedunculopontine Tegmental Nucleus in Reward-Seeking Behaviors*

**David Gabbert**, Biology (2015), Provost Fellowship
Mentored by Stephan Steidl, Psychology

Exposure to drug-predictive cues after periods of abstinence is associated with craving and relapse, presenting one of the biggest challenges in addiction treatment. The neurotransmitter dopamine (DA) is associated with the rewarding effects of food, sex, and drugs. The receipt of rewards is often paired with or preceded by non-rewarding stimuli, which can predict rewards by activating the dopamine system. How reward-predictive cues activate this system is not well understood. We will examine the role of projections from the pedunculopontine tegmental nucleus (PPTg) to the ventral tegmental area (VTA), testing the contributions of this pathway to reward-seeking behaviors.

**Poster 39**

*Understanding the Spatial-Temporal Expression of the Vertebrate Folate Receptor as a Novel Therapeutic Target for Cancer Treatments*

**Ayaz Gen**, Biology (2015)
Mentored by Rodney Dale, Biology

The goal of this work is to design a photodynamic therapeutic agent that targets cancer cells based on their requirement for the folate receptor. In order to do that we first needed to identify the normal spatiotemporal expression of the folate receptor in our model system as this has yet to be investigated in developing zebrafish. We predict that the receptor turns on and off at particular times during development and that we could use the normal receptor expression of the folate receptor for targeting uptake of synthetic molecules. To this end, we performed Reverse Transcriptase Polymerase chain reaction (RT-PCR) and in-situ hybridization to elucidate when and where the folate receptor is present.
Assessing the Presence and Concentration of Microplastics and Microorganisms in North Shore Channel Sediment Samples

Joshua Hitte, Biology (2015)
Mentored by Timothy Hoellein, Biology

Rivers are critical sites of accumulation and transportation of anthropogenic litter (AL) from a global perspective, and may be an environmental stressor in urban streams. Microplastic is a large component of AL which enters the river system through wastewater treatment plants (WWTPs), transporting contaminants and possibly providing unique habitats for microbial communities. However, the abundance and ecosystem effects of microplastic in rivers unknown. In conjunction with field work done by Dr. Hoellein and Amanda McCormick, sediment samples were taken from the North Shore Channel to evaluate the concentration and origins of microplastics and assess any microorganisms that colonize microplastic surfaces.

Intra-Racial Communication: Africans and African Americans

Jessica Ibrahim Puri, Biology (2015)
Mentored by Bryan Pickett, Biology

The presentation focuses primarily on cross-cultural communication between Africans in diaspora and African Americans as observed during my work as a Research Assistant with the Hospitalist Project at the University of Chicago. Over the last three months I have observed interpersonal interactions between African Americans and Africans in a hospital setting. Despite obvious similarities in appearance, cultural differences are evident and tensions sometimes are apparent suggesting that between group conflicts may exist. In qualitative research discussions with participants I have tried to identify potential factors which may influence the quality of communication between African and African American patients and providers in a hospital setting. Historical, cultural and economic differences may contribute to some of the observed challenges I have seen.

Viral competition between phiKZ and PP7 in a Common Host

Monica Janeczek, Biology (2014), Provost Fellowship
Mentored by Catherine Putonti, Biology

While many of the viral species causing disease in humans have small genomes, the scientific community has been recently inundated with discoveries of novel giant viruses. How these larger viruses persist and proliferate amidst more expedient competitors is unexplored. Two bacteriophages were studied, (280Kbp dsDNA) phiKZ and (3.5Kbp ssRNA) pp7, in the presence of a single host, Pseudomonas aeruginosa. The relative amounts of the two bacteriophages were analyzed in short and long term competition of 24 hours and 10 days, respectively. The phage ratio was assessed quantitatively by random sampling of viral plaques and amplification of DNA by PCR.

Characterization of Chemokines in the Olfactory Epithelium during Neural Regeneration

Paulina Lis, Biology (2015), Mulcahy Scholars Program, Provost Fellowship
Mentored by Jessica Brann, Biology

We hypothesize that chemokines, small proteins known to play significant roles in cell signaling, mediate the regenerative response in the olfactory epithelium (OE). Using a commercial antibody array, we identified several chemokines of interest, namely CCL28, CCL6, CXCL16, Adipsin, and CCL3/CCL4 as significantly different (p < 0.05, Student’s t-test) between the control and lesion conditions. We selected CCL28 as a candidate gene to pursue further because of its ability to regulate hematopoietic stem cells and tumor formation. We have confirmed the expression of CCL28 in the OE by conducting reverse transcription polymerase chain reaction (RT-PCR).
**Poster 44**

The Ornate Box Turtle (Terrapene Ornata): A Look Underground  
**Stanislaw Warcholek**, Biology and Biophysics (2015), Mulcahy Scholars Program, Provost Fellowship  
Mentored by Joseph Milanovich, Biology

*Terrapene ornata*, more commonly known as the Ornate Box Turtle, is one of two terrestrial turtles native to the Great Plains. Unfortunately, because of human developments its habitat is being fragmented and it is now under the protection of six Midwestern States. In order to better conserve this species it is important to understand fundamental aspects of its ecology. We examined facets of the hibernacula of these animals in Will and Grundy County, Illinois to elucidate the finer aspects of its territorial behavior. This will assist conservationists to safely restore population sizes to healthy numbers.

**Poster 45**

Uncovering the Mechanism for Oxygen Absorption from Surface Site on Rh(111)  
**Dana Gabel**, Chemistry (2015), Mulcahy Scholars Program, Provost Fellowship  
Mentored by Daniel Killelea, Chemistry

This study aims to determine the mechanism behind the movement of the oxygen species to and from a rhodium surface. The STM images the movement of the oxygen atoms as they diffuse about the surface; if Oxygen disappears from an image, this suggests the atom moved to the subsurface. By tracking statistically significant number of occurrences, a determination of bias will be concluded if the disappearance near the defect exists.

**Poster 46**

Development of New Iron Catalysts for the Selective Activation of Organic Molecules  
**Remington Le**, Chemistry (2015), Mulcahy Scholars Program  
Mentored by Chad Eichman, Chemistry

Iron catalysis represents an earth-abundant, non-toxic method in chemical synthesis. Ligands attached to iron have the ability to modulate the reactivity of the metal and facilitate selective transformations. Our efforts toward the synthesis of new ligands for iron catalysts, the characterization of these complexes, and the current applications in catalytic reactions will be discussed.

**Poster 47**

Optimization of STM Tip Fabrication and Determination of the Local Electronic Structure of Ag(111) in the Presence of Subsurface Oxygen  
**Avesh Thaker**, Chemistry (2015), Mulcahy Scholars Program  
Mentored by Daniel Killelea, Chemistry

When O atoms are initially absorbed on the surface or adsorbed within the subsurface, subsurface oxygen atoms (Osub) are thought to play a critical role in the formation of ethylene oxide. Understanding the role Osub plays in greater detail by studying the electronic structure of an Ag(111) crystal with Osub using an STM (Scanning Tunneling Microscope), will provide needed insight to guide development of more efficient and selective catalysts. An STM can generate an electron density map of the surface on the atomic scale and any perturbations made by O atoms can be readily detected.

**Poster 48**

Metal Complexation and Peripheral Functionalization of N3-CTV  
**David Upp**, Chemistry (2015), Provost Fellowship  
Mentored by Daniel Becker, Chemistry

Cyclotrimeratrvalylene (CTV) is a bowl-shaped molecular scaffold that is commonly employed in supramolecular chemistry for host-guest chemistry and biomimetic molecular recognition, and has been proposed as a vehicle for drug delivery. With the goal of developing new medical imaging reagents, we wish to report our recent results of peripheral functionalization of the azacy-
clophane, including halogenation and subsequent Suzuki coupling chemistry, along with mass spectrometric evidence of metal complexation.

**Poster 49**

*Avian Transcriptomics*

**Emma Highland**, Computer Science and Bioinformatics (2016), Provost Fellowship; **Amanda Misch; Kelly Boyd**

Mentored by Sushma Reddy, Biology; Catherine Putonti, Biology

In the past decade, computational skills have become crucial in the field of molecular biology. As such, many new computational tools in conjunction with new biological questions are emerging. In this project, we will be focused on avian transcriptomes. Overall our main goal is to find solutions for applications of next-generation sequencing (NGS), especially the use of NGS in further explaining gene expression in the class Aves. Using computational tools, we are analyzing the differences in gene expression between tissue types within bird species as well as differences across various bird species. We will explore evolutionary relationships in Aves.

**Poster 50**

*Sex Trafficking – The Bottom Girl Phenomenon*

**Shamere McKenzie**, Criminal Justice and Criminology (2015), Social Justice Fellowship

Mentored by John Donoghue. History

Language, norms and roles are the basic elements of culture. The ‘life’ or the ‘game’ is the subculture of sex trafficking. Within this subculture, prostitution is one of the obvious norms and the language would not be understood by someone outside of this culture. Terms like wife-in-law, tricks or ‘bottom girl/bitch’ are common within the forced commercial sex industry. In almost all cultures, roles and responsibilities are divided and many times labeled: senator, professor, laborer. There are also different roles in pimp-controlled culture. The pimp is the top of the hierarchy and is the only one who profits. He defines the roles, makes the rules, and administers punishment when deemed necessary. Everyone must obey him and do whatever he says. The bottom girl is the pimp’s most trusted girl; she usually has been with the pimp the longest and knows the rules of ‘the game’. She is often times prosecuted and seen as a criminal instead of a victim.

**Poster 51**

*The Myth of Cultural Competence: Early Childhood Educators' Perceptions and Experiences of Multicultural Competence*

**Maggie Sheehan**, Early Childhood Special Education (2015), Provost Fellowship

Mentored by Adam Kennedy, Early Childhood Special Education

The compelling need for school professionals to develop multicultural competence (MCC) in order to address the needs of increasingly diverse school populations has been well documented in published research (Carroll, 2009). MCC is an active change process that continues beyond pre-service training because competencies must respond to the contextual environments in which they are applied (Wright Carroll, 2005). Outcomes of this transactional relationship between competencies and local environments are as integral to the development of individuals’ MCC as initial training experiences. However, little is known about the processes through which cultural competence develops in practice. For this reason, the purpose of the present study is to utilize qualitative methods to describe the definitions and perceptions of multicultural competence of early childhood educators toward the goal of improving integrated early childhood education that meets the needs of all children.

**Poster 52**

*The Identification and Selection of Drug Development Candidates for a Start-Up Pharmaceutical Company*


Mentored by Anastasios Malliaris, Economics

The development of medicine specializing in the needs of pediatric and geriatric populations represent growth opportunities within the healthcare industry. This project focused on the identification and selection of novel drug development candidates
that complement the needs of the target populace and the resource constraints of a start-up pharmaceutical venture. Results revealed a need for “easy to administer” products for pediatric, geriatric and end-of-life patients. A number of products capable of meeting that need were identified. A subset, those deemed scientifically feasible and able to meet the financial and technical constraints of the company, were selected for commercial development.

**Poster 53**

**Ideology in Political Theology: Politics and the Critique of Idolatry**  
Ean Sablich, English and Secondary Education (2016), Research Mentoring Program

Mentored by Silas Morgan, Theology

This research attempts to clarify the relation of ideology to idolatry in theology, beginning with the materialist origins of idolatry critique. Emphasizing a materialist analysis of the social origins of the critique of idolatry allows us to relate the political function of this critique to contemporary challenges brought on by the ‘return of religion’. The critique of idolatry can interpreted in political terms (as ideological practice), rather than strictly religious ones.

**Poster 54**

**Investigating Ecosystem Services in Chicago Urban Farms**  
Renee Howarth, Environmental Studies (2015)

Mentored by Kelly Garbach, Institute of Environmental Sustainability

Urban farms are being integrated into cities across the globe more and more frequently. The creation of urban farms generates sites for food production, enhances biodiversity, improves neighborhood aesthetics, and develops critical social connections, in short they offer many ecosystem services. Seven different urban farms along the northeast gradient of Chicago were interviewed to better understand the ecosystem services urban farms present, as well as the difficulties and successes the farms have had in their years of operation.

**Poster 55**

**Stormwater Runoff Management and Green Infrastructure**  
Britanny Jocius, Environmental Policy (2016); Kelsey Green; Ana Guzman; Jillian Hade; Marthe Ndomo Lekina Nga

Mentored by Aaron Durnbaugh, Institute for Environmental Sustainability; Hahn Pham, Institute for Environmental Sustainability

The Stormwater Runoff project's mission is to reduce the amount of storm water entering the combined sewer system and lower the amount of pollution infecting waterways. The goal is to create a base plan for future students to work from and expand green infrastructure on campus.

**Poster 56**

**¡Nos Preocupamos por el Medio Ambiente También! (We care about the environment too!): an investigation of the environmental participation of Latinos in Chicago.**  
Sarah Naiman, Environmental Science (2014)

Mentored by Tania Schusler, Institute for Environmental Sustainability

Despite an increase in value for the environment, U.S. Latinos generally are not participating in mainstream environmental organizations or projects. Environmental groups need to understand how to appeal to minorities, especially Latinos, in order to work towards improving the environmental quality within the U.S. Through the use of semi-structured qualitative interviews, I investigated the participation of Chicago Latinos in environmental organizations and projects, their motivations to participate in such projects, and their perceptions of environmentalism and the mainstream environmental movement. Although Latino interviewees participated in a wide variety of projects, almost all self-identified as environmentalists and considered their work to be a part of the environmental movement. The understanding of Latino participation is helpful for the improvement of envi-
ronmental outreach and collaboration between the large-scale and local projects.

**Poster 57**


*Ashtar Naqvi, Environmental Science (2015)*

Mentored by Kelly Garbach, Institute of Environmental Sustainability

Under direction of Dr. Kelly Garbach, PhD, we developed an online hub for outreach and extension work supported by professional science communication, specifically to support decision-making in the utilization of hedgerows as a mechanism for on-farm conservation. The Hedgerow Hub is an innovative and groundbreaking project supported by academic, professional, and experienced thought leaders that specialize in the art and science of sustainable and economically feasible hedgerow design, management, and upkeep. HedgerowHub.org seeks to aggregate and provide access to information and collaborative online workspaces, while also pushing that information out to potential decision-makers for use in a practical, real-world environment.

**Poster 58**

*Creating A Net Zero Biodiesel Lab: Solutions for Waste-less Washwater*

*Molly Olson, Environmental Science (2015); Mark Kopec; Laura Kaliski; Juan Robles; Dominika Kraskiewicz; Mia Rubano; Amber White*

Mentored by Zach Waickman, Institute for Environmental Sustainability

Industrial wastewater remediation poses a major challenge in terms of waste disposal and water use. We carried out research contributing to a net zero biodiesel production system. We utilized the plant Salicornia virginica, a halophyte, to filter out excess salts in the washwater while establishing a standard growth procedure. We also investigated the most efficient way to filter washwater to reuse all the contaminants. This research can be implemented on a large scale to remediate other types of industrial water pollution through biological means.

**Poster 60**

*Anthropogenic Litter Density on Lake Michigan Beaches: Role of River Mouth Proximity and Fishing Activity as Revealed by Citizen Science Data Collection*

*Meagan Westhoven, Environmental Science (2015), Mulcahy Scholars Program*

Mentored by Timothy Hoellein, Biology

The abundance and distribution of anthropogenic litter (i.e., AL) is well studied in oceans, but freshwater research lags behind. We analyzed data collected by the Alliance for the Great Lakes on AL density and composition at 214 Lake Michigan beaches. We categorized AL by use to infer the major sources across beaches. Sites were categorized by distances from river mouths to determine potential riverine AL sources. Beaches were categorized by shore-fishing activity and we compared the abundance of fishing-related AL to well-studied marine beaches. Results from the analyses will guide refinement of protocols directed at efficient AL clean-ups and prevention.

**Poster 61**

*Millennials and the Workplace*

*Kelsey Merrigan, Finance (2015)*

Mentored by Stacy Neier, Marketing

This study explores the topic of Millennials and the workplace. Generation Y, known as Millennials, are changing the way career decisions are made. This study looks to discover the role corporate culture plays in the Millennials’ career decisions. This study also looks into the company culture factors that are most important to the Millennials entering the workplace. With Millennials becoming the majority of the workplace in the near future, corporations must look at the corporate culture factors the Millennials desire and the best way to adapt the culture in order to leverage the Millennial generation.
**Poster 62**

*Fostering Authentic Historical Inquiry with Technology: An Analysis of the Chicago Metro History Fair*

Jennifer Burghard, History and International Studies (2015), Provost Fellowship
Mentored by Charles Tocci, Education

This research study aims to examine how high school students engage in authentic, historical inquiry-based learning as students participate in the Chicago Metro History Fair. This project specifically analyzes how computer technologies are integrated into the History Fair learning experience to facilitate productive interactions, aid and transform the research process, and impact students' final presentations. The study has been conducted via case study observations and interviews with students and teachers presently participating in the 2015 Chicago History Fair. It additionally draws on secondary research examining how computer technologies can be used in more innovative ways to specifically promote the learning of history. This project aims to contribute to the spread of effective classroom-based technology practices, as technology continues to proliferate in school environments.

**Poster 63**

*Cellular Alignment: Presenting Data and Associated Uncertainties*

Nicole Reynolds, Biology (2016); Sahil Patel; Nileema Patel; Suneet Antaal; Rahi Patel
Mentored by Robert Polak, Physics

Cellular alignment is frequently a key measurement presented in research on tissue viability and tissue growth. In the research, we found different methods for presenting the alignment data that were regularly employed, ranging from the quantitative measurements such as Rosette plots and order parameter to qualitative impressions. Several users measured the alignment of a highly ordered cellular system of skeletal muscle cells. By comparing the results, we were able to determine common errors and the uncertainties associated with each way data is presented.

**Poster 64**

*Word Recognition: The Effect of Within-Hemisphere and Cross-Hemisphere Letter Transpositions*

Mentored by Anne Sutter, Psychology

This study addresses two questions about word recognition. First, does the brain use information about which letters originally go to which hemisphere to help identify the word? Second, how important is the exact order of the internal letters in the recognition process? To investigate this participants performed a lexical decision task. Some of the nonwords were created by transposing adjacent or nonadjacent letters in words. Transpositions occurred either on the same side or opposite sides of fixation creating either within-hemisphere or cross-hemisphere transpositions respectively. Higher error rates occurred for targets with within-hemisphere transpositions. The effect was much larger for adjacent transpositions than for nonadjacent transpositions. These results indicate that the brain does use information about which hemisphere the letters in a word are originally projected to, and that letter order may not be strictly coded but it does appear to affect the recognition process. The implications of these results for models of word recognition are discussed.

**Poster 66**

*The Effectiveness of Training to Confront Prejudice Depends on the Race of the Confronter*

Michaela Mozley, Psychology (2015)
Mentored by Robyn Mallett, Psychology

Confronting prejudice is an essential aspect of reducing discrimination. The current study examined how manipulating participants’ belonging and providing training for confronting a prejudice or a rude comment affected if they labeled a racist comment as prejudiced and used confrontation strategies. We found that when responding to racism, training to confront prejudice and sense of belonging affects Whites and participants of color differently. Confrontation training and belonging affirmation makes confrontation more likely for Whites. Participants of color confronted less when belonging was affirmed compared to control, which was unexpected.
**Poster 67**

*VirusLand: Expedient Processing of Viral Metagenomes from Assembly to Analysis*

**Joshua Haselton**, Mulcahy Scholars Program  
Mentored by Catherine Putonti, Bioinformatics

Advances in sequencing technology provide the opportunity to explore viral diversity in a variety of ecological niches. Analysis of complex viral samples presents unique bioinformatic challenges, punctuated by the paucity of available viral genomes relative to their richness in the environment. A new software tool called VirusLand has been developed for the comprehensive examination of viral metagenomic data from assembly to analysis. This software integrates existing software tools as well as new modules for analysis, providing the virology community with a non-web-based solution for analysis. VirusLand was developed with agility in mind; tools and databases can be customized by the user. Furthermore, the computational resources required of the tool are practical and expect minimal scripting expertise. As a proof-of-concept, analysis of a complex freshwater virome is presented.

**Poster 68**

*Films Every Girl and Boy Should See: Early Lessons in Leadership*

**Daria Taylor**, International Film and Media Studies (2015), Carroll and Adelaide Johnson Scholarship  
Mentored by Bren Ortega Murphy, Communication

I will be presenting on the research work I have done with Professor Ortega Murphy, researching and analyzing children's films and how the messages in children's films shape their world view positively and negatively.

**Poster 70**

*Patterns in the Worst Security Vulnerabilities of Information Technology Products*

**Safa Faheem**, Information Systems (2016)  
Mentored by Frederick Kaefer, Information Systems

Forbes Magazine gave the year 2014 the title “year of the data breach”, and according to their predictions the breaches are only going to get worse. This project is motivated by that claim and examines the elements that make up the worst security vulnerabilities. The first phase of this research involves understanding the National Institute of Standards and Technology’s (NIST) Common Vulnerability Scoring System (CVSS) which has been developed to communicate the characteristics and impacts of Information Technology (IT) vulnerabilities. This research then studies patterns of the worst security vulnerabilities by date and Information Technology product.

**Poster 71**

*Philanthropy in the Application of a New Generation*

**Iris Wen**, Marketing (2014), Provost Fellowship  
Mentored by Stacy Neier, Marketing

The research will explore the role of philanthropy to Millennials in a global market. The purpose of the research is to discover the meaning of philanthropy for this generation, investigate Millennial attitudes about philanthropy, and examine the motivation driving this generation to contribute in philanthropic efforts. The research is intended to uncover potential actions to effectively engage Millennials in philanthropic efforts. Different from previous generations, Millennials have grown up with innovative technology and are comfortable with the constant use of technology around them. With the use of social media used to generate awareness for businesses, businesses market to be heard through the noise. With philanthropic organizations also moving towards personalized relationships between the consumers, social media efforts are a growing interest in order to interest Millennials in giving back to humanitarian organizations. Since Millennials grew up at a time where the global marketplace was being saturated with more choices for philanthropic participation, the marketing efforts of philanthropies must target in a way to generate actions.
**Poster 72**

*Examination of the Roles of RhoGEF2 and Ribbon in Gonad Morphogenesis*

Fatma Ciftci, Molecular Biology (2015), Mulcahy Scholars Program
Mentored by Jennifer Mierisch, Biology

Cell-cell interactions regulate many aspects of tissue morphogenesis. In the developing gonad, migration and interaction of the germ cells (GCs) and somatic gonadal precursor cells (SGPs) is critical for creating a functional organ. The genes ribbon (rib) and Rho guanine exchange factor 2 (RhoGEF2) are required for embryonic gonad morphogenesis. Mutations in rib and RhoGEF2 exhibit defects in SGP-SGP and between SGP-GC interactions. However, the roles of RhoGEF2 and rib during gonad development, and their relationship to each other are not well understood. In order to understand the relationship of these genes during gonad morphogenesis genetic analysis was performed.

**Poster 73**

*Recombinant Expression of Plasmodium Falciparum Aurora Kinase 1*

Farrah Mahmud, Biology (2015), Mulcahy Scholars Program
Mentored by Kim Williamson, Biology

An Aurora kinase is an enzyme that plays an intrinsic role in controlled cell division in all eukaryotes. The kinome of *P. falciparum*, the deadliest strain of malaria, contains a gene called *Pfark1* whose gene product, an Aurora kinase, plays a central role in the cell division of malarial erythrocytic schizonts. Thus far in our investigation of the Ark1 gene we have taken steps towards the protein expression of the Aurora kinase. We were able to do a PCR amplification of the gene and then ligate it into an expression vector, mpIHTEV using the restriction enzymes Spe1 and BamH1-HF. The new mpIHTEV-Ark1 plasmid was transformed and a second bacterial culture was done. Colonies chosen from this culture were inoculated and the plasmids were isolated from these cells. We are now taking steps to express the protein itself. After this, we hope to check the protein for kinase activity by observing whether it is able to hydrolyze ATP and phosphorylate a universal substrate.

**Poster 74**

*Characterizing the effects of the polyether ionophore, Maduramicin, on the malaria parasite Plasmodium falciparum*

Maxim Maron, Molecular Biology (2015), Carbon Undergraduate Research Fellowship
Mentored by Kim Williamson, Biology

Malaria claims the life of a child every minute. In order to eliminate malaria strategies that target the sexual stages of *P. falciparum*, also known as gametocytes, responsible for the transmission of this disease, must be developed. The polyether ionophore, maduramicin, frequently used to prevent coccidiosis in farm animals, has shown to be an effective inhibitor of *Plasmodium falciparum* development. Interestingly, this compound is active at nanomolar concentrations against both the asexual and sexual stages, despite their differing physiologies. Here, I present results that support maduramicin as an effective anti-malarial agent.

**Poster 75**

*Identification of Critical Genes Responsible for the Hydrolysis and Dechlorination of Chlorpyrifos and 3,5,6-Trichloro-2-Pyridinol (TCP) in Cupriavidus Pauculus*

Meijing Wang, Molecular Biology (2015), Mulcahy Scholars Program, Provost Fellowship
Mentored by Domenic Castignetti, Biology

In the present research proposal, we seek to investigate the chlorpyrifos-degrading properties of the active *Cupriavidus pauculus* isolate in our laboratory. We will search for genes coding for critical enzymes of the chlorpyrifos degradation pathway-mpd which hydrolyzes the organophosphate into TCP, and tcpA1 and tcpB1 that removes the three chlorines which allows the resulting compound to feed into the central organic metabolism- via PCR, gene recombination, cloning and affinity purification. We will also attempt to culture the organism with chlorpyrifos and TCP as sole carbon source. We hypothesize that our *C. pauculus* holds definite bioremediation potential if it can metabolize chlorpyrifos or TCP to its non-toxic form.
Poster 76

Social Media Use: The Implications for Mental and Physical Health
Melissa Haggerty, Psychology (2017), Provost Fellowship
Mentored by Colleen Conley, Psychology

Young adults today spend increasing amounts of time on the Internet, and current research supports the idea that the relationship between real life and online life is important. This longitudinal study explores the relationship between social media use (specifically Facebook, Twitter, Instagram, and Tumblr) and mental and physical health (disordered eating and negative body image). It is expected that social media use will be negatively correlated with mental and physical health. The present study includes about 100 students enrolled in an introductory psychology course at a private Midwestern university.

Poster 77

Shocks in Vertically Shaken Granular Systems
Valay Brahmbhatt, Physics (2015); Alex Gilman
Mentored by Jon Bougie, Physics

Granular systems exhibit interesting fluid-like properties. We use a variant of the Navier-Stokes equations to simulate a system of vertically shaken grains. Systems that are oscillated within a given range of frequencies form interesting visual patterns. When layers of grains are oscillated at accelerational amplitudes greater than that of gravity, the layers leaves the plate. Shocks are created in the system upon impact with the oscillator. We demonstrate relationships between properties associated with shocks and properties associated with the observed standing wave patterns, and present a simplified model to explain these relationships.

Poster 78

The Emergence and Adoption of the Right to Development
Emily Komp, Political Science and International Studies (2016), Social Justice Fellowship
Mentored by Alexandru Grigorescu, Political Science

This research project focuses on the process through which new human rights emerge and are empowered. Specifically this project has centered on the emergence and codification in international agreements of the right to development. This research asks why and how states have accepted this right, and how states with differing opinions and ideas about the right come to agree on a specific iteration. Tracing the various drafts of the right to development in the UN and the arguments against or for specific details has shown how this right has emerged and been adopted throughout time.

Poster 79

Pediatric Development Center at Advocate Illinois Masonic Medical Center
Juliana Burgess, Psychology (2015); Osama Shakir, Biology and Psychology (2015)

The Pediatric Development Center at Advocate Illinois Masonic Medical Center in Chicago, IL, provides countless services to a wide-range of children experiencing developmental issues or disorders. The clinic also provides diagnostic assessments involving a team of up to 6 specific professionals who develop a comprehensive and thorough diagnosis and treatment plan. Last year, a group of Loyola undergraduate seniors experienced a psychology internship at the Pediatric Development Center. This opportunity provided students with an up-close, interactive perspective of a clinical setting, a valuable experience not usually available to undergraduate interns. This presentation highlights that experience.
The Effects of Ethnic Minority Status and College Generation Status on Mental Health, Academic Performance, and Perceived Social Support

Juan Barriga, Psychology (2015)
Mentored by Jenna Shapiro, Psychology

The study examined the effects of ethnic minority status and college generation status on depression, academic performance, and social support among 1,236 first-year college students. Specifically, the study examined whether ethnic minority or first-generation college students had significantly higher levels of depression, lower levels of academic performance, and lower levels of perceived social support than ethnic majority and non-first-generation college students. The study found that ethnic minority and first-generation college students had significantly lower grade averages than ethnic majority college students and non-first-generation college students, respectively. There were no significant differences found between groups on depression and perceived social support.

Attention to Print and Electronic Books in the Preschool Years

Edessa David, Psychology (2014), Research Mentoring Program
Mentored by Kathryn O’Toole, Psychology

The current project investigated how preschoolers learned from and attended to print and electronic books (books on the iPad), read aloud by a live adult or narrated by an audio device. That is, children were assigned to one of four conditions: live print book, live e-book, narration print book, and narration e-book. Children in the narration conditions spent more time looking at the book, but those in the live conditions were not necessarily more inattentive. They divided their attention between the book and the adult. Correlational analyses between attention and word learning from the book were also conducted.

Language Use and Executive Function in Low-Income Latino Youth

Kathleen Dillion, Psychology (2015)
Mentored by Catherine DeCarlo Santiago, Psychology

This study explores the relationship between language use and executive function in middle school-aged low-income Latino youth. For the present study, executive function consists of four components: inhibition, shifting, emotional control, and working memory. The hypothesis of the present study is that students who use two languages equally well will demonstrate better executive functioning than monolingual students or those who have experience with two languages but are more proficient in one over the other.

Evaluating Daily Anxious Mood States and Peer Stress among Low-Income Latino Adolescents

Lauren Gestes, Psychology (2015)
Mentored by Catherine DeCarlo Santiago, Psychology

The current study examined negative and positive affect to subsequently determine anxious mood states among Latino adolescents and analyze the relationship between daily self-reports of anxious mood and peer stress. Results indicated that a large majority of participants experienced peer stress (79.3%). Additionally, analyses revealed significant correlations between peer stress and negative mood, r(56) = .61, p < .01, as well as peer stress and anxious mood, r(56) = .55, p < .01. This research could inform interventions aimed to teach positive methods of dealing with peer stress and to prevent the development of anxiety disorders, specifically for low-income Latino adolescents.
Poster 84

The Bait and Switch: Differences in Shifting Attention Between Monolinguals and Bilinguals

Eva Gjorgieva, Psychology (2015), Provost Fellowship
Mentored by Valerie Flores, Psychology

Bilingualism has been associated with an advantage in task shifting since speaking two languages requires frequent shifting between contexts. The frontocentral P2 event-related potential is thought to reflect the ability to detect task-relevant cue information involved with shifting between cognitive sets. The present study hypothesized that bilinguals would show cognitive and neural advantages in shifting attention. Shifting ability in monolinguals and Spanish-English bilinguals was evaluated using a shifting Stroop task that directed participants between identifying ink color or word naming. Counter to our predictions, we found that bilinguals had longer RTs and later frontocentral P2 latencies on switching trials, which suggests that switching may be more effortful for bilinguals.

Poster 85

Tracking Basic Visual Processing Differences in Migraineurs

Eric Grisham, Psychology (2015), Provost Fellowship; Laura Brennan
Mentored by Anne Sutter, Psychology

It is well documented that migraine sufferers exhibit differences in basic visual processing compared to controls. However, the strength and direction of these effects has been inconsistent across studies. Two major issues potentially contribute to this inconsistency. We attempt to address one of them, that all of the reported studies have measured performance at one point in time. No one has, as yet, tracked the visual performance of individual migraine sufferers over the course of an extended period of time, nor attempted to correlate that performance with symptoms experienced over that period of time.

Poster 86

The Moderating Effect of Social Support on Perceived Discrimination Predicting Perceived Stress in African American Couples

Rebecca Hite, Psychology (2015)
Mentored by Tracy DeHart, Psychology

This is a cross-sectional study on African American couples looking at the moderating effect of social support on the relation between perceived discrimination and perceived stress. One significant main effect was found in the study between Perceived Discrimination and Perceived Stress, so as levels of perceived discrimination increased over the past 3 months, perceived stress also increased. This study is looking to fill an important gap in the literature looking at how social support from romantic partners may mitigate stress in response to perceived discrimination. This may help reduce the negative health symptoms associated with perceived discrimination.

Poster 87

Frustration in Video Games Causing Aggression

Nikhil Malekal, Psychology (2015); Elana Maloul
Mentored by Robert Scott Tindale, Psychology

Recent studies have indicated a correlation between violence in video games and feelings of aggression in gamers. We created a study using several video games that combined various combinations of levels of violence and frustration. After participants finished playing through a condition, they filled out the 12 Question Short AQ to assess their immediate feelings of aggression. We found that levels of frustration had a higher positive correlation with feelings of aggression than violence.
Poster 88

Parent Elaboration and Child STEM-Learning

Lauren Pagano, Psychology (2016)
Mentored by Catherine Haden, Psychology

This study focused on whether parents’ use of elaborations impacted their children’s ability to communicate ideas and learn information during an event. Using video recordings collected in the Chicago Children’s Museum, we coded dialogue of parents and children that occurred while they worked together to build a structure. We evaluated elaborative statements used by parents, as well as how often children provided ideas and responses to their parents’ prompts. We hypothesized that when parents used elaborations, their children would be more likely to engage in conversations with their parents and contribute ideas to aid in the completion of the task at hand.

Poster 89

The Roles of Phenol Hydroxylase and Catechol 2,3Dioxygenase in the Pyruvic Oxime degradation pathway

Miguel Ramirez, Psychology (2015), Mulcahy Scholars Program, Provost Fellowship
Mentored by Domenic Castignetti, Biology

The phenol degradation pathway uses one of two possible dioxygenases (Catechol 1,2 dioxygenase and Catechol 2,3dioxygenase) which are necessary for the degradation of catechol. Previous studies have shown that pyruvic oxime is degraded by a dioxygenase. The hypothesis that the dioxygenase of PO metabolism is the same one found in the phenol degradation pathway was investigated. Our goal was to isolate the phenol hydroxylase gene of C. pauculus which is known to be located near the dioxygenase genes. Having sequenced part of the phenol hydroxylase gene, primers were then designed for gene walking of the entire phenol degradation operon.

Poster 90

Perceived Discrimination in Relation to Anxiety and Daily Mood Among Latino Adolescents

Andrea Realpe, Psychology (2015)
Mentored by Catherine DeCarlo Santiago, Psychology

Perceived discrimination has been identified as a stressor contributing to poor psychological health among Latino Adolescents. In this study we explore how discrimination is related to anxiety symptoms as well as how daily experiences of discrimination are associated with daily mood and fear among low income Latino adolescents. Low-income middle school students completed baseline measures in order to assess anxiety and discrimination over the previous six months. Once the baseline measures were completed, daily diaries were administered for seven consecutive days in order to assess discrimination, daily mood, and daily fear.

Poster 91

Deserts, Camels and the Veil ?: Students Learning from a Study Abroad Trip to Tunisia

Meriem Sadoun, Psychology (2016), Provost Fellowship
Mentored by Peter Schraeder, Political Science

This presentation highlights the effects of study abroad in Tunisia on student perceptions’ of US foreign policy. The perceptions of the study abroad group were compared to beginner level political science students in the US and native Tunisian students in Tunisia. The study also consists of an analysis of the change in perception of US foreign policy towards Tunisia by the study abroad students. It also address the change in perceptual imagery towards Tunisia prior to and at the conclusion of the study abroad trip. The presentation will also include photos of the trip submitted by consenting students.
Mediators of Happiness for Future Focused Episodic Thinking  
**Mark Solinski**, Psychology (2016), Provost Fellowship  
Mentored by Fred Bryant, Psychology

Previous research has shown that a two-week period of participating in positive future-focused episodic thinking increases people’s level of happiness (Quoidbach, Wood, and Hansenne, 2009). The process of engaging in future-focused episodic thinking has been termed “positive future-focused mental time travel” or positive future mental time travel (PFMTT). The goal of the current study is to replicate and extend Quoidbach, Wood, and Hansenne’s (2009) research and test several hypotheses about potential mediators of the increase in happiness that PFMTT produces. Concerning potential mediators of increased happiness, our first hypothesis is that the emotion one feels during the daily PFMTT episode carries over into the rest of their day and builds up over the two week period to cause the increase in happiness. Our second hypothesis is that PFMTT episodes cause people to be more optimistic about the next day’s potential and that this higher optimism leads to the increase in happiness. Because we are more concerned with long term rather than immediate effects, the proposed study will involve experimental sessions that last for two weeks.

Designing Novel Iodine Catalysts to Perform Enantioselective Dearomatization of Phenolic Substrates at the Para Position  
**Jon Kusner**, Chemistry and Mathematics (2015)  
Mentored by Ken Olsen, Chemistry; Chad Eichman, Chemistry

Oxidative dearomatization of phenolic substrates represents an important class of reactions in biosynthetic alkaloid production. On a chemical synthesis platform, hypervalent iodine reagents or catalysts are known to promote the dearomatization process. However, most of the current iodine catalysts demonstrate primarily ortho-functionalization and low enantioselectivity. Our research focuses on the design and implementation of a novel iodine catalyst that will perform a regioselective and asymmetric oxidative dearomatization of substituted phenols. This dearomatization will occur at the para-position and form a new stereogenic center with high enantiomeric excess. To assist in the design of the catalysts, we are employing molecular dynamic simulations to rapidly optimize the catalyst features that influence substrate binding.

Analyses of Bacterial Communities Colonizing Drinking Water Distribution Systems  
**Nicole Minalt**, Biology (2015), Carbon Undergraduate Research Fellowship Program  
Mentored by John Kelly, Biology

Drinking water distribution systems (DWDS) contain microorganisms that exist in biofilm communities. We report the analysis of biofilm composition from pipe samples collected from a DWDS in Florida, USA using tag pyrosequencing of 16S rRNA genes. While non-pathogenic bacteria dominate these biofilms, pathogens in DWDS biofilms have been documented routinely though drinking water analysis. However, the relationship between bacterial communities in the bulk water and biofilm communities within DWDS is poorly understood. We used a laboratory-scale pipe loop system inoculated with a bacterial consortium from a DWDS and next-generation sequencing to explore the relationship between attached and planktonic bacterial communities.

Callous-Unemotional Traits and Violent Offending  
Mentored by Ira Summers, Criminal Justice

The study examined whether callous-unemotional (CU) traits predict the onset of juvenile violent offending and the extent to which CU traits predict future violent offending among 1,170 male adolescents from the Pathways to Desistance project (Mulvey, 2004). Using multinomial logistic regression and negative binominal regression models, the study found that male adolescents who scored high in CU traits were more likely to commit a violent act before age 13, and that they were almost twice as likely (odds ratio = 1.79, p < .001) than those with low or moderate CU traits to exhibit violent behavior at the 5-year follow-up.
OUTSTANDING LOYOLA UNDERGRADUATE RESEARCHER NOMINEES

This award has been established to honor Loyola undergraduates who conduct exceptional research, articulate their research to others, and enhance Loyola’s reputation as a quality research university by integrating research into their academic learning experience.

Kushal Bakshi
Edwin Chahabakhshi
Alexander Gilman
Zareen Kamal
Samantha Keyport
Christopher Lenkeit
Paulina Lis
Susanna Lohmar
Michelle Lozano
Haley Luebke
Mary O’Rourke
Catherine Pacholski
Robert Palumbo
Sarah Prinz
Jose Luis Rodriguez Orjuela

LANGERBECK AWARD FOR UNDERGRADUATE RESEARCH MENTORING

The Langerbeck Award recognizes the exceptional work of Loyola’s faculty mentors who are contributing significant time and effort to the intellectual, ethical, and academic development of undergraduate researchers.

Patrick Daubenmire
Howard Laten
Stephen Mitten
Catherine Santiago
Zach Waickman
Kim Williamson

GRADUATE STUDENT MENTOR AWARD

This award is designed to recognize the work that Loyola’s graduate students perform in mentoring undergraduate researchers, fostering their intellectual, ethical, and academic development.

Stephanie Torres
Jonathan Derouin
Kala Melchiori

HAYES AWARD FOR ADVISING AND MENTORING

The Hayes Award recognizes faculty who demonstrate a commitment to advising and mentoring students within and outside the classroom. Excellent faculty mentors are involved in helping students discover their passions, develop a dedication to life-long learning, and guiding students’ intellectual, personal, social, and spiritual growth.

Daniel Becker
Jessica Brann
Lisa Gillespie
Timothy Hoellein
Marla Israel
Robyn Mallett
F. Bryan Pickett
Maria Vidal de Haymes
LOYOLA UNIVERSITY LIBRARIES UNDERGRADUATE RESEARCH PAPER AWARD FINALISTS

This award recognizes outstanding research conducted by undergraduate students at Loyola University Chicago. The award is not only given based on the paper itself, but also the author’s reflection on the research process, including the role of the library’s resources and services.

Paul Bartel, Classical Studies
Kyle Jenkins, History
Eda Obermanns, History
Jose Luis Rodriguez, Marketing
Albert Salatka, History
Celine Sheehan, English
Meridith Stauber, Psychology
Elyse Voyen, History

COMMUNITY ENGAGEMENT AWARD FINALISTS

Each of the following community engagement awards will be awarded to an undergraduate student or group of students who participated in a service-learning course or academic internship course at Loyola University Chicago during the 2014-2015 academic year. The Community Engagement Award for Social Justice, Community Engagement Award for Innovation in Sustainability, and Community Engagement Award for Impact will be presented to the student or group of students who represent an active and ongoing pursuit in social justice, sustainability, or impact in their community.

Ian Fredreis, Kino Productions
Kevin Carroll, Nicole Ransom, Dariush Tehranfar, ART WORKS Projects
Erica Bohac, Chicago Women’s AIDS Project
Samantha Rivera, Catholic Charities
Danny Sherry, LIFT Chicago
Kevin Brannon, Lincoln Park Chamber of Commerce and Rogers Park Business Alliance
ENVS 345-E, Siburn River Watershed Association
Joe Antonini, IZEA Inc.
Amelia Petersen, Housing Opportunities for Women (HOW)
Lauren Adams, Housing Opportunities for Women (HOW)
Team390, Girls of Grace Youth Center
COMM 210, Respiratory Health Organization
ENVS 345-E, Sibun River Watershed Association
LOYOLA EXPERIENCE YEAR THREE ENGAGEMENT KEY RECIPIENTS

The Loyola Experience Year Three focuses on engaging Chicago and the world. As such, this key focuses on the integration of a student’s engaged learning course and co-curricular experiences. Students were asked to consider the values named in the mission statement of Loyola to “expand knowledge in the service of humanity through learning, justice, and faith” and demonstrate how they have shown a commitment to one or more of these values through your engaged learning and co-curricular experiences.

Matt Anderson  Michael DeStefano  Kimberly Marroquin  Jason Rothchild
Alexandra Baczynski  Jonathan Edrosolan  Caroline Mazurek  Julenys Santa Cruz
Mariam Bahia  Lauren Flaherty  Laressa McCloun  Victor Schneider
Juan Barriga  Blythe Garma  Madison Meder  Patrick Smith
Jacob Batycki  Meg Goodell  P. Dani Mendez  Andy Timmons
Laura Bedolla  Sydney Hammuck  Kathleen Meradith  Emily Van
Sarosh Bhojani  Rebecca Hite  Elizabeth Modde  MacKenzie Vigliotti
Gayle Blakely  Justin Hoch  Jeena Panicker  Anita Virani
Kevin Brannon  Andrew Jorgenson  Foram Patel  Brianna Wallace
Annie Burns  Jennifer Lee  Sydney Peck  Amber White
Kelly Cahalin  Olivia Leonard Millan  Kailee Phelps
Christine Dankha  Susanna Lohmar  Allie Puleo
Jennie Dawson  Amanda Lunn  Christine Robbins


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