

2021 Fall Academic Showcase

A Celebration of Florida Southern College
Student Scholarship and Research

Thursday, December 2, 2021
4:00pm–6:40pm



Sponsored by the Florida Southern College Chapter of the Honor Society of Phi Kappa Phi

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2021 Fall Academic Showcase

A Celebration of Florida Southern College Student Scholarship and Research

December 2, 2021

Welcome!

Florida Southern College fosters an environment where students actively transition from being consumers of knowledge to becoming scholars who create new knowledge, insights, connections, and understanding. For over 20 years, our students have gathered at the end of each semester to present and discuss the scholarly work they have been doing in and beyond their courses.

The goal of the Fall Academic Showcase is twofold: to provide students a platform for their ideas, and to provide the wider community a window into the creative and intellectual energy that pervades our campus. Especially during an academic year impacted by COVID-19, today's event provides a singular opportunity to publicly share the meaning and joy of scholarly inquiry.

Fiat Lux begins at 4:00pm in the Fall Academic Showcase Hub. Participants can access the Hub throughout the event by clicking the Fall Academic Showcase Hub Zoom link (Meeting ID: xxx xxxx xxxx, Passcode xxxxxx). Presentations will be hosted in Zoom breakout rooms as indicated in the program. These rooms can be accessed once Fiat Lux begins. To move from room to room, simply return to the Hub and connect to another presentation.

We encourage you to take part in as many sessions as you can! Enjoy the conversation.

Schedule

4:00pm-4:20pm.....	Welcome	Dr. Brian Hamilton
	Preliminary Remarks	Provost Brad Hollingshead
	Fiat Lux Hub, Click to Join	
4:20pm-6:20pm.....	Presentations	Breakout Rooms 1 and 2
	Click to Join Hub, then connect to Breakout Rooms	
6:20pm-6:40pm.....	Closing Remarks	Dr. Carrie Ann Hall
	Fiat Lux Hub, Click to Join	

Fiat Lux and the Fall Academic Showcase at Florida Southern College

<https://www.flsouthern.edu/events-center/special/fiat-lux.aspx>

2021 Fall Academic Showcase Presenters – By Last Name

Room	Time	First Name	Last Name	Major	Title
Room 1	5:20-5:40	Kristina	Bono	Economics	When Good Will Is Not Enough: A Study of Economic Incentives in Climate Policy
Room 1	4:20-4:40	Lucas	Clemens	Biochemistry and Molecular Biology	The Enantioenrichment of Ground and Excited State BINOL
Room 2	5:20-5:40	Megan	Handley	English	“All that's important is that you were honest with yourself”: Fictional Responsibility and Morality in Self-Involving Interactive Fictions
Room 2	5:00-5:20	Ashley	Jackson	Citrus and Horticultural Science	Implications of Microplastic Pollution on Green Bean Growth and Production
Room 1	5:00-5:20	Emmelyne	McGovern	Chemistry	Metal-Organic Materials Synthesis and Application to Development of Latent Fingerprints
Room 1	6:00-6:20	Andrea	Migliorato	Biology	Differential Visual Opsin Expression of a Freshwater Microcrustacean Under Different Light Environments
Room 2	5:40-6:00	Santino	Miozzi	Computer Science	Chatbots on Nonprofit Websites: Storytelling vs. Direct Requests to Donate, Which is Better?
Room 1	5:40-6:00	Lea	Schiefele	Philosophy	Disability, Philosophy and the Holocaust
Room 2	4:20-4:40	Katelyn	Shibilski	Psychology	“Meme, myself and I”: Self-Directed Effects in Meme-Centered Pedagogy
Room 2	4:40-5:00	Allen	Shorey	Psychology	Role Models with Bottles: An Analysis of Exposure to Alcohol Branding in Music Videos
Room 1	4:40-5:00	T'ahara	Willis	Biochemistry and Molecular Biology	Synthesis and Characterization of Chitosan Copper MOF composite materials

2021 Fall Academic Showcase Presentations – By Room

Room 1

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Room 2

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Presentations

In alphabetical order by presenter's last name.

2021 Fall Academic Showcase Presentations

Student: Bono, Kristina

Major: Economics

Faculty Mentor: Joseph Connors

Presentation Time: 5:20-5:40

Presentation Type: Honors Proposal

Room: Room 1

Title: When Good Will Is Not Enough: A Study of Economic Incentives in Climate Policy

Abstract: As environmental concerns were pushed to the forefront of political debate, many scholars sought to solve these concerns with policies built from traditional economic theory. However, this assumes that “rational individuals” will be concerned with the long-term safety of our planet, and that they will be willing to economically disadvantage themselves today for the sake of the next generation. I believe these types of policies rarely achieve their stated goal of helping to reduce environmental impacts, and this is why there is such a need for a new approach that relies instead on providing economic incentives in order to “nudge” people toward environmentally-friendly choices.

Student: Clemens, Lucas

Major: Biochemistry and Molecular Biology

Faculty Mentor: Jason Montgomery

Presentation Time: 4:20-4:40

Presentation Type: Oral Presentation

Room: Room 1

Title: The Enantioenrichment of Ground and Excited State BINOL

Abstract: Enantioselective reactions are the cornerstone of modern synthetic organic chemistry and are crucial to obtaining enantiopure (100% R- or 100% S-) molecules. Asymmetric catalysis is a mechanism in which a chiral catalyst directs the reaction to favor one stereoisomer over the other. BINOL ([1,1'-binaphthalene]-2,2'-diol) and its derivatives have been critical for the development of a wide range of asymmetric catalytic reactions. The utility and effectiveness of these reactions depends on obtaining enantiopure BINOL. One potential method for enriching BINOL involves synthesizing BINOL derivatives with chiral auxiliary groups, and using excited state proton transfer to reduce the barrier of rotation between R- and S-BINOL enantiomers. Differences in the energies of these enantiomers will determine equilibrium concentrations and enantiomeric enhancements (ee). In this work, we report ground and excited state time-dependent density functional theory (TD-DFT) energies of R- and S-enantiomers of two BINOL derivatives in vacuum, and compare resulting ee values with preliminary experimental work.

Student: Handley, Megan

Major: English

Faculty Mentor: Jenny Moffitt

Presentation Time: 5:20-5:40

Presentation Type: Senior Project

Room: Room 2

Title: “All that's important is that you were honest with yourself”: Fictional Responsibility and Morality in Self-Involving Interactive Fictions

Abstract: Video games have seen an ever-increasing amount of academic attention in recent years, though most of that has attempted to classify them as something apart from pre-existing foundations.

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However, I argue that they belong to an already established, but under-investigated, class of fictions: Self-Involving Interactive Fictions (SIIFs). These fictions are those that make statements in a piece of fiction true of the person participating. SIIFs are concerned with the participant, and "...what your actions say about who you are choosing to be in the story world." These uniquely personal fictions occupy an interesting junction where story-telling and narrative devices meet with moral responsibility. SIIFs demand more attention on account of their philosophical and literary merits. While not the whole of the genre, some of the most popular and recognizable examples of SIIFs are video games. Therefore, I utilize 2K Games' BioShock (2007), Toby Fox's Undertale (2015), and Obsidian Entertainment's The Outer Worlds (2019) as case studies designed to test and expand the application of the theories compiled in this paper.

Student: Jackson, Ashley

Major: Citrus and Horticultural Science

Faculty Mentor: Malcolm Manners

Presentation Time: 5:00-5:20

Presentation Type: Senior Project

Room: Room 2

Title: Implications of Microplastic Pollution on Green Bean Growth and Production

Abstract: The implications of microplastic pollution on varying ecosystems and the organisms present within them have recently become an area of interest in research. The presence of microplastic pollution within soils has the ability to alter some soil characteristics as well as aspects of plant growth. This study assessed the effect of microplastic polluted soil on green beans (*Phaseolus vulgaris*) grown within a greenhouse. Control and polluted green beans were grown in the same conditions except for the addition of a teaspoon of microplastic mixture. After the beans fully germinated, shoot length, bean production, and produced bean weights were recorded. Although the data between the two groups did not vary significantly, this study utilized an organism not found in current research. In general, our results were not consistent with published data, in that the polluted group did not display positive or negative implications as a result of the pollutant's presence. Additionally, the need for further research using a variety of organisms as well as selected variables was highlighted.

Student: McGovern, Emmelyne

Major: Chemistry

Faculty Mentor: Carmen Gauthier

Presentation Time: 5:00-5:20

Presentation Type: Oral Presentation

Room: Room 1

Title: Metal-Organic Materials Synthesis and Application to Development of Latent Fingerprints

Abstract: Metal-organic materials (MOMs) have become increasingly sought after for research on applications ranging from catalysis to drug delivery. Their prevalence in forensics, however, is still lesser known. In latent fingerprints, they react with amino acids in such a way that a grainy precipitate forms and adheres to the print, allowing for better visualization of prints. Several MOMs were synthesized using transition metals and lanthanides for the metal center and organic acids for the connecting linkers. These MOMs were then evaluated for stability and applied to latent fingerprints for

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visualization via precipitation and luminescence. Several application methods were explored, including sequential and mixed pipetting and sequential and mixed submersion. The efficacy was evaluated based on adherence to print residue, photographic quality, minutiae detail, and fluorescence if applicable. The methods were also compared to traditional fingerprint dusting powder methods. The lanthanides were best for visualization because of their fluorescence; they also adhered best to the amino acids in the prints overall. The mixing methods formed more precipitate as opposed to the sequential methods. With adjustment, metal-organic materials can potentially be a replacement method for lifting higher quality fingerprints in the field.

Student: Migliorato, Andrea

Major: Biology

Faculty Mentor: Christopher Brandon

Presentation Time: 6:00-6:20

Presentation Type: Honors Proposal

Room: Room 1

Title: Differential Visual Opsin Expression of a Freshwater Microcrustacean Under Different Light Environments

Abstract: Vision is a key sensory trait for survival and reproduction in most animals. Many animals are able to discriminate visible light by wavelength. This type of wavelength-specific discrimination (or color vision to be less precise) can be used to gather food, find mates, and other tasks. Color vision is possible because of visual pigments that are composed of a protein called opsin and a light absorbing molecule called a chromophore that are found throughout photoreceptor neural cells. The freshwater crustacean, *Daphnia*, have long been studied as model organisms of evolution and ecology because of their rapid generational times, asexual reproductive cycle, widespread presence across the world, and their importance in freshwater systems. *Daphnia* use their visual system for orientation in the water column, navigation, and potential avoiding predators and finding food. In particular, *Daphnia* may use color vision for hunting algae, a main source of food. Interestingly, *Daphnia* have the largest set of visual opsins yet discovered despite their relatively simple visual system. To compare, *Daphnia* have approximately 32 visual opsins whereas humans have four. Previous studies have shown that opsin expression has been correlated to environmental light conditions in fish and other invertebrates. The expression patterns of opsins related to the light environment can give insight into the functional role of color vision for specific organisms. In this study, we propose to study the visual opsin gene expression patterns in *D. magna*. We hypothesize that over several generations, *D. magna* is exposed to majority UV/blue light, the opsins responding to short wavelengths (SWS opsins) will express more than long wavelength sensitive opsins (LWS opsins); likewise, if *Daphnia* are exposed to a majority red light environment, LWS opsins will be more developed than SWS opsins. To test this hypothesis, we will culture multiple generations of *D. magna* in several different light environments.

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Student: Miozzi, Santino

Major: Computer Science

Faculty Mentors: Jennifer Dapko, Eric Harris

Presentation Time: 5:40-6:00

Presentation Type: Oral Presentation

Room: Room 2

Title: Chatbots on Nonprofit Websites: Storytelling vs. Direct Requests to Donate, Which is Better?

Abstract: The creation of a chatbot to obtain donations for a non-profit organization through its website. The overarching goal of this research was to advance our understanding of how chatbots should be designed in order to maximize donations. Our research question was: Should chatbots be designed to tell a story or get to the point and ask for the donation? We partnered with an animal welfare organization, The Animal League, to answer this question. We used phenomenal tools that helped us with the building and design of the chatbot. Also, great analytical tools for all the data that was generated. We did not have a clear path to follow because there is not enough information about this topic. Therefore, it was exploratory research with challenges that just could be overcome by creativity and analytical thinking. We partnered with the Animal League from Lakeland and used their website for the deploy of our chatbot. Having the data we collected come from a real and live website, gives the data more meaning and more understanding of what is happening in the donations for non-profits like The Animal League.

Student: Schiefele, Lea

Major: Philosophy

Faculty Mentor: H. A. Nethery

Presentation Time: 5:40-6:00

Presentation Type: Honors Proposal

Room: Room 1

Title: Disability, Philosophy and the Holocaust

Abstract: According to a 2020 report from the United States Census Bureau more than a quarter of Americans have disabilities. This number has grown from just nineteen percent recorded in 2010. Therefore, it is important to understand the history of people with disabilities as well as the philosophy of why people with disabilities are perceived the way that they are in society. My honors thesis will examine the forced sterilization and execution of people with disabilities by the Nazis and how the perception of people with disabilities as inherently lesser leads to discrimination and alienation. Nazi persecution of people with disabilities is often forgotten by history, yet it stands as an example of how hatred and ignorance can cause hundreds of thousands of deaths. Meanwhile, the examination of why people with disabilities are perceived as they are will explain how even today, people with disabilities can be perceived as different or in some cases, lesser.

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Student: Shibilski, Katelyn

Major: Psychology

Faculty Mentor: Patrick Smith

Presentation Time: 4:20-4:40

Presentation Type: Senior Project

Room: Room 2

Title: “Meme, myself and I”: Self-Directed Effects in Meme-Centered Pedagogy

Abstract: Using memes (i.e., images linked to text) to disseminate information has become a popular method creating social commentary and sharing common knowledge (Bini et al., 2020). Memes are often shared, replicated, and modified, making them a rapidly evolving global language (Procházka, 2014). Recently, researchers have examined the effectiveness of using memes as educational tools in different settings (e.g., Bini et al., 2020; Purnama, 2017; Riser et al., 2020). Our laboratory previously demonstrated how neuroscience-targeted memes could serve as ancillary aids for better memory retention in short- and long-term intervals (D’Alessandro et al., 2021). In this study, participants with memes that were directly targeted to the neuroscience content demonstrated greater memory of passages that highlighted neurotransmitter function. However, it wasn’t clear whether targeted memes would be further enhanced by memes that could be more actively created by students. Therefore, the purpose of the current study is to determine if creating a meme can facilitate the learning of unfamiliar neuroscience information. We hypothesize that students who create their own captions for memes will find the content more meaningful and benefit from the memes in terms of memory retention, thus further exploring the advantages to using memes as pedagogical tools in the future.

Student: Shorey, Allen

Major: Psychology

Faculty Mentor: Patrick Smith

Presentation Time: 4:40-5:00

Presentation Type: Senior Project

Room: Room 2

Title: Role Models with Bottles: An Analysis of Exposure to Alcohol Branding in Music Videos

Abstract: Music videos have been used to popularize different musical styles towards the proclivities for continual young generations. However, use of provocative content (e.g., alcohol abuse) seems to be increasing with each generation (Durant et al. 1997). Previous research has explored various social factors that affect various perceptions of music videos, including alcohol abuse (e.g., Cranwell et al. 2017). The current study analyzes undergraduate college student perceptions of alcohol content in music videos. If found to be significant, results could aid in advocating for more change in the industry. Our first hypothesis is that participants will not have a significantly different perception of success in pop and rap music videos with alcohol content as opposed to pop and rap non-alcohol content music videos. Our second hypothesis is that participants will be significantly more open to alcohol consumption, binge-drinking, and alcoholism when presented with the alcohol based music videos as opposed to the non-alcohol music videos. Our final hypothesis is the style of music video and the gender of the participant viewing will provide a significantly different perception of the artist’s success and therefore likelihood to be viewed as a role model.

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Student: Willis, T'ahara

Major: Biochemistry and Molecular Biology

Faculty Mentor: Carmen Gauthier

Presentation Time: 4:40-5:00

Presentation Type: Oral Presentation

Room: Room 1

Title: Synthesis and Characterization of Chitosan Copper MOF composite materials

Abstract: The synthesis and characterizations of two copper metal-organic frameworks (MOFs) will be presented. The first framework was synthesized by the reaction of copper (II) nitrate hemi(pentahydrate) and 5-hydroxyisophthalic acid, the second reacting copper (II) nitrate hemi(pentahydrate) and 1,3-adamantane dicarboxylic acid. We also investigated the effects of solvents and reaction conditions to see which conditions gave a greater crystallinity of the copper MOFs. The copper MOFs are used as an enhancing proponent to chitosan, a biopolymer with antibacterial properties, to add a synergistic effect. Trials of the chitosan alone, along with the combination of chitosan and copper ions, and lastly the integration of chitosan and the copper MOFs were tested for the potency of their antibacterial properties against *E. coli* and *Staphylococcus Aureus*.

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