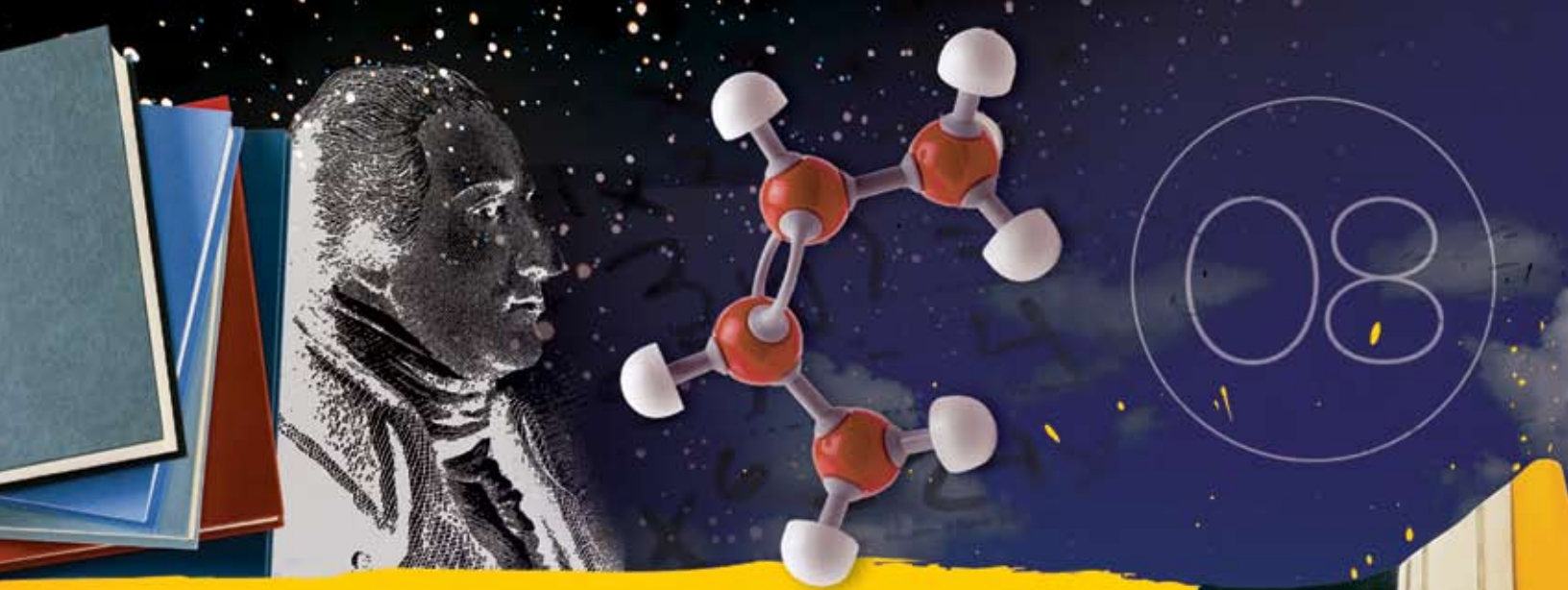

UNIVERSITY OF CENTRAL FLORIDA | ORLANDO, FLORIDA

SHOWCASE OF

UNDERGRADUATE RESEARCH EXCELLENCE

Celebrating undergraduate research and creativity across the curriculum.

OFFICE OF UNDERGRADUATE RESEARCH

FRIDAY, APRIL 4, 2008 • 2–5 PM

PEGASUS BALLROOM–UCF STUDENT UNION

Welcome to the Fifth 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 broader 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 greater 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 Undergraduate Studies. For more information about undergraduate research at UCF, please visit the Office of Undergraduate Research's Web site at **www.our.ucf.edu**.

The Showcase is part of the 2008 Research Week at UCF.
www.researchweek.ucf.edu

www.showcase.ucf.edu

We encourage you to visit the ***University of Central Florida Undergraduate Research Journal*** online at **www.urj.ucf.edu**. The *Journal*, established in 2005, facilitates faculty and undergraduate student interactions through research and a mentored publication process.

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

INTRODUCTION . . . . . 2 :00 PM

Dr. Alison Morrison-Shetlar
Dean of Undergraduate Studies
Professor of Biology

WELCOME. . . . . 2:05 PM

Dr. John C. Hitt
President
Professor of Psychology

STUDENT PRESENTATIONS . . . . . 2:00-4:15 PM

MENTOR OF THE YEAR AWARD . . . . . 4:15 PM

Student Undergraduate Research Council

REMARKS AND PRESENTATION OF SCHOLARSHIPS. . . . . 4:30 PM

Dr. John F. Schell
Vice Provost for Academic Affairs
Professor of English

2008
UCF RESEARCH WEEK

THE ENVIRONMENT:
CONSERVATION, ENERGY, *and the* QUALITY *of* LIFE

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.

Nancy Ahern
Jay Batzner
Bill Blank
William Crampton
Tace Crouse
Ronald Eaglin
Ali Gordon
Roger Handberg
Richard Harrison
Jana Jasinski
Bernadette Jungblut
Wilfredo Lopez-Ojeda
Rudy McDaniel
Ali Mehrabian
Ram Mohapatra
Jeanette Nadeau
Nina Orlovskaya
Patrick Schelling
William Self
Jamie Schwartz
Valerie Sims
Nancy Stanlick
Kristina Tollefson
James Turkson
Elliot Vittes
Lori Walters
James Wright
Kevin Yee
Antonis Zervos

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 is grateful to these benefactors for their encouragement and support of undergraduate research at UCF.

A. Duda & Sons, Inc.
Florida High Tech Corridor Council
Richard Harrison II
Progress Energy
Alison Morrison-Shetlar and Robert Shetlar
John Schell
Kimberly Schneider
Sea World—Orlando
Window Interiors, Inc.
UCF Chapter of Sigma XI: The Scientific Research Society
UCF Faculty Center for Teaching and Learning
UCF Federal Credit Union
UCF Institute for Social and Behavioral Sciences, Department of Sociology
UCF Office of Undergraduate Studies
UCF Student Government Association
UCF Women's Research Center
United Space Alliance
WELBRO Building Corporation

FACULTY MENTORS

The faculty is a university's paramount asset, and the Office of Undergraduate Studies recognizes the following UCF faculty mentors who have advised, counseled, tutored, and encouraged students presenting at today's Showcase.

Richard Ajayi
Ali Amirkhosravi
Suresh Babu
Jeffrey Bedwell
Kevin Belfield
Steven Berman
David Borst
James Brophy
Tim Brown
Ryan Burkhart
Cristina Calestani
Humberto Campins
Penelope Canan
Mason Cash
F. Necati Catbas
Debopam Chakrabarti
Ujjayant Chakravorty
Sic Chan
Po-Ju Chen
Zixi Cheng
Hyoung Jin Cho
Kristin Congdon
William Crampton
Richard Crepeau
Andrew Daire
Leslie DeChurch
Eduardo Divo
Tosha Dupras
Steven Ebert
Thomas Edwards III
Llewellyn Ehrhart
Kenneth Fedorka
Cristina Fernandez-Valle
Terri Fine
Randy Fisher
Mingui Fu
Shaun Gallagher
Martha Garcia
Michael Georgiopoulos
Katheryn Giglio
Xun Gong
Ali Gordon
XiuFang Guo
Michael Hampton
C. Keith Harrison
Eric Hoffman
Rosalyn Howard
Olusegun Ilegbusi
Peter Jacques
Alisha Janowsky
David Jenkins
Kimberly Jentsch
Anna Jones
Jeffrey Kaplan
Rick Kenney
Annette Khaled
Stephen Kuebler
Edwin Lamboy
Peter Larson
Joseph LaViola, Jr.
Shawn Lawrence
Marie Léticée
YouMing Lu
Artëm Masunov
Matthew McIntyre
Lisa Mills
Prabhas Moghe
Peter Molnar
Karen Mottarella
Mustapha Mouloua
Mark Muller
Jeanette Nadeau
Saleh Naser
Charles Negy
Dawn Oetjen
Nina Orlovskaya
Otto Phanstiel
Kimberly Renk
Fernando Rivera
Kenyatta Rivers
Elizabeth Robinson
Beatriz Roldán Cuenya
Houman Sadri
Kristen Schellhase
Kimberly Schneider
Constance Schober
Alfons Schulte
Sudipta Seal
David Segal
Denver Severt
Kimberly Severt
Mubarak Shah
Z. John Shen
Bhimsen Shivamoggi
Valerie Sims
Dinender Singla
Eileen Smith
Yong-Ho Sohn
Kenneth Stanley
John Sutherland
James Szalma
Peter Telep
Kenneth Teter
Kristina Tollefson
Alexander Tovbis
James Turkson
Natalie Underberg
Raj Vaidyanathan
Laurence von Kalm
Linda Walters
Lori Walters
Alvin Wang
John Weishampel
Shannon Whitten
Andrea Williams
Vandy Wood
Kurt Young
Amy Zeh
Lei Zhai

ARTS AND HUMANITIES

JENNIFER ANDERSON

Scenic Design: *Largo Desolato*

Mentor: Kristina Tollefson (Theatre)

The scenery I designed for Vaclav Havel's *Largo Desolato*, based upon extensive historical and artistic research, helped prepare the audience for the realistic and abstract elements of the production to better undertand Havel's message of the negative ramifications of giving in to an oppressive government.

WILLIAM BOLES

***Gee's Bend*: A Study in Scenic Design**

Mentor: Vandy Wood (Theatre)

Gee's Bend, a new play by Elyzabeth Gregory Wilder, follows the journey of Sadie, a determined African American woman in Gee's Bend, Alabama. As scenic designer for this play, I researched the history of Gee's Bend, the quilts, and the lives of the women involved, culminating in the final design.

BRITTANY BROUSSARD

Imperial Masculinity: Victorian "Manfullest" and the Feminized Colonial Body in H. Rider Haggard's *She* and *King Solomon's Mines*

Mentor: Anna Jones (English)

In *King Solomon's Mines*, H. Rider Haggard wrote that a strong team of oxen "will come through at last." Strength was central to conceptions of Victorian manhood. I intend to prove that Haggard's characters find masculine strength in their imperial experience, which enables them to overcome the feminized colonial body.

NAVA COHEN

Museums and the Internet: A Study of Holocaust Centers

Mentor: Lori Walters (History)

While the internet has become an integral component of today's society, many museums have been reluctant to extend their Web experiences beyond a digitally reformatted version of their brochures. This study investigates the internet's interactive potential to provide museums a new manner for presenting the Holocaust.

KELLY COOK

Audiobook Interactive

Co-Authors: Kurt Schultze, Harrison Stevens, Brian Hall, Daniel Pingston

Mentor: Eileen Smith (Institute for Simulation and Training)

Our goal is to provide people with a new type of interactive media for educational and entertainment purposes through a combination of older, but commonly used types of media: literature, illustration, audio and the internet.

NATALIA DaSILVA

Using Technology to Create Networking Between Artists

Mentor: Elizabeth Robinson (Art)

My goal was to find several ways to connect artists. Local artists were connected by working together in group art projects. For regional artists, I created a social networking Web site for UCF students, www.ucfart.ning.com. And for a global connection, I made a database featuring artists from many nationalities.

MATTHEW DeSALVO

Saporous: A Semantic Web Approach to Personal Kitchen Management

Co-Authors: Kyle Farris, Ishia Ramtahalsingh, Mary Denman, Andrew Vaaler

Mentor: Eileen Smith (Institute for Simulation and Training)

This project intends to be a cross-platform, Web-based, personal kitchen management system that uses emerging semantic and user-centered web design concepts to persuade internet users to adopt the relatively unusual quality over quantity mentality. Success of this tool will reflect the effectiveness of simple design and semantics.

SHALANDA FAULK

I Put a Spell On You: Voodoo and Female Agency in 19th Century African American Literature

Mentors: Andrea Williams (English, Ohio State University), Kurt Young (Political Science)

This research focuses on the recognition of a tradition in literature which counters the caricatures of black women that generally depict religious faith as a tool for squelching resistance and pacifying oppressed peoples.

HEIDI FLEMING

Creating a Mechanized World for the Stage: *Machinal*

Mentor: Vandy Wood (Theatre)

This production of Sophie Treadwell's *Machinal* necessitated a scenic design that reflected expressionist themes, the director's unique vision and a modern audience's sensibilities. This project demonstrates my design process, from initial meetings, research and model building to the fully realized production.

ROY HOLT

Nav Shield

Co-Authors: Tom Ngyuen, Tejas Patel, Eddie Farrer, Rashaad Rosalle, Alfonso Asurroca

Mentor: Eileen Smith (Institute for Simulation and Training)

Our objective is to provide the underlying concept for a next-generation automotive heads-up display system that provides the driver with dynamic, relevant information in a manner which engages but does not distract the user.

PENNY JACKSON

The Effects of the FCC's 2003 Revision of the 1996 Telecommunications Act on Media Ownership Groups and Voice Diversity

Mentor: Lisa Mills (Film)

This thesis evaluates the effects of the Federal Communications Commission's 2003 ownership deregulation on media ownership groups and voice diversity. The researcher analyzed media companies' TV stations, acquisitions and revenue to determine if the 2003 deregulation was more beneficial to larger media companies than to smaller media companies.

MIRANDA KEARLEY

'Looking For a Private Island': *Psycho*, *Lost* and Gothic Horror in Modernity

Co-Author: Jacob Lusk

Mentor: Anna Jones (English)

We will demonstrate how elements of the Gothic—a literary genre rooted in the late 18th-century—manifest themselves in popular culture in the 20th and 21st centuries, particularly in film and television. This project will ultimately show that while technology and culture have changed, anxieties about safety and technology remain the same.

SARAH LONG

ChinaVine

Co-Authors: Tomas Valladares, Sharon Weaver, Ian Hernand, Michael Diaz

Mentor: Kristin Congdon (Film)

The ChinaVine Project is a collaborative program that is currently focusing on the construction of an interactive Web site (that exhibits film, photography, and graphic design) that will serve to educate Anglophone audiences on Chinese culture through the study of that country's traditional folk art.

VANESSA MARRERO

The Spanish Golden Age in the New Millennium

Mentor: Martha Garcia (Modern Languages and Literatures)

This work focuses on different literary genres of the Spanish Golden Age: prose and theater. It is compiled so that readers may be able to appreciate, embrace, and understand the value of these classics. This investigation centers on showing the relevance of these classic works to our day and age.

CHRISTOPHER MIELKE

A Reanalysis of the Role of Philippa of Lancaster in the Ceuta Expedition of 1415

Mentor: Peter Larson (History)

The goals of this project are to determine claims made by 20th century historians that Philippa of Lancaster, Queen of Portugal, was the main architect behind the Portuguese conquest of the city of Ceuta and to re-evaluate her role in scientific discovery and European exploration.

ROBERT MIYARES

Form and Functionality: Students' Experience with Wiki-boards and Technology in the Humanities Classroom

Mentor: Katheryn Giglio (English)

The goal of this study is to analyze the effectiveness of Wiki-boards in the Humanities with a focus on the Literature track.

SUZANNE PADILLA

A Study in Translation: *Papillon, Volé!*

Mentor: Marie Léticée (Modern Languages and Literatures)

Through the translation of the unpublished poetry of Dr. Marie Léticée, I will demonstrate my translation technique and bring awareness to the cultural themes within the poetry by making it accessible to a broader audience.

BREANNE PARAWAY

Biofeedback: Customizing the Individual Experience

Co-Authors: Dan Bookman, Kevin Chung, Lisa Melegari, Matt Nathanson, Nicholas Vollentine

Mentor: Eileen Smith (Institute for Simulation and Training)

We will be implementing biofeedback technologies in congruence with MIDI sequencing controllers to show potential future usage in interactive entertainment, education, retail and medical fields in a customizable everyday experience.

HOLLY PINHEIRO, JR.

History of the NFL Phase-2

Mentor: Richard Crepeau (History)

The objective is to create a well-researched text that will be a welcome addition to the sports history field and that will be used in future courses.

TRISTAN REINIERS

The Persistence of Self

Mentor: Mason Cash (Philosophy)

Are you the same person from year to year? If so, why? In other words, what conditions must be met in order for one's self to persist over time? This project evaluates various criteria proposed by philosophers and it attempts to construct a principled answer to the question.

JORGE SALAZAR

Augmented Instructions

Co-Author: Alex Zelenin

Mentor: Eileen Smith (Institute for Simulation and Training)

Traditional instruction manuals are plagued with confusing diagrams, substandard wording, and static images. Augmented Instructions is a study observing the advantages of standardizing CGI manuals for items requiring assembly. By developing interactive media with each product, we hope to ease the process of assembly for the common consumer.

RAFAEL SANCHEZ

***Turkey Maiden*: An Interactive Fiction Fairy Tale**

Mentor: Natalie Underberg (Digital Media)

This project is interactive fiction based on the story of the *Turkey Maiden*, a Cinderella-like fairy tale told in Ybor City, Florida. By completing this project I hope to learn about game design and digital storytelling using interactive fiction.

MATTHEW SCHULTZ

WikiMonster Marathon

Co-Authors: Loren Bordas, Lindsey Bortner, Michael Frye, Ben Pincus

Mentor: Eileen Smith (Institute for Simulation and Training)

WikiMonster Marathon exemplifies the theory of the six degrees of separation and ultimately, the semantic web. This project will demonstrate the advantages of converging media and how it can be used as a research tool for the development of web content that can be understood by both humans and machines.

JUSTIN SCHUMAKER

Video Game and Narratives: Exploring the Relationship

Mentor: Peter Telep (English)

This research is being done to explore the reasons why video games and narratives do not easily complement each other. I will attempt to discover if the problems integrating the two come from technology or an inherent incompatibility.

JENNY VARELA

The *New* Puerto Rican in the U.S.: Language and Identity Construction

Mentor: Edwin Lamboy (Modern Languages and Literatures)

This study presents a sociolinguistic comparison between recently-arrived Puerto Ricans from the Orlando metropolitan area and those from the New York City area. In particular, we explore the role language plays in the construction of the *new* Puerto Rican identity and how various issues are distancing one group from the other.

ASHLEE WALTERS

Paint and Powder: Cosmetics and the Rendering of the Face in Art

Mentor: Ryan Burkhart (Art)

Henri de Toulouse-Lautrec's paintings of women during the 19th century will be examined to identify the effect of cosmetic products on the perception and portrayal of women in art. The practice of art-making, femininity, and social class structure will be discussed within the context of Toulouse-Lautrec's art.

ALEX ZELENIN

Come Back to the Fair

Mentor: Lori Walters (History)

Come Back to the Fair is a 3-dimensional recreation of the 1964/1965 New York World's Fair that serves as a virtual portal to the 1960s. It is a melting pot of interdisciplinary knowledge, showcasing primary source documents, photographs, videos and oral histories, while also reopening the fair and the era to all.

LIFE AND HEALTH SCIENCES I

KHALED ABU-IHWEIJ

Apoptosis-Induced Alkalinization by the Na+/H+ Exchanger Is Mediated Through Phosphorylation of Amino Acids Ser726 and Ser729

Mentor: Annette Khaled (Biomolecular Research Annex)

Four possible phosphorylation sites of the sodium hydrogen exchanger (NHE) protein were determined using an in vitro p38 MAPK assay and confirmed by deletion analysis. Using mutant cell lines with a mixture of null sites, the in vivo activation sites of the NHE protein were discovered.

VANESSA APPOO

You Cannot Fit a Square Peg in a Round Hole: How to Ensure the "Best Fit" Between Employees and Positions

Mentor: Dawn Oetjen (Health Professions)

Certain positions require specific personality types in order for success to occur. My objective is to determine the best fit between employees and positions within organizations by studying the personality traits of employees and reviewing various job descriptions within an organization to find the perfect match.

ANGELICA BARRERO-TOBON

Evidence for Prenylation-dependent Targeting of a Novel Ykt6 SNARE Homologue from *Plasmodium falciparum*

Co-Author: Lawrence Ayong

Mentor: Debopam Chakrabarti (Molecular Biology and Microbiology)

This study is focused on characterizing the role of SNARE family proteins in vesicular mediated protein trafficking in the malaria parasite. This knowledge is essential for understanding protein flow in the parasite, which in turn can reveal possible drug targets.

KYLE BARTLETT

Role of ERAD in CdtB Membrane Transversal

Co-Author: David Curtis

Mentor: Kenneth Teter (Molecular Biology and Microbiology)

The objective of this research is to systematically test different membrane proteins by using temperature sensitive mutations for potential roles they play in Cytolethal Distending Toxin's transversal of the Endoplasmic Reticulum.

BILLIE JO BEATS

Function of MUS-Like Receptor Kinases in *Arabidopsis thaliana*

Mentor: Jeanette Nadeau (Biology)

Activity of guard cells impacts crop photosynthetic yield and drought tolerance. MUSTACHES (MUS) is a LRR-receptor-like kinase that controls guard cell shape. This work's objective is to determine whether any of the closely related MUS-like receptor kinases in the MUS family function redundantly with MUS in controlling guard cell shape.

NIKETTE BENJAMIN

A Genetic Screen for G Protein-Coupled Receptors (GPCR) Involved in the Rho1 Signaling During Leg Imaginal Disc Morphogenesis

Mentor: Laurence von Kalm (Biology)

The objective of this project is to provide the first complete picture of the action of a type II transmembrane serine protease. This will help to improve our understanding of the causes of human pathologies (including many cancers) related to the activity of these proteases.

LESLIE BENNY

Characterization of Protein-Protein Interactions in *Plasmodium falciparum*

Mentor: Debopam Chakrabarti (Molecular Biology and Microbiology)

The objective of this project is the creation of a Bacterial Two Hybrid cDNA library for *Plasmodium falciparum* (Pf) which will be used to identify protein-protein interactions in the parasite.

SASHA BRODSKY

Strangers in a Strange Land: A Study of Cold Thermal Tolerances of the Invasive Mussel *Mytella charruana*

Mentors: Linda Walters (Biology), Eric Hoffman (Biology), Kimberly Schneider (Biology)

We are running experiments to determine the minimum temperature for survival of the invasive bivalve mussel *Mytella charruana*. This information is needed to determine the potential range for this new invader.

AARON CROSS

Reproductive Parasitism and Sexual/Asexual Reproduction

Mentors: Laurence von Kalm (Biology), David Jenkins (Biology)

This study was designed to determine if a link exists between the preference for sexual or asexual reproduction within populations of the crustacean *Daphnia* and infection with the reproductive parasitic bacterium *Wolbachia*. *Wolbachia* has been observed to cause many reproductive alterations in closely related organisms.

NICK DAVIES

A DNA-RNA Comparison of Major Histocompatibility Complex (MHC) in *Rana pipiens*

Mentor: Eric Hoffman (Biology)

This study aims to compare sequence variation of the MHC in *Rana pipiens*, the Northern Leopard Frog, from both reverse transcribed RNA and total genomic DNA. This information will give us insight into how the MHC gene is expressed and how it evolves in this and other frog species.

ERIK FAY

A Role for Dicer in Cell Protection

Mentor: Sic Chan (Biomolecular Science Center)

The objective of this research is to determine whether Dicer plays a role in cell protection.

MERCEDES GONZALEZ

Morphological Characterization of Motorneurons

Mentors: Peter Molnar (Nanoscience Technology Center), XiuFang Guo (Nanoscience Technology Center)

The morphological characterization of motorneurons (MNs) will aid in the understanding of co-cultures of the central nervous system MNs from fetal spinal cord stem cells with muscle tissue. This *in-vitro* system will be used for further studies of the motorneuron-muscle interactions at the neuromuscular junction.

AGNIESZKA GRABON

Modulation of the Unfolded Protein Response by Bacterial Toxins

Mentor: Kenneth Teter (Molecular Biology and Microbiology)

This project addresses the characteristics of bacterial toxins, *Vibrio cholerae* (cholera) and *Escherichia coli* (E.coli plasmid-encoded toxin), based on their ability to induce a stress response in mammalian cells.

STEPHEN HAJDAS

Multiple Complications from a Finger Fracture in a Basketball Player

Mentor: Kristen Schellhase (Health Professions)

I wrote a case study about a finger injury in a basketball player. The injury is somewhat rare, however the complications caused by the initial injury are also extremely rare.

MARY HARDY

Understanding the Function of *Plasmodium falciparum* Cyclin-dependent Kinases

Mentor: Debopam Chakrabarti (Molecular Biology and Microbiology)

Very little is known about the complex intraerythrocytic cell cycle of *Plasmodium falciparum*. In eukaryotes, cyclin-dependent kinases (CDKs) have been shown to orchestrate the progression of the cell cycle. This study aimed to understand the subcellular distribution and cyclin interactions of various *P. falciparum* CDK homologues.

ELIZABETH HAYNES

Combined Treatment with Immunotoxin and Lipopolyamine as an Effective Anti-Cancer Therapy

Mentor: Kenneth Teter (Molecular Biology and Microbiology)

We seek to develop a novel anti-cancer therapy by showing that a lipopolyamine/immunotoxin (ITx) combination will kill cancer cells more effectively than the ITx alone.

ALICIA HENRIQUEZ

The Brain Mitochondrial Uncoupling Protein Promotes Metabolic Adaptation and Survival of Neural Cells Subjected to Metabolic and Oxidative Stress

Mentor: Sic Chan (Biomolecular Science Center)

The objective of this research is to elucidate the underlying mechanisms whereby the brain mitochondrial uncoupling protein UCP4 promotes metabolic adaptation in response to mitochondrial dysfunction.

TIFFANY LEIBELL

Allelopathy Of Invasive Brazilian Pepper On Salt Marsh Plants and Animals In the Indian River Lagoon

Co-Authors: Lori Konar, Stephanie Garvis, Ashley Lancaster, Jason Gasso, Alondra Hernandez, Thomas Savarese, Emily Walker, Kelly Hardy, Brian Naidus, Jonathan Canale, Melinda Donnelly

Mentor: Linda Walters (Biology)

The objective of this research is to determine the lethal effects of crushed and intact seeds of the invasive Brazilian pepper *Schinus terebinthifolius* on native flora and fauna from the Indian River Lagoon in central Florida.

DANIEL LEVENTHAL

Live Imaging and Quantitation of Cytokeratin 8: Shedding Some Light on a Unique Carcinoma Antigen

Mentor: Mark Muller (Biomolecular Research Annex)

Cytokeratin 8, a filamentous protein thought to uniquely localize at the cell surface of malignant carcinomas, will be fused to a green fluorescent protein allowing us to observe the CK8 via live cell imaging using Confocal microscopy. This process is intended to confirm this phenomenon and legitimize the use of the antigen towards cancer therapies.

FRANKLIN LEW

The Role of Exchange Proteins Activated Directly by Cyclic AMP (Epac2) in Neuronal Physiology

Mentor: YouMing Lu (Biomolecular Science Center)

The objective of this project is to discover the role that exchange proteins directly affected by cyclic adenosine monophosphate, or cAMP (epac), have in neuronal cells of the brain.

GREG MARTIN

Assessment of Clinical Decision-Making Skills Using Computer-Assisted Case Simulations

Co-Author: Joshua McDonald

Mentor: David Segal (Health Professions)

This project focuses on the use of virtual patients in case scenario training with health science undergraduate students. Traditional knowledge-based teaching and assessments will be replaced with case scenario engagement strategies in several Health Professions science classes.

CELINES MARTINEZ

Development and Functional Analysis of Novel Genetic Mouse Models to Study the Role of Adrenaline Production in the Embryonic Heart

Mentor: Steven Ebert (Biomolecular Science Center)

The objective of this project is to study the role of adrenaline in the regulation of Vascular Endothelial Growth Factor (VEGF) expression in the developing mouse heart.

JEFF McMAHON

RNAi Suppression of a Storage Protein in *Romalea microptera*

Co-Author: John Zoshak

Mentor: David Borst (Biology)

In an attempt to understand the biological significance of a certain storage protein in the eastern lubber grasshopper, *Romalea microptera*, double stranded RNA was administered to nymphal grasshoppers in the hopes of eliminating transcript levels as well as hemolymph protein levels through the RNA interference (RNAi) pathway.

STACEY MONT

Tracking Biointerfacial Cellular/Molecular Cues for Cancerous Progression of Stem Cells

Mentor: Prabhas Moghe (Biomedical Engineering, Rutgers University)

The objective of this research is to characterize osteoscaroma by comparing characteristics of induced Human Mesenchymal Stem Cells with an osteosarcoma cell line (SAOS-2) to determine if osteosarcoma may derive out of the osteogenic precursor lineage before becoming osteoblasts.

JHESSYE MOORE-THOMAS

Quantifying Forest Canopy Structural Recovery from a Simulated Hurricane Disturbance

Mentor: John Weishampel (Biology)

The objective of this research is to study how forest canopy structure develops over time after a simulated hurricane disturbance. A northeastern hardwood forest in central Massachusetts will be investigated to determine forest canopy recovery and response to the experimental disturbance.

LIFE AND HEALTH SCIENCES II

KELLY NEDIMYER

Coral Reef Resoration

Mentor: Kenneth Fedorka (Biology)

The goal of this project is to determine the potential for reef restoration using transplanted coral fragments aquacultured in a coral nursery. Once the fragments have grown they will be transferred to the reef. The various growth rates, in addition to survival rates, will be studied for each genotype.

REBECCA NEGRON

Genetic Modification of Embryonic Stem Cells with Tissue Inhibitor of Metalloproteinase Type 1 (Timp-1)h

Mentor: Dinender Singla (Biomolecular Science Center)

The short term goal of this project is to transfect embryonic stem cells with a vector that has the TIMP-1 gene. With this accomplished other experiments can take place to measure the effects of TIMP-1 on differentiating the stem cells into cardiomyocytes.

ANNIE NGUYEN

Studies of Marine Turtle Nesting Activity and Reproductive Success: Brevard County Geotextile Tube Installations

Mentor: Llewellyn Ehrhart (Biology)

Florida experienced severe hurricanes in 2004. As a result, geotextile tubes were installed on the Archie Carr National Wildlife Refuge in Brevard County, a nesting beach for endangered green, loggerhead, and leatherback turtles. Observations of nest disturbance, hatchling emergence and sand depth measurements depict the interaction between geotextile tubes and marine turtle nesting.

CLAUDIA NUNEZ

School-Based Speech-Language Pathologists' Knowledge and Perceptions of Traumatic Brain Injury

Mentor: Kenyatta Rivers (Communication Sciences and Disorders)

The purpose of this project is to gather information from school-based speech-language pathologists to (1) determine their knowledge of Traumatic Brain Injury (TBI), (2) determine their perceptions about educating students with TBI, and (3) describe the strategies they use in the classroom and related environments to facilitate academic achievement of students with TBI.

NICKISHA PIERRE-PIERRE

The Effects of Climate Change on Marine Invertebrate Larvae

Mentor: Cristina Calestani (Biology)

Marine invertebrates are most sensitive at the larval stage to the surrounding environment. Changes in climate could lead to larval development abnormalities or mortality, and ultimately to species extinction. We will test the effects of environmental factor variation, such as salinity, pH and temperature, on developmental gene expression.

LUIS RODRIGUEZ

Synthesis and Biological Evaluation of a Novel Polyamine Transport Inhibitor

Mentor: Otto Phanstiel (Chemistry)

The project focused on the sythesis of a new inhibitor of polyamine transport. These types of inhibitors will have applications in developing anti-cancer therapies.

SALHA SHABAN

A Comparative Study: Radiofrequency Ablation Versus Conventional Methods in Treating Lung Cancer

Mentor: Thomas Edwards III (Health Professions)

This research evaluates the procedure of Radiofrequency Ablation (RFA) and how it is used to treat lung cancer in comparison to surgery, chemotherapy, and radiation therapy. The research also identifies the risks and benefits of each procedure for the patient as well as the advantages and disadvantages of RFA versus conventional methods.

BRIANNA SHEAHAN

The Role of *JABBER JAW* in Stomatal Development

Mentor: Jeanette Nadeau (Biology)

Stomatal patterning and development in *Arabidopsis thaliana* plants with an overexpression, inducible expression, or endogenous mutation of the *JABBER JAW* (*JBJ*) gene will be analyzed to determine the function of *JBJ* in *Arabidopsis stomatal* development.

GEOFFREY SHETKA

Design and Construction of a Voltage Measurement System for Electric Fish Research

Mentor: William Crampton (Biology)

The objective of this project is to improve a system for taking standardized measurements of the voltage of Amazonian electric eels and knife-fishes. The system is being redesigned to withstand air-transit and tropical field conditions. The finished system will contribute to an understanding of the evolutionary biology of electric fish.

MINHAJ SIDDIQUI

The Effects of Chronic Type 1 Diabetes on Glutamate Receptor Expression in Cardiac Motoneurons in the Nucleus Ambiguus of OVE26 Transgenic Mice

Mentor: Zixi (Jack) Cheng (Biomolecular Science Center)

Baroreflex control of heart rate is impaired in diabetes mellitus. Previously, Dr. Cheng demonstrated that the central neural component is selectively damaged in diabetic mice. Since glutamate is the primary neural transmitter in baroreflex circuitry, I will test the hypothesis that diabetes reduces glutamate receptor expression in the brainstem.

DIANA SILVA

Does the Apalachicola River Serve as a Biogeographic Barrier in the *Ornate chorus* Frog?

Mentor: Eric Hoffman (Biology)

We tested the hypothesis that the Apalachicola River would serve as a biogeographic barrier for *Pseudacris ornata* as it does for many species ranging from pocket gophers to white-tailed deer. To test our hypothesis, we sequenced the cytochrome-b gene from two populations on each side of the Apalachicola River.

JOSHUA SILVESTRI

How Does Your Garden Grow? Quantification of Novel Restoration Techniques for the Seagrass *Halodule wrightii* in the Mosquito Lagoon

Co-Authors: Kristen Gaffney, Erin Walker, Ben Forshee, Sarah Brodsky, Justin Bridges, Katherine Grablow

Mentor: Linda Walters (Biology)

The objective of this experiment is to quantitatively determine the effectiveness of three different restoration techniques (garden staples, rope lines, and burlap-covered quadrats) for the seagrass *Halodule wrightii* in the Mosquito Lagoon portion of Indian River Lagoon system, located along the east coast of central Florida.

ELIZABETH SIZEMORE

The Evolution of *TMM*-like Genes Based on a Divergence of Phylogeny from *Physcomitrella* to *Arabidopsis*

Mentor: Jeanette Nadeau (Biology)

To gain a better understanding of plant molecular evolution, we are studying the *TOO MANY MOUTHS* (*TMM*) gene of *Arabidopsis thaliana*, a model organism for flowering plants, and the divergence of the moss species, *Physcomitrella* patens, which contains conserved TMM-like genes after its deviation 400 million years ago from angiosperms.

NICKLAUS SPARROW

ErbB Receptors as Effective Drug Targets for Malignant Peripheral Nerve Sheath Tumors Resulting from Neurofibromatosis Type I

Mentor: Cristina Fernandez-Valle (Molecular Biology and Microbiology)

The objective of this project is to determine the possibility of using kinase inhibitors specific for the mitogenic ErbB (Neu) receptor to limit growth and/or eliminate malignancies of the peripheral nervous system arising in individuals with the genetic disorder Neurofibromatosis Type I.

NATALIA SPINELLI

Characterization of Posttranslational Modification of 19 KDa Protein Expressed by *Mycobacterium avium subspecies paratuberculosis*

Mentor: Saleh Naser (Burnett School of Biomedical Sciences)

The genus *Mycobacterium* has recognized pathogenic species. The objective of this study was to test for glycosylation, acylation or both as possible posttranslational modifications of the 19 kDa protein expressed by *Mycobacterium avium subspecies paratuberculosis*. These modifications can play a role in the antigenicity of this 19 kDa protein.

ASHLEY STARTZMAN

Inhibition of STAT3 Protein as an Approach to Sensitizing Ovarian Cancer Cells to Cisplatin

Mentor: James Turkson (Biomolecular Science Center)

The objective of this project is to investigate the responsiveness of Ovarian cancer cells to the chemotherapeutic drug Cisplatin, as well as the role of STAT3 protein in Cisplatin resistance. This project will determine the potential therapeutic benefits of inhibiting aberrant STAT3 protein to enhance the sensitivity of Ovarian cancer cells to Cisplatin.

ANASTASIA STENYAKINA

Exploring an Invasive Mussel's Secret to Success: Study of the Reproductive Biology of *Mytella charruana*

Mentors: Cristina Calestani (Biology), Linda Walters (Biology), Eric Hoffman (Biology), Kimberly Schneider (Biology)

We studied the reproductive mode of *Mytella charruana*, an invasive species of mussel in the southern United States, to better understand its dispersal rate as well as its fitness in the coastal marine environment. This study explores why this particular species may out-compete native species through its unique reproductive strategy.

RUTH STRAKOSHA

Fluoroquinolone Degradation by Bacteria Isolated from Municipal Wastewater

Mentor: John Sutherland (US FDA National Center for Toxicological Research)

The objective of this project was to quantify fluoroquinolone resistance and degradative capabilities of bacteria isolated from municipal wastewater.

ANDREW TEBLUM

Dismutation of Superoxide Radical Anion on the Surface of a Ceria Nanoparticle Studied by Theoretical Chemistry

Mentor: Artëm Masunov (Nanoscience Technology Center)

The objective of this project is to predict the activation energies for the physical and chemical processes involved in catalytic dismutation of protonated superoxide radical on the surface of ceria nanoparticles.

KATHLEEN TELUSMA

Identification of Adrenergic Cells and their Descendents in the Developing Heart Using a Novel Genetic Marking Strategy

Mentor: Steven Ebert (Biomolecular Science Center)

This project aims to study cardiac development by using a genetic mouse model to follow the distribution of adrenergic cells and their descendents in order to determine if they influence innervation activity within the heart.

KELLIE THOMPSON

Development of a Non-Invasive Bioluminescence Imaging Strategy for Evaluating Differentiation of Mouse Embryonic Stem Cells into Cardiomyocytes *In Vivo*

Co-Author: Kammili Ramana Kumar

Mentor: Steven Ebert (Biomolecular Science Center)

To characterize cell lines for the *in vivo* assessment of transplanted murine embryonic stem cell differentiation into cardiomyocytes, the relative number of differentiated cells, and longevity in the heart.

GAIL TROMP

Identification of MCPIP1 as a Novel Regulator of Macrophage Activation

Mentor: Mingui Fu (Burnett School of Biomedical Sciences)

Activated macrophages play an important role in many inflammatory diseases, like atherosclerosis. It is very important to understand the exact mechanisms of macrophage activation to develop novel drugs therapies against it. The objective of this study is to understand these mechanisms so they can be better controlled.

HOA VAN

Fabrication of a Novel Controlled-Drug-Release System Utilizing Electrospun Chitosan Fibers

Mentor: Lei Zhai (Nanoscience Technology Center)

Chitosan is a natural, biodegradable, biocompatible and bioadhesive polysaccharide with increasing appeal and potential for biomedical uses.Chitosan/PAA fibers were fabricated through the electrospinning method. Fibers at the nano-scale allow for more specific control of properties in the fiber—thus allowing for a more controlled drug-releasing system.

NATALIA VARGAS

Characterization of Immune Complex Size of Therapeutic Humanized Monoclonal Antibody and Antigen

Mentor: Ali Amirkhosravi (Florida Hospital)

Patients who are treated with Avastin (a therapeutic monoclonal antibody used to treat some forms of cancer) in combination with therapeutic amounts of heparin are at risk for developing thrombosis. We aim to investigate this unusual side effect by determining if immune complex size enhances the formation of clots.

WEI YUAN

A Comparison of Salinity Tolerance Between Adult and Juvenile *Mytella charruana*, a New Invasive Mussel in the Southeastern United States

Co-Authors: Elizabeth Bourassa, Sasha Brodsky, Gisela Harper, Scott Kerley, Jennifer Manis, Rachel Odom

Mentors: Linda Walters (Biology), Eric Hoffman (Biology), Kimberly Schnieder (Biology)

Our experiments test the salinity tolerances of both adult and juvenile *Mytella charruana* to gain a better understanding of the physiological tolerances of this invasive mussel. Our goal was to determine the survivorship when mussels were exposed to salinities treatments ranging from 0–45 ppt.

PHYSICAL SCIENCES, MATHEMATICS, COMPUTER SCIENCE AND ENGINEERING

PAUL BREMNER

Rogue Waves

Mentor: Constance Schober (Mathematics)

This project is aimed at mathematically understanding the physical processes responsible for the generation of rogue waves. We examine the connections between rogue waves and homoclinic solutions by examining the development of wavefront dislocation and phase singularities in solutions of the nonlinear Schrodinger equation.

CASSANDRA CARPENTER

Vibrational Properties of LaGaO3 Single Crystals

Mentor: Nina Orlovskaya (Mechanical, Materials and Aerospace Engineering)

The vibrational properties of [001] and [100] single crystals have been explored to characterize structural changes that are experienced during a first order orthorhombic to rhombohedral phase transformation occurring at approximately 143°C.

ANGELA COLBERT

Multifractal Models for Energy Dissipation in Fully Developed Turbulence

Mentor: Bhimsen Shivamoggi (Mathematics)

Research was conducted on multifractal models and their application to energy transfer distributions in fully developed turbulence. Current formulations of fully developed turbulence energy transfer distribution are only applicable to conservative cascades. The research extends these formulations to nonconservative cascades, where a new definition of the generalized fractal dimension is introduced.

RENE DIAZ

Plasma Sprayed Chromium Carbide Reinforced with Carbon Nanotubes

Co-Author: Virendra Singh

Mentors: Sudipta Seal (Advanced Materials Processing and Analysis Center), Suresh Babu (Mechanical, Materials and Aerospace Engineering)

A new method of reinforcing carbides was explored using a relatively new processing method and reinforcing material. The plasma spray method was used for processing and carbon nanotubes were used to reinforce this wear-resistant coating. Microhardness, crystalline structure, porosity, elemental composition and processing procedure were researched in this project.

JAIME DUARTE

Gas Exchange Simulation of In Vitro Alveolar Constructs

Mentor: Olusegun Ilegbusi (Mechanical, Materials and Aerospace Engineering)

The objective of the project was to utilize Computational Fluid Dynamics (CFD) software to model the exchange of oxygen and carbon dioxide initially at the alveolar level and in future studies at a larger scale for a simple bio-reactor model.

AMANDA DUPUY

Effect of Thermal Annealing on Conductivity and Nano-Scale Morphology of Electrolessly Deposited Silver

Mentor: Stephen Kuebler (Chemistry)

The objective of this project was to determine how thermal annealing affects the nano-scale morphology and conductivity of silver films that are electrolessly deposited onto a cross-linked epoxide polymeric surface. Understanding how this process affects the structure and properties of silver-polymer composites will be useful for creating functional metallodielectric nano-structures by this approach.

KATHERINE FERSTADT

Stabilized Metal Hydrides for Hydrogen Production

Mentor: Michael Hampton (Chemistry)

The focus of this project was to find a hydrogen storage material that is both safe and efficient. The materials developed in the project were coated metal hydrides and the hydrogen delivery was quantified using a pressure transducer system.

EDWARD GILLETT

Electromechanical Modeling of an Electrically-Conductive Coating Under Fatigue

Mentor: Ali Gordon (Mechanical, Materials and Aerospace Engineering)

The objective of this project is to analyze the evolution of the electrical properties of the conductive coating due to fatigue loading and to develop a physically-based model of the electromechanical behavior of the material.

ENROY GRIFFITH

Hands-on Synthesis of Key Intermediates in the Preparation of New Two-Photon Fluroscent Probes

Mentor: Kevin Belfield (Chemistry)

This project is directly involved in the synthesis of versatile intermediates to explore a new method of creating nonlinear optical materials for bioimaging and 3-D data storage. Synthesis, purification and characterization of key organic materials is central to the research's overall objective.

KELSEY HARGROVE

Infrared Spectra of Comet-Asteroid Transition Object 944 Hidalgo

Mentor: Humberto Campins (Physics)

This study of comet-asteroid-transition-object 944 Hidalgo was to determine if its composition varied with respect to rotation. Our team analyzed infrared data collected by the Spitzer Space Telescope and found no compositional variability in the 7-38 micron range.

AMY HOOVER

Automatically Generating Drum Tracks for Existing Songs With a Computer

Mentor: Kenneth Stanley (Electrical Engineering and Computer Science)

A major challenge in computer-generated music is to produce music that sounds natural. This project introduces NEAT Drummer, a program that takes steps toward natural creativity. NEAT Drummer automatically generates drum tracks for any human-composed song and produces compelling results that suggest a new path to computer-generated music.

PHILLIPE JEAN-JUMEAU

Wireless High-Temperature Sensors

Mentor: Xun Gong (Electrical Engineering and Computer Science)

This project involved development of wireless high-temperature passive sensors for the continuous online temperature measurement in turbine engines.

SCOTT KELLER

A Stress Approximation Technique for Helical Compression Springs Under Bending

Mentor: Ali Gordon (Mechanical, Materials and Aerospace Engineering)

The objective of this project is to develop a new method of analyzing stresses in helical compression springs subjected to bending loads. The goal is to achieve an accurate stress approximation through the visual inspection while under load, a method that has previously never been proposed.

JESSE KELLY

Investigating Hurricane-Force Wind Effects Over Housing Structures Using An RBF-Based Localized Meshless Method

Mentor: Eduardo Divo (Engineering Technology)

This objective of this research is to program a computational fluid dynamics solver that utilizes localized radial-basis function interpolation to obtain a meshless solution method. The solver program is then used to examine the effects of hurricane-force winds on housing structures of different roof geometries.

JESSICA KING

Morphological Evolution and Preferential Orientation of Planes in Hydrothermal Processed Nanoceria Rods and Cubes

Mentor: Sudipta Seal (Advanced Materials Processing and Analysis Center)

The variation of process parameters in the synthesis of Ceria nanoparticles resulted in different morphologies. Using TEM, XRD, and BET, a mechanism was suggested for the formation of nanorods. The crystalline ceria nanorods and nanocubes were formed with predominant {200} planes, which can serve as catalytically enhanced surfaces.

MATTHEW LANDOWSKI

Modeling and Analysis of PiN Power Diodes in Series

Mentor: Z. John Shen (Electrical Engineering and Computer Science)

Research was conducted on a simple solution to combat power loss in power electronics and power correction factor circuits. By simply putting two PiN diodes in series the power loss can be lowered. This phenomena is explained with device physics simulations and experiments.

ANAMARY LEAL

Evaluation of Techniques for Visualizing Mathematical Expression Recognition Results

Mentor: Joseph LaViola, Jr. (Electrical Engineering and Computer Science)

The research purpose is to explore how different techniques for visualizing the results of handwritten mathematical expression recognition affect a user's ability to detect and correct recognition errors. By studying these techniques, we can improve the usability of pen-based interfaces, such as those found on Tablet PCs and PDAs.

ANANDA LEON

Oxidation Behavior of Air Plasma Sprayed NiCoCrAlY Bond Coats in Air Plasma Sprayed Thermal Barrier Coatings

Mentor: Yong-Ho Sohn (Advanced Materials Processing and Analysis Center)

In this study, we investigate the oxidation behavior of Air Plasma Sprayed NiCoCrAlY bond coats in Air Plasma Sprayed Thermal Barrier Coatings. The main emphasis is on the time dependence of the bond coat's internal oxidation and its thermal properties after furnace exposure to 1121°F.

ANDREW LEVENSON

Anomalous Symmetry Lowering in Long-Chain Polymethine Dyes: Pitfalls in Density Functional Theory

Mentor: Artëm Masunov (NanoScience Technology Center)

Long-chain conjugated Polymethine dyes will be analyzed using different computational methods, including Hartree-Fock (HF) and Austin Model 1 (AM1), to explain the lowering of the symmetry of electron density, which can not be predicted by the modern Density Functional Theory (DFT).

DANIEL MAIER

Structural Health Monitoring: A Bascule Bridge Case Study

Co-Author: Thomas Terrell

Mentor: F. Necati Catbas (Civil and Environmental Engineering)

The objective of this ongoing research is the study of the structural behavior and critical mechanical components of movable bridges. A framework for Structural Health Monitoring (SHM) will be devised to track anomalies in normal operational conditions. This information will help decision makers schedule preventive maintenance, consequently preventing failure while ensuring safety and functionality.

ROBERTO MIGUEZ

Multi-Objective Approach to Genetic Optimization of Evolutionary Probabilistic Neural Network Classifiers

Mentor: Michael Georgiopoulos (Electrical Engineering and Computer Science)

The research focused on the optimization of probabilistic neural networks. Optimization was conducted through use of genetic algorithms and evolutionary computation. A multi-objective approach that brought network size and accuracy to a pareto-optimum state was taken. The network was tested against a well-known benchmark problem with strong success.

SIMON MOSTAFA

Catalytic Decomposition of Alcohols Over Supported Pt Nanoparticles: A Study of Activity, Selectivity and Stability

Mentor: Beatriz Roldán Cuenya (Physics)

The objective of this project is to study the decomposition of alcohols over ZrO2-supported platinum nanoparticles for hydrogen production. The reactions were enhanced by the presence of the catalyst and monitored to determine their selectivity toward different products and catalyst stability over long term exposure to reactants.

KIRTAN PATEL

Constitutive Model for Combined Creep and Plasticity in High Temperature

Mentor: Ali Gordon (Mechanical, Materials and Aerospace Engineering)

The project objective is to create a constitutive model involving internal state-dependent variables in order to accurately model the mechanical response of high temperature materials such as Ni-based superalloys. In order to achieve this, a multi-axial formulation of the Miller model has been implemented into ANSYS as a FORTRAN code.

JONATHAN RUBINI

Raman Spectroscopy with a Fiber Optical System

Mentor: Alfons Schulte (Physics)

The objective of this project was to investigate a fiber coupled system for spatially resolved Raman spectroscopy.

ALBERT STEPPI

Semiclassical Asymptotics for the Focusing Nonlinear Schroedinger Equation

Mentor: Alexander Tovbis (Mathematics)

A study of the inverse scattering map for the semiclassical focusing Nonlinear Schrödinger Equation in the case of purely radiational data. An attempt is made to partially extend the results of Tovbis, Venakides and Zhou to a wider class of scattering data.

CALVIN STEWART

Development of a Temperature Dependent, Anisotropic, Tertiary Creep Damage Model

Mentor: Ali Gordon (Mechanical, Materials and Aerospace Engineering)

The objective of this research project is to develop an advanced constitutive model that accurately depicts the tertiary creep range for anisotropic materials undergoing creep softening. Application of this model would provide a more accurate depiction of the stress versus strain responses for critical locations of industrial gas turbine components.

BINH TRAN

Antifogging Plastic Substrates

Co-Author: Kenneth Etcheverry

Mentor: Lei Zhai (NanoScience Technology Center)

The goal of this project is to prepare a synthetic route for applying surface coatings, using the layer-by-layer self-assembly method, onto a plastic substrate in order to generate antifogging properties.

CATHERINE TUPPER

Structure and Texture Analyses of NiTiPd High Temperature Shape Memory Alloys Using Neutron Diffraction

Mentor: Raj Vaidyanathan (Advanced Materials Processing and Analysis Center)

This study was conducted to examine the structure and texture evolution in Ni30Ti50Pd20 in applications for NASA, and to link the macroscopic behavior with microstructural and micromechanical changes observed from the neutron diffraction experiments at Los Alamos National Laboratory.

BENEDICT VANI

Optimization of Nanoimprint Lithography Process Conditions for Nanogap Electrodes

Mentor: Hyoung Jin Cho (Mechanical, Materials and Aerospace Engineering)

The goal of this project is to fabricate nanogap electrodes through an optimized nanoimprint lithograpy process. This optimized process can be used to create a variety of nanoscale sensors and actuators using the same type of electrodes.

BRANDYN WHITE

FPGA Centric Image Registration

Mentor: Mubarak Shah (Electrical Engineering and Computer Science)

The goal of this project is to investigate the feasibility of an embedded real-time image registration algorithm implemented on a field programmable gate array (FPGA) for use in cars, unmanned aerial vehicles (UAVs), surveillance, and wearable computing applications.

SOCIAL SCIENCES I

MICAH ALLEN

Linguistic Correlates of the Self and Psychopathology

Mentors: Jeffrey Bedwell (Psychology), Shaun Gallagher (Philosophy)

This study represented an exploratory partnership in the spirit of cognitive science, seeking to connect contemporary philosophy of mind and clinical psychology. Autobiographical narratives were recorded, linguistically analyzed, and correlated to scores on an inventory of psychopathological symptoms. A positive relationship was found between positive feeling words and psychological distress.

ROSELLYS ALVARADO

Event Industry Contracts: The Effects of Force Majeure

Mentor: Kimberly Severt (Hospitality Management)

The primary objective of the study is to explore the use of Force Majeure clauses in event contracts. This study also aims to identify how often Force Majeure is used and the financial affects associated with its use.

ARIEL BARUCH

To Give or Not to Give: The Influence of Gifts on Romantic Relationships

Mentor: Valerie Sims (Psychology)

This study examines why gift giving has such large effects on the strengthening or deterioration of romantic relationships. Data from the questionnaire, designed to measure gift-giving beliefs regarding a significant other, family and friends, will be analyzed through a series of factor analyses.

KELCI BLOCK

Traditional Wisdom: Native American Wildlife Conservation in the 21st Century

Mentor: Peter Jacques (Political Science)

Through my research, I explore the methods of wildlife conservation on Native American reservations and how these efforts have addressed problems with reconciling economic and ecological concerns. I also explore the federal government's role in this process.

KENDRA BROWN

Personality-Display Rule Congruence Predicts Emotional Labor and Cognitive Performance

Co-Author: Jaclyn Schwartz

Mentor: Kimberly Jentsch (Psychology)

The effects of personality congruence with emotional display rules on emotional labor and cognitive task performance were investigated. One hundred twenty-one undergraduate students performed a customer service simulation. Results indicated that greater congruence between personality and display rules was associated with less emotional labor and improved cognitive performance.

ZENOBIA CARVER

Jungian Archetypes and the Symbiosis of Native American Religions and Catholicism

Mentor: Rosalyn Howard (Anthropology)

An overview of Jung's theories of the collective unconscious and archetypes provides the foundation for exploration of the Great Mother archetype in Native American Mythology, including symbolic examples in the "myths" and symbolism of the Virgin Mary from Catholicism.

STEPHANIE COLOMBO

A Comparison of Natural Speech Utterances to Minimal Vocal Features in Human-Robot Teammate Interaction

Co-Authors: Linda Ellis, Tatiana Ballion

Mentor: Valerie Sims (Psychology)

The research studies human reactions and interactions with Artificial Intelligences (AI). AI that speak increase user satisfaction in business. We want to study whether natural voice, synthetic voice, or synthetic sounds are better suited for human/robot teamwork in a moderately stressful and time-sensitive search disaster response situation.

RYNE EDWARDS

I Want My DTV: Why Florida Television Stations Are Facing Problems Transtioning to Digital Signals

Mentor: Tim Brown (Communication)

The purpose of this research is to explain how television news stations are making the switch from analog signal to digital signal and the advantages that occur with the change.

GUELINE FELIX

The Relationship Between Physical Activity and Perception of Self in Latino Children

Mentor: Shawn Lawrence (Social Work)

This project was conducted to determine if a relationship exists between parents' activity levels and their children's activity levels. It also considers whether there is a relationship that exists between how a child views themselves as a person and their level of activity or exercise outside of school.

CATHERINE FORRESTER

A Cross-Cultural Study of Hospitality Hourly Employee Motivations: U.S. vs. International Employees

Mentor: Po-Ju Chen (Hospitality Management)

Hospitality organizations hire international workers as hourly employees in the United States. Introducing international employees to the work environment creates the necessity of dealing with additional cross-cultural difficulties and issues. The purpose of this study is to gain an understanding of differences of employee motivations between U.S. and international workers in the hospitality industry.

NATHAN GOLDSCHLAG

Subsidies and the Significance of Ethanol in Corn Markets

Mentor: Ujjayant Chakravorty (Economics)

My research explored relationships between corn and ethanol to shed light on the subject of agricultural subsidies. The ethanol industry has seen exponential growth in recent years, which seems to speak against subsidizing corn production. A model was constructed to capture those relationships and conclusions were drawn.

HISAE GOZU

College Students' Perception of Parenthood: Predictors of Parental Efficacy

Mentor: Kimberly Renk (Psychology)

This study seeks to examine the predictors of future parenting efficacy and timing of parenthood for college students who are not already parents. The study will further examine the relationships between the motivation to become a parent, future role expectations, parenting attributions, interpersonal relationships and other related variables.

ALEXIS GREENBERG

An Examination of Training on States of Goal Orientation and Mentoring Relationship Success

Co-Authors: Jocelyn Reyes, Kenneth Ksmichniewicz, Shannon Scielzo

Mentor: Kimberly Jentsch (Psychology)

The current study examined the effects of a formal preparatory training intervention, given to both mentors and protégés, on mentoring relationship processes and outcomes. Specifically, the training was designed to elicit desired states of goal orientation utilizing a formal, academic peer-mentoring program.

KAILEE GREGWARE

What Do Good Teachers Believe? A Study of Select Teachers' Perceptions on Teacher Efficacy and Maslow's Hierarchy of Needs

Mentor: Jeffrey Kaplan (Teaching and Learning Principles)

Teacher efficacy, known as one's ability to make a difference in the lives of students, and self-actualization, reaching one's greatest potential, will be evaluated and compared to determine their association. The foundation for this research lies within my own personal journey, which will be emphasized throughout.

MITZI HAHN

Patient Advocacy: Enhancing Guest Service in the Hospital Setting

Mentor: Denver Severt (Hospitality Management)

Patient satisfaction and excellent medical care are hospital administrators' goals. Patient advocates work to safeguard patient rights and interests by acting as liaisons between the patients and staff. The influence of the patient advocate will be examined to determine the effect on patient well-being, healing, and ultimate satisfaction level.

ASHLEY HARPER

The Myth of the Crazy Cat Lady: Exploring How Loneliness and Connectedness Influence Attachment to Pets

Mentor: Karen Mottarella (Psychology)

This study investigates the effects of loneliness and existential connectedness on pet attachment to better understand the connection that humans have with their pets.

DANAE HIGGINBOTHAM

Anagram Test

Mentor: James Szalma (Institute for Simulation and Training)

Research was conducted on self-efficacy/self competence. The Self Determination Theory was the basis for this research.

DANIELA JARAMILLO

Driver Distraction: A Bio-behavioral Analysis

Mentor: Mustapha Mouloua (Psychology)

This study aims to empirically examine the effects of iPods on driver distraction. Previous research showed that driver distraction is a leading cause of traffic accidents (Stutts et al., 2001). However, little empirical research has documented this claim. This research aims to further examine driver distraction using a bio-behavioral approach.

JAVED KHAN

New Election Technology in Florida: How Demographic and Economic Factors Affect Voter Error

Mentor: Terri Fine (Political Science)

What are the demographic characteristics that correlate to increased voter error rates for counties using touchscreen and optical scan ballots? Analysis has shown that the factors that correlate with voter error rates for the 2004 and 2006 gubernatorial elections are educational level, household income, population size and county population density.

CATHERINE KILEY

A Comparison of Face-to-Face and Electronic Peer-Mentoring: Interactions With Mentor Gender

Co-Authors: Dana Moody, Shannon Scielzo

Mentor: Kimberly Jentsch (Psychology)

The study compares the use of computer-medium communication relative to face-to-face communication for mentoring relationships, and for formal peer-mentoring relationships. Furthermore, the effects of gender with regard to medium will also be examined.

ALEXANDER LENHOFF

Reviving the Linguistic Study of Pennsylvania German

Mentor: Rosalyn Howard (Anthropology)

The goal of this study is to revitalize linguistic anthropological research in the Pennsylvania German (also known as Pennsylvania Dutch) speaking communities. Out-dated material will be analyzed to show gaps in the research that modern studies can fill. The purpose of this investigation will be to apply new research techniques to the study of the dialect, as well as to record it using newer technologies and methods.

MICHELLE LEWIS

Sexual Identity Development Measured From an Identity Status Perspective

Mentor: Steven Berman (Psychology)

The purpose of this study was to explore the development of sexuality in relation to one's overall sense of identity. None of the most popular measures of identity include sexuality. Toward this endeavor, a sexual identity measure was constructed and compared to other measures of identity and sexuality.

ARI LITWIN

A Look at the International Manned Space Programs and the Potential For Cooperation

Mentor: Houman Sadri (Political Science)

This project is a comparative analysis of the manned space programs of Russia, the United States, and China in terms of their past international cooperation, with focus on either a military or an economic perspective. The ramifications of that perspective on the potential for expanded international cooperation are also considered.

CLAUDIA MACHADO

The Relation Between College Students' Intrafamilial Relationships and Their Adjustment to a Multiethnic University

Mentor: Charles Negy (Psychology)

The objetive of this study was to examine whether the quality of college students' relationships with their parents and family-of-origin would predict their academic and psychological adjustment to college.

SOCIAL SCIENCES II

KAITLIN MARTINEZ

Under Stress: Latino Social Support in Traumatic Situations

Mentor: Fernando Rivera (Sociology)

This project is centered on empirical research of studies done over a 25 year period, focusing on Latino social support structures and how they are affected by trauma and disaster situations.

DAVID MELVIN

Ending Impunity: Establishing the Legitimacy of the International Criminal Court

Mentor: Houman Sadri (Political Science)

As the controversial International Criminal Court begins its first investigations of human rights violators, it is important to determine its legitimacy as an institution. By analyzing the criticisms of the Court and their relevance in these initial cases, certain truths are uncovered that could determine the Court's role in global politics.

KENNETH MICHNIEWICZ

Ordinary Cruelty Televised in a Just World

Mentor: Randy Fisher (Psychology)

Using clips from "American Idol" and "Maury Povich," a study was designed to measure enjoyment of televised teasing, humiliation, verbal abuse, gossip and ridicule. The influence of victim deservingness, aggressive tendencies, just-world beliefs, socially desirable responses, parasocial identification and television viewing habits on measured enjoyment will be investigated.

JAVONTE MOTTLEY

Classroom Experiences on Student-Athletes: Men, Women and Identity

Mentor: C. Keith Harrison (Sport Business Management)

We are studying the way student-athletes perform in a classroom setting on standardized intelligent tests without knowledge of their identities as student-athletes.

IRIS DANIELA NARVAEZ

Impact of Speech Delivery Vs. Content upon Voter Perception of Transformational Leadership

Co-Authors: Jennifer Ciancio, Laura Burkstrand, Annette Cheney

Mentor: Leslie DeChurch (Psychology)

The purpose of this study is to compare the effect of speech content (in terms of information specificity) to that of speech delivery (in terms of language) upon follower perception of transformational leadership.

THUY NGUYEN

An Empirical Test of the Blood-Type Diet: Does Blood Type Modify the Effects of Diet on Weight Loss?

Mentor: Matthew McIntyre (Anthropology)

Our research will seek to answer the following: Does blood type predict which foods are eaten, and does blood type modify the association between foods eaten and weight gain in ways predicted by Dr. Peter D'Adamo's blood-type diet?

LILLIAN O'CONNELL

In Hot Water: Rising Ocean Temperatures and Coral Reefs

Mentor: Peter Jacques (Political Science)

The author researched the effects of rising ocean temperatures on coral reefs as compared to other known threats to reef health. Past bleaching events and current coral reef protection policy were researched and analyzed. A map was created to highlight the overwhelming number of bleached and unhealthy corals globally.

KEVIN PALMER

The Effect of Physical Context of Previous Stress Expsoure on Stress Response Habituation

Mentors: Shannon Whitten (Psychology), Karen Mottarella (Psychology)

This study investigated the effect of the environment on stress response habituation. Animal studies have shown that habituation to stress is modified by the environmental context of previous exposure to stress. This study sought to identify this effect in humans so that the health detriments of stress may be avoided.

MICHAEL PANELLA

Public Opinion and the Perceived Effectiveness of Political Representation

Mentor: Terri Fine (Political Science)

This project will examine views on political representation that constituents possess and, through comparison of representative democracies, discover which system is perceived as more effective in addressing public needs. I will examine public opinion data from France, Germany, Ireland, New Zealand, Poland, Portugal and the United States.

MELISSA PATTERSON

Law and (Moral) Order: News Media Discourse in Death Penalty Coverage

Mentor: Rick Kenney (Communication)

This study analyzes discourse in the death penalty coverage of select newspapers, including word choice, sourcing, quotations and tone, to identify subjective nuances. In Florida, California and Texas, the largest newspaper and the capital-city newspaper are mined for coverage of the death penalty from December 2006 to January 2008.

KATHLEEN PORTILLO

College Students' Perception of Academic Ability and Social Distance for Students With Chronic Mental and Physical Illness

Mentors: Karen Mottarella (Psychology), Shannon Whitten (Psychology)

This study explores whether participants desire greater social distance from a student with chronic mental illness or chronic physical illness, relative to a student of good health. This study also investigates whether participants might evaluate the written work of these students differently in regard to their health.

MARIA RICCI-TWITCHELL

Exploring the Relationship Between Patients' Health Locus Of Control and Perception Of Physician's Support

Mentors: Karen Mottarella (Psychology), Shannon Whitten (Psychology)

This study explores the relationship between patient's Health Locus of Control and their perceptions about the nature of their physician-patient relationship. It is expected that patients who exhibit an internal health locus of control will report better relationships with their physicians.

DAVID ROHRER

The Impact of Personality Congruence on the Malleability of Follower Perceptions of Transformational Leadership

Co-Author: Nicholas Higgins

Mentor: Leslie DeChurch (Psychology)

This study examines the influence of leader-follower personality congruence on the differences between followers' perceptions of transformational leadership dimensions over time.

CYNTHIA ROMERO

PAIRS For PEERS: Relationship Education for High School Students

Mentor: Andrew Daire (Child, Family and Community Sciences)

The PAIRS for PEERS program strives to teach high school students healthy relationship skills. This presentation reports the findings from this project's evaluation that utilized the CBCL-Youth Self Report given at pre- and post-program, and six-months along, with analyses of demographic variables.

JENNIFER SCOTT

Self-Esteem, Emotional Stroop and Recall: 'Neutral' Word Bias

Co-Author: Hilary Slover

Mentors: James Szalma (Institute for Simulation and Training), Alisha Janowsky (Psychology)

This study examined the relationship between self-esteem and performance on the emotional Stroop task. We found that participants recalled more emotionally positive than negative or neutral words. This difference may be due to the color-implication of the neutral words leaving us to question the reliability of research using this methodology.

ANTHONY SELKOWITZ

Mental Rotation and a Drawing-Based Training Regiment

Mentor: Valerie Sims (Psychology)

The study investigated whether a drawing training task would affect the outcome of mental rotation involving the figures drawn. The hypothesis is that the drawing task will reduce the visuo-spatial memory load required to complete the metal rotation task, yielding fewer eye-movements, fewer errors, and a shorter reaction time.

ANDREW SHERRILL

Undergraduate Students' Perceptions of Child Sexual Abuse

Mentor: Kimberly Renk (Psychology)

This project investigates perceptions of child sexual abuse, specifically demographic factors that influence victim blaming. Previous researchers have suggested age and gender double standards for victims. In this study, participants were presented with scenarios depicting abuse in which the age and sex of the victim and perpetrator were manipulated.

JOY SHIVELY

Analyses and Comparisons of Political Rhetoric Following September 11

Mentor: Alvin Wang (Psychology)

Content analyses were conducted on speeches given by United States President George W. Bush and al Qaeda leader Osama bin Laden following the terrorist attacks of September 11, 2001. Through these analyses I evaluated and compared various rhetorical strategies employed by one or more speakers.

HOLLY STRONG

The Interrelation of World Stock Market Indices

Mentor: Richard Ajayi (Finance)

Extensive country-by-country correlation analysis was performed on 30 to 40 developed and emerging world stock market indices to test if the world's financial markets are becoming increasingly interrelated. Investors can use correlation analysis to reduce risk and increase the returns on their portfolios.

LAWTON SWAN

Irrational Thinking and Prejudice: An Atheist Anomaly? Correlates and Predictors of Prejudice Toward Atheists among College Students

Mentor: James Brophy (Psychology)

Prejudice toward atheists is prevalent in the United States, and it is distinct from other prejudices. This study measured college students' attitudes toward atheists, and tested correlations with several cognitive and demographic variables. Implications, potential causal links and the need for further study are discussed.

LINDSEY THOMAS

Skeletal Manifestations of Child Abuse and Associated Sociological Risks

Mentor: Tosha Dupras (Anthropology)

The purpose of this research project is to bring together several sources with topics related to child abuse and its skeletal manifestations as well as the associated sociological risks.

CANDICE TORRES

Comprehensive Service-Learning Assessment Tool

Mentor: Amy Zeh (Experiential Learning)

The problem the research will address is that there is no dynamic, interactive tool available for assessing the range of elements of a service-learning course or program. This assessment tool will research the effectiveness of service-learning courses and its effects on students, professors, and agencies in the community.

MELISSA USSA

An Evaluation of the 2008 UCF Focus the Nation "Teach In/Reach Out"

Mentor: Penelope Canan (Sociology)

This project is a presentation of the results of an anonymous survey (N=188) evaluating the Focus the Nation "Teach In/Reach Out" at UCF on January 31st, 2008. Topics covered include: 1) opinions regarding the goal of promoting climate change solutions on campus and across the community, and 2) the collaborative process of this research.

JENNIE ZILNER

Teaching and Learning about Globalization and Localization: Comparative Analysis of Cross Cultural Issues

Mentor: Houman Sadri (Political Science)

The objective of this project is to examine the attitudes and behaviors of students related to globalization or localization. This cross-cultural study comparatively analyzes students' views, actions, education and habits. Furthermore, this research explores the implications of teaching and learning about "globalization" in international relations courses.

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.

Nancy Ahern
Michael Aldarondo-Jeffries
Mia Alexander Snow
Kelly Astro
Jay Batzner
Bill Blank
Debopam Chakrabarti
Costas Efthimiou
Niels da Vitoria Lobo
Henry Daniell
Michael Dunn
Martin Dupuis
Cherie Geiger
Germayne Graham
Richard Harrison
Bob Hoekstra
Jana Jasinski
Bernadette Jungblut
Joo Kim
Ana Leon
Stacey Malaret
Rudy McDaniel
Ali Mehbrabian
Alison Morrison-Shetlar
Mark Muller
Enrique Ortiz
Chris Parkinson
Holly Pinheiro
Margot Reynolds Lagowski
John Schell
Kimberly Schneider
Constance Schober
John Schultz
Valerie Sims
Kenneth Teter
Kristina Tollefson
Pallavoor Vaidyanathan
Linda Walters
James Wright

SPECIAL THANKS

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

President John Hitt
Suzanne Adornetto
Michael Aldarondo-Jeffries
Kelly Astro
Sandra Cherepow
Denise Cristafi
Elizabeth Davis
Justin Delabar
Xinli Geng
Richard Harrison
Terry Hickey
Martha Hitt
Kayla Lyons
Andi McNamara
Alison Morrison-Shetlar
Sandy Pouliot
Margot Reynolds Lagowski
Ryan Retherford
Norma Suarez
John Schell
Tom Swanson
Brian Strickland
UCF Faculty Center for Teaching and Learning
UCF Foundation, Inc.
UCF Libraries
UCF Office of Instructional Resources
UCF Marketing

INDEX OF STUDENT PRESENTERS

UCF Stands For Opportunity

UCF is the university that seeks opportunities, creates opportunities, and brings them to fruition. The university's culture of opportunity is driven by the diverse people it attracts and serves, its Orlando environment, its history of entrepreneurship, and its youth, relevance, and energy.