A CELEBRATION of SCHOLARSHIP

April 8-11, 2019
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01. SCHEDULE
All Week: Celebrate the Art Exhibit
Grasselli Library, Tully Atrium & Gallery

Monday, April 8, 2019

3-5 p.m. Research Reception
Remarks at 3:30 p.m.
Grasselli Library and Breen Learning Center, Muer Room
Sponsored by the Provost and Academic Vice President and the Academic Deans
By invitation only

5-6 p.m. Participant Reception
Dolan Science Center, Muldoon Atrium
Open to all Celebration Participants

5:30-7:30 p.m. Poster Session and Poster Competition
Group A: Presenting from 5:30 to 6:30 PM
Group B: Presenting from 6:30 to 7:30 PM
Dolan Science Center, Muldoon Atrium
Refreshments

7:30 p.m. Public Speaking Contest
O'Malley Center, Atrium
A Russert Festival Event

9-11 p.m. The Arts at Night
Lombardo Student Center, The Underground
Refreshments

Tuesday, April 9, 2019

2-3:15 p.m. Panel Session A
Dolan Science Center, A202
Advocacy as Scholarship: Arrupe Scholars and Dialogue
Moderator: Sydnia De Franco, M.A., Director, JCU Arrupe Scholars Program

2-3:15 p.m. Panel Session B
Dolan Science Center, A203
Peace, Justice and Human Rights
Moderator: Philip Metres, Ph.D.

3:30-4:45 p.m. Panel Session C
Dolan Science Center, A202
Theology and Religious Studies 337.52
Moderator: Deborah Zawislan, Ph.D.

3:30-4:45 p.m. Panel Session D
Dolan Science Center, A203
Scholarship as Advocacy: Marginalized Voices
Moderator: Sydnia De Franco, M.A., Director, JCU Arrupe Scholars Program

5-6:15 p.m. Panel Session E
Dolan Science Center, A202
Advocacy as Scholarship: Poverty Simulations as a Way to Transform Narratives
Moderator: Sydnia De Franco, M.A., Director, JCU Arrupe Scholars Program

5-6:15 p.m. Panel Session F
Dolan Science Center, A203
Outside of the Self: Connecting with Others – Honors Program Presentations Part 1 of 2
Moderator: Angela Canda, Ph.D., Director, JCU Honors Program

5-6:15 p.m. Panel Session G
Dolan Science Center, O’Connell Reading Room
Moderator: Moderator: Carole Krus, M.A., CIP
Panelist 1: Elizabeth Marcelli, “The Impact of Improved Sanitation on the Prevalence of Gastrointestinal Symptoms in Rural Honduran Children”
Panelist 2: Adriana Nelson, “Yulin Grottoes Cave #3: The Bodhisattva Temple”
Panelist 3: Katherine O’Connell, “Live LIVE! Creating Community in Music Experiences”
Panelist 4: Matthew Slodov, “Modeling the Thermal Conductivity of Hybrid Perovskites”

7:00 p.m. 60 Second Lectures
Dolan Science Center, Donahue Auditorium
Contact: Angela Canda
Wednesday, April 10, 2019

11:45 a.m.-1 p.m. Scholarly Lunch (reservations required)
Dolan Science Center, O’Connell Reading Room
Dr. Chris Sheil, Department of Biology
Contact: Eileen Egan

2-3:15 p.m. Panel Session I
Dolan Science Center, A203
Whose Culture? Exploring Cultural Memory and Identity as well as Invented Tradition amid Oppression by Totalitarian Regimes, Conquest, or Conflict – Part I
Moderator: Michele Stopera Freyhauf, MA, ABDiss

3:30-4:45 p.m. Panel Session J
Dolan Science Center, A202
Moderator: Medora Barnes, Ph.D.
Panelist 1: Katherine Marusic, “Justice for All; Incorporating Restorative Justice and Practices into the Classroom”
Panelist 3: Genevieve Nigro, “Building Community Through a Pack Walk”

3:30-4:45 p.m. Panel Session K
Dolan Science Center, A203
Whose Culture? Exploring Cultural Memory and Identity as well as Invented Tradition amid Oppression by Totalitarian Regimes, Conquest, or Conflict – Part II
Moderator: Michele Stopera Freyhauf, MA, ABDiss

5-6:15 p.m. Panel Session N
Dolan Science Center, A203
Exploring the Holocaust
Moderator: Michele Stopera Freyhauf, MA, ABDiss

5-6:15 p.m. Panel Session O
Dolan Science Center, O’Connell Reading Room
Issues in Modern and Contemporary Italian Culture Presentation of IT410 Capstone Thesis Projects.
Moderators: Santa Casciani, Ph.D. and Luigi Ferri, Ph.D.

6:30-7:00 p.m. Theology and Religious Studies Anisfield-Wolf Post-Doctoral Fellow Lecture
Dolan Science Center, O’Connell Reading Room
Krista L. Stevens, Ph.D.
Contact: Sheila McGinn

7 p.m. Russert Debate
TV Studio
A Russert Festival Event
Contact: Brent Brossmann

8 p.m. Student Event: Poetry Slam
Lombardo Student Center, The Underground
Contact: Julia Arnold-Hess

Thursday, April 11, 2019

3:15-4:15 p.m. Introduction to the Fellowship Process: Finding Funding and Exploring Applications
Location: Dolan Science Center, A202
Contact: Erica Kennedy

5-6:15 p.m. Panel Session M
Dolan Science Center, A202
Exploring Issues of Inequality – Honors Program Presentations Part 2 of 2
Moderator: Angela Canda, Ph.D., Director, JCU Honors Program

7:30 p.m. WJCU’s 50th Birthday Party
Lombardo Student Center, The Underground
A Russert Festival Event
Contact: Trent Maverick
02. PANEL SESSIONS
Panel Session A | Tuesday 2-3:15 p.m.
Dolan Science Center, A202

Advocacy as Scholarship: Arrupe Scholars and Dialogue
Moderator: Sydni De Franco, M.A., Director, JCU Arrupe Scholars Program

What does scholarship as advocacy look like? What are the responsibilities of doing socially just research & advocacy? What roles do listening and dialogue play in advocacy?

1. Tony Penk: Catholic Conversations--The People in the Pews
2. Sheelagh Jackson: Catholic Conversations--The People in the Pews
3. Hope Uwase: Representing the ‘Other’: Race & Dialogue on Campus

A.1. Catholic Conversations--The People in the Pews
Tony Penk, Undergraduate

Students at JCU are at the point when they must start taking ownership of their lives and learning what exactly that means. At JCU, students learn to be active rather than passive participants in all aspects of their lives, including their faith lives. Campus Ministry offers many opportunities to pursue faith personally and as a community at JCU. This project focused on asking the questions “What does faith life look like after JCU?” and “What responsibilities do laity (the people in the pews) have to the betterment of the church?” The overall goal of this project was to encourage laity to be active in their faith communities and to develop healthy relationships with clergy in support of the more long-term effort of legitimizing laity influence in the Catholic Church’s institutional processes.

A.2. Catholic Conversations--The People in the Pews
Sheelagh Jackson, Undergraduate

Students at JCU are at the point when they must start taking ownership of their lives and learning what exactly that means. At JCU, students learn to be active rather than passive participants in all aspects of their lives, including their faith lives. Campus Ministry offers many opportunities to pursue faith personally and as a community at JCU. This project focused on asking the questions “What does faith life look like after JCU?” and “What responsibilities do laity (the people in the pews) have to the betterment of the church?” The

A.3. Representing the ‘Other’: Race & Dialogue on Campus
Hope Uwase, Undergraduate

Multi-cultural appreciation, recognition and dialogue are key elements in initiating cross-cultural dialogue among minority, majority and international students on JCU campus with the aim of addressing implicit bias and stereotypes. I hosted a dialogue event and movie showing that focused on media misrepresentation of specific groups of people. Other topics discussed included imposter syndrome, color-blindness, discrimination, violence, and false accounting of history. I concluded with suggestions on how to go about recognizing and appreciating cultural diversity in our daily lives.

Ryan Fitch, Undergraduate

Using computer science and programming as a tool, I developed a program to support a social justice endeavor called “MedEx.” Programming a system to meet a client’s needs to support and facilitate a program that helps connect resources with people is a trend that will continue to grow. As a computer science and statistics major, I wanted to find a useful way to support social justice with the skills I have learned.

Panel Session B | Tuesday 2-3:15 p.m.
Dolan Science Center, A203

Peace, Justice and Human Rights
Moderator: Philip Metres, Ph.D.

The 2019 Peace, Justice, and Human Rights panel features papers tackling some of the most persistent social justice issues of our day: wrongful convictions, transitional justice rights, and the role of media during situations of conflict.

1. Katie Burns: Wrongful Convictions: Why They Happen, and What Can be Done About Them
2. Elizabeth Nies: The Empowerment of Children During Transitional Justice Processes
3. Maddie Mooney: The Impact of Media on The Troubles and Peacemaking
B.1. Wrongful Convictions: Why They Happen, and What Can be Done About Them

Katie Burns, Undergraduate

Since 1973, 144 people on death row have been exonerated, and ten others have been named “executed but possibly innocent” by the Death Penalty Information Center. Even if the wrongfully convicted are exonerated, the punishment continues even after released. After an average of fourteen years behind bars, the newly exonerated reenter a society where they face unemployment and a lack of housing, transportation, health insurance, and, likely, a reputation, despite the criminal charges being dropped. There are numerous reasons why wrongful convictions occur more often than they should, but the three leading causes of wrongful convictions are: 1) eyewitness misidentification testimony, 2) improper forensic evidence, and 3) false confessions/incriminating statements.

B.2. The Empowerment of Children During Transitional Justice Processes

Elizabeth Nies, Undergraduate

According to the United Nations, “as of 2010, over 1 billion children worldwide were living in territories affected by armed conflict, and over one-quarter of them were under the age of five” (International Center for Transitional Justice 2018). Due to their dependent status, children and youth are particularly vulnerable to experiencing suffering and human rights violations during conflicts. At the same time, because children will constitute the next generation of a society, they have a critical role to play in the transition of a society towards peace. For these reasons, it is essential to consider children’s unique needs when implementing transitional justice processes, and to give them a chance to take part in such mechanisms. As such, this research examines how existing mechanisms including truth commissions, trials, reparations, and institutional reform can be adapted to support the inclusion and empowerment of children.

B.3. The Impact of Media on The Troubles and Peacemaking

Maddie Mooney, Undergraduate

During The Troubles, the media was as chaotic as the events they were reporting. Censorship laws, biased reports, and coverage meant to create peace all coexisted in Northern Ireland during The Troubles. The BBC, the British public service broadcaster, and the RTE, the national public service broadcaster of the Republic of Ireland, dominated the television side of coverage, while print media sources such as Belfast Telegraph, Irish Times, Irish News, and An Phoblacht became popular within their own communities. During the Troubles, the media’s role quickly transformed from reporter to political activist, as each major media platform consumed in Northern Ireland was either directly affected by government laws, or was an influential factor in creating a space for peace/perpetuating conflict. However, the media’s role as peacemaker created a dialogue within the individuals, communities, and overall warring society that attempted to bridge the binary and open the door for peacemaking.

Panel Session C | Tuesday 3:30-4:45 p.m.

Dolan Science Center, A202

Ignatian Solidarity Network Carbon Challenge: Relationship between Climate Change, Water, and Single-use Plastics

Moderator: Deborah Zawislan, Ph.D.

“Climate change is all about water,” says Zafar Adeel, chair of the United Nations interagency coordinator for fresh water-related issues. He goes to state, “water is the medium” through which climate change will most profoundly affect all societies and ecosystems, and the interaction between climate change and fresh water will be a significant factor in the global water crisis. This panel presents findings from a Globalization, Theology & Justice class service-learning project that included a survey to collect information about JCU students’ views on recycling, single use plastics, and climate change. Students also researched the relationship between climate change and water in the Anthropocene; the connection between water and social justice; the connection between climate change and single use plastic; moving the Earth overshoot date; John Carroll students’ beliefs about recycling; and recommendations for engaging students in making JCU’s campus greener.

1. Deborah Cha: Water, the Climate Shark
2. Michael Bishop: Data and The System We’re In
3. Maria Garcia-Olalla: JCU Students Recycling Habits and View of Single-use Plastics
4. Isabella Carlozzi: Educating for a Greener John Carroll
C.1. Water, the Climate Shark  
Deborah Cha  
“If climate change is the shark, then water is its teeth.” - Water Disclosure Project. The clock is ticking before the earth suffers a global climate catastrophe. Unless we divert energy use away from fossil fuels, carbon emissions will continue to rise and damage the planet. The largest impact will be seen through our water sources. Glaciers are already melting by the ton, with sea levels and water temperatures rising to dangerous levels. So far, the climate shark has only terrorized small fish, but by 2030, it will be directly attacking humans. The poor will suffer the most through the upcoming natural disasters and water scarcities. With 95% of climate change attributed to human activity, it is of major importance that each individual contributes to the welfare of the earth.

C.2. Data and The System We’re In  
Michael Bishop  
Given how energy is produced in this region of the country, how our transportation is arranged, and the standard of living enjoyed by students this paper highlights the depth of change that must take place to limit the breadth of severe climate change. Through tools such as the Global Footprint Network’s online “Ecological Footprint Calculator” we came to understand the major influential factors of climate change. Moreover, we came to understand that many of the determinants of climate change are systematic in nature and that individual decision making by consumers (or in this case, students at John Carroll) can contribute very little in the way of protecting the planet, and that action at the economic and political levels will be required to make significant changes.

C.3. JCU Students Recycling Habits and View of Single-use Plastics  
Maria Garcia-Olalla  
A survey created by the class asked students about their recycling habits, how important recycling is to them personally, and their opinions of single-use plastics. A trash audit of recycling within JCU dorms was also conducted to observe the recycling habits as well as to identify the types of single-use plastics that were attempting to be recycled. Data from both the survey and the trash audit gave us a clearer picture of recycling habits on. Overall we did see that JCU students care about recycling, but they need to be more educated when it comes to the process. The trash audit reinforced our conclusion, that people try to recycle, but they need to be educated on the do’s and don’ts. While every dorm has a different set of recycling habits, our findings suggest that overall we need to do better as an institution in helping students be more efficient in their recycling efforts.

C.4. Educating for a Greener John Carroll  
Isabella Carlozzi  
The Ignatian Solidarity Network (ISN) Carbon Challenge is focused on reducing single use plastics in secondary and post-secondary schools. Our liaison for the ISN Carbon Challenge asked our class to help identify students’ perceived barriers to joining/getting excited about the environmental movement at John Carroll. Based on the class survey, several students said they would be more excited about a green movement on campus if there was a clearer message on how to participate, and possible ways to make recycling fun! The education group will be hosting an interactive information session on recycling at JCU, on Wednesday, April 10th, and hopes to inspire and enable students on campus to play a part in this community effort to care for our environment. This paper presents highlights of educating for a Greener John Carroll.

Panel Session D | Tuesday 3:30-4:45 p.m.  
Dolan Science Center, A203  
Scholarship as Advocacy: Marginalized Voices  
Moderator: Sydnia De Franco, M.A., Director, JCU Arrupe Scholars Program  
How can scholarship and advocacy best give marginalized voices a chance to be heard? In this panel, students in the Arrupe program will talk about their advocacy and how their passions have led them to walk with others and give voices to the voiceless.  
1. Mackenzie McNaughton: Advocating for Marginalized Groups--Equality Ohio  
2. Kate Fike: Advocacy in Healthcare Billing  
3. Ashura Powell: Advocating for Marginalized Groups  
4. Grace Blanchard: Advocating for Marginalized Groups  

D.1. Advocating for Marginalized Groups--Equality Ohio  
Mackenzie McNaughton, Undergraduate  
The goal of this advocacy project was to raise awareness among John Carroll students about the current state of LGBTQ legal protections in the state of Ohio. Currently, LGBTQ people in 30 states in the U.S. (including OH) still do not have clear protections from discrimination in housing, employment and public spaces. The other major goal of this project was to mobilize students to write letters and call legislators about passing HB 160 in Ohio to protect LGBTQ individuals from housing and
job discrimination. In our project, we wanted to make sure that those who participated left our event with a new or better understanding of the injustices faced by the LGBTQ community and the importance of political activism. Many people are unaware of how powerful their voices can be in shaping politics by contacting their representatives and voting in elections. Phone calls, letters, and emails are very powerful in influencing policy decisions as one call is often considered to represent the views of 1,000 constituents. We worked with Equality Ohio which is an organization dedicated to increasing LGBTQ legal protections in Ohio. They emphasized that all calls made by advocates of the LGBTQ community have a strong effect on the outcomes of legislation.

D.2. Advocacy in Healthcare Billing
Kate Fike, Undergraduate

Healthcare cost transparency is a major issue in the United States; the average patient has no way to compare costs between medical facilities, and they often unwittingly pay medical bills that are extremely inflated. Unfortunately, the shortcomings of the healthcare systems are realized by those that are financially insecure or uninsured, for which unexpected medical bills can be devastating. It is essential that patients learn that the charge on their bill from the medical facility is not the correct price of their medical service, and that they can access the correct prices using public databases. The goal of this project was to increase healthcare billing literacy so that patients can advocate for lower healthcare costs.

D.3. Advocating for Marginalized Groups
Ashura Powell, Undergraduate

Who are the powerful? Who are the powerless? These are two very important questions to consider when thinking about those who are marginalized. For our advocacy project, myself and two other Arrupe Scholars chose to focus our attention on the LGBTQ+ community. Specifically, we looked at two bills proposed by the Ohio State Legislature: House Bill 160 and House Bill 36. House Bill 160 (Ohio Fairness Act) aimed to add legal protection for LGBTQ+ persons when it came to public accommodations such as housing and employment, as well as add gender identity/expression to the list of nondiscrimination protections. This bill we pushed for. House Bill 36 (Pastor Protection Act) served to allow clergy member’s rights to refuse to marry couples that go against their religious beliefs. This bill was one we advocated against. We spoke up for the powerless, the LGBTQ+ community and wrote letters and made phone calls to the powerful, members of the Ohio House of Representatives and committees responsible for these two bills.

D.4. Advocating for Marginalized Groups
Grace Blanchard, Undergraduate

The LGBTQ+ community continues to suffer discrimination, and is a group with very few federal protections. Currently in Ohio there is no state-wide law that protects LGBTQ+ people from being fired from their jobs, denied housing, or denied access to basic goods and services. Our group sought to educate JCU students about state and local legislation impacting the LGBTQ+ community, and what they can do to help. In particular, we worked with the organization Equality Ohio, and focused on House Bill 160, which would add sexual orientation and gender identity/expression to Ohio’s list of nondiscrimination protections when it comes to housing, employment, and other public accommodations.

Panel Session E | Tuesday 5-6:15 p.m.
Dolan Science Center, A202

Advocacy as Scholarship: Poverty Simulations as a Way to Transform Narratives
Moderator: Syndia De Franco, M.A., Director, JCU Arrupe Scholars Program

This panel will discuss how poverty simulations can help transform perspectives and change narratives about poverty and hunger. Students will also discuss the impact of their research and advocacy in the field of social justice.

1. Anna Masica: Poverty Simulation: Struggles and Successes
2. J. Evan Dexter: Poverty Simulation: Lessons Learned
3. Hannah Singerline: Poverty Simulation: Participant/Leader Experiences

E.1. Poverty Simulation: Struggles and Successes
Anna Masica, Undergraduate

Hunger insecurity is a problem that affects our general population, including, more specifically, college students. We wanted to shed light on the issue to other students, and to do so, prepared a SNAP Week Challenge and Poverty Simulation. These were two large events that lasted a week, planned for the duration of a semester by our team. Our program was, overall, a success. That doesn’t mean that it did not come with any struggles. I will be touching on the struggles of putting on events for students and the success of what it looks like when it comes together in the end.
Up until the final moments of our event we dealt with the struggles of trying to explain hunger insecurities to college students in a way that would make sense. I will be touching on what some of those successes and struggles were and how we balanced both to make our advocacy project the most impactful possible.

E.2. Poverty Simulation: Lessons Learned

J. Evan Dexter, Undergraduate

We learned some difficult lessons during the creation of our poverty simulation. The lessons I will be discussing are as follow: 1. Students are more likely to show up if there is an incentive i.e. bonus points, free food, or whatever it may be. 2. Having someone, or an organization in our case, with experience in creating, organizing and running the poverty simulation is priceless. 3. Market! Market! Market!—posting to social media and other platforms is very effective, but asking a person face-to-face is the most effective way to get someone to sign up. 4. Regardless of the amount of participants, you are making a difference among peers and those who do participate through education and insight. 5. It is difficult to explain food insecurity to an audience that has never had to worry about it.

E.3. Poverty Simulation: Participant/Leader Experiences

Hannah Singerline, Undergraduate

After the poverty simulation, I heard talk in various classes and organizations from students who heard about the SNAP week challenge, or attended the poverty simulator. These students often spoke not knowing my involvement which allowed me to have an unfiltered insight. Though there are many things on the leader end that we wished could have gone better, the students and professors who participated seemed to take away what we were hoping they would, and more. Many lessons about poverty were learned by the students and professors, most importantly experience based lessons. We as leaders learned a great deal about the issue as well during preparation, and also had the opportunity to learn how to educate others on the issues we are passionate about in various different ways.

F.1. Reinventing the Contemporary Experience - How Technology is Shaping the Art World

Rebecca Fortsch

Throughout time, art has imitated life, and life has imitated art. Cultural values, historical events, and society have profoundly impacted both artists and their respective movements. Today, the notion of capturing and communicating real-world moments in real-time has become second nature. However, contemporary art persists as the title for present works. Although these pieces are art of today, they speak to the visual and participatory culture of consumers. Installation pieces have become increasingly popular, due to their high engagement and delivery of a shareable online experience. Therefore, considering the ever-changing landscape and demands of visitors, the purpose of this research is to understand how art museums are responding to the convergence of online and offline profiles today. This project seeks to illuminate the changes in how individuals appreciate and experience art in a contemporary era by analyzing the strategy and influence of social media accounts.

F.2. Immerse Together

McKenzie Stine

In order to embody being “men and women for and with others,” we, as members of Jesuit Colleges and Universities, must intentionally immerse ourselves. Immersion experiences challenge individuals to simply be. Most importantly, they invite individuals to put learning first, service second, and to truly lean into the notion that “in the end, it is the reality of personal relationships saves everything.” While many of the 28 Jesuit Colleges and Universities provide immersion experiences in various realities to their students, they as a whole do not collaborate. The lack of collaborative immersions deserves the communities in which these institutions are set. Immersing together would enable us to better serve those within our respective communities. In finding similarities among the locations of every Jesuit College and University, our advocacy would not only be more intentional and reverent, but more radical. This panel serves to advocate for collaborative AJCU immersions.

Panel Session F | Tuesday 5-6:15 p.m.

Dolan Science Center, A203

Outside of the Self: Connecting with Others - Honors Program Presentations Part 1 of 2

Moderator: Angela Canda, Ph.D., Director, JCU Honors Program
F.3. Empathy: What is it, What is it Good For
Colleen Dougherty
Many people believe that empathy is necessary for being morally “good,” such that empathy is fundamental to our moral sense. Yet, there is much debate about what empathy is and whether or not it is a good thing. My goal is to explore and evaluate this debate. In the first part of the paper, I will discuss the misconceptions of empathy and provide a taxonomy of different sorts of empathy. I will then address whether empathy is good by evaluating the arguments for and against empathy by David Hume, Paul Bloom, Jesse Prinz, Peter Goldie, Michael Slote, and Denise Cummins.

G.2. Modeling the Thermal Conductivity of Hybrid Perovskites
Matthew Slodov
Hybrid Perovskites are crystals with a specific structure made up of both organic and inorganic components. These crystals have shown potential to make more efficient solar cells, but their physical properties are not well understood. The properties of these crystals were studied through modeling their thermal conductivity as a function of temperature. The Debye model for thermal conductivity was used as a basis for the modeling. Specifically the Perovskites Methylammonium Lead Iodide, Bromide, and Chloride (MAPbX3, X = I, Br, Cl) and their physical properties of point defects, Umklapp phonon scattering, and grain boundary size were studied. From the samples provided, MAPbI3 had the most point defects, and MAPbBr3 had the greatest Umklapp scattering. More research is required to better understand these Perovskites and implement them in technology. Funded by the generous donation of Matt Keresman, a John Carroll University alumni, class of 1983.

Panel Session G | Tuesday 5-6:15 p.m.
Dolan Science Center, O’Connell Reading Room
Individual Presentations
Moderator: Carole Krus, M.S., CIP

1. Elizabeth Marcelli: The Impact of Improved Sanitation on the Prevalence of Gastrointestinal Symptoms in Rural Honduran Children
2. Matthew Slodov: Modeling the Thermal Conductivity of Hybrid Perovskites
3. Adriana Nelson: Yulin Grottoes Cave #3: The Bodhisattva Temple

G.1. The Impact of Improved Sanitation on the Prevalence of Gastrointestinal Symptoms in Rural Honduran Children
Elizabeth Marcelli
The objective of this study is to evaluate the effect of improved sanitation on the prevalence of ID/Parasitic symptoms in children under 13 in rural Honduras. Information from intake sheets including vitals, past medical history, diagnoses and treatment, as well as a survey regarding key household health factors, were derived from the 2016 and 2018 medical brigades at locations determined by Sociedad Amigos de los Ninos. About half of the children within the study had access to improved sanitation. The results indicated that improved sanitation decreased Gastrointestinal symptoms by 34% in children under 13. The research supports the impact of improved sanitation on the reduction of reported GI symptoms in rural Honduran children, as well as the importance of work placed towards improved sanitation initiatives in developing rural communities to reduce ID/Parasitic diseases in the youth. This research was part of JCU’s SURF program supported by the Colleran-Weaver Fund.

G.3. Yulin Grottoes Cave #3: The Bodhisattva Temple
Adriana Nelson
The Western Xia dynasty (1038 - 1227) marked an extraordinary transitional period within northwestern China. Under the rule of a nomadic group known as Tanguts, popularized Buddhist patronages at the time caused the demand for an increase in artwork and iconography. The Yulin Caves became a part of these major projects during the era. Researchers of Buddhist art have particularity been interested in the way Yulin Caves provides a juxtaposition between Chinese Mahayana and Esoteric Buddhist motifs, along with how the caves demonstrate elaborate artistic techniques. The cave that best exemplifies the perplexity of the Yulin phenomena is cave #3. The juxtaposition appears through overlapping iconography and motifs presented by enlarged Bodhisattva images across the cave. Bodhisattvas in Buddhist tradition are described as the attendants of the Buddha. The quantity of these enlarged images reintroduces the attendant Bodhisattva as the principal figure in both Buddhist traditions.
Panel Session I | Wednesday 2-3:15 p.m.

Dolan Science Center, A203

Whose Culture? Exploring Cultural Memory and Identity as well as Invented Tradition amid Oppression by Totalitarian Regimes, Conquest, or Conflict - Part 1 of 2

Moderator: Michele Stopera Freyhauf, M.A., ABDiss

1. Kathryn Flanders: The Invention of Modern Italian Gastronomy
2. Molly Ross: Tibet and China’s Revisionism of History
3. Alex LaFayette: Libya and the Destruction and Reclaiming of Jewish Culture
4. Catherine McCarty: Stalin’s Reinvention of Russian Cultural Memory
5. Brooklynne Elliot: Hitler and Manipulation: A Psychological Exploration of Cultural Manipulation through Ideological Agendas

In this two-part panel, students will present their research born out of the course, Religion, Terrorism, and Culture Wars, whereby we look at the importance of cultural heritage, cultural memory and identity, and ways to protect, preserve, or otherwise reclaim the culture and traditions of those marginalized or forgotten before it is too late.

I.1. The Invention of Modern Italian Gastronomy
Kathryn Flanders, Undergraduate

What is authentic Italian cuisine? Certainly, what we have come to know as particular food as Italian, there is a shocking history of cultural appropriation and invention of tradition. Italy is trying to reclaim and resolve - even reinvent - what “authentic” Italian gastronomy is.

I.2. Tibet and China’s Revisionism of History
Molly Ross, Undergraduate

From the destruction of artifacts, religious persecution, and the re-writing of Tibetan history as Chinese, the cultural memory and identity of Tibet is under threat -- but why should we care? This presentation will explore this conflict and how Tibet’s cultural heritage can be saved.

I.3. Libya and the Destruction and Reclaiming of Jewish Culture
Alex LaFayette

With the destruction of cultural heritage in the Middle East, there is a new trend for countries that once destroyed Jewish artifacts to claim these artifacts as part of their own cultural heritage. With the recent Bilateral Agreement with the United States, under the Convention on the Cultural Property Implementation Act, the United States accepted this as true and put Jewish cultural heritage on the list of protected Libyan cultural heritage. With the recent Red Lists, Yemen is doing the same. Is this appropriate? Is there a real preservation or a motive to reclaim the heritage and further banish these artifacts? This, as it relates to Libya, will be explored in this paper.

I.4. Stalin’s Reinvention of Russian Cultural Memory
Catherine McCarty

The story is not unheard of - and is almost expected when we see the rise of a dictator - that the history and culture of the past is squashed and reinvented to fit the ideology of that regime. Russia is no different. Stalin, he engineered, manipulated, and created a cultural memory in Russia that had him memorialized as one of the greatest leaders in the world. Since Stalin’s death, there has been a cultural shift away from such viewpoints. How was this done? Why was it effective? What is the lasting impact? And have we seen other dictator’s use or improve on Stalin’s methods?

I.5. Hitler and Manipulation: A Psychological Exploration of Cultural Manipulation through Ideological Agendas
Brooklynne Elliot

Hitler had a vision of what it meant to be German, from manipulating archaeology to assert Aryan primacy to utilizing social Darwinism to convince neighbors to turn on each other - the tools of manipulation are vast, but what was the motivation? Why did people believe in the lies? Why did they act and turn on, and even kill their neighbors? This essay will examine these topics.
Panel Session J | Wednesday 3:30-4:45 p.m.

Dolan Science Center, A202

Individual Presentations

Moderator: Medora Barnes, Ph.D.

1. Katherine Marusic: Justice for All; Incorporating Restorative Justice and Practices into the Classroom

J.1. Justice for All; Incorporating Restorative Justice and Practices into the Classroom

Katherine Marusic, Graduate Student

This presentation will provide a multi-cultural perspective on integrating restorative justice practices into the classroom and for participants to examine their own views about restorative practices. Restorative justice is beginning to be embraced by more districts, but why is it still resisted? What is the history behind both restorative justice and restorative practices? Restorative justice is especially important to consider in a culturally competent classroom, and while one teacher cannot necessarily impact the district level, there are ways to incorporate these principles into daily classroom practice. This presentation will provide participants a chance to ask themselves “How Restorative Am I?” as well as ideas to incorporate restorative justice strategies into the classroom on a micro-level.


Emmanuel Brown, Undergraduate

The purpose of this research was to examine queer history featuring black and latinx people. Queer people of color have made significant advances in our world and it is time we begin to recognize and celebrate their legacy. By analyzing scholarly articles, journals, and interviews, the goal was to formalize a timeline of historic people that identify as being a queer black or latinx person. Important historic events that are essential to queer history were also included. This paper is organized by decade, starting with the 1960s and ending the 1980s. The focus was placed on these decades in an effort to gain a better sense of the United States during that specific time period. Queer persons, regardless of their race, deserve to know that there is an extended history of heroes that have made a significant change for the advancement of all queer people.

Panel Session K | Wednesday 3:30-4:45 p.m.

Dolan Science Center, A203

Whose Culture? Exploring Cultural Memory and Identity as Well as Invented Tradition amid Oppression by Totalitarian Regions, Conquest, or Conflict - Part 2 of 2

Moderator: Michele Stopera Freyhauf, M.A., ABDiss

1. Lucia Bonacchi: Kurdistan: Promises of Independence and Betrayal
2. Taylor Nash: Guarani: Oppression and Cultural Cleansing
3. William Sweeney: Northern Ireland: When a Mural Tells a Violent Story Memorializing the Past, Should It Be Changed or Protected, Especially During Times of Peace?
4. Kelsey Segrue: Ireland: How They Are Losing Their Cultural Identity and Memory
5. Michael Fazioli: The Cherokee Nation: From the Trail of Tears to Today

In this two-part panel, students will present their research born out of the course, Religion, Terrorism, and Culture Wars, whereby we look at the importance of cultural heritage, cultural memory and identity, and ways to protect, preserve, or otherwise reclaim the culture and traditions of those marginalized or forgotten before it is too late.
K.1. Kurdistan: Promises of Independence and Betrayal
Lucia Bonacchi

False promises and the allure of independence has created a tenuous situation for Kurds living in Turkey. Through the Turkish Republic's fight for independence, the Kurds were allured into fighting for their cause with the promise of a created Turkish-Kurdish republic. Not only has the promise been renounced, but laws were passed to abolish any physical and cultural non-Turkish elements within the Republic. This paper will explore this tumultuous history in Turkey, the laws that are in place, and what can be done to preserve the Kurdish cultural memory and identity in the region.

K.2. Guarani: Oppression and Cultural Cleansing
Taylor Nash

Largely located in Paraguay, the Guarani are an indigenous group being marginalized and victimized - to the point of eradicating their cultural footprint and even history. The root of the cause comes from their own government and corporations taking over their ancestral land often illegally and off the international community's radar. This incident has caused suicide, murder, cultural loss, and forgetfulness within the Guarani community. This paper will explore the issue, the long-term impact, and what can be done.

K.3. Northern Ireland: When a Mural Tells a Violent Story Memorializing the Past, Should It Be Changed or Protected, Especially During Times of Peace?
William Sweeney

In Northern Ireland, murals can be seen across the area and is considered to be part of their cultural heritage and a means of remembering the past. Because of the content of many of the morals, which depict violence and their fight through the "Troubles," debates of their message and influence of the youth have been ongoing. Revisions have been made during the last twenty years which has been a time of peace in the area. This paper will explore this history, the connection to their past and the memory it creates for those who live in the region.

K.4. Ireland: How They Are Losing Their Cultural Identity and Memory
Kelsey Segrue

Ireland has a complex history with rich traditions, which is in jeopardy of being lost largely due to British control of Ireland and the introduction of Catholicism into the country. For example, the Irish language itself is being lost - where it was once part of their curriculum, much of the youth no longer know or can speak in their native tongue. This essay will explore the ways in which Irish culture is being lost and how some are still trying to keep the many aspects of Irish culture alive - even reviving the Celtic influence and traditions along with its Gaelic roots. I will also explore not just the degradation of Irish cultural heritage but explore methods or ways to regain, reclaim, and even recreate a more organic cultural identity.

K.5. The Cherokee Nation: From the Trail of Tears to Today
Michael Fazioli

What is the Trail of Tears and Indian Removal act of 1830, and how do they impact the Cherokee Nation still today? The Cherokee Nation largely encompassed land that we now know as North Carolina, South Carolina, Georgia, Alabama, Tennessee, Kentucky, and parts of Virginia. In 1830, under an Executive Order signed by Andrew Jackson, the Cherokees and other tribes were forcibly removed from the land east of the Mississippi River and relocated to Oklahoma. This removal caused death and irreparable destruction to the Cherokee people and significantly impacted their cultural heritage, which continues to be forgotten by young Cherokee children today. Why is this important? Is anything being done to wrong this right? These are just a few of the issues I will explore in this paper.

Panel Session L | Wednesday 3:30-4:45 p.m.
Dolan Science Center, O'Connell Reading Room
Contemporary Philosophical Approaches on Medicine and Embodiment
Moderator: Renee Jacobs

1. Mariah Dellinger: The Effects of Cartesian Dualism on Medicine
2. Ivan Glagola: Racism and Medicine: The Biological Implications of Racist Practices
3. Deniz Durmus, PhD: The Self in Ecological Exchange: Phenomenological Account of the Self in Medicine

Our panel discusses a variety of issues at the intersection of medicine and philosophy. The first paper discusses the repercussions of the paradigm of mind-body dualism in medicine. While acknowledging the advances this paradigm has allowed in medical practices, the paper shows the limitations of the paradigm and searches for
a new paradigm to understand the self. The second paper looks at the biological and physiological effects of racism on the racialized bodies by analyzing empirical studies showing the weathering of the racialized body. The last paper, discusses the shortcomings of the notion of a rigid and self-contained self in contemporary medicine and argues for a more dynamic and porous conception of the self that does justice to the myriad of interactions happening between the self and the environment.

L.1. The Effects of Cartesian Dualism on Medicine
Mariah Dellinger

Cartesian Dualism has affected most aspects of the world and has therefore caused paradigm shifts. Society has had to adjust its views to adapt to the new ideas that have been applied to medicine. Since the seventeenth century when Descartes emphasized Cartesian Dualism, medicine has followed in those footsteps and considered the mind and body as two separate identities. Treating the mind may be easier due to it being able to be physically touched and tested, but, although many agreed that the mind existed, it is specific to each individual experience. As time has progressed though, the mind and body as divided pieces began to be questioned. This paper focuses on the changes that Cartesian Dualism has had on medicine as well as what it's going to be, studying the mind and body as cohesive parts, and the benefits of this change.

L.2. Racism and Medicine: The Biological Implications of Racist Practices
Ivan Glagola

From external to internal interactions, the way in which humans relate to themselves and others have been altered to perpetuate harm because of long-standing uncritical evaluations of systems, particularly social theories, that we have created. Predominantly, the systems in place have been influenced by white thinking and privilege causing lasting relational effects between different ethnicities. As a result, the social endeavor has become normalized to a degree that conventional approaches to the problems of oppressed and disadvantaged individuals become ineffective because of the embedded aspect of discrimination. I will be drawing on the works of Shannon Sullivan as well as Charles Mills to illustrate the impact of racism not only in relation to social, political and economic disparities but also in relation to disparities in health and well-being.

L.3. The Self in Ecological Exchange: Phenomenological Account of the Self in Medicine
Deniz Durmus, PhD

This paper maintains that the current challenge of chronic disease invites us to reconsider our relationship to environment and see the necessity of a radical paradigm shift in our engagement with nature. The boundary between exterior and interior, and body and world is much more dynamic and fluid than we would like to accept in our current scientific and medical practice. Microbial ecology created by nonhuman cells (up to 90% in an average human body) stands as a compelling proof of our interdependence with the environment and earth. Despite the dramatic increase in chronic illnesses in the last decades the medical-agricultural industrial complex continues to ignore that fact and maintain practices that separates nature and the self even further. Hence, developing an ecological framework that operates with a more dynamic and permeable notion of the self that does justice to the ecological exchange is crucial in that process.

Panel Session M | Wednesday 5-6:15 p.m.
Dolan Science Center, A202
Exploring Issues of Inequality - Honors Program Presentations Part 2 of 2
Moderator: Angela Canda, Ph.D., Director, JCU Honors Program

1. Alec Bryson: An Evaluation of the United States Healthcare System Performance Compared to Spending
2. Olivia Pach: The Impact of Women’s Representation in Parliament on Gender Inequality

M.1. An Evaluation of the United States Healthcare System Performance Compared to Spending
Alec Bryson, Undergraduate

According to a 2017 comparison of eleven international health care systems by the Commonwealth Fund, the United States ranked eleventh overall, and its highest ranking in any category was fifth in Care Process. In
three out of the remaining four categories, the United States ranked last. However, the United States spends the most on health care as a country, more than 17% of GDP, which is 5% higher than the next country. This paper serves as a literary review in order to explain the causes of the poor performance of United States healthcare and to suggest improvements. A combination of factors has led to the United States’ poor performing health system including access to care, cost and equity of care, and efficiency of care. While the United States spends the most, it does not spend the most effectively. In looking to improve the health care system, a realignment of spending must be made, so that people can receive timely access to effective care and prescription drugs.

M.2. The Impact of Women’s’ Representation in Parliament on Gender Inequality

Olivia Pach, Undergraduate

This paper addresses the notion that an increase in the amount of women in parliament will lead to increased levels of gender equality. However, this general assumption is flawed because of the reliance current research has on Western-based models that do not account for all states. Using the UN gender inequality index and the percent of women in the lower house of legislature collected by the Inter-Parliamentary Union, I analyze the effect on gender inequality by the percent of women in the lower house of legislature, while controlling for multiple variables. These variables are analyzed using multivariate regression to test their significance. The results show that most of the variables have a statistically significant effect on gender inequality. These findings suggest that there is a threshold requirement required before the independent variable has an effect on gender inequality. Also, they suggest there is still much to know regarding gender inequality.

M.3. Economic Regression Analysis of Homelessness Rates in the United States

Jessica Silber, Undergraduate

My research project is an economic analysis on the causes of homelessness rates in the United States. During my time at John Carroll, I have worked firsthand with people experiencing homelessness in Cleveland with my involvement with the Labre Project. In my work, the question of what causes homelessness rates and how these rates could be decreased, intrigued me. My project consists of previous research into this field, a regression analysis, and a conclusion. My regression analysis looks at the following independent variables for predicting homelessness rates: minimum wage, number of shelters, education, population density, cost of living, poverty rates, and climate. The data consists of both time series and cross sectional data from the last two decades for various cities in the United States. The conclusion contains the significance of each independent variable, and how these results can affect how the issue of homelessness should be addressed in the United States.

Panel Session N | Wednesday 5-6:15 p.m.

Dolan Science Center, A203
Exploring the Holocaust
Moderator: Michele Stopera Freyhauf, M.A., ABDiss

1. Andrew “Bobbie” Salem: Propaganda during the Holocaust
3. Kelci Fleming: Trauma and Survival: Exploring the Psychological Impact of Being a Survivor
4. Caleb Leonard: Antisemitism Through Time (Where Did It Come from and Do We Still Face It Today?)

This Panel stems from a course where we explored all aspects of the Holocaust and responses. During class, it was determined that many, including some of the students themselves, did not have a good understanding of the Holocaust; what led up to it, what influenced it, and the responses during and after. Even some of the events, like the influence of eugenics, especially the sterilization programs in the United States, were largely unknown. It is through that lens that the students thought that a panel exploring such topics would be of interest to the community. The ultimate question is – Can this happen again? Would we recognize the signs? Would we believe the reports of atrocities or chose to ignore them (much like the exiled Polish government in London and others did during World War II)?

N.1. Propaganda during the Holocaust

Andrew “Bobbie” Salem

Propaganda was arguably the most important reason for the success of the Nazis and Hitler during World War II. They had mastered the art of propaganda and utilized new forms of media to promote their message of hate. In this paper, I will explore the methods that were used to do this.
N.2. American Eugenics and the Third Reich
Luke Yablonski
This paper will explore the Eugenics program in the United states and its influence and impact on the policies of the Third Reich. This topic is not well-known throughout American society today, which is why this presentation should be eye-opening and promote interesting discussion.

N.3. Trauma and Survival: Exploring the Psychological Impact of Being a Survivor
Kelci Fleming
This paper will explore how Holocaust victims adjusted to life after their experiences during World War II. We hear stories of what happened when – but I want to explore what life was like after the atrocities that happened at the hands of the Third Reich.

N.4. Antisemitism Through Time (Where Did It Come from and Do We Still Face It Today?)
Caleb Leonard
It is common knowledge that antisemitism fueled much of Nazi propaganda and success. In this presentation, the known sentiments that existed before Hitler’s rise to power will be explored as well as how this hate was exploited during his reign. One of the reasons to attend this panel is to explore these questions: Does society still harbor antisemitic views and how would we know? Does popular culture (e.g. Family Guy, South Park, etc.) run a legitimate risk of propagating antisemitism to spark a laugh?

WED 5-6:15 p.m. Panel Session O
Dolan Science Center, O’Connell Reading Room
Issues in Modern and Contemporary Italian Culture - Presentation of IT410 Capstone Thesis Projects
Moderators: Santa Casciani, Ph.D. and Luigi Ferri, Ph.D.
Isabel Mecca: From Paninari to the Genius project: Moncler over the Years

1. Michael Grenga: The Foreign Perceptions of Food in Italy
2. Linh Huynh: Food Culture and the Growth of Tourism in Italy
3. Emily Nerici: La Fuga Di Cervelli
4. Mallory Fitzpatrick: From Caesar to Mussolini: Imperialism, Empire, and Fascism

O.1. From Paninari to the Genius project: Moncler over the Years
Isabel Mecca, Undergraduate
This study explores how the Italian fashion industry relates to youth social changes. There is a strong correlation between the Italian youth mindset and the changing fashion culture. Mecca first analyzes Italian youth culture of the Paninari (Italian youth hanging around Panini shops), which began in the early 1980s in Milan. For decades, Italy has been on the cutting edge of the fashion industry. After an introduction to this culture, this study explains how the staples of the Paninari youth fashion scene were Timberland boots, Levi’s, a Moncler down jacket, and a Rolex Daytona wristwatch. Furthermore, it examines how these styles, as well as other selected luxury or premium items, have become symbols for certain social groups. This influence continues today. Quite often, high-end fashion designers bring the trends and fads of youth culture onto the runway. For example today Moncler targets young consumers and pushes online sales in a desire to outperform luxury industry competitors.

O.2. The Foreign Perceptions of Food in Italy
Michael Grenga, Undergraduate
The paper primarily concentrates on common misconceptions and expectations vs. reality of Italian cuisine. Evaluating visitors’ experiences from around the world, before and after they leave Italy, how the media portray Italian cuisine, the paper also delves into the food origins of the common cuisine of Italy and the experience of agriturismo. This presentation examines foreign perceptions of food, not only through using scholarly sources and statistics but through use of direct experience, to help explain how foreign perceptions of Italy have been created. The result unravels misconceptions of Italian food, displays the reality of Italian cuisine, and explains the importance of food in Italy.

O.3. Food Culture and the Growth of Tourism in Italy
Linh Huynh, Undergraduate
Italian cuisine influences food culture in the Mediterranean region and in the world. This study explores and examines the close connection between food culture and the development of tourism in Italy. First, it discusses the development of food culture in Italy in relation to the sociology of food, focusing on the diverse regional cuisine as well as on its enogastronomy. Furthermore, it explains the reason for which culinary culture in Italy has had such a profound impact in
the Mediterranean region and in the world. Second, the study relates the tourism industry to how food culture has become the most important growth area for the country’s economy. Finally, it analyzes data to demonstrate the influence food has on tourists’ activities in Italy and how, in turn, it has influenced the economic performance of the country.

O.4. La Fuga Di Cervelli
Emily Nerici, Undergraduate
Today in Italy la fuga di cervelli (Italian brain drain) is a problem. Those who are skilled and highly educated are fleeing Italy to find jobs elsewhere. This study explores when this social phenomenon began, who is leaving Italy and why, and the places these people are choosing as their destinations. Analyzing the phenomenon can reveal potential solutions within Italy’s economic and political climate. La fuga di cervelli is popular in the media, being the subject of many news stories, books, movies, and songs. Italians seem to be aware of the problem, but not much is being done to try to remedy it. By focusing on specific professions that have been central to this brain drain, such as professors and doctors, the paper analyzes the causes and their impact on Italy’s social situation.

O.5. From Caesar to Mussolini: Imperialism, Empire, and Fascism
Mallory Fitzpatrick
This paper examines the romanticization of the Roman Empire as a prominent mentality, which contributed to the rise of fascist Italy beneath the leadership of Benito Mussolini. The duce and other supporters of fascism in Italy promoted an often falsified version of ancient Roman politics and culture as an era which Italy should strive to restore in a “new empire”. The use of symbols and slogans from the Roman Republic and Empire, as well as the glorification of the Roman Empire, particularly its military’s imperialistic expansion, were used to support fascist theory, rhetoric, and ideology in the 1930s and 1940s in Italy. It is important to understand the appropriation and misuse of such classical symbols in a historical context so that we may recognize these troubling trends among current fascist and white supremacist groups.

Anneliese Ivy Preske, Undergraduate
This article analyzes Paolo and Vittorio Taviani’s “La Giara” episode of the film Kaos. The episode is a film adaptation of Luigi Pirandello’s short story “La Giara”. While the works of Pirandello have been thoroughly exhausted through nearly a century of scholarly research, the cinematic side of Pirandello’s stories remains mostly untouched. The Taviani brothers modify a remote form of art to enhance the overall historical and social commentary of “La Giara”. Through cinematographic techniques, the Taviani brothers are able to add an additional layer of narrative for gender relations, spirituality, political pressures and various other aspects. The following article will discuss the episode of “La Giara” with a specific focus on the portrayal of law and politics.
03. POSTER SESSIONS
**PS.01**

An Analysis of Algebra I Literacy Resources in Northeast Ohio (PC)

Nicolas Bayda*, Undergraduate; Dr. Daniel Reynolds, Department of Education and School Psychology, JCU

Understanding disciplinary vocabulary is a key characteristic of successful students. This project is motivated from students being intimidated and not learning as well from a traditional textbook. The literature examined the use of Khan Academy, mathematical disciplinary learning, and the role of the textbook in the classroom. This research analyses four different Algebra I textbooks used in Northeast Ohio middle schools as well as Khan Academy. Specifically, this investigation focused on how these texts integrate disciplinary vocabulary in their lessons concerning quadratic functions. Results showed that the textbooks and Khan Academy featured similar and explicit definitions of terms. Further findings showed only two textbooks had formative assessments targeting vocabulary. Implications from the results are that there is a need for quality formative assessment of vocabulary in classrooms. Funded by the Colleran-Weaver Fellowship.

**PS.02**

Integrating Bioethics in Middle Childhood Science Literacy Education (PC)

Michelle Ritchey* and Kayla Marshall, Undergraduates; Dr. Daniel Reynolds, Department of Education and School Psychology, JCU

Science instruction focuses on content in reading, but fails to teach students how to comprehend the disciplinary content. The purpose of this research is to understand how middle level science students use science literacy to inform their judgments about complex bioethical issues. Science educators need to move beyond text explicit questions in order to push students to form opinions and pose questions. A literature review is adapted as the method in this study. Thirty-five studies from peer-reviewed journals in science education and literacy education were reviewed and coded based on the instructional method used in order to determine effective teaching practices. The study found that key instructional design principles include argumentation and real-world connections. A greater understanding of science literacy will result in a decline in the scientific literacy gap as effective instructional methods are used more often, sparking student interest in science fields.

**PS.03**

Multiple Primary Cancers: Associations & Network Link Analysis (PC)

Zachary Zinda* and Miriam Arshiya, Undergraduates; Dr. Elena Manilich, Department of Mathematics and Computer Science, JCU

Cancer survivors are considered at increased risk of developing new primary cancers. The Surveillance, Epidemiology and End Results (SEER) Program monograph reports that about 10% of cancer survivors in the U.S. were diagnosed with a second or higher-order primary cancer(s). Further, this number is expected to increase over time. Data-driven approaches can be used to recognize that certain patient populations are at higher risk of developing specific multiple primaries. Much of the existing literature on multiple primary cancers (MPCs) focuses on the general incidence of multiple primaries. This study uses machine learning and other data science algorithms to give new insights into the patterns and complex relationships between MPCs. This research was part of JCU’s SURF program supported by the Colleran-Weaver Fund.

**PS.04**

Which factors are significant in the prediction of per capita disposable income for rural farmers in China? (PC)

Ryan Fitch*, Undergraduate; Dr. Zhao Yang, Chinese Academy of Agricultural Engineering Planning & Design; Dr. Rebecca Fang, Department of Mathematics and Computer Science, JCU

The purpose of this study is to better understand which factors are significant in the prediction of per capita disposable income for rural farmers in China. The data set was obtained from the Nation Bureau of Statistics of China and contains information pertaining to small household farmers in rural China from 1996 to 2016. Missing values were estimated based on the pattern of historical data. A linear regression model was used to predict disposable income for rural farmers and a backward stepwise selection was applied to select the best fitted model. We found that the factors that are statistically significant in the prediction of per capita disposable income for rural farmers in China are farm machinery production, electricity consumption in rural areas, number of agricultural practitioners, total output value of agriculture, and new fixed assets of agriculture. Further analysis is needed when most recent data is available.
PS.05

Comparing Mental Health and Academic Performance of Motor-Disabled and Non-Disabled American College Students (PC)

Carla Basconi*, Quynh Tran, and Ryan Fitch, Undergraduates; Dr. Greg Farnell, Department of Exercise Science and Sports Studies, JCU

A mobility disability is a physical disability that involves the loss of limb control, dexterity, and coordination with other body parts. The purpose of this study is to discover discrepancies between the mental well-being and academic performance of disabled and non-disabled college students. Previous research has concluded that those with a mobility disability need additional resources upon entering secondary education and that these students have had greater struggles in academics and their mental health. Questions from the National College Health Assessment from Spring 2017 were selected to retrieve data about individuals with and without mobility disabilities. The data will be statistically analyzed to compare the data of disabled and non-disabled college students, specifically on mental health and academic performance. Significantly lower ratings of mental health and academic performance in disabled students will indicate that necessary changes should be made to help decrease this difference.

PS.06

Competition between Microcystis species from Lake Erie, Ohio in Varying Phosphorous Levels (PC)

Leila Jugo*, Claire Kelly, Jeana Franjoine, and Erica Truong, Undergraduates; Dr. Carl Anthony, Department of Biology, JCU

Lake Erie’s water quality continues to decline due to cyanobacterial algal blooms caused by agricultural run-off. One of the most common genera of harmful cyanobacteria in Lake Erie is Microcystis. Previous studies have focused on how Microcystis strains outcompete each other, but these studies lacks research on which species of Microcystis are competitively dominant. We examined the effects of phosphorus concentrations on competition between different species of cyanobacteria obtained from Lake Erie in Northeast Ohio. Microcystis. aeruginosa dominated and persisted in all three phosphorous treatments, but phosphorus levels were not a significant predictor of growth rate. Microcystis. aeruginosa and M. viridus, differed in growth rates and the date had a significant effect on dominance. Our results show that M. aeruginosa competitively dominates other strains across a range of phosphorus concentrations, expanding our understanding of how certain harmful strains come to dominate during algal blooms.

PS.07

Associations Between Exercise Self-Efficacy and Self-Reported Physical Activity Levels vs. Measured Cardiorespiratory Fitness in Firefighters (PC)

Christian Lowery*, Tristan Perry, Rebecca Fortsch, Reilly Girardot and Madison Steiner, Undergraduates; Dr. Rebecca Fang, Department of Mathematics and Computer Science, and Dr. Jacquelyn Zera, Department of Exercise Science and Sports Studies, JCU

Firefighting requires both physical and mental training. Interestingly, research suggests that an individual’s belief in his or her self to participate in exercise, or self-efficacy, greatly impacts an individual’s physical activity behavior and fitness. Therefore, 27 male firefighters completed an exercise self-efficacy questionnaire, the Global Physical Activity Questionnaire and a comprehensive fitness assessment. Linear and logistic regressions were created in order to determine the influence of exercise self-efficacy in the firefighting profession. Overall, the results determined that subjects confident in their ability to stick to programs were twice as likely to meet exercise guidelines, while those confident in their ability to make time for their exercise were 1.7 times more likely to meet their exercise guidelines. In conclusion, the results of this study indicate that exercise self-efficacy is an important determinant in physical activity participation among firefighters.

PS.08

Arf6 as a critical regulator of placental syncytialization and cytotrophoblast fusion (PC)

Zachary Brady*, Undergraduate; Dr. Andrei Ivanov, Dr. Susana Lechuga Villarauz, and Dr. Lei Sun, Department of Inflammation and Immunity, The Cleveland Clinic Foundation

Syncytiotrophoblasts form a layer that covers the human placenta that serves several vital functions in fetal development. The signaling mechanisms that regulate trophoblast remodeling during synsythialization remain poorly understood but Arf6 has recently become a molecule of interest. While Arf6 has been previously implicated in the regulation of myoblast fusion, its roles in cytotrophoblast fusion and placental development...
remain unclear. The unique cellular functions of Arf6, together with preliminary data provide ground for the hypothesis that: Arf6 is a critical regulator of placental syncytialization, exerting a dual control over plasma membrane dynamics and cytoskeletal remodeling that drive trophoblast fusion. This was assessed with a combination of loss-of and gain-of function approaches. The former will see use of chemical inhibitors of Arf6, siRNA Arf6 knockdown, and expression of dominant-negative mutants. Conversely, the latter uses a chemical activator of Arf6.

**PS.09**

**Associations Between Self-Reported Physical Activity and Cardiorespiratory Fitness in Firefighters (PC)**

Tristan Perry*, Christian Lowery, Rebecca Fortsch, Reilly Girardot, and Madison Steiner, Undergraduates; Dr. Rebecca Fang, Department of Mathematics and Computer Science, and Dr. Jacquelyn Zera, Department of Exercise Science and Sports Studies, JCU

Firefighting is physically demanding, requiring high cardiorespiratory endurance (VO2max). The relationship between self-reported physical activity and VO2max has not been thoroughly examined in firefighters. The purpose is to examine associations between self-reported physical activity (MET-min/week; min/week) and measured VO2max in firefighters. 27 male firefighters completed the Global Physical Activity Questionnaire (GPAQ) showing their total physical activity (MET-min/week; min/week), as well as physical activity level (high, moderate, low), and whether they met physical activity guidelines (Met/Not Met). Pearson correlation analysis revealed moderate correlations between VO2max and self-reported physical activity in min/week ($p = 0.475$), as well as total MET-min/week ($p = 0.454$), with 59% of firefighters meeting the physical activity guidelines. Overall, as self-reported physical activity participation increases (min/week), then cardiorespiratory endurance also increases.

**PS.10**

**Interdisciplinary Scaffolding (PC)**

Elizabeth Litzinger*, Graduate Student; Dr. Daniel Reynolds, Department of Education and School Psychology, JCU

Scaffolding and disciplinary literacy are terms widely incorporated in educational literature and practice. This study examined when and how disciplinary and interdisciplinary scaffolding unfolded in the tutoring of complex interdisciplinary texts. In this study, small groups of 2-5 eleventh-grade students were randomly assigned to an eight-session interactional scaffolding intervention. Transcripts from the intervention were coded to examine the occurrences of interdisciplinary scaffolding. Preliminary results demonstrated the occurrence of interdisciplinary scaffolding across all four tutors. Furthermore, it was shown that tutors’ specific backgrounds determined what type of disciplinary scaffolds were incorporated with the tutoring of students. This study highlights the importance of utilizing interdisciplinary scaffolding with high school students in order to make sense of increasingly diverse texts and supports the notion of increasing an interdisciplinary curriculum in education.

**PS.11**

**Cloning and Functional Characterization of Human Aspartate Transcarbamoylase (PC)**

Trevor Cubra* and Sean Cain, Undergraduates; Dr. Christine McDonald, Inflammation and Immunity, Cleveland Clinic Lerner Research Institute; Dr. Erin Johnson, Department of Biology, JCU

Carbamoyl phosphate synthetase/aspartate transcarbamoylase/dihydroorotase (CAD) is a multi-subunit enzyme required for de novo pyrimidine synthesis. CAD also inhibits the immune sensor, NOD2. The antiproliferative agent N-phosphonacetyl-L-aspartate (PALA) specifically blocks the aspartate transcarbamoylase (ATCase) enzyme of CAD to slow cell growth and stimulate NOD2 antimicrobial activity. Therefore, the ATCase domain holds valuable therapeutic potential for both cancer and antibiotic-resistant bacterial infections. The present study aimed to generate a functional, epitope-tagged ATCase domain in order to characterize the immunomodulatory potential of drug candidates that may be less toxic than PALA. The ATCase domain was PCR-amplified and cloned into a mammalian plasmid to add a FLAG epitope tag. The ability of this construct to express the fusion protein in mammalian cells was confirmed; its enzyme activity is currently being evaluated. Funded by Colleran-Weaver and the DOD.
PS.12

Differences in Depression and Anxiety across the Breast Cancer Spectrum
Kate Fike*, Undergraduate; Dr. Kathleen Ashton, Breast Center, The Cleveland Clinic Foundation; Dr. Helen Murphy and Dr. Cyrilla Wideman, Neuroscience Program, JCU

The current study evaluated which populations within the breast cancer spectrum have the highest levels of depression and anxiety. Participants were patients at the Cleveland Clinic who currently had breast cancer, survivors, or were at genetic risk for developing breast cancer. All participants completed two self-report questionnaires of depression and anxiety. The results showed that survivors had the highest levels of depression, followed by current breast cancer patients, then genetic risk patients. Both current breast cancer patients and survivors had significantly higher anxiety scores than genetic risk patients. Gene mutation negative patients were significantly more depressed and anxious than breast cancer (BRCA) mutation positive patients. Genetic status was not related to higher levels of depression or anxiety. This research was part of the JCU’s SURF program supported by the Colleran-Weaver Fund.

PS.14

Identification of Potential Aryl Hydrocarbon Receptor Activating Microbes (PC)
Stephen Suhayda, Undergraduate; Dr. Philip Ahern and Keisha Arielle Best, Department of Molecular Medicine, Cleveland Clinic Lerner Research Institute

The aryl hydrocarbon receptor (AhR) is a ligand-dependent transcription factor that senses environmental toxins and microbial products such as those produced by the gut microbiota. AhR activation controls several aspects of immune function with a prominent role in intestinal immunity, and its activity can modulate the progression of gut inflammatory diseases. Identifying products that can activate AhR is therefore of potential therapeutic value. Employing specialized microbial culture media, we isolated anaerobic microbial strains from the murine gut microbiota and screened their ability to activate AhR using an AhR-responsive luciferase reporter assay, identifying several candidate gut microbes with AhR stimulating capacity. Sequencing of the 16S rRNA gene identified our most potent stimulators of AhR activity as E. faecalis and B. thetaiotaomicron. Future studies will involve metabolomic analyses to identify the specific product produced by these microbes that activate AhR.

PS.13

The Effect of Isoleucine on Amino Acids and TCA Cycle Intermediates
McKenzie Stine*, Undergraduate; Srinivasan Dasarathy, MD, Departments of Gastroenterology, Hepatology and Pathobiology, Liver Metabolism Research, Center for Human Nutrition, Cleveland Clinic Lerner College of Medicine, Lerner Research Institute, Cleveland Clinic

Sarcopenia, or skeletal muscle loss, is a common consequence of cirrhosis. Sarcopenia can stem from variations in protein homeostasis, or proteostasis. In liver disease, skeletal muscle proteostasis becomes disordered due to the increased uptake of ammonia, or hyperammonemia. Cataplerosis, the removal of intermediate metabolites, of the Tricarboxylic Acid Cycle, also occurs. Isoleucine rescue experiments in C2C12 myotubes in the presence of hyperammonemia were conducted to explore potential cirrhosis treatments. Isoleucine, a branched chain amino acid, TCA Cycle intermediate, is thought to rescue proteostasis in hyperammonemia. To further understand the effect of BCAAs, the relative abundance of amino acids in response to Isoleucine was also explored. Cell culture, ion exchange column chromatography, and GC-MS techniques were used. Only the experimental plan was executed. Further statistical analysis must be conducted in order to determine the significance of isoleucine rescue.

PS.15

Kratom As an Enhancer of Working Memory in Rats
William Sweeney*, Undergraduate; Dr. Helen Murphy and Dr. Cyrilla Wideman, Neuroscience Program, JCU

Kratom (Mitreagyna speciose) is a plant indigenous to the region of Southeast Asia and has been used to manage painful demands of physical labor, enhance mood and well-being, and as a substitute for opioids. This study examined the effect of kratom on working memory and activity in rats. The drug was administered orally to experimental animals. Spatial working memory was tested utilizing the Morris Water Maze (MWM). Metabolic parameters of food and water intake and renal adiposity were recorded. It was hypothesized that, compared to control rats, kratom-treated animals would have enhanced working memory with few adverse side effects. The two groups showed no differences in the MWM. Activity in the experimental group was lower, which may suggest lethargy. Renal fat in experimental animals was higher. Water intake of the experimental group was lower, which may be indicative of dehydration. Unintended health problems should be considered before using kratom.
PS.16

**Inhibition of Gut Microbial Indoxyl Sulfate Production**

Celine Burias*, Undergraduate; Dr. Yijun Zhu, Dr. Joe DiDonato, and Dr. Stanley Hazen, Department of Cellular and Molecular Medicine, Cleveland Clinic

Intestinal bacteria possess tryptophanase which converts tryptophan to indole. Indole is absorbed into the bloodstream by the intestine and is converted to indoxyl sulfate by the liver. However, renal complications preventing excretion of the toxin allows it to accumulate in the serum. In an effort to investigate control of host indoxyl sulfate levels, a library of small molecules (both naturally occurring and synthetic) were screened for potential inhibition of tryptophanase. From these data, several molecules were identified to inhibit the production of indole. Further work must be done to characterize these molecules and their efficiency of inhibition. Funded by The Cleveland Clinic Foundation.

PS.18

**Kindlin3 dependent microglial function is crucial for central nervous system development (PC)**

Chase Bertagnolli*, Undergraduate; Dr. Tejasvi Dudiki, Dr. Gregory DeGirolamo, and Dr. Tatiana Byzova, Department of Neurosciences, Lerner Research Institute, Cleveland Clinic

Microglia are the immune cells of the central nervous system (CNS) and are primarily responsible for the clearing of pathogens/damaged tissue. A secondary, though not completely understood, role is in the development of the CNS. Microglia utilize integrins, which are dependent on the protein, Kindlin3, to migrate in response to infection or injury. Using Kindlin3 mutant knock-in (K3KI) mouse models to impair microglial migration and function, we show defects in development of the brain and retina. The functional deficiency of Kindlin3 led to abnormalities in microglia numbers, shape, and positioning within the brain and retina. Using a test of maternal socialization, K3KI mice had deficits in social behavior reflective of autistic symptoms in humans. Immunohistochemistry of K3KI retinas showed excessive vascularization, characteristic of age-related macular degeneration, leading to vision loss in humans. Our study highlights the importance of microglial function in the developing CNS.

PS.19

**In Vivo Study of Cervical Spine Implants in a Bovine Model**

Kaitlyn DeMeo*, Undergraduate; Dr. Boyle Cheng, Daniel Cook, and Isaac Swink, Department of Neurosurgery, Allegheny General Hospital; Dr. Helen Murphy and Dr. Cyrilla Wideman, Neuroscience Program, JCU

Back pain is quickly becoming one of the most costly and widespread medical problems in the United States. In more serious cases after medication has failed, implants are used to stabilize the spine. Polyether ether ketone (PEEK) has been the gold standard in terms of clinical success. However, recent findings indicate that pure PEEK cages can lead to slow and insufficient fusion which may result in less improvement of pain and disability. The purpose of this experiment was to compare a PEEK (Xiphos) implant to a zeolite composite implant (ZFuse). Fourteen female sheep were used for in vivo testing. Assessment included biomechanical testing and radiographic analysis. No significant statistical differences were found between the two types of implants. One major limitation of this study is the length of time the experiment was conducted over.

PS.20

**Proteome of Cornea- Versus Bone Marrow-Derived Myofibroblasts. Are They Different?**

Madison Juszczak*, Undergraduate; Dr. Steven Wilson, Dr. Carla Medeiros, Dr. Rodrigo Oliveira, and Dr. Luciana Lassance, Department of Ophthalmology, Cleveland Clinic; Dr. Paramananda Saika, Dr. Geeng-Fu Jang, Jack Crabb, and Dr. John Crabb, Department of Ophthalmologic Research, Cleveland Clinic; Dr. Belinda Willard, Proteomics and Metabolomics Core, Cleveland Clinic

The development of myofibroblasts after epithelial stromal injury in the cornea leads to stromal fibrosis. Myofibroblasts play a role in fibrosis in which they are differentiated from keratocyte-derived fibroblasts or infiltrating fibrocytes. Developed myofibroblasts can then die after wound healing or persist in pathological conditions. The aim of this study is to determine whether corneal stroma-derived myofibroblasts are different from bone marrow-derived myofibroblasts. Keratocyte and bone marrow cells were differentiated into myofibroblast by cell culture which revealed that the cell types have the same phenotype. Proteins were identified by LC MS/MS and quantified with iTRAQ tags which showed that proteomes of myofibroblast derived from cornea and BM could be slightly different. These
differences are being corroborated by western blotting for collagen type VII, a fibrosis-associated protein. This work was supported by NIH R01EY010056 and Research to Prevent Blindness.

**PS.21**

**Effect of Radix Ginseng on Spatial Learning and Memory and Amelioration of Anxiety in Long-Evans Rats**

Isabella Lane*, Undergraduate; Dr. Helen Murphy and Dr. Cyrilla Wideman, Neuroscience Program, JCU

Radix ginseng is an herb that has been used in Chinese medicine for centuries. The active ingredients in ginseng, ginsenosides, are thought to be responsible for memory enhancing and anxiolytic effects. The present experiment assessed the influence of ginseng on spatial learning and memory in rats and examined anxiety. The study was divided into three periods: habituation, experimentation, and withdrawal. During experimentation, a dose of powdered ginseng was given to the experimental group via a condensed milk treat. Spatial learning and memory were analyzed using a Morris Water Maze test. Animals were given two trials during the maze exercise: a sample trial in which platform location was learned and a test trial in which platform location was recalled. Anxiety was measured utilizing a 1-3 scale. This study does not support the hypothesis that Radix ginseng improves spatial learning and memory; however, it does suggest positive effects of the herb on lowering anxiety levels.

**PS.22**

**Utilization of a Mouse Model of Sorsby Fundus Dystrophy to Study Macular Degeneration**

Allison Mancuso*, Undergraduate; Dr. Bela Anand-Apte, Ophthalmic Research, Cleveland Clinic; Dr. Helen Murphy and Dr. Cyrilla Wideman, Neuroscience Program, JCU

A mouse model for Sorsby fundus dystrophy (SFD) was used to study age-related macular degeneration (AMD) in the human. SFD is characterized by an increase in vascularization in the choroid which leads to vision loss for people affected. Tissue inhibitor of metalloproteinases 3 (TIMP3) is naturally expressed in high levels in retinal pigment epithelium (RPE) cells. The specific aim of the current research was to examine how the RPE cells are affected by TIMP3 mutations. This was achieved by studying the morphology of mutant TIMP3 cells and examine eyes of mutant mice compared to wild type to characterize how the RPE is affected in the retina from the mutation in TIMP3. Results demonstrate that a mutation in TIMP3 significantly affects the morphology of RPE cells and is involved in hyaluronan-specific inflammation in the RPE and choroid due to the presence of hyaluronan protein in these regions of the retina.

**PS.23**

**Competitive Binding of Polycystin-1 Potentially Alters Ciliary cAMP and Calcium Levels (PC)**

Shyla McMurtry*, Undergraduate; Dr. Oliver Wessely, Department of Cell and Molecular Medicine, Cleveland Clinic

Autosomal dominant polycystic kidney disease (ADPKD) is one of the main causes of kidney failure in adults. It is caused by mutations in one of two membrane proteins, Polycystin-1 and Polycystin-2. Polycystin-2, through previous studies, is hypothesized to be a calcium channel that is affected by Polycystin-1, whose function is still unknown. Polycystin-1 associates with a variety of trimeric G-proteins and is localized in the cilia of kidney epithelia cells. It is hypothesized that Polycystin-1 via its association with G-protein G12/13 subunits competitively removes the pool of available G-proteins from other GPCRs. As a result, loss of Polycystin-1 will increase the amount of available G-proteins for activation and alter the levels of Ca2+ and cAMP in the cilia compartment. We test this hypothesis by focusing on changes in ciliary calcium and cAMP in the presence and absence of Polycystin-1 as well as a possible link to the Hedgehog pathway.

**PS.24**

**Inducing a Phenotype in bbs2 Mutant Zebrafish Larvae**

Viktoriya Partyka*, Undergraduate; Dr. Brian Perkins, Cole Eye Institute, Cleveland Clinic; Dr. Helen Murphy and Dr. Cyrilla Wideman, Neuroscience Program, JCU

Bardet Biedl Syndrome (BBS) is the second most common syndromic retinal degeneration disorder which results in legal blindness by early adulthood. Due to severity of the disease as it progresses later in life, there is clinical importance in determining an earlier phenotype in order to test potential preventative therapies. In the present study, light treatment was used on wildtype and bbs2 mutant zebrafish larvae in order to induce a retinal phenotype. The phenotype was assessed by using optokinetic reflex tests and immunohistochemical staining. It was determined that there was a statistically significant difference in OKR analysis between homozygous and heterozygous/
wild-type bbs2 light-treated and untreated zebrafish larvae groups. Although behavioral differences were demonstrated, histological findings did not indicate that retinal degeneration had occurred. A novel outcome of this study was the establishment of a new phenotype in bbs2-/- light treated zebrafish larvae.

PS.25

Validating Slow Cycling as a Mechanism of Resistance to EGFR Tyrosine Kinase Inhibitors in EGFR Mutant Lung Cancer

Mychaela Lauria*, Undergraduate; Dr. Pamela Hershberger, Department of Pharmacology and Therapeutics, Roswell Park Comprehensive Cancer Center; Dr. Helen Murphy and Dr. Cyrilla Wideman, Neuroscience Program, JCU

The largest lung cancer subtype is adenocarcinoma, where a significant number of patients have mutations in the epidermal growth factor receptor (EGFR). This is treated with tyrosine kinase inhibitors (TKI), but patients become resistant. It was hypothesized that a slow-cycling phenotype contributes to drug resistance and that accelerating the cell cycle with AZ191, a DYRK1B inhibitor, would overcome resistance. To ensure that additional mutations in the EGFR gene did not cause EGFR TKI resistance, genomic DNA from parental and EGFR TKI resistant cell lines were analyzed. Only expected mutations were found. To validate the slow-cycling phenotype, sulforhodamine B assay, cell counting, and flow cytometry were performed which showed that drug resistant cell lines divided at a significantly lower rate with greater percentage in G0/G1. Because the slow-cycling phenotype was successfully validated AZ191 was added to the resistant cells to see if it could overcome EGFR TKI resistance.

PS.26

Allele-specific PCR of the Human ABO Locus

Patrick Jungling*, Undergraduate; Dr. Eric Calhoun, Department of Biology, Alma College

The ABO locus determines the most medically-important phenotype in humans, and genetics courses use it as a classic example of codominance. Previous work focused on utilizing single nucleotide polymorphisms (SNPs) and restriction fragment length polymorphisms to differentiate among the five most common alleles, A1, A2, B, O1, and O2, in order to determine individual genotypes. In this study, we performed allele-specific PCR (polymerase chain reaction) that was designed to amplify a single ABO allele. Two primers, differing only at the SNP, were paired with a common reverse primer in separate reactions in order to produce a product of unique length (when compared to the other allele-specific reactions). We have shown that all five alleles can be amplified with great specificity in a total of eight reactions to yield successful genotypic determination without the need for any further analysis.

PS.27

Collaborative Leadership in Marketing

Alexis Guage*, Undergraduate, Leadership Scholar; Dr. Kyle O’Dell

Collaborative leadership is a management practice which is focused on leadership skills across functional and organizational boundaries. Traits of a collaborative leader include balance, openness and trust. Working cross functionally requires leaders to be transparent in their communications, always ensuring that everyone is on the same page. This is where the term horizontal leadership emerges, meaning that collaborative leaders do not only focus on their direct reports, but embrace the team as a whole by communicating cross functionally in an open and honest way. Relationship building and networking are important skill sets possessed by collaborative leaders. This is an important practice in marketing, especially in the corporate world where multiple teams are working toward a common project or task. A good marketing campaign is vital to any company’s success, and often times requires branding, sales, communications and advertising knowledge. A collaborative leader encourages these teams to come together and create a comprehensive and unilateral marketing campaigns.

PS.28

The Pen-Pal Exchange Program (PC)

Sally Al-Qaraghuli*, Undergraduate; Dr. Tracy Masterson, Department of Psychology, JCU

The Pen-pal is an exchange program linked with an Adolescent Development (PS 262) course at John Carroll University and the Maharat Mentorship Program in Basrah, Iraq. The aim of this partnership is to increase exchanges between youth in the U.S. and the Middle East and allow both groups to view adolescents through the lens of diversity, globalization, and cultural sensitivity and acceptance. Through written email exchanges and live small-group conversations using Skype, learning outcomes will be enacted. The skype sessions highlight topics ranging from stereotypes to social norms in their community. Pre and post-data was collected from participants, emphasizing expectations, preconceived stereotypes of the “other” group, and student goals. As a consequence of participating in
the exchange program, American participants denoted statistically significant reductions in emotional prejudice ($t = 29.28, p < .000$). Funded by the Colleran-Weaver scholarship.

**PS.29**

**Model Arab League (MAL) (PC)**

Sally Al-Qaraghuli*, Undergraduate; Dr. Mindy Peden, Department of Political Science, JCU

Sponsored by the National Council on U.S.-Arab Relations, Model Arab League (MAL) at John Carroll University allows emerging student leaders to experience the challenges of representing the foreign policy objectives of a government other than their own as they put themselves in the shoes of diplomats and other practitioners. Students must demonstrate how international organizations deal with political problems. By researching the League of Arab States, students learn to identify the major issues within the Arab League as well as propose solutions to problems. Students develop and practice analytical, organizational, writing, editing, and public speaking skills while strengthening their ability to engage in the art of reasoned argument and spirited debate. The impact of the program on participants is studied using data from a pre and post assessment of the learning goals of diplomatic capabilities, negotiation skills, and understanding of the functioning of international organizations.

**PS.30**

**Analyzing Immigration through a Legal Panel**

Caitlin Matthews*, Maeve McMahon, Matthew Rombalski, and Lauren Isherwood, Undergraduates; Arrupe Scholar; Sydnia DeFranco

For our Arrupe advocacy project, we focused on the legal aspects of immigration for individuals from Central and South America who attempt to enter the United States. To educate the John Carroll student body on this topic, we welcomed four individuals on December 3rd, 2018 to speak on a panel regarding the legal aspects of an often politicized issue. The first two individuals were immigration attorneys who provided a technical lens to look at immigration law and provided insight from working with clients regarding immigration status and the process of receiving visas. The other two individuals were not born in the United States and gave truly impactful accounts of their experiences with our immigration system. Our immigration panel opened the eyes and hearts of many JCU students, as well as provided a tangible way to advocate for those affected by our immigration system through letter writing to our elected representatives.

**PS.31**

**Gender Neutral Bathrooms at JCU**

Lillian Perkins*, Marissa Miller, and Zachary Barr, Undergraduates; Arrupe Scholar; Sydnia DeFranco

Having few gender neutral bathrooms creates an environment that promotes gender discrimination and exclusivity on campus. In contrast, creating more gender-inclusive restrooms, like those available in the Grasselli Library and Breen Learning Center, can foster an atmosphere in which inclusivity and acceptance are highlighted. For this reason, everyone within the greater John Carroll community stands to benefit from such additions. In order to embody the goal to be individuals for and with others, the university should provide safety to its trans and non-binary students. We propose that the administration change all bathrooms on campus into gender-inclusive bathrooms. This will create a markedly more accepting and welcoming campus environment for all students and visitors who are trans and non-binary. We also propose that a gender-inclusive locker room be provided for non-binary trans students.

**PS.32**

**Stepping Up: Considering Accessibility Issues at JCU**

Megan Whitman*, Undergraduate; Arrupe Scholar; Sydnia DeFranco

The primary goal of this advocacy project was to raise awareness of how the inaccessibility of JCU’s campus creates disability among individuals in our community. The target audience, therefore, was able-bodied stakeholders in the JCU community. During this project, I also attempted to re-conceptualize the term “accessibility” such that it could be seen as an external pressure upon certain groups rather than an internal coincidence. In other words, I emphasized that the environment was built by people in power (i.e., able-bodied people, or people with the majority ability set) to serve the needs of other able-bodied people. People in the out-group (i.e., people with different ability sets) therefore experience disadvantage in performing everyday activities as a function of their minority status. This reconceptualization is meaningful because it encourages able-bodied people in power to view their ability sets as a privilege, and inaccessibility for others as a social injustice rather than a disability.
**PS.33**

Domestic Violence and Animal Abuse: A Research and Advocacy Project to Start a Safe Haven Program in Cleveland

Caitlin Glennon*, Undergraduate; Arrupe Scholar; Sydnia DeFranco

Forms of family violence, namely domestic violence and animal abuse are often co-occurring. Research has proven the correlations between these forms of violence consistently. Research has identified that victims often do not leave their abusers in fear of retaliation against their pets. As a result of my research compilation, my advocacy project was to start a Safe Haven program in Cleveland. It will set-up coordination between domestic violence shelters and animal shelters in the area so that victims and their pets can seek shelter. This project is done with the hope that more victims will utilize these community resources knowing that their pets will be protected, all while providing a safe space for abused pets as well.

**PS.35**

Interview and Advice Night: Creating Community and Opportunity for Individuals with Developmental Disabilities

Nicolette Fee* and Daniel Smith, Undergraduates; Sydnia DeFranco

The Arrupe Scholars’ Interview and Advice Night for Individuals with Developmental Disabilities was an opportunity to create community and understanding between Boler College employers and individuals with developmental disabilities. Employers had the chance to learn about both the misconceptions and advantages of actively employing individuals with developmental disabilities, while the individuals with developmental disabilities were given the opportunity to practice interviewing skills and have their resumes reviewed by Boler College employers and community partners. Individuals with disabilities remain the largest untapped talent pool in the country and have employment rates double that of the rest of the population. It is important to equip individuals with disabilities with the necessary tools to support themselves throughout their lives, and what better way to start that right here in our John Carroll University community!

**PS.36**

JCU Students Ecological Footprint and Recycling Habits (PC)

Maria Garcia-Olalla, Undergraduate; Ignatian Solidarity Network, Dr. Deborah Zawislan, Department of Theology and Religious Studies, JCU

Laudato Si, Care for our Common Home, the 2015 Encyclical by Pope Francis talks about many issues related to the environment. A major focus is on how climate change is, at its heart, a spiritual problem deeply rooted in why and how we consume. Students in the “Globalization, Theology & Justice” class are participating in the Ignatian Solidarity Network Carbon Challenge, a nationwide initiative designed to raise awareness around reducing single use plastic. Students conducted an audit of a small sampling of trash from John Carroll dorms. A survey was also developed and used to collect information about JCU students’ views on recycling, single use plastics, and climate change. The survey also asked participants to calculate their ecological footprint, and a campus footprint was calculated. The survey results were analyzed and are being used to raise awareness about single-use plastic on campus and to give suggestions for raising student involvement in recycling efforts to make JCU greener.

**PS.37**

Educating for a Greener John Carroll (PC)

N’Tare Williamson, Undergraduate; Ignatian Solidarity Network, Dr. Deborah Zawislan, Department of Theology and Religious Studies, JCU

Laudato Si, Care for our Common Home, the 2015 Encyclical by Pope Francis talks about many issues related to the environment. A major focus is on how climate change is, at its heart, a spiritual problem deeply rooted in why and how we consume. Students in the “Globalization, Theology & Justice” class are participating in the Ignatian Solidarity Network Carbon Challenge, a nationwide initiative designed to raise awareness around reducing single use plastic. Students conducted an audit of a small sampling of trash from John Carroll dorms. A survey was also developed and used to collect information about JCU students’ views on recycling, single use plastics, and climate change. The survey also asked participants to calculate their ecological footprint, and a campus footprint was calculated. The survey results were analyzed and are being used to raise awareness about single-use plastic on campus and to give suggestions for raising student involvement in recycling efforts to make JCU greener.
PS.38

A Tax System in America: An Economic Investigation into the Implications Tax Systems and Their Effectiveness in the USA (PC)

Zach Chapman*, Undergraduate, Honors Program; Dr. Sokchea Lim, Department of Economics and Finance, JCU

In the past few years, many politicians have proposed switching the tax system of the United States from our current progressive model, to a flat tax model. This investigation researches economic and public policy implications of three tax systems (flat, progressive, and regressive) based on theoretical, historical, and mathematical analysis. While some tax systems seem theoretically stable, they become much less ideal upon analyzing their practical implications. What is most shocking in this study is the thought that an ideal tax system might not exist. Every system has positive and negative aspects to it. Thus we must all internally question, “What is an ideal tax system?”

PS.39

Eclipse’s IMC Plan (PC)

Alexis Guage*, Undergraduate, Honors Program; Dr. Angela Canda, JCU

Eclipse is a start-up app that offers on-campus haircuts to college students who don’t have the ability to go off campus for a haircut. I have conducted extensive market research for Eclipse to determine the best way to advertise for their target market: undergraduate college-aged males. The research was conducted both in the form of a focus group and an online survey. The results showed that college students in this demographic prefer receiving their digital advertisements on Twitter over any other social media platform. In addition, research showed that Eclipse should highlight the convenience factor of their brand in their advertisements, as that was the most attention grabbing piece of their brand according to their target market. In conclusion, I shared these results with Eclipse and have helped them to create a comprehensive integrated marketing communications plan based on the research gathered.

PS.40

Effects of the Tax Cuts and Jobs Act’s Increase in the Standard Deduction on Not-For-Profit Organizations (PC)

Rachel Hiestand*, Undergraduate, Honors Program; Dr. Joanna Garcia, Department of Accountancy, JCU

According to Forbes.com, 25 percent of taxpayers itemize deductions on their individual tax return, with that number rising by income level. The Tax Cuts and Jobs Act (TCJA) significantly increased the size of the standard deduction, which is expected to decrease the number of people who itemize. In this project, I will assess the effects of the TCJA’s increase of the standard deduction on charitable donations. First, I conducted interviews with individuals familiar with not-for-profits and considered the effects of similar tax regulations in foreign countries. In doing so, I developed an idea of what the United States can expect to happen to donations during 2018 and beyond. I will also examine the effect of income level on donation behavior. Since exact data for 2018 will not be released until June, I will use preliminary data to support my conclusions regarding which charities are most significantly affected.

PS.41

A Double Standard of Fourth Amendment Rights (PC)

Joseph Franke*, Undergraduate, Honors Program; Dr. Sara Schiavoni, Department of Political Science, JCU

Can the police utilize a generalized fear of crime when deciding whether or not to stop and frisk an individual? I argue no, they cannot. Rather, this paper explains why reasonable suspicion cannot rest properly on an undefined expression of crime: the high crime area factor. When it does, a Fourth Amendment double standard that discriminates based on a fabricated perception of criminality emerges. Therefore, police should not be able to utilize the factor of a high crime area, something which is not defined and therefore left to the subjective discretion of officers, as a factor for conducting a Terry stop and frisk, which called for “particularized and articulable facts.” Currently, the high crime area factor is actually a subjective determination and therefore unconstitutional. Therefore, I present clear guidelines that must be incorporated at either the judicial or legislative level before this factor can be used by the police.
**PS.42**

**Accuracy of Flexible and Conditional Administration of the Minnesota Multiphasic Personality Inventory-2-Restructured Form in Pre-Surgical Psychological Evaluations of Bariatric Surgery Candidates (PC)**

Casey Lindstrom*, Undergraduate, Honors Program; Dr. Anthony Tarescavage, Department of Psychology, JCU

The Minnesota Multiphasic Personality Inventory-2-Restructured Form (MMPI-2-RF) is a very accurate test doctors can administer to bariatric surgery candidates, but many choose not to due to the time-consuming length of the exam. Efforts have been made to decrease administration time without sacrificing accuracy. Tarescavage and Ben-Porath have tested a flexible and conditional administration (FCA) of the MMPI-2-RF that uses elevated scores on higher-level scales to trigger the administration of lower-level scales within the elevated domain. A sample of 3,341 patients from a Midwest hospital and 758 patients from a Midwestern private practice were used to evaluate the accuracy of the FCA. For all elevations at and above 70T, the overall accuracy for every scale tested was above 90%. These findings indicate the FCA method approximates the same amount of information gained from a full MMPI-2-RF administration. This research was part of JCU’s SURF program supported by the Colleran-Weaver Fund.

**PS.43**

**Warming and Women: Gender Inequality in Climate Change**

Isabella Powers, Undergraduate, Honors Program; Dr. James Watling, Department of Biology, JCU

The increasing levels of atmospheric CO2 indicate that the temperature of Earth will continue to rise, making extreme weather events occur more frequently and intensely. These prolonged periods of extreme weather have detrimental effects, specifically on vulnerable populations. In many areas of the world, especially developing nations, women are a disadvantaged population experiencing the first-hand effects of climate change. In these communities, women are responsible for tending to the family and completing household tasks; tasks that are all made more difficult due to climate change. An increase in severity and duration of extreme weather events have a disproportionate impact on the most vulnerable women and as a result, their families and communities. Climate change is becoming an issue of fundamental human rights, and the individuals impacted most severely often have no voice. This project strives to raise awareness of this disparity, encourage help, and ignite change.

**PS.44**

**The Impact of Gender and Gender Attitudes on Respect toward a Stranger (PC)**

Riya Shanavas* and Arianna Soika, Undergraduates, Honors Program; Dr. Tracy Masterson, Department of Psychology, JCU

To evaluate the value of respect among strangers, different social situations are presented in the form of a survey for the research participant. The goal of the study is to examine factors predictive of attitudes toward respect of a stranger. Specifically, we have developed a questionnaire aimed to assess whether participants have attitudes consistent with automatically respecting a stranger as opposed to respect having to be earned. The R Scale consists of 33 questions that describe common social situations that one may encounter on a day to day basis. Consistent with the long-standing research linking sex differences with a variety of social behaviors and attitudes, females have a tendency to be more communal and accepting of others while males err on the side of being independent and assertive (Eagly & Steffen, 1984). Thus, it is anticipated that gender, in addition to attitudes about masculinity and femininity, will be associated with respect ratings.

**PS.45**

**Comparing Different Technical Aspects of the Discus Throw Between Elite and Collegiate Athletes: A Case Study**

Nicholas Colby, Undergraduate, Honors Program; Dr. Greg Farnell, Department of Exercise Science and Sports Studies, JCU

The discus throw is an Olympic event that has been around for thousands of years. Through the course of these years, the best technique to achieve maximum has evolved greatly, and professional athletes have taken great measures to perfect it. The discus technique consists of many different aspects, but three of the most important include the angle of release, hip-shoulder angle, and shoulder arm angle. Using the Quintics Sports v29 motion analysis software funded by John Carroll University’s Department of Exercise Science and the John Carroll University Honors Program, eight individual discus throws performed by an NCAA Division III collegiate athlete were recorded and analyzed. Measures were taken for the angle of release, hip-shoulder angle, and shoulder-arm angle and then compared to measures found in professional and Olympic athletes in previous research. It is expected that the angle measures will be similar, as both athletes are highly trained.
Different Leadership Styles and Approaches in Collegiate Coaches of Various Athletic Teams

Nicholas Colby, Undergraduate, Leadership Scholar; Dr. Kyle O’Dell

Every professional field consists of a variety of different leaders who work to accomplish identified goals. Previous research has shown that certain leadership styles are more effective in different fields. To explore the best leadership styles for athletic teams, five interviews were conducted to explore different the leadership roles, habits, and approaches of five collegiate coaches. Based on the results of these interviews, similarities and differences were found and matched with qualities associated with certain leadership styles to determine the main approaches associated with collegiate coaches. This analysis will provide a set of baseline leadership qualities of collegiate athletic coaches for the future generation of coaches.

Leadership in Finance

Matt Bocketti*, Undergraduate, Leadership Scholar; Dr. Kyle O’Dell

Leadership manifests in different forms contingent upon a leader’s personal touch and the needs of their followers. Often times, there is not one exact leadership style that is successful; instead, a blend of leadership theories effectively communicates a leader’s message and helps the group achieve their goals. When analyzing the finance industry, with a focus on wealth management, one common leadership style emerged. While interviewing five finance professionals, the theory of Path-Goal Leadership was touched upon in every conversation. In this leadership style, the leader (wealth manager) aids their followers (clients) in defining goals, clarifying paths, removing obstacles, and supporting goals / outcomes. Path-Goal Leadership allows wealth managers to communicate clear, personalized financial solutions with clients and help their clients achieve specified financial goals.

Effective Leadership Styles among Public Health Officials (PC)

Luke Cancilla*, Undergraduate, Leadership Scholar; Dr. Kyle O’Dell

Public health officials are professionals who strive to effectively improve the overall health of a group of people, communities, nations, and even global regions. These professionals focus on many disciplines that span across improving access to health care, prevention of injury and diseases, prevention of violence, limiting substance abuse, and addressing global health issues. To address the array of topics that these professionals deal with, they first and foremost have to be effective leaders. This poster presents testimonials from local, state, national, and international public health officials about effective leadership in this field of public service. In addition, this poster strives to determine which type(s) of leadership styles are the most effective to successfully perform the duties and responsibilities of this particular field.

Leadership in Economics: How to Mold the World through an Economic Lens

Zach Chapman*, Undergraduate, Leadership Scholar; Dr. Kyle O’Dell

When problems arise in modern America, economists are often turned to in order to provide analysis and reassure citizens the future is in good hands. This paper aims to investigate how leading economists utilize leadership skills to alleviate the stress of the modern American, whilst also solving dynamic issues which impact the daily lives of everyone. How do these individuals balance the fate of United States citizens in an unbiased manner, and collaborate with top politicians, CEOs, and other economists to solve them? Most importantly, this paper looks to dissect the exact leadership techniques utilized to engage with an opposing audience. Local, regional, and national leaders were interviewed to contribute their opinions and experience to these important questions.
PS.50

Athletic Director Competency
Alejandro Charette*, Undergraduate, Leadership Scholar; Dr. Kyle O’Dell

Throughout the country organized athletics is one of the most popular extracurricular within schools. Students within these school-affiliated organized sports learn life lessons, make life-long relationships, and begin to build their character and individuality in these critical years. Athletic Directors provide leadership to organized sports at all school levels, from K-12 up through college. These staff members must have all the related knowledge of sports injury prevention, equipment needs, facility management, and best options for the safety of athletes. With all the knowledge required for the job, this study explores whether athletic directors need to be competent in all subject areas to have a successful and safe department.

PS.51

Healthcare Professionals and their Personal Take on Leadership
Emily Ellis*, Undergraduate, Leadership Scholar; Dr. Kyle O’Dell

Through different experiences and events that occur in a health care professional’s life, leadership styles are formed to align with each person’s beliefs. Successful leaders at the regional, state, and national levels were interviewed in order to study such skills. The definition of a leader is different from person to person, but the overall goals tended to be relatively similar. A collaborative leadership style is discussed and further studied along with comparing and contrasting each of the interviewee responses.

PS.52

At Brand Face: Leadership in Public Relations of Entertainment (PC)
Nathaniel Fuller*, Undergraduate, Leadership Scholar; Dr. Kyle O’Dell

Everyone has a brand - big or small, intentional or not. A brand is generally comprised of two separate aspects: everything that an entity claims to be and stand for, as well as what outside people understand it to be. Just as people have brands, contemporary companies and organizations are often assigned brands by people outside of the organization. To adapt to these expectations, a company will develop messaging efforts organized and executed by a variety of individuals who are brought together, often with disparate ways of thinking. Core leadership is needed to form and maintain a motivated team in order to create and expand a brand, often with moving pieces and timing inconsistencies. This analysis explores how leadership styles within the marketing departments of various organizations impact the overall sustainability of publicity ROI for the future.

PS.53

The Varying Leadership Styles in Education
Marissa Golem*, Undergraduate, Leadership Scholar; Dr. Kyle O’Dell

Research has shown that the leadership styles of educators can play an essential part in the success of students. This project analyzed the leadership styles of various educators and how their styles related to that of the interviewer, as a future educator. Any one of a number of leadership styles can be successful within the compass of education, but more often than not, it is a combination of styles that are successful. The leadership styles of these educators did not fit into one particular type of style, but overlapped with a number of styles. Therefore, the research was concentrated on three types of leadership styles; transformational, coaching, and servant.

PS.54

An Analysis of Leadership within Computer Science (PC)
Jacob Haas*, Undergraduate, Leadership Scholar; Dr. Kyle O’Dell

Computer science is a massive industry that impacts daily life across the globe. This field contains a wide variety of leaders, each with different leadership styles and attributes. Five leaders in computer science at the local and national levels were interviewed, with the data showing that leaders within the computer science field focus on task completion, improving their employees, clear communication and expectations, and team building. This project presents the data collected from each leader and shows the corresponding attributes of leaders within this field.
Leadership in Healthcare (PC)
Devvin La Barge*, Undergraduate, Leadership Scholar; Dr. Kyle O’Dell

Working in the medical field consists of a dynamic team that works together to diagnose, treat, and care for patients. Surfacing as a pivotal role on the healthcare team is the Physician’s Assistant (PA). PAs are employed in almost every discipline of medicine and are found in numerous settings, ranging from practicing autonomously as the primary care provider to assisting medical doctors in surgery. The adaptability the PA embodies affords different experiences and incorporates myriad leadership opportunities to provide the most effective, compassionate, and altruistic care.

Leaders Building Community in Entrepreneurial Spaces (PC)
Katherine O’Connell*, Undergraduate, Leadership Scholar; Dr. Kyle O’Dell

Strong leadership is needed in entrepreneurial environments to create a thriving business. In this study, conversations with five innovators on the local, national, and global scale explored how leaders create community among their teams so they can better serve their customers. In a digitally driven world, these leaders are using their skills, talents, and ideas to create more meaningful connections between people with their products and services. This study dissected these innovator’s interpersonal relationships, methods for lifelong learning, and self-care and reflection techniques that lend them to be successful leaders and community builders.

Leadership: Leading Others Toward a Common Vision (PC)
Nicholas Reis*, Undergraduate, Leadership Scholar; Dr. Kyle O’Dell

Situational leadership, laissez-faire, and transformational leadership were the three different leadership styles discussed by the professional leaders and mentors interviewed for this project. In our unique contemporary world, each of these leadership styles can be effective in various situations, while providing challenges in others. While each leader admitted that they would utilize a variety of leadership styles, they would turn to their respective dominant styles during times of stress and conflict, showing how each style can serve a critical purpose in the world we live in today.

Innovative Leaders in the World of Marketing (PC)
Connor Robinson*, Undergraduate, Leadership Scholar; Dr. Kyle O’Dell

Marketing is a facet of life in all professional fields, led by dynamic and creative individuals with different approaches to leadership. From the interviews conducted by the researcher, one of the shared leadership styles among each of the interviewees was path-goal theory. Since the marketing field is based on analytics and creative implementation, it requires leaders to provide followers with the proper resources to succeed. This project will present the data that was collected from interviews with five local and national leaders in the field of marketing.

Leadership within the Thin Blue Line
Jerald Rostocil*, Undergraduate, Leadership Scholar; Dr. Kyle O’Dell

The Thin Blue Line of those who work in law enforcement contains special individuals dedicated to serving others. These individuals must display trust, integrity, and dedication as they serve the community in this difficult role. Through their day-to-day responsibilities, police officers strive to make a difference in the lives of those who they serve. Leadership plays a large role in how effective these individuals are in this important work, with the role of leadership varying within each level of law enforcement. The role of leadership within different levels of law enforcement was explored using local, state, and federal lenses.

Thought Leadership in Entrepreneurial Ventures (PC)
Julia Ruggiero*, Undergraduate, Leadership Scholar; Dr. Kyle O’Dell

Thought leaders are changing the world one conversation at a time, welcoming anyone and everyone on their journey, while helping others create their very own journey. The experience and passion of one individual can lead to massive change in areas such as healthcare, education, fitness, and politics. This project involved interviewing five entrepreneurs from various demographic background to discover how they use thought leadership to help people understand how to spark massive, positive influential change in the world.
**Leading in Perspective**

Haley Vinborg*, Undergraduate, Leadership Scholar; Dr. Kyle O’Dell

This project involved interviewing five leaders from various paths of life and career foci in order to discover the different types of leadership that are being incorporated in different settings. This research highlighted how both similar and different leadership styles are being employed in various settings. These diverse mindsets can enable individuals to animate their personal leadership styles, which were then compared to the individual approach used most by the researcher: a democratic leader that leads by example.

**Search for Variable Stars with ROTSE-1**

Grant Donnelly* and Ian Glass, Undergraduates; Farley Ferrante and Dr. Robert Kehoe, Department of Physics, Southern Methodist University

Variable stars are stars that change brightness over time, and they have long been an indispensable tool in the astronomer’s toolkit. By studying variable stars, one can learn characteristics of a star such as its composition, structure, and mass, which can be used to develop and verify models of stellar evolution. In addition, certain types of variable stars are a primary tool for determining distances in the Universe. It is clear then that the discovery of as many variable stars as possible is crucial for our understanding of the Universe. Using data from the ROTSE-I experiment, which is primarily a tool for observing gamma ray bursts, three new variable stars were discovered, classified, and accepted into the International Variable Star Index. In addition, several more objects have been identified as variable star candidates. This research was part of the JCU’s SURF program supported by the Colleran-Weaver Fund.

**Proton NMR Studies of the Keto-Enol Equilibria of a Series of Acetylacetone Compounds**

A β-diketone acetylacetone (AcAc) undergoes tautomerization in solution between its keto and enol forms in solution. Using proton nuclear magnetic resonance spectroscopy (H1-NMR), both forms of the equilibrium were studied at temperatures ranging between 15-40°C in chloroform-d solvent. By measuring the equilibrium constant (Kenol) at different temperatures, the thermodynamic values for Gibbs free energy (ΔG), enthalpy (ΔH), and entropy (ΔS) changes can be evaluated. Methyl groups on the AcAc were substituted with phenyl and tert-butyl groups to determine their steric and electronic effects on the equilibrium. H1-NMR was used to determine whether the equilibrium shift towards the enol form was driven predominately by enthalpy or entropy. Funding provided by Colleran-Weaver SURF Program, John Carroll University Chemistry Department, and the Kresge Foundation.

**Searching for Variable Stars: Exploring with the ROTSE 1 Telescope**

Ian Glass* and Grant Donnelly, Undergraduates; Farley Ferrante and Dr. Robert Kehoe, Department of Physics, Southern Methodist University

Variable brightness stars provide valuable insight into the lifecycle of stars. Observations made with the ROTSE I Telescope were data-mined for objects whose magnitude varied over several nights. This data was then phased with the period04 Java program and excel spreadsheet. Stars whose light curves showed clear periodicity were further phased with data from the ASAS-N, CSS, NSVS, and SWASP astrological surveys using GNUplot to confirm the accuracy of the observations. The finalized curves were submitted for approval to the Variable Star Index, including a revised curve of a star at J12 11 34.4 + 43 17 44.

**Developing a Simulation Tool to Visualize Swarm Behavior in a Structural Hierarchy**

Morgan Might*, Undergraduate; Dr. Daniel Palmer and Dr. Marc Kirschenbaum, Department of Mathematics and Computer Science, JCU

A key issue in swarm research is understanding how behaviors at one level of organization in a structural hierarchy (i.e. molecules, cells, organs) influence a system when viewed at a different level of organization. How do the actions of an individual agent affect the behavior of the collective? Viewing a seemingly chaotic swarm of agents does not offer much insight into their effect on each other and the different levels. This work lays the foundation to better understand this interaction by building a swarm simulation tool that allows experimentation and visualization at multiple levels. Simulations have been run to verify that the system can collect the necessary data to investigate
this interdependence. This tool allows researchers to visualize the swarm’s actions at different levels and draw inferences and insights from the data. This research was part of the JCU’s SURF program supported by the Colleran-Weaver Fund.

**PS.66**

**Seebeck Coefficient and Hall Mobility Measurements on ZnSnN2 Thin Films and the Determination of Effective Mass (PC)**

James Millard*, Undergraduate; Dr. Jeffrey Dyck, Department of Physics, JCU

The prevalence of interest in ZnSnN2, a pseudo III-V nitride semiconductor composed of earth-abundant elements, has increased due to its high optical absorption coefficient in the visible light spectrum. However, its important basic properties such as density-of-states effective mass have not yet been quantitatively determined. This research aimed to determine the effective mass by applying the measured Hall and Seebeck coefficients for ZnSnN2 to solutions of the Boltzmann transport model. The ZnSnN2 thin films analyzed in the research were found to have an electron concentration in the 6x10^18 to 3x10^19 cm^-3 range. The Seebeck coefficient showed a linear dependence on temperature from 25k to 300k which is indicative of a degenerate carrier gas. Comparing theoretical modeling at room temperature to the data acquired provided an effective mass of ~.08 me. This research was part of the JCU’s SURF program supported by the Special Physics Fund.

**PS.67**

**Characterization and Photoconductivity Measurements of Methylammonium Lead Iodide Perovskite Thin Films**

David Sprenger* and Matthew Slodov, Undergraduates; Robert Stanek and Dr. Clemens Burda, Department of Chemistry, Case Western Reserve University, Dr. Jeffrey Dyck, Department of Physics, JCU

Methylammonium lead iodide is a new material with desirable photoconductive properties, making it very efficient for use in solar panels. In the project, thin films of methylammonium lead iodide were prepared by spin-coating solutions of lead(II) iodide and methylammonium iodide onto a glass slide, followed by annealing on a hot plate in inert atmosphere. X-ray diffraction and electron microscope data showed the films were of moderate quality. The photoconductive properties in vacuum of the films were characterized under illumination by white light, in addition to narrow-spectrum red and blue light from high power light emitting diodes. The current-voltage characteristics were verified to be Ohmic. The electrical resistance versus light intensity and wavelength trends were compared to various conduction models and found to be in agreement with the previous reports in the scientific literature. Funded by the Ferro Corporation.

**PS.68**

**Molecular Dynamics Simulations of DNA Ion Interactions (PC)**

Madison Edge*, Undergraduate; Dr. Chrystal Bruce, Department of Chemistry, JCU

Ionic interactions are important in DNA binding and conformational topology, how the shapes are arranged. In this study, a thirty base pair double-stranded DNA sequence was modeled using molecular dynamics simulations in the presence of sodium (Na+) ions and with added salt (Na+ and Cl- ions). The distribution of the ions, including the formation of contact-ion pairs, provides insight into properties important to electrostatic and thermodynamic interactions between DNA and other species. The analysis will be presented on the structural and dynamic behavior of the ions, water, and DNA in the simulation.

**PS.69**

**Efficacy of DRIFT Spectroscopy for the Identification of Polymers (PC)**

Lyvia Hallman Taylor*, Undergraduate; Dr. Michael Setter; Department of Chemistry, JCU

Diffuse reflectance Fourier-transform infrared spectroscopy (DRIFTS) has recently been explored as a low-cost, rapid analytical method to identify plastic waste. Six of the most common consumer-grade plastics, polypropylene (PP), high-density polyethylene (HDPE), low-density polyethylene (LDPE), polyvinyl chloride (PVC), polyethylene terephthalate (PETE/G), and nylon were analyzed via DRIFTS. The resulting transmission spectra were used to assign component values to the plastics and generate a principal component analysis (PCA) matrix, which can be used for comparison purposes. The resulting PCA scores suggest that DRIFTS can effectively distinguish polypropylene and high-density polyethylene from other common polymers, regardless of sample origin, with correlation scores of 0.83 or higher.
**PS.70**

**Bringing the Past to the Present: A Paleoenvironmental Reconstruction of the Pennsylvanian Period (PC)**

Claire Kelly*, Undergraduate; Dr. Denise Su, Curator and Head of Paleobotany & Paleoeology Department, The Cleveland Museum of Natural History; Dr. Christopher Sheil, Department of Biology, JCU

Scientific illustration is a research tool used to communicate biological research results in a visual medium. I had a summer 2018 Kirtlandia Research Internship (Cleveland Museum of Natural History) in the Paleobotany and Paleoeology department to reconstruct and illustrate a paleoenvironment of a coal forest from the Pennsylvanian Period (ca. 300 million years ago). I referenced the fossil collection at CMNH and scientific literature, and examined comparative plant anatomy to determine the environment during this period. This 8-week project required sketching and scaling specimens from 5 major groups of extinct plans: Lycopods; Sphenopsids; Pteridosperms; Pteropsids; and Cordaites. Lycopods dominated this community and are largely responsible for current Appalachian coal deposits. My final 3ft x 4ft acrylic panel presents a reconstruction that places the viewer in the dawn of this ancient swamp and captures the dominant Lycopod community with other commonly-found flora and fauna.

**PS.71**

**Proton NMR and Computational Chemistry Studies of the Equilibrium of Acetoacetate and Ethyl Acetylacetate**

Christian Kreye*, Undergraduate; Dr. Michael Nichols, Department of Chemistry, JCU

Two $\beta$-ketones, acetylacetone (AcAc) and ethyl acetoacetate (EtAcAc), undergo tautomerization in solution between their respective keto and enol forms. To study the equilibrium between both forms, proton nuclear magnetic resonance spectroscopy ($^1$H-NMR) was used at temperatures ranging between 15-40 °C in CHCl$_3$ solvent. By measuring the equilibrium constant (K enol), thermodynamic values for Gibbs free energy ($\Delta^\circ$G), enthalpy ($\Delta^\circ$H), and entropy ($\Delta^\circ$S) can be determined. Methyl groups on both $\beta$-ketones were substituted with phenyl and tert-buty1 groups to determine their steric and electronic effects on the equilibrium. Both H $^1$-NMR and computational chemistry methods were used to determine whether the equilibrium shift toward the enol form when tert-buty1 or phenyl groups were added, was driven predominately via enthalpy or entropy.

**PS.72**

**Development of an Advanced Biochemistry Laboratory: Monitoring the Oxidation of Linoleic Acid using GC-MS (PC)**

Alexandra Taylor* and Viktoryia Partyka, Undergraduates; Dr. Michael Nichols, Department of Chemistry, JCU

The purpose of this research is to analyze the identity and concentration of the lipid peroxidation products of linoleic acid that results from reaction with oxygen gas and Fenton oxidation upon addition of Iron (II). The identity and concentration of the oxidation products 4-hydroxy-2-nonenal (HNE), 4-oxo-2-nonenal (ONE), and 2,4-decadienal were determined by gas chromatography – mass spectrometry (GC-MS). Optimal reaction conditions for oxidation were determined by altering buffer, pH, and reaction time. In addition, 2,4-decadienal was tested as an antioxidant assay. The optimal conditions for product formation include the use of the buffer MOPS, at a pH of 6, three days of reaction time, and the addition of Iron (II). This project was supported by the Chemistry Department and the Kresge Foundation.

**PS.73**

**Time Saved Using a Flexible and Conditional Administration of the Minnesota Multiphasic Inventory-2-Restructured Form in Pre-Surgical Evaluations of Bariatric Surgery Candidates (PC)**

Amy Morris*, Undergraduate; Dr. Anthony Tarescavage, Department of Psychology, JCU

Longer and more accurate psychological tests, such as the Minnesota Multiphasic Personality Inventory-2-Restructured Form (MMPI-2-RF), are being replaced by shorter, less accurate, symptom-focused measures for convenience. The MMPI-2-RF, as is, usually takes between 25 and 50 minutes. A Flexible and Conditional Administration (FCA) has been proposed that would decrease the administration time of the MMPI-2-RF. This approach uses the broad measures of psychopathology as a trigger that if the score is high enough, the lower-level, specific scales are administered in that domain. The purpose of this study was to refine the process of taking the MMPI-2-RF and ultimately save time for both the patient and practitioner. The FCA approach has been found to decrease administration time by 40-80%, depending on the number of domains. The Colleran-Weaver Summer Undergraduate Research Fellowship provided funding for this study.
Convergent and Discriminant Validity of the PROMIS Emotional Distress Scales: Evidence from the MMPI-2-RF (PC)

Emma Forner*, Undergraduate; Dr. Yossef Ben-Porath, Department of Psychological Sciences, Kent State University; Dr. Anthony Tarescavage, Department of Psychology, JCU

The Patient Reported Outcome Measurement Information System (PROMIS) is an NIH-funded self-report measure. PROMIS assesses physical, social, and mental health domains. DSM-5 (the newest edition of defining and classifying mental disorders) included the PROMIS Emotional Distress item bank (which includes measures of Depression, Anxiety, and Anger). However, there were major psychometric limitations in regards to evidence of construct validity. Construct validity evidence is established by defining the construct of interest, developing a test or measure for it, and by demonstrating theoretically established relationships with other tests and measures. We used the Minnesota Multiphasic Personality Inventory-2-Restructured Form (MMPI-2-RF) to assess concurrent validity. The sample included 344 college students. Although there is evidence of some convergent validity, our results suggest that the PROMIS Depression, Anxiety, and Anger scales lack evidence for discriminant validity.

The Effects of Gender and Serial Position of Opening Statements on the Verdicts of Jurors (PC)

Kara Barshel*, Undergraduate; Dr. John Yost, Department of Psychology, JCU

The goal of this study is to determine whether the gender of a defendant and the position of an opening argument negatively affects the outcome (level of guilt) for the defendant. Past research has shown that when the prosecution begins the trial with their opening argument, the defense has an unfair disadvantage. This is because the defense has to alter their opening argument so it addresses all the points made by the prosecution. Gender also has an effect on the perceived culpability of crimes. Women, in self-defense cases, are seen as less responsible for committing a murder than a man. This is because women are seen as being the less aggressive gender by society. Participants in this study will view two videos: one of an opening statement from the prosecution, one of an opening statement from the defense. Participants will then rate the defendant’s level of culpability.

Call Back Likelihood (PC)

Jillian Doherty*, Madison Dolce, and Amanda Cheravitch, Undergraduates; Dr. Janet Larsen, Department of Psychology, JCU

College students (N = 86) participated in a 2 x 2 mixed design experiment measuring the likelihood of a callback for an interview. The independent variables were gender (male and female) as the within factor and job industry (Michael Kors, fashion, or ESPN, sports) as the between subjects factor. Through previous research, male applicants would receive a higher likelihood for ESPN over Michael Kors and vice versa for female applicants. After reviewing four resumes the participants rated the likelihood each applicant would be called back for an interview. The hypothesis was partially supported by female applicants received a higher likelihood of a callback for Michael Kors over ESPN. While, male applicants received equal likelihood for both industries.

The Effect of Music and Color on Change Blindness (PC)

Gabriella Gabroa Angel*, Kayley Capron, Alexandria Iemma, and Robert Wazevich, Undergraduates; Dr. Janet Larsen, Department of Psychology, JCU

When two copies of the same image are shown successively and one of the images has a minor change, the inability to detect that change is known as change blindness. When presented these images, the participant’s task is to press the spacebar on their keyboard as soon as they detect a change. The participant then has to then indicate what the change was. Half of the pictures will be in full color, the other half will be in black and white. Some research has suggested visual recognition is more difficult in black and white than in color. Music has been debated on whether it assists or inhibits cognitive functioning. Half of the participants will hear a Mozart composition while doing the task as others will do it in silence. Reaction time and accuracy will be measured.
PS.78
The Increasing Trend of Null Hypothesis Statistical Testing in Behavioral Research (PC)
Alison Carey*, Hannah Lenze, and Julia Navratil, Undergraduates; Dr. Abdulrazaq Imam, Department of Psychology, JCU
In the field of Behavior Analysis, Sidman (1960) famously advised against using inferential statistics in the form of null hypothesis statistical testing (NHST). However, a 1999 study by Foster, Jarema, and Poling found that the use of NHST was growing in the Journal of the Experimental Analysis of Behavior (JEAB). Zimmermann, Watkins, and Poling (2015) did a follow-up study that showed this trend continued through 2010. Here, we sought to see how the trend progressed into 2018. We examined every article in JEAB from 2011-2018 to see if NHST was used in the analysis. We also recorded the design type and species used. In addition to confirming the trend of the previous findings, we found increased use of between-subjects experimental design, which Sidman also advised against, increased use of experiments with human participants, and increased use of NHST in Small-N designs. We now know these trends exist, and it is important for future researchers to examine their appropriateness.

PS.79
The Effects of Disclaimer and Image Type on Mood
Shannon O'Mara*, Ella McNamara, Tinica Osborn, and Claire Testa Undergraduates; Dr. Janet Larsen, Department of Psychology, JCU
Female college students (N = 80) will be participating in a 2 x 2 between subjects experiment measuring mood after being shown digitally altered images. The independent variables are the presence of a disclaimer indicating digital alteration of images (disclaimer or no disclaimer) and what is depicted in each image (face or full body). As a result of finding an abundance of research on the effect disclaimers can have on women's affect, the researchers are interested to see how female college students will react. We predict that participants who view images with a disclaimer attached will experience more positive mood than participants who view images without a disclaimer attached. We further predict that participants who view images of women's faces with a disclaimer will experience more positive mood than participants who view images of women's full bodies.

PS.80
UV-B Avoidance Behavior in Frogs of the Genera Pristimantis and Leptodactylus (PC)
Andrew Benos*, Undergraduate; Dr. James Watling, Department of Biology, JCU
The rapid rate of habitat modification exposes denizen species to novel environmental stressors. Animals occurring in modified pastures are presumably exposed to higher ambient levels of harmful UV-B radiation than animals occurring in primary forest. The goal of this project was to study behavioral avoidance of UV-B radiation in amphibians. During a trip to Colombia in June 2018 two genera of frogs were collected, Pristimantis and Leptodactylus, at field sites with both primary forest and modified pasture. It was predicted Pristimantis would be more likely to avoid areas with high UV-B levels and Leptodactylus would exhibit no preference in areas with differing UV-B levels. These predictions were tested by conducting preference trials in a lab. The results indicated that Pristimantis did not exhibit UV-B avoidance while Leptodactylus did exhibit preference for UV-B shielded conditions. This research was part of the JCU SURF program supported by the Colleran-Weaver Fund.

PS.81
Chemical Defense Variation in the Strawberry Poison Frog from Costa Rica and Panama (PC)
Ashley Brooks*, Undergraduate; Dr. Ralph A. Saporito, Department of Biology, JCU
The strawberry poison frog (Oophaga pumilio) is found in the Caribbean lowlands of Nicaragua, Costa Rica, and Panama. Oophaga pumilio sequester defensive alkaloids, which are used to deter predators and pathogens, from their diet consisting exclusively of arthropods. Previous studies have shown that the type and quantity of alkaloid defenses vary with geographic location, suggesting that certain alkaloid-containing arthropods vary on similar scales. The goal of this study was to identify and quantify the alkaloids present among 49 individuals of O. pumilio from 10 populations throughout Costa Rica and Panama. This study supports previous research and indicates that alkaloid defenses vary significantly among geographic locations. Alkaloid defenses were also found to vary among individual frogs within each location, suggesting that not all frogs are equally defended. Finally, the quantity of alkaloid defenses in frogs from Panama is significantly greater than that of frogs from Costa Rica.
**PS.82**

**Differences in Palatability Between Alkaloid-defended Dendrobatids and Peptide-defended Tree Frogs (PC)**

Koary Lutz*, Undergraduate; Annelise Blanchette and Dr. Ralph A. Saporito, Department of Biology, JCU

Dendrobatid poison frogs, such as Dendrobates auratus, sequester defensive alkaloids from dietary arthropods, whereas tree frogs, such as Agalychnis callidryas, produce defensive peptides in specialized skin glands. Previous research has suggested that there are considerable differences in predator perceived alkaloid palatability among dendrobatid species. The goal of the present study was to compare the relative palatability of alkaloid defenses from D. auratus and peptide defenses of A. callidryas. Palatability of alkaloids and peptides were assessed using a previously established fruit fly-based (Drosophila melanogaster) palatability assay. Our study indicates that there are differences in palatability between alkaloid and peptide chemical defense, as well as differences in alkaloid palatability between populations of D. auratus that differ in alkaloid content. This research was supported by the Barrett Undergraduate Endowment Research Award

**PS.83**

**Are Populations of the Salamander Bolitoglossa altamazonica Declining at Low Elevations Due to Rising Temperatures? (PC)**

Osmary Medina-Baez*, Graduate Student; Dr. James Watling, Department of Biology, JCU

Amphibians are the most extinction-prone clade of terrestrial vertebrates, and have declined not only in deforested areas, but also in forests with low human impact. These declines are often associated with the chytrid fungus, but studies suggest that climate might also play an important role. Ectotherms in the tropics are at special risk of decline because of their narrow thermal safety margins (TSMs), the difference between an organism’s body temperature and its tolerance to high temperatures. During field surveys in a large protected area in the lowlands near the city of Villavicencio, Colombia in 2008, researchers encountered an average of over 21 individuals of the lungless salamander Bolitoglossa altamazonica per night. I surveyed the same site during 2018 and encountered an average of 0.6 salamanders per night. This decline does not appear to be regional, as I observed abundant populations at high elevations. I aim to determine if the apparent decline is caused by reduced TSMs.