2015

SHOWCASE OF

UNDERGRADUATE RESEARCH EXCELLENCE

CELEBRATING UNDERGRADUATE RESEARCH AND CREATIVITY ACROSS THE CURRICULUM

THURSDAY, APRIL 2, 2015

UCF STUDENT UNION

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

UNIVERSITY OF CENTRAL FLORIDA | ORLANDO, FLORIDA

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 Kolposhchikov
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

FACULTY MENTORS

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 Altomare
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
Hyoung Jin 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 Hancock
Erin Hanson
Joseph Harrington
Sally Hastings
Christopher Hawkins
Florencio 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 Hyoung Lee
Ana Leon
Xiaoman Li
Kuo-Chi 'Kurt' Lin
Zhe Liu
Suzanne Lunsford
Weili Luo
Carolyn Massiah
Michal Masternak
Daniel McConnell
Stephen Medeiros
Cecilia Rodríguez Milanés
Delbert Miles
Joanna Mishtal
Doan Modianos
Sean Moore
Karen Mottarella
Mustapha Mouloua
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 Pherigo
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
Mohtashem Samsam
Maria Santana
Swadeshmukul Santra
Alfons Schulte
Axel Schülzgen
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

ARTS AND HUMANITIES

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 own 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
I.D.E.A.S. (Infant Development and Environment Analysis Simulator): Assessing Social and Emotional Health in Very Young Children

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 PIDBEREJNA

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 Pherigo (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 Rodríguez 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."

EDUCATION

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

Observing the Accommodations of Exemplary Elementary Teachers of Students Identified as Dyslexic and Gifted in the Netherlands

Mentor: Dr. Sherron Roberts (Teaching, Learning and Leadership)

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.

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: Dr. 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.

NICOLE SKEEN

The Integration and Implementation of Music in the Social Studies Classroom

Mentor: Dr. William Russell (Teaching, Learning, and Leadership)

This project seeks to understand the extent to which music is integrated into the social studies classroom, whether through the established curriculum or through implementation directed by the individual teacher. As a future educator, the importance is readily seen to connect students to the material in a variety of methods.

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.

ENGINEERING, COMPUTER SCIENCE, AND OPTICS I

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.

KYLE BEGGS

Design of a Physical Windkessel Model for Use in Cardiovascular Engineering Experiments

Mentor: Dr. Alain Kassab (Mechanical and Aerospace Engineering)

Computational fluid dynamics modeling of the cardiovascular system frequently requires analogous benchtop models for validation. However, the viscoelastic property of blood vessels must be accurately recreated in order to mimic physiological flow characteristics. To achieve this, we designed a Windkessel model to be incorporated into an existing flow circuit.

PATRICK BESANA

Effects of Binary Solvent System on Morphology of Particles

Mentor: Dr. Weiwei Deng (Mechanical and Aerospace Engineering)

This research explores the consequences of using the electrospray to produce nanoparticles of pharmaceutical substances dissolved in a two-solvent system. In this study, the main focus is on the analysis of the morphology of the nanoparticles as a result of solvent volatility, thermal history, and droplet sizes.

HARDEO CHIN

Effects of Blade Mistuning

Mentor: Dr. Jeffrey Kauffman (Mechanical and Aerospace Engineering)

In this study, a MATLAB-based simulation code is used to conduct a statistics-based parameter study of mistuning. A mistuning experimental setup, which accommodated nominally identical blades with coupling elements, was then developed to measure the forced response of the blades.

GABRIELLE CLARK

Designing a Rigid, Reliable, and Ergonomic Mechanical Structural Support System for the Raven III

Mentor: Dr. Zhihua Qu (Electrical Engineering and Computer Science)

The objective is to design a support system for the Raven III. It should optimize structural integrity by being rigid with a robust foundation. The structure must be reliable and able to sustain the robot's loading. It is essential that the design is ergonomic with ease of implementation and operation.

BURDLEY COLAS

Designing a High-Power Wavelength Division Multiplexer

Mentor: Dr. Axel Schülzgen (Optics)

The aim of this experiment was to create high-power WDMs for closely spaced wavelengths for fiber laser application. Using a fiber designed for high-power applications, Nufern LMA 20/130, this device will enable power scaling and wavelength flexibility for high-power fiber lasers.

MARTIN COLEMAN

Determining Tidal Elevations in Dry Elements Within a Coastal Salt Marsh Model

Mentor: Dr. Stephen Medeiros (Civil, Environmental, and Construction Engineering)

An integrated hydrodynamic/marsh biomass model is a useful tool for analyzing multiple hydrologic activities on a shoreline. The inverse distance weighting interpolation method is used to interpolate unknown groundwater elevations that are then used to calculate tidal datums. The Dupuit equation is examined as a method to simplify/replace the interpolation method.

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 ZrB^2-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 ZrB^2 of different weight percent samples of ZrB^2-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 CO_2

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 (CO_2) 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

ANDREW MCCORMICK

The Potential of Natural Algae for Biofuel Production

Mentor: Dr. Woo Hyoung Lee (Civil, Environmental, and Construction Engineering)

The objective is to determine the potential of using algae already in existence from natural sources in order to produce biofuel.

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 deplete 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

An On-Chip, Passive Blood Plasma Separation Device for Resource-Limited Areas

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 hypervehicle (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 CO_2 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 (sCO_2).

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.

HEALTH SCIENCES

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 women'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 (/É'/, /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. Comparison 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-Authors: 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 PERROTTE

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.

ERICA 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.

LIFE SCIENCES I

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.

LINDSAY ARICK
Molecular Phylogenetics of Two Florida Water Snakes: *Nerodia fasciata* and *Nerodia clarkii*

Mentor: Dr. Christopher Parkinson (Biology)

When taxonomy is determined using solely morphological and geographical data, species designations often do not reflect true evolutionary relationships. In this study, I will use mitochondrial gene sequences to investigate the evolutionary relationship between *Nerodia fasciata* (banded water snake) and *Nerodia clarkii* (salt marsh snake).

ANDREW ARTEAGA
Understanding the Function of the CDK-Like Kinase Pfmrk in *Plasmodium falciparum*

Mentor: Dr. Debopam Chakrabarti (Biomedical Sciences)

The objective of our research is to achieve an understanding of the *Plasmodium* cell cycle regulatory roles played by the CDK-like kinase Pfmrk. The identification and characterization of Pfmrk's interactors and substrates will offer insight into Pfmrk biochemical pathways, allowing us to establish the protein as a potential drug target.

COURTNEY BUCK
The Impact of Crown Conch *Melongena corona* on the Eastern Oyster *Crassostrea virginica* in Mosquito Lagoon, Florida

Undergraduate Co-Authors: Casey Craig, Jordan Filipponi, Chelsea Landau

Mentor: Dr. Linda Walters (Biology)

We conducted a three-part experiment to test whether or not there is an impact of crown conch *Melongena corona* on oyster reefs in Mosquito Lagoon.

THOMAS CARPINO
Taxonomy vs. Phylogeny: Ringneck Snakes

Mentor: Dr. Eric Hoffman (Biology)

Within my study I am assessing the taxonomic classification of the critically endangered key ringneck snake, *Diadophis punctatus acricus*, which can only be found within the Florida Keys. To do so I am analyzing mitochondrial and nuclear phylogenies, genetic divergence, and haplotype data.

STEVEN CARRION
A Two-Season Experiment Determining Effective Cultivation Methods for Marsh Cordgrass *Spartina alterniflora*

Undergraduate Co-Authors: Keith Brinsko, Ellis Hartley

Mentor: Dr. Linda Walters (Biology)

To improve the cultivation of *Spartina alterniflora*, which is widely used in living shoreline stabilization projects, we tested nutrient (nitrogen, phosphorus, N+P, control) and salinity (0, 30 ppt) combinations on their effectiveness in increasing belowground biomass, number of new shoots, and survival. Seasonal effects on cultivation were also determined.

MORGAN CARSON
The Potential Role of DMSO Reductase in Selenate Reduction

Mentor: Dr. William Self (Biomedical Sciences)

The objective of this study is a genetic approach to identify which molybdoenzyme(s) are capable of reducing selenate to elemental selenium in anaerobic conditions. This will include a number of mutant strains consisting with genetic modifications affecting reductase function or molybdenum cofactor biosynthesis.

DIANA CARVEL

Nitrated 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 nonphosphorylatable 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 macroalga 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 (Biology)

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 Cilenti (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.

JORGE 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 AB5-type protein holotoxin within the endoplasmic reticulum.

JACOB KIMMEL
Alginate-Based Hydrogels as a Delivery Vector for Stem Cells and Growth Factors

Mentor: Dr. Kiminobu Sugaya (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, Hiba Hatoum, Savannah Mulvey, Christopher Turdo, Kristen Garcia, Lesl Li, Rositsa Mihaylova, Sheldon Smith

Mentors: Dr. Linda Walters, Mr. 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.

LIFE SCIENCES II

CLARA LEUNG

The Role of Monoclonal Antibodies in Migraine

Mentor: Dr. Mohtashem 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 Docetaxol 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 Lostetter

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 antiproliferative 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 PfPK7 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 (PfPK7), 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.

AUSTIN SHEPPE

Membrane Lipid Aminoacylation in *Enterococcus faecium* Is Responsible for Multiple-Drug Resistance Phenotype

Mentor: Dr. Herve Roy (Biomedical Sciences)

I performed all but the Miller assay experiment. This included growth curve kinetic fitness tests for multiple antimicrobials, MIC determination, Grofit analysis and feneration, TEM studies, autolysin assay, and Biolog data analysis. I created all the figures on the posterboard except Figure 1.

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.

JEREMY TRAN

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 Microbicidal 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. Kelcey 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 Deoxyribozyme Sensors

Mentor: Dr. Dmitry Kolpashchikov (Chemistry)

This project employs binary deoxyribozyme 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 MENSAH

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 analyte 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-2,3,5,6-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_6, 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 curvularin 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 Î² Peptide
Mentor: Dr. Suren Tatulian (Physics)
The aim of this research is determine the structural basis of neurotoxicity of Alzheimer's amyloid Î² peptide. Additionally, the soluble oligomers of amyloid Î² peptide can be causatively linked as an alternative source of neurotoxicity as opposed to amyloid Î² 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).

SOCIAL SCIENCES I

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: Miamor 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 1 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 multilinguist's worldview.

ELAINE CHAMBERLAIN

Microfinance in Algeria, Lebanon, and Tunisia

Mentor: Dr. Houman Sadri (Political Science)

The purpose of this research is to analyze the effect of political and social history on the microfinance sector in the former French colonies of the Middle East and North Africa region, specifically Algeria, Lebanon, and Tunisia.

BRACH CHAMPION

Using Stochastic Frontier Analysis to Correct Underreporting of Medicaid Claims by the Current Population Survey

Mentor: Dr. Richard Hofler (Economics)

The Current Population Survey is cheaper, easier, and the most widely cited source of estimation of Medicaid enrollment — but it's inaccurate. We will correct this inaccuracy using a stochastic frontier to predict the true value of Medicaid enrollment.

MICHELLE CHEN

How Does the Relationship Between the Body-Positivity Movement and Happiness Affect Society as a Whole?

Mentor: Dr. Cyrus Azimi (Psychology)

This study will strive to underscore the importance of the body image and self-love movement by examining the correlations between self-reported levels of body image satisfaction, subjective well-being, and quality of interpersonal relations in a sample population of college students.

NICHOLAS COLES

Judgments of Animal Emotionality: An Evaluation of Visual Fixation Patterns

Undergraduate Co-Authors: Michael Torres, Jenny Walker

Mentor: Dr. Valerie Sims (Psychology)

Utilizing the Gazepoint GP3, this study utilizes eye-tracking technology to examine and compare the facial scanning patterns used by individuals of varying levels of canine expertise (novice, owner, and trainer).

WILLIAM DEAN

Democratization, State Capacity, and the Military: Assessing the Susceptibility of Young Democracies to Coups d'État

Undergraduate Co-Author: Kyle Romano

Mentor: Dr. Jonathan Powell (Political Science)

Our research attempts to provide a better understanding of the challenges facing democracies around the world. One of those challenges, specifically in the developing world, is military coups. Our research provides lessons for academic scholars and policymakers attempting to endorse democratic countries around the world.

DAVINA DHANI

The Organizational Usage of Social Media During Food Recalls

Mentor: Dr. Timothy Coombs (Communication)

The behavioral patterns of food industries will be examined by studying each organization's presence in social media to observe how and if organizations inform the public of these events.

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.

KRYSTAL 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.

SOCIAL SCIENCES II

TIERNAN MIDDLETON

Homophobia and HIV: A Cross-Cultural Comparison of HIV Transmission

Mentors: Dr. Joanna Mishtal (Anthropology), Dr. Kenneth Teter (Biomedical Sciences)

This project investigates a relationship between systemic homophobia and HIV transmission rates through a close analysis of several socio-cultural factors and multiple countries. These factors were scored and compared to HIV transmission rates to find possible correlations. These correlations can be applied to epidemiology and public health policy.

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.

SERENELA PELIER

Stable Isotope Evidence for the Geographic Origins and Military Movement of Napoleonic Soldiers During the March to Moscow in 1812

Mentor: Dr. Tosha Dupras (Anthropology)

In 2001, a mass grave containing the remains of at least 3,269 Napoleonic soldiers from 1812 was discovered in Vilnius, Lithuania. Stable oxygen isotopic analysis was conducted on 10 of the 78 femoral samples that were collected to explore military migration patterns and regional geographic origins.

TAYLAR PEOPLES

An Analysis of Distress Levels Among Chronically Ill Women Receiving a CRE Intervention Based on Current Working Status

Mentor: Dr. Jenene Case-Pease (Educational and Human Services)

Examining the distress levels of females before and after receiving a couples and relationship education intervention based on current working status.

REBECCA PERDOMO

Political Normalization of Violence: College Students' Perceptions of Micro- and Macro-Level Violence

Mentor: Dr. Amy Donley (Sociology)

The following research is a collection of data examining the relationship between political affiliation and levels of violence. Its aim is to see if there is a discrepancy between perceptions of personal versus state violence and if this discrepancy is closely related to political ideology.

MATTHEW POZO

Do We Remember Information Better When Heard in Our Own Voice? A Study of the Self-Reference Effect

Mentor: Dr. Valerie Sims (Psychology)

This project further extends research on the self-reference effect. Traditionally, the self-reference effect suggests that relevancy of information to an individual promotes improved memory. This study proposes that the manner in which information is presented (voice), as well as the relevance of that manner, will affect memory.

OLIVIA QUINN

The Sustainability of Orange County Comprehensive Planning: Growing, Green, (and Equitable?)

Mentor: Dr. Peter Jacques (Political Science)

This study was motivated by critical theory in efforts to analyze urban planning frameworks in Orange County, Florida, the fifth most populous county in the state. Utilizing content analysis, dominant themes within the data were identified and evaluated against theories of sustainable planning.

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.

KYLE ROMANO

Frames in Environmental Restoration: The Florida Everglades

Mentor: Dr. Peter Jacques (Political Science)

The purpose of this research is to examine the dominant frames in environmental restoration projects. This study deals particularly with the Comprehensive Everglades Restoration Plan.

JOSE SANCHEZ

A Decline in San Diego County Water Authority Values Regarding Salton Sea Rehabilitation

Mentor: Dr. Peter Jacques (Political Science)

My research analyzes San Diego County Water Authority values toward Salton Sea restoration, which is based upon hinterland relations. Furthermore, I coded Water Authority annual reports from 2003 to 2009 to identify three constructive themes: municipal control of freshwater use, delaying environmental protection, and dismissing socio-economic effects.

KATHRYN SCHAFER

The Road Rage and Aggressive Driving Dichotomy: Personality and Attribution Factors in Driver Aggression

Mentor: Dr. Peter Hancock (Psychology)

Aggressive driving and road rage are not consistently defined by researchers. The principle aim of this study is to assess the reasonableness of treating them as two facets of the same underlying impulse control problem rather than as distinct aggressive behaviors.

JULIA SHANKLE

Measuring Reaction Time and Type in Drivers

Undergraduate Co-Author: Tamar Nir

Mentor: Dr. Peter Hancock (Psychology)

Our objective for this study was to measure how driver experience affects driver judgment, reaction time, and reaction type in various collision scenarios.

HECTOR SILVA

Relationships Between Attitudes Toward War and the Big Five Personality Traits Agreeableness and Neuroticism

Undergraduate Co-Authors: Christian Quiles, Angela Parra

Mentor: Dr. Jason Chesnut (Psychology)

The purpose of this research is to examine the relationship between two of the Big Five personality traits and attitudes toward war. It is hypothesized that the Big Five traits of agreeableness and neuroticism will be negatively and positively correlated with pro-war attitudes, respectively.

GABRIELLE SIMON

Superstitious Beliefs in Technology: An Important Factor Regarding Trusting Technology

Undergraduate Co-Author: Alejandra Sosa

Mentor: Dr. Daniel McConnell (Psychology)

A novel measure of superstitious technological beliefs was developed, and both reliability and concurrent validity was accessed using previous measures of superstitious and technological beliefs. Relationships between computer skill, use, technological trust, negative attitudes toward robots, paranormal, and anthropomorphic beliefs were assessed as predictors of superstitious technological beliefs were examined.

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

Mentors: 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.

2014 UNDERGRADUATE RESEARCH JOURNAL PUBLICATIONS

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 Identify 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

UNIVERSITY OF CENTRAL FLORIDA LIBRARIES

Annual Award for Excellence in Undergraduate Research Publishing in the *University of Central Florida Undergraduate Research Journal*

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**.

UCF UNDERGRADUATE RESEARCH COUNCIL

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
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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
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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.

INDEX OF STUDENT PRESENTERS


UCF