Welcome to the 12th Annual Showcase of Undergraduate Research Excellence.

The Showcase is a poster- or display-based forum for University of Central Florida undergraduates to present their research and creative projects to the university community. Undergraduates from all disciplines are encouraged to present current or recently completed academic projects showcasing the diversity of topics, approaches, and interests at UCF. The Showcase serves as a resource for undergraduates not yet engaged in research and creative pursuits to learn how fellow students have developed their intellectual interests, current projects, and faculty connections. The Showcase also demonstrates to students, faculty, staff, alumni, and the Central Florida community that student research builds upon and enriches the UCF undergraduate experience. The Showcase is sponsored by the Office of Undergraduate Research, which is a unit of the Office of Undergraduate Studies. For more information about undergraduate research, please visit www.our.ucf.edu.

The Showcase is part of the 2015 Research Week at UCF.

www.showcase.ucf.edu
SHOWCASE OF UNDERGRADUATE RESEARCH EXCELLENCE
Celebrating undergraduate research and creativity across the curriculum.

OFFICE OF UNDERGRADUATE RESEARCH

ORDER OF EVENTS

STUDENT PRESENTATIONS (Pegasus Ballroom) . . . . . . . . 1:00-4:00 P.M.

FACULTY MENTOR OF THE YEAR (Cape Florida Ballroom) . . . . . . . 4:20 P.M.

Student Undergraduate Research Council

REMARKS AND PRESENTATION OF SCHOLARSHIPS (Cape Florida Ballroom) . . . . . . . . . . . . . . . 4:30-5:00 P.M.

John C. Hitt
President

Manoj Chopra
Interim Vice Provost and Dean of Undergraduate Studies

2015 UCF STUDENT RESEARCH WEEK
SHOWCASE JUDGES

The Office of Undergraduate Research is indebted to the following faculty for devoting a substantial amount of their time serving as Showcase judges.

Cindy Bayer
Kathleen Bell
Divya Bhati
Bill Blank
Patrick Bohlen
Bob Borgon
Karin Chumbimuni-Torres
Melinda Donnelly
Martha Garcia
Laurel Gorman
James Hogg
Jana Jasinski
Travis Jewett
Jennifer Kent-Walsh
Joo Kim
Dmitry Kolposchikov
Stephen Kuebler
Woo Hyoung Lee
Ana Leon
Ni Li
Victoria Loerzel
Stacey Malaret
Karen Mottarella
Elizabeth Mustaine
Enrique Ortiz
Anthony Pak Hin Kong
Adam Pritchard
Shawn Putnam
Andrew Randall
David Rollins
Michael Rovito
Bridget Rubenking
Shadab Siddiqi
Pamela Thomas
Tian Tian
John Venecek
Leslie Wolcott
Kerry Welch
Lei Wei
Thomas Wu

SHOWCASE BENEFACTORS

Through the generosity of the following organizations and individuals, substantial scholarships will be awarded to students judged to have the best projects presented at the Showcase. The Office of Undergraduate Research and the planners of 2015 Student Research Week are grateful to these benefactors for their encouragement and support of student research at UCF.

We are especially appreciative to the UCF Student Government Association for their generous contribution.

The Burnett Honors College
Ken Fedorka and Kimberly Schneider
Richard H. Harrison II,
in honor of Ms. Nancy Lynch,
stalwart supporter of SURE for 12 years

Institute for Social and Behavioral Sciences
Office of Research and Commercialization
Student Government Association
Office of Undergraduate Studies
The faculty is a university’s paramount asset, and the Office of Undergraduate Research recognizes the following faculty mentors who have advised, counseled, tutored, and encouraged students presenting at today’s showcase.

Mohamed Abdel-Aty
Ayman Abouraddy
Kelly Allred
Deborah Altmare
Cyrus Azimi
Jack Ballantyne
Matthieu Baudelet
Deborah Beidel
Alaina Bernard
Aniket Bhattacharya
Patrick Bohlen
Joyce Burr
Cecyle Carson
Shawn Carter
Jenene Case-Pease
Robert Cassanello
Necati Catbas
Debopam Chakrabarti
Ratna Chakrabarti
Debashis Chanda
Jason Chesnut
Matthew Chin
Hyo Jung Cho
Karin Chumbimuni-Torres
Lucia Cilenti
Kevin Coffey
Alexander Cole
Joshua Colwell
Timothy Coombs
Anne Culp
Leslee D’Amato-Kubiet
Henry Daniell
Ronald DeMara
Weiwei Deng
Warren Dick
Aristide Dogariu
Amy Donley
Melinda Donnelly
Adrienne Dove
Krisann Draves
Tosha Dupras
Steven Duranceau
Steven Ebert
Costas Efthimiou
Jennifer Elliott
Kelcey Ellis
Alvaro Estevez
Kenneth Fedorka
Terri Fine
Thomas Fisher
Elena Flitsiyan
Jason Ford
Martha Garcia
Jim Gilkeson
Ann Gleig
Avelino Gonzalez
Ali Gordon
Donita Grissom
Peter Grissom
Erin Hanson
Joseph Harrington
Sally Hastings
Christopher Hawkins
Florence Hernandez
Bari Hoffman-Ruddy
Eric Hoffman
Richard Hofler
Kathleen Hohenleitner
Rosalyn Howard
Racine Jacques
Peter Jacques
Florian Jentsch
Yier Jin
Jayanta Kapat
Abdelkader Kara
Alain Kassab
Jeffrey Kauffman
Jennifer Kent-Walsh
Stephen King
Barbara Kinsey
Richard Klemm
Eda Koculi
Dmitry Kolpashchikov
Alla Kourova
Stephen Kuebler
Ji-Eun Lee
Woo Hyoong Lee
Ana Leon
Xiaoman Li
Kuo-Chi ‘Kurt’ Lin
Zhe Liu
Suzanne Lunsford
Weili Luo
Carolyn Massiah
Michal Masternak
Daniel McConnell
Stephen Medeiros
Cecilia Rodriguez Milanés
Delbert Miles
Joanna Mishtal
Doan Modianos
Sean Moore
Karen Mottarella
Mustapha Mouloa
Mark Muller
Patrick Murphy
Elizabeth Mustaine
Saleh Naser
Sandra Neer
Charles Negy
Elsie Olan
Nina Orlovskaya
J. Thomas Owens
Hakan Ozoglu
Christopher Parkinson
Marisol Parra
Sampath Parthasarathy
Jennifer Pazour
J. Manuel Perez
Jose Vazquez Perez
Johnny Phirigo
Carla Poindexter
Jonathan Powell
Tison Pugh
Shawn Putnam
Zhihua Qu
Susan Quelly
Pedro Quintana-Ascencio
Luis Rabelo
Seetha Raghavan
Talat Rahman
Andrew Randall
Maria Reyes
Beatriz Reyes-Foster
Kathleen Richardson
Fernando Rivera
Sherron Roberts
Kyle Rohde
Carey Rothschild
Michael Rovito
Herve Roy
William Russell
Houman Sadri
Haripada Saha
Eduardo Salas
Mohtashemul Samsam
Maria Santana
Swadeshmukul Santra
Alfons Schulte
Axel Schüzgen
Jamie Schwartz
Sudipta Seal
William Self
Mubarak Shah
Valerie Sims
Eileen Smith
Mary Lou Sole
Kiminobu Sugaya
James Szalma
Suren Tatulian
Kenneth Teter
Julian Thayer
Tian Tian
Fernando Uribe-Romo
Anna Valdes
Martine Vanryckeghem
Subith Vasu-Sumathi
Laurence Von Kalm
Linda Walters
Lori Walters
Grace White
Shannon Whitten
William Wise
Chrysalis Wright
Cherie Yestrebsky
Widaad Zaman
Antonis Zervos
Jihe Zhao
Shengli Zou
Richard Zraick
OLIVIA ADKINS
Connected Garden II: Start Local, Think Global
_Undergraduate Co-Authors_: Andres Loaiza, Adriana Ramirez Silva
_Mentor_: Ms. Eileen Smith (Visual Arts and Design)
Our project aims to connect gardens, people, and communities to track and easily visualize statistics and information about produce yields. By connecting environments and people we anticipate an increase in awareness of agricultural sustainability.

NAZEER BACCHUS
Deconstructing Babel: A Polemic Against Urbanization in Genesis 11
_Mentor_: Dr. Patrick Murphy (English)
This research examines the biblical story of the “Tower of Babel” in Genesis 11, analyzing the text against its historical context and cultural milieu to reveal an anti-urban undercurrent directed particularly at the larger Mesopotamian empires and their religious structures.

GRANT CAVALUZZI
Orlando Game Development: How Social Networking Communities Can Foster Economic Development
_Undergraduate Co-Authors_: Nathalie Vazquez, George Wright, Alexa Ponce, Daniel Brook, Derek Hodge, Alicja Kochanowicz
_Mentor_: Ms. Eileen Smith (Visual Arts and Design)
Providing an online community for current emerging game developer students, alumni, and the Orlando gaming community where they can interact, support flows of ideas, and create awareness. Figures included are salary expectations for game developers and infographics depicting game development graduates versus the number of jobs available in the industry.

DOMINIC CHARLES
A Diplomat’s Record: The United States of America’s Perception of French Imperial Policies Toward Syrian and Lebanese Minorities
_Mentor_: Dr. Hakan Ozoglu (History)
For this project, I critically analyzed documents from the U.S. Department of State relating to the internal affairs of Turkey in the years 1918–1922. In these documents, I looked for U.S. diplomats’ views of French imperial policies directed toward Syrian minorities and how these policies affected different minority groups.

CLAY DUNKLIN
Perceiving Art: The Influence of Words on the Understanding of and Emotional Responses to Visual Works
_Mentor_: Ms. Carla Poindexter (Visual Arts and Design)
I examined the impact of language on viewers’ perceptions of visual works in contemporary art in order to better understand how to use language effectively within my art practice. A series of drawings, sculptures, and videos that utilize language in significant ways was created in response to my findings.

JULIA ELLIOT
Expanding E2i: An Interactive Exploration of Its Institutional Memory
_Undergraduate Co-Authors_: Veronica Winters, Fritzi Wittmann, Shannon Feeney, Haley Paulsen, Taylor Brooks, Chloe Hu, Shealen Duncan
_Mentor_: Ms. Eileen Smith (Visual Arts and Design)
Recording the institutional memory of E2i Lab through converging media by providing up-to-date content as well as a navigable archive of past achievements.

ZACKARY HENDERSON
_Undergraduate Co-Authors_: Chris Oxley, Deonte’ Brower, Jonathan Ott, Allison Farrell, Brianna O’Connor
_Mentor_: Dr. Ana Leon (Social Work)
The objective is to create a 2-D simulation game that will better prepare students and mental health professionals to effectively assess the social and emotional health of children under the age of 5. This game is designed as a new simulation training tool to enhance training in infant mental health.

ELIZABETH MCCLUSKEY
The Neurocognitive Effects of Music on Emotion
_Undergraduate Co-Author_: Brandon Scheetz
_Mentor_: Dr. Johnny Pherigo (Music)
The neurocognitive effect of music on the human brain will be studied from the perspective of emotion and attention in order to gain insight into therapeutic applications of music.

HALIE MCLANAHAN
From Demolition to Digital: Preserving the History of the Cocoa Beach Glass Bank
_Undergraduate Co-Authors_: Connor Shamet, Shawn Bettencourt, Robert Smith, Irina Pidberejna, Stephanie Fritz, Kris Taibl, Jessica Serra
_Mentor_: Dr. Lori Walters (History)
Our overall vision is to preserve the history of the iconic Cocoa Beach Glass Bank structure through use of digital technology. We aim to educate and inform the local and national public about the history and culture of the 1960s when the bank was built.

MICHAEL MELENDEZ
Patriotic Duty and Temporary Women Empowerment: The Case of Rosie the Riveter and Her Legacy in the Women’s Movement
_Mentor_: Dr. Maria Santana (Women’s Studies)
To better understand the magnitude the war campaign had on American women in the 1940s and how it propelled the women’s movement a decade later.

JARED MUHA
Apopka, Florida, and Shifting Racial Dynamics in Agricultural Labor
_Mentor_: Dr. Robert Cassanello (History)
This project studies the process by which agricultural labor shifted from being comprised mainly of black Americans to immigrants from Latin America, mainly Mexico. This project therefore seeks to connect global neoliberal developments of the late 20th century to transformations in agricultural labor in the context of Apopka, Florida.
JENNIFER NEWTON
Ethics of Faeries: Exploring Medieval Marriage Through Chaucer’s The Merchant’s Tale and Claudian’s De Raptu Proserpinae
Mentor: Dr. Tison Pugh (English)
Addressing the ways Chaucer alluded to, incorporated, and manipulated the characters and style of De Raptu Proserpinae, the following analysis answers the question, “What role do Pluto and Persephone play in the development of Chaucer’s characters and the overall ethos within The Merchant’s Tale from The Canterbury Tales?”

VANESSA NGUYEN
Sacred and Secular Suffering: Christian, Buddhist, and Biomedical Perspectives on Suffering
Mentor: Dr. Ann Gleig (Philosophy)
The objective of my project is to analyze the concept of suffering from three different perspectives: Christianity, Buddhism, and biomedicine. With a specific focus on the treatment for depression, I will critically examine differences and commonalities between these perspectives and their implications for the growing dialogue between religion and medicine.

IRINA PIBBEREJNA
Cross-Cultural Ways and Their Role on Students’ Perceptions on Russian and American Culture in a Linguistic Context
Mentor: Dr. Alla Kourova (Modern Languages and Literatures)
Cross-cultural ways and word associations will be analyzed and elaborated on in the present context of U.S. and Russian cultures through the interactive communication of the Peer-to-Peer: Getting Closer Project and the future publication of project “Picturing Russia.”

MICHAEL SCIMECA
Left Brain vs. Right Brain: An Analysis of Functionality in Cervantes’ Don Quixote
Mentor: Dr. Martha Garcia (Modern Languages and Literatures)
Cervantes’ discussion of medicine and his treatise on human consciousness will be considered through the step-by-step analysis of the inclusion of scientific references and allusions to defined medical specialties within various chapters of the work.

KENDRA SEMMEN
Music Therapy and the Autism Spectrum
Mentor: Dr. Johnny Perhigo (Music)
Anxiety levels and ease of expressing emotions for those on the autism spectrum will be researched. I will analyze a setting with music versus one without in order to understand the importance of music therapy for that group. Given that I have symptoms of Asperger’s syndrome, I am passionate about this topic.

RACHEL TOBILLO
Rojas’ Renaissance Tragicomedy La Celestina as an Illustration of the Lasting Social Impact of Literature
Mentor: Dr. Martha Garcia (Modern Languages and Literatures)
This study explores how literature — specifically, the text of La Celestina — invites readers to examine their own moral values and patterns of ethical behavior. The purpose is to demonstrate how readers across generations and ethnic backgrounds can grasp the text and subtext of La Celestina despite differences in cultural norms.

ASHLEY TORRES
Negative Effects of Standardized Test Taking on Students, Teachers, and Universities: The Real Lessons Learned from My GRE Freak-Out
Mentor: Dr. Cecilia Rodriguez Milanés (English)
This cross-genre research essay draws from personal experience and research on standardized testing and will analyze the adverse effects of high-stakes testing on students. My GRE and college admission anxiety provide clarity about the issues in relying on standardized testing for predicting the futures of students, especially minorities.

CALYN WADDINGTON
Joyce, Le Fanu, and Stoker Walk into an Irish Pub: Gothicism in Ireland
Mentor: Dr. Kathleen Hohenleitner (English)
The influence of the Gothic in Ireland extending into modernist fiction writers such as James Joyce, and the relation of theme between Irish Gothic writers and Joyce’s “The Dead.”

CAVEL AUSTIN
The Representation of Poverty in Great Depression American Literature
Mentors: Dr. Sherron Roberts, Dr. Elsie Olan (Teaching, Learning, and Leadership)
The literary critical analysis of this research answered the core question: “How did American authors represent poverty during the Great Depression era?” The analysis explored how, if at all, American authors accurately represented poverty through literature and determined if Marxist critical literary key tenets are present in the data collection tools.

STEPHANIE CASTILLO
Determination of the Overall Antioxidant Strength of Teas Combining Fluorescence, Plasmonics, and Metal Nanoparticles: Designing New Educational Experiments
Mentor: Dr. Florencio Hernandez (Chemistry)
We have developed a simple educational experiment that uses the combination of metal nanoparticles, the application of plasmonics, and the fluorescence of dyes to test the antioxidant strength of teas. This experiment was designed for high school and undergraduate students to engage them in higher STEM education.

GAYLE COURTNEY
Learned from My GRE Freak-Out
Mentor: Dr. Cecilia Rodríguez Milanés (English)
This study seeks to examine and observe exemplary elementary teachers who are capable of identifying and accommodating students who are dyslexic and gifted, and identifying which accommodations are most beneficial for the students.
EDUCATION CONTINUED

**MERIDITH DOERSTLING**  
*Follow the Leader: The Importance of Recess in Leadership Development*  
*Mentor:* Dr. William Wise (Educational Studies)  
Research shows that schools are shortening or eliminating recess time during the school day. However, further research shows that recess is crucial to developing future leaders. The purpose of this study is to shed light on these two issues and prove the important role of recess in developing student leadership.

**ASMA ELMANI**  
*Speed Dialing Education: How Technology Affects Student Learning*  
*Mentor:* Dr. J. Thomas Owens (Teaching, Learning, and Leadership)  
How many phone numbers do you know? Do you find that you struggle to spell words sometimes? As computer use becomes more prevalent in education, the use of computers increases in the classroom. This project explores the correlation between technology and learning.

**ERICKA FRANCOIS**  
*The Spain Experience: How the Treatment of U.S. Minorities in Spain Challenged Their Perceptions on Working and Traveling Abroad*  
*Mentor:* Dr. J. Thomas Owens (Teaching, Learning and Leadership)  
In an attempt to explore the underrepresentation of minority students participating in an international education experience, this research analyzes how the treatment of such students in Spain impacted their professional goals as it relates to traveling overseas.

**KIARA GARCIA**  
*Exploring Dentists’ Readiness to Work with Individuals with Disabilities*  
*Mentor:* Dr. Maria Reyes (Child, Family, and Community Sciences)  
Qualitative and quantitative research methods will be utilized to complete the study. Self-perceived efficacy patterns were analyzed at two different stages: first, an analysis of the curricula of the three dental schools in Florida followed by modified questionnaire instrument surveying undergraduates pursuing a career in dentistry and current dental students.

**ALYCIA GIBBONS**  
*iKids: Is Technology Bullying Good Learning Strategies?*  
*Mentor:* Dr. J. Thomas Owens  
Should schools limit the usage of technology in classrooms? Research is showing that too much technology may not be such a good thing. The purpose of this study is to determine teacher candidate’s perspective of technology as a teaching tool.

**ALEXANDRIA HARKINS**  
*Synthesizing the Music Integration Research to Explore Five Common Themes in Intermediate Elementary Classrooms*  
*Mentor:* Sherron Roberts (Teaching, Learning and Leadership)  
After examining scientific research on the effect of music on the brain, this study was designed and conducted with the objective of understanding how and why exemplary intermediate teachers use music in their general classrooms to the benefit of their students.

**DWAYNE HOUSTON**  
*Implementing Student Engagement in Mass Section Classes Delivered via Lecture Capture*  
*Mentor:* Dr. Carolyn Massiah (Marketing)  
The objective is to provide a foundation for intimate relationships between business students and their curriculum in mass section classrooms delivered via lecture capture. By discovering the current level of student engagement, we will be able to implement new strategies that will enhance the quality of education within large classes.

**JENNA MATHIS**  
*The Role of Child Life Specialists in Meeting the Needs of Children with Chronically Ill Siblings*  
*Mentor:* Dr. Anne Culp (Teaching, Learning, and Leadership)  
This study explored the needs and concerns of children with chronically ill, hospitalized siblings. This study also discussed the role that child life specialists perform in meeting the needs of siblings and in helping them cope with the chronic illness of their brother or sister.

**JOSEPH PARADIS**  
*You’re Not You When You’re Hungry: Politics, Nutrition, and Academic Achievement*  
*Mentor:* Dr. William Wise (Teaching, Learning, and Leadership)  
This study will show that malnutrition in U.S. school-age children is a major concern to all surveyed. The idea of free nutrition for all school-age children (breakfast, lunch, and snack) is split between liberal/conservative Americans even though they agree that childhood hunger/obesity is a problem in the U.S.

**ESPERANZA PEREZ**  
*How Behavioral Factors Are Being Implemented into Today’s Financial Education Programs*  
*Undergraduate Co-Author:* Hector Perez  
*Mentor:* Dr. Jim Gilkeson (Finance)  
This research surveyed 50 financial education programs throughout Florida using a survey of 27 questions. The majority of programs do not collect financial information about participants; however, they provide one-on-one counseling to focus on tailoring education to an average of 501+ participants per year.

**KELLY ROSCH**  
*The Effects of Metacognitive Prompting on Musical Learning*  
*Mentor:* Dr. Valerie Sims (Psychology)  
We aim to examine musical learning outcomes through the comparison of metacognitive teaching methods and traditional teaching methods.

**MARY-MARGARET SHIMADA**  
*The Power of Cloze Activities, Sentence Frames, and Word Banks for Raising English Learners*  
*Mentor:* Dr. Donita Grissom (Teaching, Learning, and Leadership)  
This research focuses on a fifth-grade science class at a school with a high rate of English learners. The perspective of the teachers will be described regarding any change in writing about science after the teachers used cloze activities, sentence frames, and word banks.
**JENNIFER AMBROSE**  
**A Fractographic Analysis of Inconel 718 Failure Modes**  
*Mentor: Dr. Ali Gordon (Mechanical and Aerospace Engineering)*  
Cyclically loaded IN718 samples have been analyzed through the use of fractographic methods to determine the main microstructural mechanisms of crack initiation and its dependence on stress concentration.

**LUKE STRAWN**  
**Examining the Effect of Couple Relationship Education on Individual Distress Among Individuals with Varying Levels of Educational Attainment**  
*Mentor: Dr. Jenene Case-Pease (Child, Family, and Community Sciences)*  
This study examines the individual distress of participants who are currently completing the “Within My Reach” couple relationship education workshop, presented by the Marriage and Family Research Institute. Educational attainment is currently being analyzed as a factor that may influence the progress an individual has while participating in the workshop.

**ALLISON TWYMAN**  
**An Investigation of Evidence-Based Practices Used by Teachers in Classrooms Serving Children with Autism Spectrum Disorder**  
*Mentor: Dr. Jamie Schwartz (Communication Sciences and Disorders)*  
This study will investigate the use of evidence-based practices by teachers in classrooms serving children with autism spectrum disorders (ASD). A survey will be used to determine what specific interventions are being used, whether they are evidenced-based, and if the Florida ASD certificate affects teachers’ use of evidence-based practices.

**BRIANNA WILLIAMS**  
**Providing Relationship Education Services to Males in a Correctional Facility**  
*Mentor: Dr. Jenene Case-Pease (Child, Family, and Community Sciences)*  
The objective of this study is to examine the influence of providing relationship education services to males who are incarcerated in order to target relationships and employment, factors research has shown to affect inmate recidivism.

**HARRY AHLHEIM**  
**Simulation and Examination of Efficiency Parameters in Ultrathin Monocrystalline Silicon Solar Cells**  
*Mentor: Dr. Debashis Chanda (Optics)*  
The purpose of this project is to model highly efficient solar cells by optimizing optical and electrical parameters to eventually fabricate ultrathin c-Si solar cells based upon simulation results to achieve maximum efficiency.

**JENNIFER AMBROSE**  
**A Fractographic Analysis of Inconel 718 Failure Modes**  
*Mentor: Dr. Ali Gordon (Mechanical and Aerospace Engineering)*  
Cyclically loaded IN718 samples have been analyzed through the use of fractographic methods to determine the main microstructural mechanisms of crack initiation and its dependence on stress concentration.
DOMINIQUE COURBIN
Developing 3-D Printed Arm Solutions with Electromyography Actuation
Undergraduate Co-Authors: Tyler Petresky, Mateo Alvarez
Mentor: Dr. Seetha Raghavan (Mechanical and Aerospace Engineering)
3-D printing for the development of a biomechatronic arm.

MICHAEL CRIPPEN
Transesterification of Prototype Industrial Hemp Biodiesel with Projection for a Profitable Global Cellulose-Based Biofuel Refinement Facility
Mentor: Dr. Andrew Randall (Civil, Environmental, and Construction Engineering)
To produce a viable biodiesel alternative to harmful contemporary energy methods as well as actualize economies of scale that allow for global refinement of cellulose-based materials to supplement and eventually eliminate dependence on those methods.

CAIO DA SILVA LIMA
Smart Material Actuation and Morphing for Unmanned Aircraft Systems
Mentor: Dr. Jeffrey Kauffman (Mechanical and Aerospace Engineering)
To design, construct, test, and fly a smart material-actuated unmanned aircraft system with improved reliability, control authority, and flight performance in all flight conditions.

SAM DRUCKER
Multi-Input Surface Electromyography for Application in Bionics
Undergraduate Co-Authors: Victor Salomon, Carmen Henriquez, Alexandria Alford
Mentor: Dr. Jeffrey Kauffman (Mechanical and Aerospace Engineering)
We created custom control interfaces that will allow users to comfortably operate assistive motor-driven technologies. This was done by synchronously processing multiple electromyography signals acquired in real time, representing the deliberate flexion of active muscle groups.

CONNOR FORD
3-D Simulation for Safety Training and Protocol Improvement
Undergraduate Co-Author: Alexander Katarsky
Mentor: Dr. Luis Rabelo (Industrial Engineering and Management Systems)
Analysis of simulated safety emergencies to improve safety training and protocol.

JOHNNIE GREENE
Thin Cellulosic Films as a Drug-Delivery Platform
Mentor: Dr. Ayman Abouraddy (Optics)
To provide an alternative for patient post-surgery pain management based on sustained drug delivery from biodegradable cellulosic thin films.

IMAD HANHAN
Hybrid Carbon Fiber Composite for Noncontact Stress Sensing via Piezospectroscopy
Mentor: Dr. Seetha Raghavan (Mechanical and Aerospace Engineering)
Experimentally measure stress-sensing capability introduced in a carbon fiber composite with embedded alumina nanoparticles through piezospectroscopy while also characterizing particulate dispersion through photoluminescent mapping.

DANIELLE HARPER
Plasma Density of Laser Filament
Mentor: Dr. Matthieu Baudelet (Optics)
A high-power femtosecond laser pulse can propagate as a nearly nondiffracting beam called filament, creating a plasma channel in air. We assembled a folded wavefront interferometer for direct spatio-temporal measurement of the plasma electronic density. An Abel inversion code was developed to extract the radial dependence from the interferogram.

CARMEN HENRIQUEZ
Blending Art with Algorithmic-Driven CAD and Additive Manufacturing for Bionics
Undergraduate Co-Author: Nicole Bizet
Mentor: Dr. Seetha Raghavan (Mechanical and Aerospace Engineering)
The achieved objective in this project was to create a 3-D printed bionic arm that uses an electromyography sensor with microcontroller that will improve the life of the user and enhance self-expression of the same, blending art and additive manufacturing technology.

GRANT HERNANDEZ
Vulnerability Analysis of Smart Consumer Electronics: A Case Study on Google's Nest Thermostat
Mentor: Dr. Yier Jin (Electrical Engineering and Computer Science)
A deep dive into the security of Google’s Nest thermostat and the expanding realm of networked consumer electronics known as the “Internet of Things.” Learn why hardware and software security matters and why your smart thermostat, fitness bands and refrigerator are the next big target for hackers.

CARLYN HIGGINS
Energy and Cost Analysis of Reverse Osmosis Membrane Technology
Mentor: Dr. Steven Duranceau (Civil, Environmental, and Construction Engineering)
The purpose of the study was to examine interstage boost pressure and new membrane technology as a means of energy reduction for the Town of Jupiter (Florida) Water Treatment Plant.

BILLY HUGHES
Raman Mapping of ZrB2-SiC Ceramic Components
Mentor: Dr. Nina Orlovskaya (Mechanical and Aerospace Engineering)
The objective of this research is to investigate the detectability of SiC phase in ZrB2 of different weight percent samples of ZrB2-SiC. Results will lead to further research for ceramic tiles on hypersonic vehicle nose tips.
DIEGO HURTADO

Optical Measurement of Blood Coagulation During Open Heart Surgery

*Mentor:* Dr. Aristide Dogariu (Optics)
Evaluate the reliability of the viscoelastic properties of blood continuously measured using low-coherence dynamic light scattering and its relationship to a standard clotting test to assess blood coagulability status during cardiopulmonary bypass in open heart surgery.

ANDREW IZBICKY

Exploration of Structural Health Monitoring Concepts for Seismic Loadings

*Mentor:* Dr. Necati Catbas (Civil, Environmental, and Construction Engineering)
The objective of this project is to model the structural dynamics of a six-story structure under seismic excitations provided by a shake table for educational and research purposes.

JOSHUA JORDAN

Change in Resistivity of Metallic Thin Films Due to Stress

*Mentor:* Dr. Kevin Coffey (Materials Science and Engineering)
To test resistivity, a wafer was deposited with the metal ruthenium. After the deposition, the curvature was measured then put under pressure and vacuum to cause tensile and compressive stress. While under stress, the resistance was measured and related to resistivity.

JUSTIN KINGSLEY

Miniature Functional Wind Farm

*Undergraduate Co-Authors:* Samuel Ehling, Jonathan Eby, Benjamin Bailey, Shirley Mulero, Liya Elez
*Mentors:* Dr. Kuo-Chi “Kurt” Lin, Dr. Tian Tian (Mechanical and Aerospace Engineering)
The objective of this project is to design and manufacture miniature functional wind turbines to test wind farm designs. This research is being done in an effort to improve efficiency in wind farm schemes of onshore, three-blade horizontal axis wind turbines.

ZACHARY LOPARO

Robust and Low-Cost LED Absorption Sensor for Simultaneous, Time-Resolved Measurements of CO and CO2

*Mentor:* Dr. Subith Vasu-Sumathi (Mechanical and Aerospace Engineering)
A robust and low-cost midinfrared LED-based absorption sensor for measuring carbon monoxide (CO) and carbon dioxide (CO2) is being developed for implementation in aerospace and low-Earth orbit vehicles as an early detection system for fires.

ENGINEERING, COMPUTER SCIENCE, AND OPTICS II

REBECCA MCLEAN

The Effect of Nutrient Depletion on the Lipid Productivity of *Chlorella vulgaris* for Biofuel Feedstock Generation

*Mentor:* Dr. Woo Hyoung Lee (Civil, Environmental, and Construction Engineering)
The objective of the research is to evaluate the nutrients depletion effects on the lipid and biomass productivity of *Chlorella vulgaris* for biofuel feedstock generation and to quantify their synergetic effect on the lipid productivity.

MARC MEDINA

Gas Turbine Combustor Transition Cooling

*Mentor:* Dr. Jayanta Kapat (Mechanical and Aerospace Engineering)
This investigation will focus on the combustion sector of a power generation gas turbine and its implications with impingement cooling. More specifically, this research case studies the aerodynamic behavior inside a turbine combustion sector in order to relate those characteristics in future heat transfer research on the combustor transition piece.

ERIKA MEEKER

Assessment of Safety Effects for Multiple Roadside Elements Using Generalized Nonlinear Models

*Mentor:* Dr. Mohamed Abdel-Aty (Civil, Environmental, and Construction Engineering)
(1) Analyze safety effectiveness of multiple roadway and roadside elements using generalized linear models and generalized nonlinear models. (2) Develop crash modification factors using cross-sectional method for different crash types and severities.

RICHARD MURDOCK

Frequency-Domain Faraday Rotation Spectroscopy (fd-FRS) for Functionalized Particle and Biomolecule Characterization

*Mentor:* Dr. Shawn Putnam (Mechanical and Aerospace Engineering)
(1) Develop and characterize the fd-FRS technique. (2) Synthesis and surface functionalization of magnetic particle suspensions (i.e., ferrofluids). (3) Compare fd-FRS results with correlated results from modern immunoassay techniques.

CATHERINE NINAH

Responsive Sea-Based Logistics Delivery Systems

*Mentor:* Dr. Jennifer Pazour (Industrial Engineering and Management Systems)
The U.S. Navy supports large-scale projects through sea-based logistics, the operational sustainment of forces from the sea. This research is focused on the impact of imperfect visibility and use of mathematical algorithms, models, and simulations to provide recommendations on technology, evaluate performance measures, and determine new policies to optimize performance.

WILSON PEREZ

Finite Element Simulation of Single-Lap Shear Tests Utilizing the Cohesive Zone Approach

*Mentor:* Dr. Ali Gordon (Mechanical and Aerospace Engineering)
In order to determine which materials allow for the strongest bond, single-lap shear tests will be modeled utilizing finite element modeling.
PASCUAL SANTIAGO-MARTINEZ
A Mechanics-Based Approach for Putt Distance Optimization
*Mentor:* Dr. Ali Gordon (Mechanical and Aerospace Engineering)
The objective of this research is to develop a scientific model that accurately predicts the post-impact displacement of a ball based only on how far back the putter is swung and the texture of the green.

MARK SCHUMACHER
*Mentor:* Dr. Hyoung Jin Cho (Mechanical and Aerospace Engineering)
This project objective was to create a simple on-chip device that separates and isolates plasma from whole blood for application in resource-limited areas. This was achieved through a microfluidic chip that utilizes passive forces and separation mechanisms to attain 99 percent pure plasma separation.

BRANDON SEESAHAI
Plasma Temperature Measurements in the Context of Spectral Interference
*Mentor:* Dr. Matthieu Baudelet (Optics)
Simulated plasma spectra are analyzed to calculate plasma temperature. A MATLAB code is developed to read the emission parameters provided from a spectrum and assign the possible emitters from a database to the underresolved emission lines. Temperature measurements are then performed via the Boltzmann, Saha-Boltzmann, or multielemental Saha-Boltzmann plot techniques.

JOHN SELIGSON
Mechanical Properties of Acrylonitrile Butadiene Styrene Following Fused Deposition Modeling
*Undergraduate Co-Author:* Michael Gonzalez
*Mentor:* Dr. Seetha Raghavan (Mechanical and Aerospace Engineering)
Fused deposition modeling, commonly known as 3-D printing, creates products with varying mechanical properties. This project experimentally explores the mechanical advantages of printing layers at different orientations using acrylonitrile butadiene styrene. The study is focused on tensile testing.

ALEX SELIMOV
Microscale Mechanics of Alumina Nanocomposites Under High Strain Rates via Piezospectroscopy
*Mentor:* Dr. Seetha Raghavan (Mechanical and Aerospace Engineering)
In this experiment, alumina nanocomposites were tested under high strain rates in order to shed light on particle matrix interactions in the dynamic regime.

SHEILA SERRA
Modeling and Dynamic Computation of Hip Dysplasia Reduction in Infants with the Pavlik Harness Using Patient-Specific Geometry
*Mentor:* Dr. Alain Kassab (Mechanical and Aerospace Engineering)
To develop a 3-D model of an infant’s lower limb and a computer model to analyze the physics of dislocations of developmental dysplasia of the hip using the Pavlik harness. Also, to investigate the elastodynamic response of the adduction muscles due to the harness’ load optimizing its use.

ROBERT SHORT
Engineered Structures of Laser Filaments
*Mentor:* Dr. Matthieu Baudelet (Optics)
We investigated techniques for the creation of arrays of laser filaments using a multiterawatt femtosecond laser system. The filament arrays are created by modifying the wavefront of the Gaussian laser beam prior to filamentation. Such arrays have applications as microwave and optical waveguides. Supported by the Army Research Office.

KELSEY STROBRIDGE
Safety Estimation for Rural Intersections
*Mentor:* Dr. Mohamed Abdel-Aty (Civil, Environmental, and Construction Engineering)
The objective of this project was to determine how the location of warning signs and how the overall layout of an intersection affects crash rates for rural intersections. During this research project, I took part in collecting the specific details of numerous intersections via Google Earth and Google Maps.

DREW THOMAS
Impact of Internal Cooling on Mechanical Response of Thermal Barrier Coatings
*Mentor:* Dr. Seetha Raghavan (Mechanical and Aerospace Engineering)
The purpose of our experiment was to develop novel methods to obtain in situ internal strain data of thermal barrier coatings samples using synchrotron X-ray diffraction and to determine the behavior of the strains under realistic turbine simulation thermal gradient and mechanical loads.

ARJUN WATANE
Automatic ADHD Classification Using fMRI and sMRI Imagery
*Mentor:* Dr. Mubarak Shah (Electrical Engineering and Computer Science)
ADHD affects 5 to 10 percent of children, who may suffer from learning difficulties, behavioral abnormalities, depression, or anxiety. I created a novel method that includes a multimodal channel fusion that combines deep learning and local binary pattern features from structural MRI and functional MRI brain scans in order to accurately diagnose ADHD.

REBECCA WHITSITT
Viscosity Response of Chalcogenide Glasses with Respect to Composition and Temperature
*Mentor:* Dr. Kathleen Richardson (Optics)
We investigated the temperature and composition dependence of the viscosity of glasses in the Ge-As-Se family. The resulting viscosity curves aid in the understanding of precision glass molding of infrared lenses.
RACHEL WILCOX  
Cyclic Response of 304SS Under Combined Extreme Environments  
*Mentor:* Dr. Ali Gordon (Mechanical and Aerospace Engineering)  
Funded by the Air Force to aid in the development of a hypervelocity (Falcon HTV-3x) by successfully simulating extreme environmental conditions similar to that of a plane reaching speeds of Mach 7 in order to determine the optimal material for the fuselage of the aircraft.

HUNTER WILLIAMS  
Real-Time Testing of High Temperature Aerospace Materials  
*Mentor:* Dr. Seetha Raghavan (Mechanical and Aerospace Engineering)  
The integration of a high-temperature heater, two linked rotational stages, and a mechanical load frame is examined for use in X-ray diffraction and piezospectroscopy of ceramic matrix composites under realistic thermomechanical loading conditions.

STEPHEN WILLIAMS  
Evolution of Analog Circuits for Low-Energy Computation  
*Mentor:* Dr. Ronald DeMara (Electrical Engineering and Computer Science)  
In our work we utilize an optimization technique, called a genetic algorithm, to systematically evolve analog computation circuits. Our method produces a circuit that is both energy- and design-time efficient.

RACHEL WILLIS  
Microchannel Recuperator for Use in a Nominal 100mw Class Supercritical CO₂ Brayton Cycle Turbine with TIT of 1350k  
*Mentor:* Dr. Jayanta Kapat (Mechanical and Aerospace Engineering)  
This was a computational analysis and design of a counterflow heat exchanger used for a recuperative Brayton cycle (gas turbine) for power generation applications. Unlike the traditional gas turbine, the working fluid for this cycle will be supercritical carbon dioxide (sCO₂).

KYLE WILLNOW  
Distributed Teamwork Simulation in a Virtual World  
*Mentor:* Dr. Avelino Gonzalez (Electrical Engineering and Computer Science)  
The goal of this project is to create a virtual infrastructure in which to observe teamwork, in the form of a bucket brigade, and capture data from the observations. The data will then be compared to data collected from the real world to verify the accuracy of the simulation.

JOSIAH WONG  
Artificial Humor Through Dynamic Contextual Analysis  
*Mentor:* Dr. Avelino Gonzalez (Electrical Engineering and Computer Science)  
This project investigates methods of injecting conversational humor by an avatar in avatar-to-human dialogue. Through an original humor engine, this research seeks to make avatars more humanlike by giving them the capacity to exhibit contextually appropriate and well-timed humor from a predetermined humor data set in real time.

GUILLERMO ALFONSO  
Psychosocial Indicators of Injury Concealment Among Young Male Athletes  
*Mentor:* Dr. Michael Rovito (Health Professions)  
The purpose of this study is to uncover specific factors contributing to young athletes concealing injuries and ignoring long-term health. Normative factors, including masculinity and other external influences such as lack of knowledge and sense of commitment to the team, will be researched in order to improve athlete longevity.

KRISTIN BADILLO  
Effectiveness of Participation in Cardiac Rehabilitation: Secondary Prevention Increases Functional Capacity in Post-Myocardial Infarction Patients  
*Mentor:* Dr. Thomas Fisher (Educational and Human Sciences)  
Post-myocardial infarction patients who have attended secondary prevention seek to increase their functional capacity. The analyzed data from the Duke Activity Status Index surveys will be used to determine the program’s effectiveness based on patient outcomes.

KAYLA BERRIOS  
Preliminary Case Study of Expiratory Muscle Strength Training in Laryngectomized Patients  
*Mentor:* Dr. Bari Hoffman-Ruddy (Communication Sciences and Disorders)  
Expiratory muscle strength training will be studied in total laryngectomy patients from the affiliated oncology and local cancer center to measure if this technique improves expiratory pressure, peak cough airflow, cough-related quality of life, and perceived dyspnea.

THOMAS BOLSEGA  
Assessment of Tracheostomy Care Practices in a Simulated Setting  
*Mentor:* Dr. Mary Lou Sole (Nursing)  
There continues to be no defined standard technique for tracheostomy care. The purpose of this study was to determine what procedural steps nurses are currently performing and determine whether their policies reflect such findings. By documenting the best practices, this research will aid in improving patient outcomes and overall health.

JOANNA BORISSOVA  
Analyzing the Factors that Influence Dental Anxiety  
*Mentor:* Dr. Fernando Rivera (Sociology)  
To conduct an analysis of the factors that cause patient anxiety in dentistry by sampling UCF undergraduate students through Corah’s Dental Anxiety Scale. The responses from the sample group will be used to gain further knowledge of how dental anxiety affects preventative health care and treatment avoidance.

BRITTANY BOWKS  
Factors that Affect Compliance with Long-Term Control Medications Among Pediatric Patients with Asthma  
*Mentor:* Dr. Krisann Draves (Nursing)  
The objective of this research is to identify factors that affect compliance with long-term medications used to control asthma in children. A literature review will be performed, and factors will be identified that either increase, decrease, or have no effect on compliance. Recommendations will be made based on the results.
TIYE BROWN
Post-Treatment Analysis of Swallow Function and Quality of Life for HNC Patients
*Mentor:* Dr. Bari Hoffman-Ruddy (Communication Sciences and Disorders)
Swallowing impairment frequently occurs in head and neck cancer (HNC) patients undergoing radiation treatment and may cause malnutrition, dehydration, and increases in mortality secondary to aspiration-related lung infections. This study analyzed feeding tube presence and duration from a 5-year database of HNC patients and their current swallowing related QOL.

TYLER BULL
Anticipated Telehealth Device Usage in Younger Adults
*Mentor:* Dr. James Szalma (Psychology)
In this project, we researched the anticipated usage of telehealth devices in a younger adult sample. We were interested in examining the role motivation plays in the acceptance of telehealth devices. Additionally, we further examined anticipated advantages and disadvantages of using telehealth devices to alleviate health concerns in the future.

SUZELINE DESIR
Acculturation Factors Associated with the Prevalence of Obesity in Immigrant Children and Adolescents
*Mentor:* Dr. Susan Quelly (Nursing)
A literature review was conducted to analyze the association of acculturation factors on the prevalence of childhood obesity among U.S. immigrant children and adolescents.

OLIVIA DOWNS
Implementing the SPEAKall! iPad App and Intervention Protocol with a Child with Autism: A Pilot Study
*Mentor:* Dr. Jennifer Kent-Walsh, Dr. Jamie Schwartz (Communication Sciences and Disorders)
This investigation is designed to address the dearth of evidence-based iPad interventions specifically designed to address the communication needs of children with autism spectrum disorder. This pilot study will serve to examine the feasibility of following the SPEAKall! iPad application intervention protocol in a classroom setting to facilitate functional communication.

TIFFANY FABIANAC
Risk Prevention Analysis for Academic Research Laboratories
*Mentor:* Dr. Jose Vazquez Perez (Psychology)
Present results of an impact evaluation of the safety training and laboratory standard requirements provided by the UCF Environmental Health and Safety Department.

KAYLA GAYLE-CAMPBELL
The Relationship Between a Woman's Decision to Use Contraception and Their Partner's Perception of Preventative Health Behaviors
*Mentor:* Dr. Leslee D’Amato-Kubiet (Nursing)
The objective of this research is to analyze how influential a partner’s perception of contraception is on a woman's decision to engage in preventative behaviors. Results of this study are expected to improve information readily available to the young adult population and further promote safe sex and contraceptive practices.

JAMILLAH HAMMOND
The Negative Health Effects Associated with Prescription Drug Misuse and Misuse that is Combined with Alcohol
*Mentor:* Dr. Jason Ford (Sociology)
The purpose of this study is to analyze the negative health effects that prescription drugs, specifically opioids and benzodiazepines, have on misusers and if these negative health outcomes are strengthened when prescription drugs are misused in combination with alcohol.

SARA HANSON
Total Body Water and Its Relationship to Functional Performance in Individuals with Diagnosed Osteoarthritis
*Mentors:* Dr. Sherron Roberts, Dr. Anna Valdes (Educational and Human Sciences)
This study aims to determine if total body water (TBW) values will have a positive correlation to overall performance on balance, strength, and physical function tests in participants with diagnosed osteoarthritis (OA). Furthermore, this study examines the possibility of a relationship between TBW levels and OA pain.

CHRISTINA HIGGINS
The Relationship Between Drug Use and Risky Sexual Behavior
*Undergraduate Co-Authors:* Alissa Gebben, Brandon Harpold, Alex Ross
*Mentor:* Dr. Mustapha Mouloua (Psychology)
This study aimed to find a correlation between drug use and risky sexual behavior. We created a survey to define different levels of risky sexual behavior in relation to substance use. We aim to educate students about the dangers of being under the influence and engaging in risky sexual behavior.

ANNABETH HUFF
The Use of Yoga for Chronic Pain Management in the Pediatric Population
*Mentor:* Dr. Joyce Burr (Nursing)
Chronic pain is uncomfortable and can lead to impaired quality of life. Traditional therapies for chronic pain may be ineffective. Studies have demonstrated yoga is effective in the management of chronic pain, and a review of literature was completed to investigate use within the pediatric population.

LINDA LAVADIA
Augmentative and Alternative Communication Services in the Schools: A Survey
*Mentor:* Dr. Jennifer Kent-Walsh (Communication Sciences and Disorders)
The purpose of the study is to examine: (1) the prevalence of children with severe speech disorders requiring the use of augmentative and alternative communication (AAC), and (2) service-delivery practices and needs in the area of AAC. A survey design methodology will be implemented.

SOPHIA LUNA-WEBB
Comparison of Acoustic Measures in Discriminating Between Those with Friedreich's Ataxia and Neurologically Normal Peers
*Mentor:* Dr. Cecyle Carson (Communication Sciences and Disorders)
The accuracy of time-based versus cepstral/spectral acoustic measures in discriminating between young adults with Friedreich's ataxia (n = 20) and normal-voiced peers (n = 20) was investigated. Prolonged vowels (/E/, /I/, /O/) from participants were analyzed through Praat (freeware) and the Analysis of Dysphonia in Speech and Voice.
CLYDE MARQUEZ
Implications of Health Literacy in Patients with Head and Neck Cancer
*Undergraduate Co-Author:* Naureen Syed
*Mentors:* Dr. Bari Hoffman-Ruddy, Dr. Richard Zraick (Communication Sciences and Disorders)

Health literacy has emerged as an important factor related to clinical outcomes. This study investigates readability scores from clinical instructions and education materials provided to patients with head and neck cancer, specifically patients undergoing total laryngectomy. Correlation of these scores to national guidelines and options for improvement will be presented.

TAYLA MASON
The Effects of Glucose Consumption on Acne Vulgaris
*Undergraduate Co-Author:* Rachel Adriano, Alison Tata
*Mentor:* Dr. Michael Rovito (Health Professions)

The purpose of this study is to examine at least one of the causal factors of acne vulgaris and determine if a lower glycemic diet and the replacement of organic milk in the diet will decrease the outcome of acne on the skin.

LEAH MORISSETTE
Administration Techniques of Subcutaneous Anticoagulant Therapies
*Mentor:* Dr. Kelly Allred (Nursing)

The purpose of this study is to determine current nursing practice related to how nurses administer injectable anticoagulant medications. Results of this study are compared to better practices suggested to limit adverse effects. This research is the first step toward decreasing the incidence of adverse effects associated with anticoagulant medications.

AUTUMN NOBLES
The Behavior Assessment Battery: A Normative and Comparative Investigation Among Adults Who Stutter and Typical Speakers
*Undergraduate Co-Author:* Allison Twyman
*Mentor:* Dr. Martine Vanryckeghem (Communication Sciences and Disorders)

The purpose of this study is to analyze if the subtests of the Behavior Assessment Battery are useful in differentiating adults who stutter from typical speakers. Data will be analyzed for each test to determine between-group differences and possible within-group gender effect. Correlation between the tests will be determined.

NICHOLAS OLMEDA
The Use of Fear-Provoking Media to Increase Sunscreen Usage in College-Age Students
*Undergraduate Co-Author:* Kristine Young
*Mentor:* Dr. Michael Rovito (Health Professions)

The following study attempts to induce behavioral changes regarding sunscreen use through fear-provoking messages in media about skin cancer. Taking into account the scare tactics that will affect the behavioral use of sunscreen in college-age students, our research will be based on the Health Belief Model.

KYLE PERKINS
Conservative Treatment of Common Running-Related Injuries: A Systematic Review
*Mentor:* Dr. Carey Rothschild (Health Professions)

To analyze all relevant articles proposing treatment for several of the most common running-related injuries and to compile a list of the most effective conservative treatments for these injuries.

DANIELLE PERNA
The Link Between Prescription Drug Misuse and Suicide
*Mentor:* Dr. Jason Ford (Sociology)

The misuse of prescription drugs is evaluated, in collaboration with data from more than 50,000 respondents age 12 and older, in order to determine the related negative effects of depression and suicide ideation among users.

LINDSAY PERNA
The Risk of Secondary Lymphedema Due to Procedures in the Affected Arm Post-Mastectomy: A Literature Review
*Mentor:* Dr. Leslee D’Amato-Kubiet (Nursing)

This project’s objective is to examine whether procedures done in the affected arm post-mastectomy will increase the risk for women to develop secondary lymphedema in the ipsilateral arm.

JEFFREY PERROTTA
Orthographic Similarities and False Recognition of Unfamiliar Words
*Mentor:* Dr. Marisol Parra (Psychology)

The objective of this study is to gain a deeper understanding of word recognition in both a known language (English) and an unknown language (Spanish). Specifically, the goal is to examine the phenomenon of false recognition driven by orthographic similarities in both English and Spanish for English-speaking monolinguals.

NICHOLAS RESCINITI
Divorce, Separation, and Risky Behaviors Among Fathers: What Are the Connections and How Does It Affect Family Health?
*Mentor:* Dr. Michael Rovito (Health Professions)

I analyzed data from the Fragile Families and Child Wellbeing Survey. I examined married fathers from baseline and followed them up to the 5-year study. This study looked at the differences in married and separated fathers with a focus on behaviors and the impact of their children.

DEBORAH SHIMSHONI
Effect of Caffeine on Migraine Headaches
*Mentor:* Dr. Mohtashem Samsam (Biomedical Sciences)

This research will explore the effects of the most widely consumed drug — caffeine — as it relates to one of the most predominating diseases — migraine headaches. Specifically, it will give special focus to microglial activation, excitation, and caffeine’s effects on disorders with similar pathophysiological processes as migraines.

NAUREEN SYED
Examination of Health Literacy in Patients with Head and Neck Cancer
*Undergraduate Co-Author:* Clyde Marquez
*Mentors:* Dr. Bari Hoffman-Ruddy, Dr. Richard Zraick (Communication Sciences and Disorders)

Health literacy — the ability to read, understand, and apply health information — has emerged as an important factor related to clinical outcomes. This study investigates health literacy in a cohort of head and neck cancer patients before surgical and/or chemoradiation and provides options for improvement based on national guidelines.
ERIC THOMAS
The Effect of Infant Feeding Strategies to Improve Weight Gain Prior to Surgery for Congenital Heart Defects: A Systematic Review
Mentor: Dr. Leslee D’Amato-Kubiet (Nursing)
The objective of this research is to determine the feeding strategies with the greatest impact on improving presurgical weight gain in infants with CHD in order to improve surgical outcomes. Results are expected to lay the foundation for interventional studies in infants with CHD.

ASHLEY TIERNEY
Effects of Fear-Based Messages on Health Behaviors and Body Mass in Obese College Students
Mentor: Dr. Michael Rovito (Health Professions)
This project will explore the impact of fear-arousing messages based on the constructs of the Extended Parallel Process Model on weight loss and other health behaviors in obese college students. This project will aim to explore the use of health behavior theory in weight loss and health behaviors.

ADRIANNA TILTON
Effects of Sexual Risk-Taking Behaviors on Sexual Debuts in Adolescent Males
Mentor: Dr. Michael Rovito (Health Professions)
The objective of this research project is to determine the effects of sexual risk-taking behaviors upon adolescent male sexual debut. By retroactively assessing such risk-taking behaviors, the researcher hopes to better understand potential predictors for earlier versus later sexual debut.

VICKY VAZQUEZ
The Effects of Masculinity and Religiosity to the Quality of Life of Men
Mentor: Dr. Michael Rovito (Health Professions)
This cross-sectional study seeks to evaluate the relation between masculinity and religiosity to the quality of life of men. Convenience sampling will be used to study men who are age 18 and older through the completion of a 61-item questionnaire that will measure masculinity, religiosity, and quality of life.

AHMAD ABDEL-ATY
Correlation Between Selenium-Dependent Glutathione Peroxidase Activity and Diabetes Mellitus, Crohn’s Disease, and Mycobacterium avium Subspecies Paratuberculosis (MAP) Infection
Mentor: Dr. Saleh Naser (Biomedical Sciences)
To determine the correlation between selenium-dependent glutathione peroxidase activity and diabetes, Crohn’s disease, and Mycobacterium avium subspecies paratuberculosis (MAP) infection.

LACIE ANDERSON
Reef Introductions: Quantifying the Success of Crassostrea virginica in New Areas of Brevard County
Mentor: Dr. Linda Walters (Biology)
This field study examines the growth and survival of the Crassostrea virginica oyster on pilot oyster reefs in three locations of the Indian River Lagoon in Brevard County, Florida. Success of these test populations will enable us to consider large-scale, countywide deployments of C. virginica to improve water quality.
DIANA CARVEL
Nitration Hsp90 and Elevated Nitrotyrosine Levels in Glioblastoma

Mentor: Dr. Alvaro Estevez (Biomedical Sciences)

Glioblastoma is the most common and malignant brain cancer. Tyrosine nitration is present in the human glioblastoma U87 cell line. Particularly, nitration of the molecular chaperone heat shock protein 90 increases with cell culture density. We hypothesize that tyrosine nitration is involved in the survival, proliferation, and metastasis of glioblastoma.

LUKE CHANDLER
Repopulation of Long-Spined Sea Urchins to Promote Coral Reef Restoration

Mentor: Dr. Eric Hoffman (Biology)

Long-spined sea urchins, Diadema antillarum, suffered a population crash that resulted in coral reef decline in 1983. Our study assesses whether captive-bred populations of the D. antillarum are genetically similar to wild populations. Our aim is to determine if broodstock D. antillarum can be released into the wild.

MALCOLM CHAPMAN
LIM Kinase 1 and Regulation of the Chemokine Receptor CXCR4 in Prostate Cancer Cells

Mentor: Dr. Ratna Chakrabarti (Biomedical Sciences)

We plan to investigate the involvement of LIMK1/cofilin axis in surface expression of CXCR4. CXCR4 is a chemokine receptor, and its higher expression is associated with poor survival of advanced prostate cancer patients. The objective is to use a non-phosphorylatable mutant of cofilin to assess the membrane targeting of CXCR4.

KATHRYN CLINE
Microenvironment Changes in the Pancreatic Stroma Induced by Genetic Mutation and Inflammation

Mentor: Dr. Deborah Altomare (Biomedical Sciences)

Investigating the connection between inflammation, pancreatic microenvironment rearrangement, and immune response in tumor formation by immunostaining tissue samples from constitutively active KRas and Akt mouse models in order to elucidate the histology of mouse pancreatic tissues during treatment with cerulein.

LOUISA COLLINS
The Potential of Behavioral Fever and Parasite Manipulation in Drosophila melanogaster

Undergraduate Co-Author: Edward Musto
Mentor: Dr. Kenneth Fedorka (Biology)

Our objective was to detect if parasite manipulation and behavioral fever exists in Drosophila melanogaster infected with a bacterial pathogen.

MARIA CROSBY
Islands in the Sun: A UCF Urban Heat Island Study

Undergraduate Co-Authors: Keith Berry, Peter Denis III
Mentor: Ms. Alaina Bernard (Biology)

To determine if the UCF main campus is warmer due to urban heat island effects. Focus was placed on the horizontal spread of thermal effects from the urban center to surrounding natural lands.

ANTHONY CUMINALE
Movin' On Up! Insects Find Better Habitat Among Mangroves Than Salt Marsh Plants

Mentor: Dr. Linda Walters (Biology)

Our objective is to gain an understanding of how the abundance and diversity of insects is changing as mangrove trees extend northward due to climate change.

ANDI CUMMINS
Identification and Characterization of Putative Interactors in Plasmodium falciparum

Mentor: Dr. Debopam Chakrabarti (Biomedical Sciences)

This project focuses on the characterization of proteins that have been previously shown to interact with Plasmodium falciparum protein kinase 6. Characterizing this kinase’s interactors is critical to determining its role in the parasite, which may eventually reveal the protein to be a novel drug target for new malaria therapies.

JULIE DESLAURIERS
Preventing Introductions to Sustain Healthy Ecosystems: Establish Eradication Protocols for a Popular Aquarium Seaweed

Mentor: Dr. Linda Walters (Biology)

Chaetomorpha, the most widely used macroalgae among aquarium hobbyists, has previously been identified as a potential invasive species. In order to preserve the integrity of coastal ecosystems, this experiment determined the minimum dosage of acetic acid needed to eradicate Chaetomorpha. Results will provide aquarium hobbyists with a responsible disposal method.

ALEXANDRIA DEVORE
Evaluation of the Composition and Formation of Household Dust for the Forensic Analysis of Human Bioparticles Present in Dust Samples

Mentors: Dr. Jack Ballantyne, Dr. Erin Hanson (Chemistry)

The goal of this project was to characterize the composition of household dust from both macroscopic dust bunnies and surface dust. We performed experiments to monitor the formation of dust over time to begin to understand how dust is formed and possibly how it accumulates into a macroscopic dust bunny.

VIKRAM DHILLON
Neoplastic Metastasis via Differential Splicing

Mentor: Dr. Xiaoman Li (Biomedical Sciences)

In this project, the impact of differential splicing on cell receptors was analyzed. The tumor microenvironment influences tissue adaptation, and alternative splicing can greatly vary protein interactions in breast-to-brain metastasis that leads to terminal cancers.

CHRISTOPHER DOWLATRAM
The Use of PLGA Nanoparticles to Carry a Therapeutic Peptide into Breast Cancer Cells

Mentor: Dr. J. Manuel Perez (Chemistry)

The effectiveness of poly (lactic-co-glycolic acid) or PLGA as a carrier for the anticancer/therapeutic peptide CT20p will be examined to determine its viability as a treatment for breast cancer in vitro.

KATELYN DUNIGAN
The Effect of Wetland Water Chemistry on Nonnative Apple Snail (Pomacea maculata) (Ampullariidae) Distribution

Mentor: Dr. Pedro Quintana-Ascencio (Biography)

We are investigating the relationship of local environmental variables on the distribution of the invasive island apple snails, Pomacea maculata, across seasonal wetlands at Buck Island Ranch in Lake Placid, Florida. We will be examining snail distribution in relation to wetland water chemistry (calcium/magnesium, pH, dissolved oxygen) within invaded wetlands.
TAHIRY EDD
Identifying Substrates That Interact with the Pfmrk Protein Kinase of the Malarial Parasite Plasmodium falciparum
Mentor: Dr. Depobam Chakrabarti (Biomedical Sciences)
Malaria affects millions every year due to the frequent transfer of the malarial parasite Plasmodium falciparum. This research project is examining how Pfmrk, a malarial parasite kinase, can interact with protein substrates and see if it can show how protein kinases are involved in regulating cell proliferation of P. falciparum.

DEAN EDUN
A Unique Interaction Between Mulan and PACRGL Proteins and Its Potential Role in Mitophagy
Mentors: Dr. Antonis Zervos, Dr. Lucia Cristen (Biomedical Sciences)
Mulan is a mitochondrial E3 ubiquitin ligase involved in mitophagy, and deregulation of this pathway is involved in the development of Parkinson’s disease (PD). My research aims to determine the link between Mulan and a newly characterized protein, PACRGL. Characterizing this interaction may provide new and significant information about PD.

JOSHUA EDWARDS
Mitochondrial Mulan E3 Ubiquitin Ligase Regulates Proteasome Function
Mentor: Dr. Antonis Zervos (Biomedical Sciences)
Mulan is a mitochondrial E3 ubiquitin ligase with an important role in mitophagy. Mitophagy is the process that removes damaged mitochondria, and its deregulation can lead to many age-related diseases, including neurodegeneration. The objective of this project was to identify novel proteins regulated by Mulan that are involved in mitophagy.

JUSTIN GRAY
Constructing Krüppel-Like Factor 8 Activation and Repression Domain Mutants for Transgenic Mouse Model Study
Mentor: Dr. Jihe Zhao (Biomedical Sciences)
The focus of the project was to construct a plasmid that would aid in determining the function of KLF8 activation and repression domain mutants in an in vivo system. This was done through utilization of recombinant DNA technology.

JASON HENDERSHOT
Live Rock and Macroalgae: A Hitchhiker’s Guide to the Aquarium
Undergraduate Co-Authors: Gabriel Abreu, Lindsay Arick, Lacie Anderson, Amanda Binnion, Victoria Brodie, Sonja Cames, Michelle Cardenas, Ciara Coffell, Joseph Cordell, Caitlin Dombrowski, Heidy Hartley
Mentor: Dr. Linda Walters, Ms. Madison Hall (Biology)
To evaluate the different types of organisms found on commercially available live rock and macroalgae. In order to identify which organisms accompanied each sample, all pieces were kept in their own tanks and tested for biodiversity throughout the duration of the experiment.

JORGHE HERNANDEZ
Genetic Deletion of the SOD Copper-Binding Site Does Not Prevent Catalysis of Nitration by Peroxynitrite
Mentor: Dr. Alvaro Estevez (Biomedical Sciences)
This was a study on an amyotrophic lateral sclerosis (ALS) mutant protein and its ability to cause toxicity in vitro. The project should lead us closer to understanding the biochemical pathway that leads to an ALS disease state.

CAITY HERNDON
Understanding the Role of a Hemerythrin-Like Protein in Mycobacterium tuberculosis
Mentor: Dr. Kyle Rohde (Biomedical Sciences)
This project aims to characterize the role of a unique protein that may be contributing to the survival of Mycobacterium tuberculosis in host immune cells. Using reverse genetics, fluorescent promoters, and polymerase chain reaction, we will generate tools to study the regulation and roles of this previously unstudied protein.

LAURA HERNDON
Identification of the Domain(s) in Protein Disulfide Isomerase Required for Binding and Disassembly of the Cholera Holotoxin
Mentor: Dr. Kenneth Teter (Biomedical Sciences)
The goal of this project is to identify which domain(s) of protein disulfide isomerase is responsible for binding to the cholera toxin A1-subunit and dislodging it from the cholera ABS-type protein holotoxin within the endoplasmic reticulum.

JACOB KIMMEL
Alginate-Based Hydrogels as a Delivery Vector for Stem Cells and Growth Factors
Mentor: Dr. Swadeshmukul Santra (Biomedical Sciences)
Nonunion bone fractures are a clinical challenge that may be addressed by delivery of stem cells or stem cell-modulating factors. We assess the potential for an alginate-based hydrogel (CapGel) to act as a delivery vector for adipose-derived stem cells and osteogenic differentiation factors in this context.

PREETI KUMRAH
The Use of Fixed-Quat Silica Nanoparticles (FQ-SiNPs) to Prevent and Treat Acinetobacter baumannii Biofilms
Mentor: Dr. Swadeshmukul Santra (Biomedical Sciences)
To assess the potential of using FQ-SiNPs to prevent and treat Acinetobacter baumannii biofilms through a series of antimicrobial and cytotoxic assays.

NICOLE LAMA
Design of a Pull-Down Assay to Study the Affinity of Hsp90 Inhibitors for Nitrates Hsp90
Mentor: Dr. Alvaro Estevez (Biomedical Sciences)
The objective is to test the affinity of geldanamycin to heat shock protein 90 (Hsp90) and nitrated Hsp90.

LAUREN LANOUX
AquaWeb: An Assessment of Online Marine Biodiversity Available in Central Florida
Undergraduate Co-Authors: Catherine Woolwine, Kathryn King, Kayla Born, Cody Brannon, Deetra Ware, Valencia Olysse, Janet Ho, Keisha Claudio, Gabriela Carmo, Jessy Blough-Wayles, Kayley Polk, Jacklyn Matteo, Hibatoum, Savannah Mulvey, Christopher Turdo, Kristen Garcia, Lesi Li, Rosita Mihaylova, Sheldon Smith
Mentors: Dr. Linda Walters, Dr. Ryan Chabot (Biology)
Since the aquarium trade has increased the probability of invasive species introductions, our objective was to assess the availability of organisms in the online aquarium market that would ship to Central Florida, and identify the potential threat of nonnative species to the area.
AARON LEDRAY
Characterizing the Onset and Progression of Charcot-Marie-Tooth Disease in H304R Mice
Mentor: Dr. Stephen King (Biomedical Sciences)
The goal of this project was to study the onset and progression of Charcot-Marie-Tooth disease by performing a comparative analysis of H304R mutant mice.

CLARA LEUNG
The Role of Monoclonal Antibodies in Migraine
Mentor: Dr. Mohitashem Samsam (Biomedical Sciences)
We investigate the potential use of monoclonal antibodies as treatment of migraine headaches through examination of the role of calcitonin gene-related peptide in the pathophysiology of migraine.

JENNA LEVY
Mechanistic Roles of a MicroRNA 17-92 Cluster in Development of Anti-Androgen-Resistant Prostate Cancer Cells
Mentor: Dr. Ratna Chakrabarti (Biomedical Sciences)
We intend to study the effects of mir17-92 expression on sensitivity of androgen-independent prostate cancer cells to common chemotherapeutics such as Docetaxel and Aurora kinase inhibitors.

STEVEN MCKENZIE
Site-Directed Mutagenesis of the Hemerythrin-Like Protein (Rv2633c) and Subsequent Protein Characterization
Mentor: Dr. William Self (Biomedical Sciences)
To successfully mutate the gene encoding the hemerythrin-like protein gene (Mycobacterium tuberculosis), to transform this plasmid into Escherichia coli, to express this gene, and to perform subsequent experiments to determine whether these mutations alter the putative protein cofactor.

MORGAN MCSWEENEY
A Novel Three-Dimensional Bioengineered Human Nose to Accurately Model Nasal Carriage of Staphylococcus aureus
Mentor: Dr. Alexander Cole (Biomedical Sciences)
We developed a 3-D bioengineered model of a human nose as an in vitro system for the study of Staphylococcus aureus. This model will have epithelial cells, fibroblasts, and peripheral blood mononuclear cells growing together as an organ within a scaffold and used as a novel model of nasal mucosa.

MEAGAN MINADIE
Pets to Pests: The Role of Central Florida Aquarium Stores as an Invasion Pathway for Nonnative Species
Undergraduate Co-Authors: Justin Brown, Brandon White, Jeremi McRae, Bryan Dieterich, Corey Lloyd, Cody Sparaco, Edward Grammer, Amanda Walker, Jennifer Griffith, Dylan Adams, Jacob Conley, Alex Troyer, Suzanne Connor, Monica Perez, Leanne Ottaviano, Brooke Lestetter
Mentors: Dr. Linda Walters, Ms. Panagiota Makris (Biology)
Aquarium hobbyists may negatively impact our coasts if their tanks are disposed of improperly and the organisms establish in coastal waters. Seventeen aquarium hobbyist stores in Central Florida were surveyed to determine what species were available for sale and what preventative education was provided to hobbyists.

SHIALA MORALES
The Effects of Sublethal Doses of Imidacloprid on Survival and Cleaning Behavior in Nurse Honey Bees
Mentor: Dr. Pedro Quintana-Ascencio (Biology)
We hypothesized that honey larvae fed pollen and nectar contaminated with sublethal doses of imidacloprid may not develop normal cleaning behavior, which may lead to an increase of unavailable brood cells.

AMNA NASER
Correlation Between Serum Osteocalcin Concentration and Mycobacterium avium subspecies paratuberculosis (MAP) Infection Abstract
Undergraduate Co-Author: Ahmad Abdel-Aty
Mentor: Dr. Saleh Naser (Biomedical Sciences)
To measure the correlation between Mycobacterium avium subspecies paratuberculosis (MAP) infection and osteocalcin in bovine serum.

APRIL NGUYEN
The Effect of Bacterial Vaginosis-Associated Bacteria on Epithelial Factors Mediating HIV Transmission
Mentor: Dr. Alexander Cole (Biomedical Sciences)
Bacterial vaginosis (BV) is a female reproductive tract microbial shift condition associated with increased transmission of HIV. The exact role BV plays in HIV transmission is unclear. This study aims to explore the interaction between BV-associated bacteria and FRT epithelia in order to determine factors that may facilitate HIV infection.

KHOA NGUYEN
Screening for Anticancer Agents to Inhibit Mitotic Kinases and Proliferation of Metastatic Prostate Cancer Cells
Mentor: Dr. Ratna Chakrabarti (Biomedical Sciences)
Aurora-A kinase is a mitotic kinase facilitating centrosome separation and bipolar spindle formation; overexpression in metastatic prostate cancer cells makes it a potent target for anti proliferative drug therapies. High-throughput screening of synthetic compound libraries was used to identify potent antimitotic agents for the treatment of advanced, metastatic prostate cancer.

MELISSA PADUANI
How “Natural” Are Shoreline Plant Communities in Constructed Stormwater Ponds?
Mentor: Dr. Patrick Bohlen (Biology)
This project examined whether littoral zone plant communities in stormwater detention ponds were similar to those in natural lakes. I hypothesized that plant communities in stormwater ponds would contain more species characteristic of disturbed habitats. The data may guide management practices to improve the habitat quality of the constructed systems.

JENNA PAPPALARDO
Compound Screen for Identifying Novel Clostridium difficile Therapeutics
Undergraduate Co-Author: Andrew Dakkak
Mentor: Dr. William Self (Biomedical Sciences)
Clostridium difficile is an emerging nosocomial pathogen, impacting both patient health and health care costs. Novel, narrow-spectrum antibiotics are in demand to avoid unnecessary disturbance of normal gut flora. Performing a compound screen against the most clinically relevant C. difficile strain provides an avenue for discovery of such potential therapeutics.
IVORY PAULK
Nitration of Hsp90 Under Hypoxic Conditions in Glioblastoma Multiforme Cells
Mentor: Dr. Alvaro Estevez (Biomedical Sciences)
The purpose of the project is to explore the regulation of mitochondria metabolism in relation to the nitration of heat shock protein 90 (Hsp90) in glioblastoma multiforme cells at high and low density. This may help in revealing the regulation of energetic metabolism of mitochondria in hypoxic conditions.

MARIA-GRAZIA PIEDRAHITA
Discovery of Novel Antimalarials from Natural Product-Inspired Library
Undergraduate Co-Author: Kaitlyn Parker
Mentor: Dr. Debopam Chakrabarti (Biomedical Sciences)
Malaria is a disease caused by the parasite *Plasmodium falciparum* that kills over 1 million people annually. Widespread drug resistance results in a need for antimalarials with novel mechanisms of action. The goal of this project is to identify many potent and selective novel antimalarial compounds.

CHRISTIAN PILATO
Is It Worth It? The Value of UCF’s Natural Lands
Undergraduate Co-Author: Suzanne Connor
Mentors: Ms. Alaina Bernard, Ms. Jennifer Elliott (Biology)
Our group assessed the economic value of the natural lands on the UCF campus by comparing water quality between retention ponds and wetlands, analyzing the value of our pollution sequestration, providing a monetary value for wetland ecosystem services, and analyzing the effect on the market value of the surrounding neighborhoods.

AARON POLLOCK
Defining the Scope and Regulation of the Antibiotic and Macrophage Inducible WhiB7 Regulon of Mycobacterium tuberculosis
Mentor: Dr. Kyle Rohde (Biomedical Sciences)
This study focuses on genetic engineering an in vitro model of the transcriptional activator WhiB7 and its regulation of the Tap multidrug efflux pump encoded by Rv1258c and other downstream genes.

LAURA Puentes
Site-Specific Structural Changes in Unmodified and Pyroglutamylated Amyloid Beta Peptide
Mentor: Dr. Suren Tatulian (Physics)
Pyroglutamylated amyloid beta (pE-Abeta) has been linked to increased cytotoxicity in the pathogenesis of Alzheimer’s disease. The objective of the project is to examine secondary structural changes of amyloid beta (Abeta) peptide and the pyroglutamylated (pE-Abeta) species upon co-incubation, utilizing Fourier transform infrared spectroscopy (FTIR).

MARVI QURESHI
Analysis of the Role and Pathomechanism of the Neuropeptide CGRP in Primary Headaches and the Evaluation of Current Treatment Plans
Mentor: Dr. Mohtashem Samsam (Biomedical Sciences)
The neuropeptide CGRP is examined, through a description of the three phases of a typical migraine, in its involvement in the pathophysiology of the migraine. The importance of CGRP is analyzed by its role in migraine onset, results for laboratory tests conducted, and a comparison of CGRP-related treatment plans.

ASHLEY RAMIREZ
Engineering an Improved Recombination System Using Antibiotic Resistance
Mentor: Dr. Sean Moore (Biomedical Sciences)
The goal of this project is to use a synthetic-lethal screening system to reveal the functions of orphan genes. The immediate focus has been to engineer a genetic tool that serves as a reporter system for successful integration of the orphan genes into the model organism (*E. coli*).

TYTON ROBERTS
Discovery of Novel Antimalarials from Marine Microbial Extracts
Mentor: Dr. Debopam Chakrabarti (Biomedical Sciences)
In response to widespread resistance to antimalarial therapeutics, we have screened over 2,500 compounds from natural marine sources to determine antimalarial potency in novel and diverse scaffolds. These marine microbial extracts exhibiting effective inhibition against malaria will be further purified and advanced through the drug development process.

COREY RODAS
Silk Fibroin Electrospun Nanostructures for Biomedical Applications
Mentor: Dr. Sudipta Seal (Materials Science and Engineering)
Our research focuses on utilizing the unique properties of electrospun, natural, silk fibroin biopolymer extracted from *Bombyx mori* silkworm cocoons in order to explore new ideas and applications in medicine at the nanoscale, such as regenerative wound dressings and controllable drug delivery systems.

JESSICA SANDOVAL
Impact of Roosting Bats on Urban Stormwater Quality
Mentor: Dr. Patrick Bohlen (Biology)
Roosting bat colonies on the UCF campus will be examined to determine colony size, seasonal guano production, and the impact of deposition onto urban structures that feed into stormwater systems. Laboratory experiments will be conducted to examine stormwater quality and nutrient release of guano in water.

COREY SEAVEY
Analysis of the Mechanism of Action of the Anti-Migration/Anti-Metastatic Compound Dihydromotuporamine C Using a Leg Imaginal Disc Eversion Assay
Mentor: Dr. Laurence Von Kalm (Biology)
A known anti-metastatic compound, motuporamine C, has been tested in developmental tissue in order to distinguish and discriminate what makes the drug effective at blocking cell migration and what makes the drug toxic, in order to define the cause of each phenotype.

DANIEL SEGARRA
Elucidating the Molecular Pathway of Atypical *Plasmodium falciparum* Kinase PIPK7 Through Substrate Characterization
Mentor: Dr. Debopam Chakrabarti (Biomedical Sciences)
The main objective of the proposed research is to understand the physiological function of *Plasmodium falciparum* protein kinase 7 (PIP7K), which has earlier been shown to have a role in regulating parasite growth in the erythrocyte.
MICHELLE SHAFFER
Propagule Trapping: Examining the Rate of Successful Rhizophora mangle Propagule Recruitment Along the Restored Shorelines of Turtle Mound

Mentor: Dr. Linda Walters (Biology)

The purpose of my study is to monitor the successful recruitment of red mangrove propagules along restored shorelines of Turtle Mound National Historic Site in Canaveral National Seashore. The results contribute to documenting positive impacts of shoreline stabilization projects.

AALOK SHAH
A Whole New Meaning to Medicinal Plants: Expression of Angiotensin-(1-7) in Chloroplasts for Treatment of Cardiovascular Diseases via Oral Delivery

Mentor: Dr. Henry Daniell (University of Pennsylvania)

The therapeutic plants expressing angiotensin-(1-7) were created to treat pulmonary hypertension via oral delivery. The plants were created and confirmed using a gene gun and Southern blot analysis, respectively. Oral delivery of the leaf materials retarded the progression of hypertension and improved cardiopulmonary functions in rats.

FRANK SUAREZ
The Effects of Leaf Herbivory on Established Seedlings of the White Mangrove (Laguncularia racemosa)

Mentor: Dr. Melinda Donnelly (Biology)

This study examines the effects of various degrees of leaf herbivory on the survival and growth of established seedlings of the white mangrove (Laguncularia racemosa).

MOHAMMED TALEB BENNIS
Effects of GHRKO Visceral Fat Transplant on Insulin Signaling

Mentor: Dr. Michal Masternak (Biomedical Sciences)

By testing genes expression and proteins quantification compared between different mice groups, we determine the mechanism behind insulin resistance and the process by which visceral fat regulates the body’s insulin, signaling in the absence of growth hormones. This can help us understand type 2 diabetes and insulin action during aging.

JOANE TITUS
Selective Nitration of Hsp90 by Peroxynitrite in the Presence of ALS-Linked Mutant SOD

Mentor: Dr. Alvaro Estevez (Biomedical Sciences)

The goal of this project is to identify a change in mutated gene superoxide dismutase (SOD) due to mutations within human pathology. These mutations stimulate motor neuron apoptosis in neurodegenerative disease amyotrophic lateral sclerosis (ALS) through the selective nitration of heat shock protein 90 (Hsp90) in the presence of peroxynitrite.

JEFFDY TREMBLAY
Testing the Effect of Vitamin C on Epigenetic Revisions as a Cancer Therapeutic

Mentor: Dr. Mark Muller (Biomedical Sciences)

Vitamin C has often been speculated as a potential cancer treatment, but its exact mechanism is not well-understood. My research focuses on evaluating vitamin C’s role in regulating the epigenetic revisions that occur in cancer to reverse gene silencing and return the cells’ abilities to control their growth.

BRADFORD TREMBLAY
Inhibition of ASK1 Prevents P2X7-Mediated PC12 Cell Death

Mentor: Dr. Alvaro Estevez (Biomedical Sciences)

Our objective is to investigate the role of apoptosis signal-regulating kinase 1 (ASK1) in P2X7 receptor-mediated cell death. Characterization of these mechanisms will lead to better understanding of the molecular pathways activated in neurodegeneration, helping to develop more efficient strategies for treatment of conditions such as amyotrophic lateral sclerosis and Parkinson’s disease.

LAHARI TUMULURI
Validation of a Genetically Targeted Adrenergic-Specific Cellular Suicide in the Developing Heart

Mentor: Dr. Steven Ebert (Biomedical Sciences)

Running western blots to quantitatively determine the amount of PNMT production in transgenic versus wild-type mice. Staining heart sections and viewing them for phenotypic defects. Lastly, running a drug rescue using isoproterenol to determine if the cardiac defects are due to loss of PNMT cells versus a loss of adrenaline/noradrenaline.

ZINA VERSFELD
Development of a Fluorescent Drug-Screening Platform for Inhibitors of Mycobacterium tuberculosis Protein-Protein Interactions

Mentor: Dr. Kyle Rohde (Biomedical Sciences)

The directive of the study is to optimize the fluorescent M-PFC drug-screening platform, develop fluorescent M-PFC reporter strains with interacting protein partners, and perform a drug screen to identify novel drugs that inhibit PPIs essential for Mtb pathogenesis.

KALEY WILBURN
Development of Novel Fluorescent Tools for Investigating Virulence Factors and Drug Susceptibility in Mycobacterium tuberculosis

Mentors: Dr. Kyle Rohde, Dr. Kenneth Teter (Biomedical Sciences)

This project focused on creating innovative fluorescent tools that are useful to study and combat the mechanisms that make Mycobacterium tuberculosis a dangerous bacterium and the causative agent of tuberculosis. The project was further motivated to investigate the applicability of these tools to discovering novel treatments for this disease.

ARELYS ZAMORA
Biophysical Characteristics of Human RNA Helicase DDX1

Mentor: Dr. Eda Koculi (Chemistry)

We aim to understand the enzymatic activity of DDX1, a human RNA helicase, due to its involvement in the replication of the HIV-1 virus and upregulation in several cancers, including retinoblastoma. More specifically, to understand the role of its unique SPRY region in the enzymatic activity of DDX1 adrenaline.
PHYSICAL SCIENCES AND
MATHEMATICS

AUSTIN ANDERSON
Micro-Raman Spectroscopy of the Conductive Polymer Poly(2,2’-bithiophene)(PBTP) and Heavy Metal Incorporation
Mentors: Dr. Alfons Schulte, Dr. Suzanne Lunsford (Physics)
The objective of this project is to study the conductive polymer PBTP along with lead-incorporated PBTP using micro-Raman spectroscopy and compare it to electrochemical analysis of the polymer and the polymer-lead system.

STEPHANIE ARMAS
Indirect Potentiometric Detection of DNA Hybridization Using a Four-Way Junction System
Mentor: Dr. Karin Chumbimuni-Torres (Chemistry)
Ion-selective electrodes (ISEs) are used to indirectly detect different hybridized DNA target sequences without altering the sensor, thus developing an inexpensive, reliable tool to be used at the point of care. This is possible through the use of a four-way junction and potentiometric detection as its platform.

CHRISTOPHER BARSOUM
Bead EjectA Dynamics Study (BEADS)
Mentors: Dr. Joshua Colwell, Dr. Adrienne Dove (Physics)
The Bead EjectA Dynamics Study (BEADS) is a laboratory experiment set up to simulate impacts into planetary and small-body objects. The results obtained from this experiment help create a better knowledge of planetary surface dust and regolith dynamics, which is essential in understanding the evolution of a planet or small-body surface.

ANTONIA BASS
Synthesis and Characterization of Metal-Conjugated Microbicalid Chitosan Nanoparticles
Mentor: Dr. Swadeshmukul Santra (Chemistry)
Chitosan, a biopolymer derived from chitin, has been known to possess antimicrobial properties. Metal-conjugated chitosan nanoparticles gain enhanced antimicrobial abilities. We developed various variants of chitosan nanoparticles conjugated to either zinc, copper, or both. Characterization methods and antimicrobial assays were conducted to ensure the development and efficacy of nanoparticles.

DANIEL BATISTA
Optimization of Multiphoton Direct Laser Writing Material and Development Process for Spatially Variant Photonic Crystals
Mentor: Dr. Stephen Kuebler (Chemistry)
The optimization of the multiphoton direct laser writing (DLW) material and development process for spatially variant photonic crystal (SVPC). SVPC is a 3-D nanostructure exhibiting the phenomena of self-collimation, bending the direction of light without scattering. SVPC’s ability to manipulate light has a potential for practical use in applied photonics.

ROBERT BAUER
An Analytic Perspective on the Nine Cayley-Klein Geometries of the Plane
Mentor: Dr. Costas Efthimiou (Physics)
The objective of this work is to analyze the relationship between the algebras of three kinds of complex numbers and geometry. We explore the nine Cayley-Klein geometries of the plane under the framework of I.M. Yaglom and derive analytic representations of the line elements for each geometry.

SEBASTIEN BENOIT
Experimental Design for Simultaneous Measurements of Convective Heat Transfer in Magnetic Fluids Under Two Different Configurations
Mentor: Dr. Weili Luo (Physics)
To reduce experimental time and total error of an experiment, a vacuum chamber — transparent to magnetic fields and capable of simultaneously holding two sample cells — was designed and will be built. The results obtained will be compared with the results of the single-cell chamber.

ENRIQUE BLANCO
Nernstian Response of Nonconditioning Ion-Selective Electrodes for Cations and Anions
Mentor: Dr. Karin Chumbimuni-Torres (Chemistry)
Significant amounts of effort in the ion-selective electrodes (ISEs) field are spent researching ways to reduce preparatory steps of the sensors. Here we present ISEs for cations (sodium and silver) and anions (iodide) that avoid the need of conditioning. This would enable nontrained personnel to use ISEs quickly and reliably.

JAMES BOONE
Characterization of Metastable Photoacids for the Use in Ion-Selective Optodes
Mentor: Dr. Karin Chumbimuni-Torres (Chemistry)
This research created two new reversible photoswitches for use in ion-selective optodes.

DANIEL CERKONEY
Theoretical Study of Excitation and Ionization of Atoms in the Upper Atmosphere
Mentor: Dr. Haripada Saha (Physics)
The electron impact ionization of highly charged carbon atoms was examined by using the most accurate multiconfiguration Hartree-Fock method, extended to include initial state electron correlation effects, to calculate the ionization cross section for this interaction at excess energy 2 eV shared equally by the two final state continuum electrons.

AMANDA COX
Using Tile Associated 10-23 Deoxyribozyme to Increase Catalytic Efficiency and Improve Detection Limits of Biosensors
Mentor: Dr. Dmitry Kolpashchikov (Chemistry)
This project compares the catalytic efficiency of 10-23 deoxyribozyme (Dz) free in solution and associated with DNA antenna tile. The tile contains hooks that bind and concentrate the Dz substrate within its active center. Therefore, we expect to observe an increase in catalytic efficiency and lower detection limits of Dz-based biosensors.

DREW DOYLE
Regression Analysis of the Levels of Chlorine in the Public Water Supply in Orange County, Florida
Mentor: Ms. Keicy Ellis (Statistics)
In the interest of obtaining a better understanding of what variables affect the levels of chlorine in the water, this research will use a regression analysis of a particular set of water samples randomly collected from locations in Orange County, Florida.

REID FERGUSON
Heavy Metal Encapsulation by Poly(3-Methylthiophene) (P3MT): A Micro-Raman Spectroscopic Study
Mentor: Dr. Alfons Schulte (Physics)
The goal of this project is to analyze, with micro-Raman spectroscopy, electrochemically grown poly(3-methylthiophene) and its ability to encapsulate heavy metal pollutants (lead, Pb).
ANDREW FOSTER
Secondary Eclipse Observations of the Hot Jupiter HAT-P-30-WASP-51b
*Mentor:* Dr. Joseph Harrington (Physics)
We took photometry data for two secondary eclipses of HAT-P-30-WASP-51b using the Spitzer Space Telescope. This data helps to constrain the orbit and atmosphere of the planet.

JUSTIN GARLAND
Observation and Analysis of Secondary Eclipses of WASP-32b
*Mentor:* Dr. Joseph Harrington (Physics)
This project is an analysis of the secondary eclipse of the exoplanet WASP-32b in preparation to publish results for its brightness temperatures in two wavelengths as well as atmospheric models for the planet. Work was done using our group’s pipeline written in Python and C.

MATEO GOMEZ GOMEZ
Cooling Rates and Ice Crystals
*Mentor:* Dr. Weili Luo (Physics)
This research is aimed at understanding the properties of water when it transitions to a solid state. We believe there should be some correlations between treatment and differences in crystal structure. Although the crystallization of water has been observed for centuries, research in the cooling rates has not been observed.

ASMAIL HABACH
Micro-Raman Spectroscopy of Carbonaceous Chondrite Meteorites
*Mentor:* Dr. Alfons Schulte (Physics)
Probe microstructure and chemical composition of meteorites nondestructively using Raman spectroscopy.

ASHLYN HALE
Degradation of 1,2-Dichloropropane with Microscale Zero-Valent Iron and B Vitamins
*Undergraduate Co-Authors:* Matthew Rollando, Patrick Cole
*Mentor:* Dr. Cherie Yestrebsky (Chemistry)
As a toxic compound, the dechlorination of 1,2-dichloropropane (1,2-DCP) was investigated through a reduction process utilizing microscale zero-valent iron in the presence of B vitamins. This method will then be developed to remediate groundwater supplies contaminated with 1,2-DCP.

GEENA ILDEFONSO
Hilbert Spaces
*Mentor:* Dr. Zhe Liu (Mathematics)
The research objective is to explore the applications of Hilbert spaces in quantum, statistical, and classical mechanics. Hilbert spaces have many contributions to the physical world by generalizing the notion of Euclidean space. They play a significant role in wave equations, heat equations, and different aspects of partial differential equations.

REBEKAH KARADEEMA
General Method for Analysis of Nucleic Acid Structures by Deoxyribonuclease Sensors
*Mentor:* Dr. Dmitry Kolpashchikov (Chemistry)
This project employs binary deoxyribonuclease probes to target RNA secondary structures in order to make determinations about their stability at near physiological conditions. Experimental methods for studying RNA structures are lacking, so this method provides an easy, inexpensive way to study secondary structures in the aim to understand their function.

SAMANTHA MENSEAH
Development of a Paper-Integrated Ion-Selective Device with Joint Reference and Working Electrodes
*Undergraduate Co-Author:* Andrew Manhan
*Mentor:* Dr. Karin Chumbimuni-Torres (Chemistry)
Development of a single device containing both the reference and working electrodes for electrochemical analysis would present a superior alternative to traditional multielectrode setups. This research proposes such a device by bypassing the pretreating step of each individual electrode in its analyze solutions via a novel method of instantaneous pretreating.

MICHAEL MITCHELL
Identifying Products from TF and Clavulanic Acid Reaction for HIV-1 Reverse Transcriptase Inhibitor Development
*Mentor:* Dr. Dmitry Kolpashchikov (Chemistry)
We propose to identify and analyze the products from the reaction between 4-hydroxy-2,5,6-tetrafluorobenzoic acid (TF) and clavulanic acid in order to determine the inhibitor mechanism of HIV-1 reverse transcriptase.

ZAID MOHAMMAD
Naphthalene and Perylene Bisimides as Light-Harvesting Antennae in New Catalysts for Artificial Photosynthesis
*Mentor:* Dr. Fernando Uribe-Romo (Chemistry)
Organic light-harvesting antennae (LHA) integrated into crystalline metal-organic frameworks have the potential to be used for artificial photosynthesis in the fixation of greenhouse gases. In this work we synthesize LHA containing naphthalene and perylene-bisimides in efforts to make a contribution toward the preparation of new artificial photosynthetic systems.

MANUEL MORALES
Calculation of the Terahertz Radiation Patterns from a Superconducting Mesa for the Development of Medical Imaging and Homeland Security Tools
*Mentor:* Dr. Richard Klemm (Physics)
The AC Josephson effect causes terahertz radiation from atomic-scale layered superconducting mesas. We calculate the radiation patterns from an acute pie-shaped mesa and explore the ramifications for the development of Homeland Security and medical imaging equipment, such as explosive and handheld epithelial cancer detection tools.

COURTNEY POWELL
Development of Colorimetric Assay for Sex Determination in Ancient DNA
*Mentor:* Dr. Dmitry Kolpashchikov (Chemistry)
A DNA probe is developed for the purpose of determining sex by analyzing aDNA and producing a color response upon recognition of the amelogenin gene, which is a biomarker for human sex.

GERALD RICHARDSON
Optimization of the Processing of Thermally Deposited Chalcogenide Films for Direct Laser Writing of Targeted Nanostructures
*Mentor:* Dr. Stephen Kuebler (Chemistry)
With a femtosecond-pulsed infrared laser, we have fabricated nanoscaled cylindrical pillars using chalcogenide thin films. We have investigated the relationship between the deposition and laser processing conditions and analyzed the structural characteristics of the chalcogenide thin films.
MERRITT ROBBINS
CATE: Collisional Accretion Experiment
*Mentor: Dr. Joshua Colwell, Dr. Adrienne Dove (Physics)*
An experiment that attempted to simulate collisions between dust and much larger objects in space.

MINA SIDHOM
Cathodoluminescence Study of Radiation Effects in GaN-Based Semiconductor Materials and Devices
*Mentor: Dr. Elena Flitsiyan (Physics)*
The goal of the project is to understand the radiation effects in AlGaN/GaN high electron mobility transistors. Electrical testing, combined with cathodoluminescence and electron beam-induced current measurements, was able to provide critical information on defects induced in the material as a result of gamma irradiation.

ILIA TOLI
Some New Noncryogenic Rocket Fuels
*Mentor: Dr. Shengli Zou (Chemistry)*
Various allotropes of oxygen and nitrogen are studied computationally as candidates for rocket fuels, farming fertilizer, and chemical feedstock. They should be stable and liquid, $O_2$, or solid, nitrogen polymers, at room temperature and pressure. Paths for the synthesis of the various species are proposed. Nitrogen is nanotubes, nanoballs, nanosheets, etc.

NIKIA TOOMEY
A Total Synthesis of a Curvularin: A Novel Anti-Tumor Compound that Occurs Naturally in Fungi
*Undergraduate Co-Author: Luke Eliopoulos*
*Mentor: Dr. Delbert Miles (Chemistry)*
The goal of this research is to carry out an efficient synthesis of sulfur containing curvulin derivatives, which are compounds isolated from natural sources that have shown cytotoxic properties. These compounds are of interest due to their potential as lead compounds for cancer- and disease-fighting agents.

CONRAD TROHA
Adsorption of Fluorine on Single-Layer MoS$_2$: First Principle Study
*Mentor: Dr. Talat Rahman (Physics)*
The adsorption characteristics of fluorine on single-layer MoS$_2$ were studied on a fundamental level using density functional theory calculations.

NATHANIEL TUKDARIAN
Dynamics of a Fluctuating Semiflexible Membrane
*Mentor: Dr. Aniket Bhattacharya (Physics)*
We study the dynamics of membranes comprised of spherical particles connected by bonds of various bending rigidities to better understand a semiflexible membrane.

SHANTAL TUMMINGS
Effect of Gypsum and Residue on Infiltration Rate of Water in Two Soils in Ohio
*Mentor: Dr. Warren Dick (Ohio State University)*
The experiment was performed to replicate agricultural practices in the Midwest. Farmers are using gypsum at an increasing rate as a soil amendment. Through my research it was observed that gypsum application decreases the rate that water can enter into the soil profile.

JOHN VASTOLA
Analytically Evaluating Sums in Quantum and Statistical Physics Using Integral Representations
*Mentor: Dr. Costas Efthimiou (Physics)*
A method of systematically evaluating sums using integral representations is developed and applied to physical problems from statistical and quantum mechanics. In particular, it may be used to solve problems related to partition functions, perturbative expansions, and calculating the expectation values of observables.

JACQUELINE WILLIAMS
The Structural Basis of Neurotoxicity of Alzheimer’s Amyloid $\beta$ Peptide
*Mentor: Dr. Suren Tatulian (Physics)*
The aim of this research is determine the structural basis of neurotoxicity of Alzheimer’s amyloid $\beta$ peptide. Additionally, the soluble oligomers of amyloid $\beta$ peptide can be causatively linked as an alternative source of neurotoxicity as opposed to amyloid $\beta$ peptide fibrils that form senile plaques as the source.

VALENTINA ZAFFINO
Recognition of DNA Sequencing Through Binding of Nucleobases to Graphene
*Mentor: Dr. Abdelkader Kara (Physics)*
Applied density functional theory, with and without the inclusion of van der Waals interactions, to investigate the adsorption of nucleobases (cytosine, guanine, adenine, thymine, and uracil) on graphene with and without defects (divacancy and Stone-Wales).

MIAMOR AGUIRRESAENZ
Literature Review of Deviant Behavior Assessment: Suggestions for Improvements
*Mentor: Dr. Florian Jentsch (Psychology)*
Structured assessments of deviant behavior could be improved by looking at other psychological constructs that have not been currently looked at.

ALESIA ALBURY
Gender and Ethnic Differences in Personality Variables
*Mentor: Dr. Doan Modianos (Psychology)*
Group self-esteem, individualism, collectivism, locus of control, and social dominance orientations will be studied to determine whether or not American men and women differ on these scales. And if so, ethnicity within those genders will be considered as a possible variable for the results.

BRIANNA ALEX
Automation Reliability and Performance Detection Using Two Systems of the Multi-Attribute Task Battery
*Mentors: Dr. Mustapha Mouloua, Ms. Jennifer Leavens (Psychology)*
The present study investigated effects of reliability level on detection performance of an automated aviation task. This study sought to replicate a previous study, examining reliability levels of an automated detection task using the newly developed MATB. Results have implications for cockpit design, pilot-cockpit interaction, simulation, training, and performance assessment.
ELIZABETH ALTAMIRANO
Investigating Acculturation and Psychological Homelessness Among Latinos in Florida
Undergraduate Co-Author: Maimor Aguirresaenz
Mentor: Dr. Charles Negy (Psychology)
In the current study, the aim is to find a relationship between depression and other psychological constructs (acculturation and psychological homelessness) in order to determine high risk factors that may lead to the development of depression among Latinos.

HOLLY BAHAMONDE
The Effects of Western Medicine on the Livelihood of Zulu Traditional Herbal Healers in South Africa
Mentors: Dr. Beatriz Reyes-Foster, Dr. Rosalyn Howard (Anthropology)
Zulu traditional herbal practice was studied in regard to its various uses, frequency used relative to Western medicine, and how it is maintained in KwaZulu Natal, South Africa, to determine the potential problems between Western medicine and Zulu traditional herbal practice in a country with developing health care.

KRISTIN BAYER
How Safe Do You Feel? A Look Into Crime and the Impact It Has on Students’ Housing Choices
Mentor: Dr. Amy Donley (Sociology)
The primary objective of this research is to see whether crime victimization has an impact on students choosing where to live while attending UCF. This includes on- and off-campus housing as well as nonaffiliated housing.

ISEL BEDGOOD
Are Women Really Women in Politics?: An Analysis of Political Participation Through a Sociological Lens
Mentor: Dr. Terri Fine (Political Science)
The purpose of this research is to gauge the progressiveness of American society between the time of second- and third-generation feminism, in efforts to predict the possibility of gender equality in American politics. The present study will examine whether women believe that they can participate in elite politics.

KERSTIN CARTER
Influence of Personality and Writing Prompt on Alleviating Stress Among College Students: Are Certain Styles of Journal Writing More Successful?
Undergraduate Co-Authors: Julie Gaudio, Molly Rendon, Vincent Iula
Mentor: Dr. Shannon Whitten (Psychology)
The current study hypothesizes that different types of writing have varied effects on stress levels, depending on personality type. Participants will be randomly assigned to one of 5 prompts: creative, expressive, reflective, open, or control. The dependent variable will be stress levels before and after each of six writing sessions.

NICHOLAS CASORIO
Multilingualism and Linguistic Relativity
Mentor: Dr. Beatriz Reyes-Foster (Anthropology)
To date I have completed my literature review and my methodology of measurement and analysis for this project. My methodology elucidates the division of colors between native English speakers and speakers of English as a second language. This data allows for an interesting contrast and comparison of a multilingual’s worldview.
LAYLA GHANIM
Hey Lil Mama, Lemme Whisper in Your Ear: Perceptions of Street Harassment on College Students
Mentor: Dr. Amy Donley (Sociology)
Currently, limited research has been done on the prevalence of street harassment and its effects on women. This study seeks to examine the factors that influence perceptions of street harassment on college campus in hopes of shedding some light on the negative impact it has on women nearly every day.

TRINA GILLIAM
The Great Escape: Making the Choice for Upward Mobility
Mentor: Dr. Amy Donley (Sociology)
I researched general attitudes toward motivation for upward mobility, obtaining comparable data of upward mobility individuals versus stagnation populations. Data collection was done at UCF, Eatonville, and low-income areas in Orlando.

CATHERINE GRISTOCK
What Do You Want from Us?: Employer Expectations for Communication Skills
Undergraduate Co-Authors: Esther Valverde, Rebecka Fraser, Jordan Bicasan, Luisa Rosas, Sandra Aponte, Michelle Saddic
Mentor: Dr. Sally Hastings (Communication)
Our research involves interviews with 35 local managers regarding their perceptions of recent college graduates that are employed by their organization. The research project is designed to learn about the graduates communication skill strengths and weaknesses by using thematic analysis to analyze their interview data.

ERIKA HANLEY
Perception of Mental Illness Based upon Its Portrayal in Film
Mentor: Dr. Amy Donley (Sociology)
The objective of the current study was to analyze how depictions of mental illness in film influenced or did not influence the knowledge of the viewers. This research explored the role of the media in forming perceptions and the prevalence of social stigmas.

ERICA HOMEFIELD
Factors of Sexual Assault Victim Blame Amongst Young Adults
Mentor: Dr. Amy Donley (Sociology)
The objective of this research is to identify the factors that influence the attitudes and perceptions of sexual assault victim blaming amongst young adults in today's society.

JENNIFER HUDSON
Institutional Design and Economic Inequality: Socio-Economic Actors and Public Policy in Germany and the United States
Mentor: Dr. Barbara Kinsey (Political Science)
I seek the institutional determinants of economic inequality. I conduct a comparative analysis of the U.S. and Germany of the influence of socio-economic actors, business, and labor on public policy that impacts economic inequality. I assess facets of institutional design that may facilitate the channeling of this influence.

MICHELLE HUGHES
Are Kids Getting Nutritionally Sound Meals in School?
Fat Chance. Feeding Orange County's Kids.
Mentor: Dr. Peter Jacques (Political Science)
My study looks at school lunch menus over the past 20 years in Orange County, Florida. I looked for trends and patterns within my data set over the past 20 years to establish a historical look at where lunch food has been and where it's going in the future.

NATALIE IKERD
Iran-Saudi Ties: Conflict and Cooperation Between Two Muslim States
Mentor: Dr. Houman Sadri (Political Science)
This research is focused on dissecting the conflict among two of the largest, and arguably, most influential states in the Persian Gulf region — Iran and Saudi Arabia.

VINCENT IULA
Free to Be Accountable: Extended Self as a Moderator of Cheating Among Those Who Discover There Is No Free Will
Mentor: Dr. Shannon Whitten (Psychology)
The aim of this project is to explore a psychological process that may give rise to the observed cheating effect that occurs when people consider the notion that they have no free will. The current experiment will test a priming mechanism by which this effect may be moderated.

NICHOLAS JAMES
Exploring a Relationship Between Social Anxiety Disorder and Bilingualism
Mentor: Dr. Deborah Beidel (Psychology)
This study investigated the relationship between bilingualism and social anxiety disorder by looking at individual and historical differences (e.g., social anxiety, language expertise and comfort, and acculturation) in monolingual, bilingual, and multilingual individuals.

TISHA JAMES
Rose-Colored Mirrors: How Social Media Affects Our Lives, Perceptions of Ourselves, and Views of Others
Mentor: Dr. Elizabeth Mustaine (Sociology)
This project will analyze how social media has influenced our perceptions of ourselves and other people. Using the findings from previous literature and research on self-esteem, impression management, and the use of social media as well as an original online survey.

NICHOLAS JOSEPH
The Impact of Stereotype Threat, Rumination, and Heart Rate Variability Amongst Ethnic Minorities
Mentor: Dr. Julian Thayer (The Ohio State University)
Stereotype threat has a detrimental impact on a wide variety of domains, including academic performance and mental health, especially in ethnic minorities. In this study, when minorities are presented with an explicit stereotype, there is a greater lower change in heart rate variability compared to nonminorities in the recovery phase.

REBEKAH KANEFSKY
Perceived Locus of Control in the Children of Military and Civilian Families Affected by Deployment and Divorce
Mentor: Dr. Sandra Neer (Psychology)
Locus of control in children of military families with a deployed parent will be examined in order to help determine if these children are more likely to attribute experiences to external factors.
KRISTAL KISSOON
Cultural Identity in Hispanics
*Undergraduate Co-Author:* Nelly Blumen
*Mentor:* Dr. Widaad Zaman (Psychology)
We are interested in bicultural identity development in Hispanics. In particular, if Hispanics identify more with their own culture or American culture and what they learn from specific cultural experiences. Further, we are interested in how the navigation between two cultural identities contributes to students’ progress throughout their college career.

BRUCE LEE
Analyzing UCF Students’ Perceptions of Race
*Mentor:* Ms. Racine Jacques (Sociology)
This study is centered around surveying UCF students as a means to gauge their feelings on people from other races. The study looks to paint a picture of what goes into forming those feelings/opinions about race at the societal level.

ANDREW LUTZ
Virtual Team Coopetition: An Investigation of Coopetitive Proclivity in Virtual and Face-to-Face Dyads
*Mentor:* Dr. Matthew Chin (Psychology)
This project involves an investigation of virtual team coopetitive proclivity, which is the balance between one’s tendency to perform behaviors aimed at achieving a private goal or goals and one’s tendency to perform behaviors aimed at achieving a shared goal or goals within the context of a coopetitive relationship.

EMMA McGEATH
Autonomous Cars and Their Potential for Blind and Visually Impaired Individuals
*Mentor:* Dr. Peter Hancock (Psychology)
Mobility is one of the most important aspects of someone living with a visual impairment. Research and development of autonomous cars can dramatically improve the quality of life for blind and visually impaired adults. This research focuses on how autonomous cars will impact a blind or visually impaired individual.

DAVID McMahan
Disaster Resilience: Linking Community Development and Emergency Management Strategies
*Mentor:* Dr. Christopher Hawkins (Public Administration)
Reviewed and analyzed comprehensive emergency management plans for Central Florida counties to identify disaster mitigation policies and their relationship to community development planning. The overarching goal is to analyze the disaster resiliency of counties, particularly as it relates to land use and the network of organizations involved in land development.

FERNANDO MONTALVO
Comparing Laboratory Methods for Inducing Cognitive Fatigue
*Undergraduate Co-Author:* James Kozachuk
*Mentor:* Dr. Daniel McConnell (Psychology)
Three methods — 15-minute break, 15-minute vigilance task, and 30-minute vigilance task to induce laboratory fatigue — were compared to determine their effectiveness of inducing fatigue. Physiological fatigue was determined using ECG; subjective fatigue was determined using self-report stress, task engagement, and anxiety; and cognitive fatigue was determined using a cognitive task.

JULIO MONTANEZ
Context: Undergraduate Students’ Attitudes and Opinions Pertaining to the Existence of a Social Problem
*Mentor:* Dr. Amy Donley (Sociology)
This research utilizes the development and administration of a survey to undergraduate students at a large, public research university in order to understand which factors most influentially underlie two constructs: (1) attitudes toward intimate partner violence (IPV), and (2) opinions regarding interventions and policies that target IPV.

CAITLYN MYERSON
Perspectives on the Eurozone Crisis: Assessing the Effects on the Political Systems of Germany, France, and the United Kingdom
*Mentor:* Dr. Houman Sadri (Political Science)
I analyzed the effects of the eurozone crisis on the political systems of Germany, France, and the United Kingdom through the three main perspectives of political economy: neoliberalism, neomercantilism, and structuralism.

AARON NECAISE
Perceptual Effects of Gaze Avoidance in Social Anxiety
*Mentor:* Dr. Shawn Carter (Psychology)
Visual processing of facial expression in socially anxious college students will be examined in order to better understand the function of gaze avoidance behavior typical in social anxiety disorder.

TAMAR NIR
Driving Distraction Simulation Testbed (Building)
*Mentor:* Dr. Peter Hancock (Psychology)
The objective of S.A.L.T., or simulation attention layer testbed, is to better understand the reaction time, attention, and multitasking ability of participants when they are presented with multiple layers of attentional demand alongside a text distraction.

MEI OSUKA
The Impact of Magnitude of Price Deviation on the Relationship Among Perceived Quality, Value, and Revisit-Intention in Hotels
*Mentor:* Dr. Ji-Eun Lee (Hospitality Services)
This study aims to examine the impact of magnitude of price deviation, which is defined as a difference between internal reference price and actual price paid, on the relationship among perceived quality, value, and revisit-intention in hotels.
Brazil's growth and development.

In the past century and a half, Brazil has seen tremendous events have contributed to and will continue to contribute to government domestic policy implementations, recent foreign growth and development. This research analyzes how.

Dr. Houman Sadri (Political Science)

HENRIQUE RIBEIRO
Developmental Challenges and Opportunities of Brazil in the 21st Century

Mentor: Dr. Houman Sadri (Political Science)

In the past century and a half, Brazil has seen tremendous growth and development. This research analyzes how government domestic policy implementations, recent foreign policy reforms, and the hosting of major international sporting events have contributed to and will continue to contribute to Brazil’s growth and development.
ALEJANDRA SOSA  
Brief Exposure to Casual Video Games Decreases Stress, Improves Mood, But Does Not Enhance Cognitive Performance  
*Undergraduate Co-Author:* Gabrielle Simon  
*Mentor:* Dr. Daniel McConnell (Psychology)  
Stress-related cognitive fatigue is a detrimental issue for individuals with highly stressful and risky jobs. This study analyzed and compared three relaxation methods (break, meditation, and game) to the effectiveness of brief casual video game exposure as a method to reduce stress, increase mood, and restore cognitive resources.

CODY SPARACO  
Assessment of Sustainability Awareness and Attitudes Among College Undergraduates  
*Undergraduate Co-Author:* Kristen Garcia  
*Mentor:* Ms. Alaina Bernard, Ms. Jennifer Elliot (Biology)  
To determine if a correlation exists between undergraduate students' academic college at UCF and their sustainability knowledge and between their academic college and environmental attitude.

REBECCA STANLEY  
Love the Way You Lie  
*Undergraduate Co-Authors:* Tiffany Bunn, Mackenzie Hively, Amanda Johnston, Elizabeth Harrington, Heidi Holden  
*Mentor:* Dr. Grace White (Psychology)  
A follow-up study on lying within relationships as compared to personality types, as well as seeing what personality types find certain lies acceptable and which types are more likely to forgive the lies of their partner.

HEATHER STROBEL  
Public Perceptions of Social Workers as Compared to Other Mental Health Professionals  
*Mentor:* Dr. Karen Mottarella (Psychology)  
This study explores perceptions of clinical social workers. Participants will be randomly assigned to review a scenario in which a mental health professional assists a distressed student. Scenario content is constant with only type of mental health professional manipulated. We hypothesize social workers will be rated significantly lower.

MICHELLE SUAREZ  
In Search of Wayúu Gold: A Historical Case Study of the Impacts of the Mining Industry on Colombian Indigenous Communities  
*Mentor:* Dr. Peter Jacques (Political Science)  
A historical case study that explores the environmental and social impacts of the Cerrejón coal mine on Colombia’s indigenous Wayúu people, specifically the issue of water security. It attempts to contribute a deeper understanding about the relationship between the environment and the health and well-being of indigenous communities.

ROBIN THORNE  
Exploring the Relationship of Resilience, Optimism, and the Big Five  
*Mentor:* Dr. Karen Mottarella (Psychology)  
This study explores the relationship of resilience, optimism, and the Big Five personality traits using the Connor-Davidson Resilience Scale, the Personal Optimism and Self-Efficacy Optimism Scale, and the NEO Five-Factor Inventory. I hypothesize a positive relationship between levels of resilience, optimism, and the positive personality traits from the Big Five.

JENNIFER TORCHALSKI  
Fishy Business: The Local and National Effects of Caged Tilapia Aquaculture in Nicaragua  
*Mentor:* Dr. Peter Jacques (Political Science)  
This study explores the economic effects of tilapia cage aquaculture in Lake Nicaragua. Although there was an increase in national exports, the introduction of these nonnative tilapia altered the ecology of the lake so much that it changed the market dynamics and livelihoods of local fishermen involved.

ASHLEY TORRES  
The Relationship Between Political Knowledge and Political Involvement in College Students  
*Mentor:* Mr. Jason Chesnut (Psychology)  
The purpose of the experiment is to examine the relationship between the level of political knowledge and political involvement in college students. It is hypothesized that higher political knowledge will be correlated with higher political involvement among college students.

MICHAEL TORRES  
Mental Rotation with Martial Arts Experts  
*Mentor:* Dr. Valerie Sims (Psychology)  
Athletes have exhibited faster reaction times on mental rotation tasks than nonathletes, suggesting they process this information faster. This experiment will investigate whether there is a link between taekwondo expertise and reaction rate with mental rotations of various stimuli, as well as whether this expertise is transferable across different domains.

NATASHA VASHIST  
The Effect of Misogynistic Humor on the Perception of Women  
*Mentor:* Dr. Chrysalis Wright (Psychology)  
This research examined how exposure and preference of sexist humor would impact one’s perception of women. The results indicate long-term exposure to sexist humor is correlated with higher levels of sexism.

JENNY WALKER  
Qualitative Analysis of Event-Related Potential EEG Data  
*Mentor:* Dr. Peter Hancock (Psychology)  
This study qualitatively examined EEG data for error-related negativity (ERN). The trend is visible in raw data, which shows that complicated, time-consuming filtration methods are not necessary. These findings are promising for the use of ERN in applied settings.

AMANDA WOODS  
Examining the Relationship Between Trait Goal Orientation and Behavior in Team Debriefing Sessions  
*Mentor:* Dr. Eduardo Salas (Psychology)  
This study investigated the impact of goal orientation, an individual difference variable, on debriefing, an intervention tool for improving team effectiveness. The present findings shed light on how individuals behaved during debriefing based on their level of goal orientation and how this impacted the debrief.
The University of Central Florida Undergraduate Research Journal (UCF URJ) encourages, recognizes, and rewards the intellectual scholarship of undergraduate students by providing a peer-reviewed forum to share their research. The journal accepts student articles, essays, and adapted thesis projects from all majors. Students who publish their work gain valuable academic experience, preparing them for future success. Collaborative research is always welcomed.

The UCF URJ showcases articles of exemplary works from a wide range of student scholarship in all fields. The journal seeks outstanding research submitted by undergraduate students who have been involved in faculty-mentored research projects and activities related to scholarship.

The UCF URJ is on display at www.urj.ucf.edu.

LISA D’AGOSTINO
The Association Among Maternal Resiliency, Perception of Touch, and Reports of Infant Touch
*Mentor:* Dr. Julee Waldrop

KAYLIN RATNER
The Role of Parenting and Attachment in Identity Style Development
*Mentor:* Dr. Steven Berman

JESSY GULER, COURTNEY GULER, AND DR. JUDIT SZENTE
The Influence of Previous Traumatic Experiences on Haitian Child Refugees’ Conceptualization of Fear
*Mentor:* Dr. Judit Szente

LISA M. SOLAR AND ADRIANA RAMIREZ
An Analysis of the Ecological Theory of Research Participation Applied to a Sample of Young Adult Males
*Mentor:* Dr. Michael Rovito

SCOTT MORRISON
Defining Hybridity: Frantz Fanon and Post-Colonialism in Louise Erdrich’s Shadow Tag
*Mentor:* Dr. Pat Angley

CHELSEA R. PINER
Intensive Land Use and Conservation Planning at the University of Central Florida
*Mentor:* Dr. Peter Jacques

The University of Central Florida Libraries is pleased to announce Kaylin Ratner, author of *The Role of Parenting and Attachment in Identity Style Development*, has won its 2015 Award for Excellence in Undergraduate Research Publishing.

Congratulations to Kaylin Ratner and her mentor, Dr. Steven Berman!
DISTINGUISHED UNDERGRADUATE RESEARCHER AWARD (DURA)

In January 2010, the Student Undergraduate Research Council, in collaboration with the Office of Undergraduate Research, developed DURA, formerly known as the Undergraduate Researcher of the Month program. Each month a new student is honored with the award. The following students were recognized in 2014.

JANUARY
AARON MADDEN
Roll-to-Roll Manufacture of Thin Film Oral Dosage Form
Mentor: Dr. Weiwei Deng (Mechanical and Aerospace Engineering)

FEBRUARY
MELISSA THYE
Assessment of Instructional Presentation for Emergency Evacuation
Mentors: Michael Boyce and Dr. Janan Smither (Psychology)

MARCH
LAURA HERNDON
Identification of the Domain(s) in Protein Disulfide Isomerase Required for Binding and Disassembly of the Cholera Holotoxin
Mentor: Dr. Kenneth Teter (Biomedical Sciences)

APRIL
HOLLIS DAHN
Examining Specific and Subspecific Diversity Within the Monotypic Snake Genera
Mentor: Dr. Christopher Parkinson (Biology)

MAY
JESSY GULER
Exposure to War and Conflict, Acculturation, and Identity Formation Among Adolescent Refugees
Mentor: Dr. Steven Berman (Psychology)

JUNE
TYLER CAMPBELL
An Empire on the Brink of Destruction: Seleucids After Antiochus III
Mentor: Dr. Edward Dandrow (History)

JULY
APRIL NGUYEN
The Effect of Bacterial Vaginosis-Associated Bacteria Effect on Epithelial Factors Mediating HIV Transmission
Mentor: Dr. Alexander Cole (Biomedical Sciences)

AUGUST
ANNA LEWIS
Photochemical Response and Etching Behavior of Chalcogenide Films
Mentor: Dr. Stephen Kuebler (Chemistry and Optics & Photonics)

SEPTEMBER
JESSICA SPROAT
A Prospective Study of Telehealth Devices and Motivation
Mentor: Dr. James Szalma (Psychology)

OCTOBER
CAITY HERNDON
Understanding the Role of a Hemerythrin-Like Protein in Mycobacterium tuberculosis
Mentor: Dr. Kyle Rohde (Biomedical Sciences)

NOVEMBER
ANDREW LUTZ
Instruction from Behind a Black Mirror
Mentor: Dr. Matthew Chin (Psychology)

DECEMBER
BRADLEY ROSENKRANTZ
Detection and Characterization of Pathogenic Mycobacteria
Mentors: Dr. Kyle Rohde (Biomedical Sciences) and Dr. Dmitry Kolpashchikov (Chemistry)

Applications are available at www.our.ucf.edu/accomplishments.
The Undergraduate Research Council promotes the involvement of undergraduates in the ongoing activities of the UCF research community and advises the Office of Undergraduate Research about policies and programs that pertain to undergraduate research at UCF.

Michael Aldarondo-Jeffries
Kelly Astro
Ratna Chakrabarti
Matt Chin
Latarsha Chisholm
Manoj Chopra
Melissa Dagley
Jonathan Decker
Martin Dupuis
Martha Garcia
Debbie Hahs-Vaughn
Jonathan Hall
Richard Harrison
James Hogg
Peter Jacques
Nicholas James
Robert Jones
Tammie Kaufman

Jennifer Kent-Walsh
Joo Kim
Claire Knox
Dmitry Kolpashchikov
Stephen Kuebler
Ana Leon
Amelia Lyons
Stacey Malaret
Abby Milan
Christopher Niess
Enrique Ortiz
Shelley Park
Pedro Patino
Jennifer Pazour
Adam Pritchard
Tison Pugh
Shawn Putnam
Andrew Randall
Debra Reinhart
Kathy Rovito
Michael Rovito
Bridget Rubenking
Swadeshmukul Santra
Constance Schober
Asli Tasci
Kenneth Teter
John Venecek
John Walker
Linda Walters
Ze Wang
Lei Wei
Michael Wilkinson
Leslie Wolcott
Chrysalis Wright

UCF STUDENT UNDERGRADUATE RESEARCH COUNCIL (SURC)

SURC was formed to promote awareness about undergraduate research for students at the University of Central Florida. Students actively engaged in research are selected each year to serve on this council. Through their support, the Office of Undergraduate Research has greater exposure on campus and gets continuous feedback on undergraduate research programs. Their help in promoting and running the Showcase of Undergraduate Research Excellence is greatly appreciated.

Elizabeth Altamirano
Thomas Carpino
Nicholas Coles
Nicholas James

Samantha Mensah
Arjun Patel
Irina Pidberejna
Gerald Richardson

Jeremy Tran
Shantal Tummings

SPECIAL THANKS

The Office of Undergraduate Research thanks the following individuals and entities for their time, expertise, and support in the planning of today’s event.

Michael Aldarondo-Jeffries
Kelly Astro
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Robert Bilic
Tammy Brushwood
Tinessa Callinan
Sandra Cheerepow
Krystal Christopher
Manoj Chopra
Denise Crisafi

Michelle Fuentes
Lauren Haar
Richard Harrison II
President John C. Hitt
Martha H. Hitt
Terrell Ibanez
Monique LeGrow
Eddy Mojica
Julio Montanez
Khondaker Rahman

Erika Rasso
Kathy Rovito
Brian Strickland
Stephanie Valderrama
UCF Foundation
UCF Libraries
UCF Student Union
UCF Marketing
Elliot Vittes
Dale Whittaker

We would especially like to thank Nancy Lynch for helping support and develop the Showcase for the past 12 years and coordinate the event for the last five years. Nancy retired in February after 22 years with UCF and is greatly missed.
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<td>Zaffino, Valentina</td>
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