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2021 Undergraduate Research Symposium: Full Program

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Sessions at a Glance

8:30 – 8:50 AM	<p>Welcome and Dean Metzger’s Opening Remarks (Welcome Zoom Room) David Metzger, Dean of Perry Honors College</p>
8:45 – 9:00 AM	<p>Presenter Check-in</p>
9:00 – 9:55 AM	<p>Session 1. pp. 9-12 Interdisciplinary Research #1 [3 presentations] (Zoom Room A) Room Moderator: Chunqi Jiang & Kristen Egler</p> <ol style="list-style-type: none"> 1. Elizabeth Harden. <i>A Qualitative Study of Representations of Socially Stigmatized Individuals in CSI</i> 2. Torre Williams, Cesar Ariel. <i>Pinto Fundamentals of Human-Centric Artificial Intelligence (A.I): Comparative Analysis of Europe and the U.S. Landscape</i> 3. Kyle Canady, Jian Wu. <i>Extracting Datasets, methods, and projects for ACL Anthology Papers</i> <p>College of Sciences UG Research #1 (Zoom Room B) Room Moderator: Desmond Cook</p> <ol style="list-style-type: none"> 1. Q&A for COS Students interested in UGR <p>Monarchs Maximizing Access to Research Careers #1: (Zoom Room C) Room Moderator: Alvin Holder & Desh Ranjan Info Session</p> <p>Art Exhibit Video (Zoom Room D) Room Moderators: Tamara Dunn & Elliott Jones</p> <ol style="list-style-type: none"> 1. Continuous Art Show Loop of Video <p>INNOVATE Panel: (Zoom Room E) Room Moderators: Leona McGowan & Jennifer Grimm</p> <ol style="list-style-type: none"> 1. Kayla Marbella 2. Ashanti Cameron <p>Coastal and Estuarine Science [3 presentations] (Zoom Room F) Room Moderators: Sophie Clayton & Michala Hendrick</p> <ol style="list-style-type: none"> 1. Alexander Burns, Alexander Bitterman, Tim Muraskin, Autumn Kistler, Jennifer Huggins, Christopher Zajchowski. <i>Visitor Motivations and Public Health Perceptions during the COVID-19 Pandemic: A Case Study from First Landing State Park</i> 2. Kayla Marciniak, Chanel Flores-Vargas, Kathryn M. Wiesner, Leah Gibala-Smith, Sophie Clayton. <i>Direct observations of the life cycle of <i>Heterocapsa triquetra</i> in the Elizabeth River.</i> 3. Chanel Flores-Vargas, Kayla Marciniak, Kathryn M. Wiesner, Leah Gibala-Smith, Sophie Clayton. <i>The Winter Succession of Phytoplankton in the Elizabeth River</i>

9:45 – 10:00 AM	Presenter Check-in
10:00 – 10:55 AM	<p>Session 2. pp. 12-16</p> <p>Art History 1: Art at Work [4 presentations] (Zoom Room G) <u>Room Moderators: Jared Benton & Sherelle Rodgers</u></p> <ol style="list-style-type: none"> 1. Kayla Cochran. <i>The Cypriot Vase Collection at ODU</i> 2. Danielle Jensen. <i>How Cyprus Vases were influenced by Surrounding Areas</i> 3. Dee Moses. <i>Inimitable Lines, Inimitable City: Jacopo de'Barbari's View of Venice</i> 4. Kayla Everett. <i>STEAM at the Forefront of Positive Change: A Virtual Exploration of Ted Ellis's Writing a New History</i> <p>Extra Zoom Room [3 presentations] (Zoom Room H)</p> <ol style="list-style-type: none"> 1. Presenter 1 2. Presenter 2 3. Presenter 3 <p>Monarchs Maximizing Access to Research Careers #2 [3 presentations] (Zoom Room I) <u>Room Moderators: Alvin Holder & Desh Ranjan</u></p> <ol style="list-style-type: none"> 1. Lindsay C. Days, Duaa R. Alajroush, Chloe B. Smith, Jessa Faye Arca, Khadija Faye, Floyd A. Beckford, Stephen J. Beebe Dr., Alvin A. Holder. <i>Evaluating anticancer activity of a cobalt(III) complex with a thiosemicarbazone ligand against triple negative breast cancer cells</i> 2. Chloe Smith, Yazmin Hernandez, Umesh Sankpal, Raj K. Gurung, Alvin A. Holder, W. Paul Bowman, Anish Ray, Riyaz Basha. <i>Evaluating the Anti-Proliferative Effects of Less Toxic Agents against High-Risk Neuroblastoma Cells</i> 3. Noah Jennings, Desh Ranjan, Shubham Jain, Prateek Prasanna. <i>Confirming Hardware Accuracy in Eye Tracking Research</i> <p>Art Exhibit Video (Zoom Room J) <u>Room Moderators: Tamara Dunn & Elliott Jones</u></p> <ol style="list-style-type: none"> 1. Continuous Art Show Loop of Video <p>Engineering & Science Research #1 [2 presentations] (Zoom Room K) <u>Room Moderators: Jennifer Younkin & Qiqi Liang</u></p> <ol style="list-style-type: none"> 1. Sara M Smith, Justine Marin, Amari Adams, Keith West. <i>Artery Wall Physical Properties as Clinical Indices for Detection of Atherosclerosis</i> 2. Winston Shields. <i>Metadata Based Figure Search Engine for US Patent User Interface</i>
10:45 – 11:00 AM	Presenter Check-in

11:00 AM – 11:55
PM

Session 3. pp. 17-23

**Art History 2: Identity and Society [4 presentations] (Zoom Room L)
Room Moderators: Vittorio Colaizzi & Sarah Bulger**

1. Dee Moses. *Only in Bologna: Lavinia Fontana's Self-Portrait at Clavichord*
2. Kayla Everett. *Hilma af Klint and Hilla Rebay: Adding a New Thread to the Web of Abstraction*
3. Eva James. *Rituals and Sex and Blood: Pioneering Queer and Feminist Performance Art*
4. Carla Leanzo. *The Punk Rocker of the Northern Renaissance: How Pieter Aertsen's Meat Stall Broke the Boundaries*

**History [3 presentations] (Zoom Room M) Room Moderators: Brett
Bebber & Kate Warnock**

1. Toni Gaisford. *Building Nationalism: Germany's use of Propaganda Posters to Unify People*
2. Alexa Zavala. *Remembering the German Outrages of 1914*
3. Noelle Mueller. *The Music of the Great War: How Song Helped Support the War Effort from the Home Front*

**Engineering & Science Research #2 [3 presentations] (Zoom Room N)
Room Moderators: Bridget Anderson & Michala Hendrick**

1. Rita Meraz. *Using Software Defined Radio Platforms and Open Source Software to Design and Build an HD Radio Receiver*
2. Shane Williams. *Researching, Designing, and Building Multiple Antennas to be used with Receivers*
3. Dan Burzek. *Deconstructing the Rectifier: A Historical Look at the Diode*

**Art Exhibit Video (Zoom Room O) Room Moderators: Tamara Dunn
& Elliott Jones**

1. Continuous Art Show Loop of Video

**LeADERS Panel [3 presentations] (Zoom Room P) Room Moderators:
Leona McGowan & Jennifer Grimm**

1. CHIP Student Presentations: LeADERS Panel (Ciyera Allen, Ariana Montemayor and Sydney Scanlon).

**Interdisciplinary Research #2 [3 presentations] (Zoom Room Q) Room
Moderator: Sheila Keener & Raksha Kandlur**

1. Tess Hardesty. *The Effects of Urbanization on Plant Biodiversity in Southeastern Virginia*

	<ol style="list-style-type: none"> 2. Brooke Nixon. <i>The Interdisciplinary Impacts of Technology Semantics and Communicational Bypassing in the Cybersecurity Field</i> 3. Taylor Powell. <i>Undetermined Coefficients: A Fully Generalized Approach</i>
11:45 – 12:00 PM	Presenter Check-in
12:00 – 12:55 PM	<p>Session 4. pp. 23-31</p> <p>Art History 3: Matters of Interpretation [4 presentations] (Zoom Room R) Room Moderators: Anne Muraoka & Ireland O’Hare</p> <ol style="list-style-type: none"> 1. Eva James. <i>Printmaking Towards Reconnection: Art Therapy's Use in Harm Reduction with Substance Abuse Disorders</i> 2. Kim Hardy. <i>Bosch's Haywain Triptych: A Glimmer of Hope on the Road to Hell</i> 3. Kayla Everett. <i>Palpable Freedom in Claude Monet’s Giverny Home: the Visible and Obscure Manifestations of Japonisme</i> 4. Kayla Bruce. <i>Michelangelo’s Last Judgment: A Winged Boat and an Ill Omen</i> <p>Computer Science and its Impact in Science and Engineering [4 presentations] (Zoom Room S) Room Moderator: Jing He & Caleb Scruggs</p> <ol style="list-style-type: none"> 1. Sean Leonard, Jiangwen Sun. <i>A training module to introduce undergraduate students the analytical pipelines for omics data in biomedical research</i> 2. Taylor Powell. <i>Encryption and Decryption with a Raspberry Pi Device</i> 3. Justin Luckenbach. <i>Connecting a Vintage Macintosh to the Internet</i> 4. Thu Nguyen, Jing He. <i>Development of Informal Learning Channels for Visualization of Cellular and Molecular Images</i> <p>Interdisciplinary Research #3 [3 presentations] (Zoom Room T) Room Moderators: Jeremiah Ammons & Cassidy Sandoval</p> <ol style="list-style-type: none"> 1. Cherita Washington, Kelly Romano, Kristin E. Heron. <i>Racial Differences in Associations Among Discriminatory Experiences, Body Dissatisfaction, and Eating Disorder Behaviors Between Young Women Who Identify as Black and White</i> 2. Kaylee Kaznosky. <i>Virtual School Counseling During the COVID-19 Pandemic</i> <p>Art #1 Q & A based on Virtual Exhibit [4 presentations] (Zoom Room U) Room Moderators: Elliot Jones & Tamara Dunn</p> <ol style="list-style-type: none"> 1. Kayla Cochran (Drawing). <i>Grounded</i> 2. Tamara Dunn (Drawing). <i>Masked, Eye, Hand, Self Portrait at 19, Eyes in Shadow</i>

	<p>3. Tony Gelardo (Drawing). <i>There's more than one way to.... make Art: An exploration of medium and technique</i></p> <p>4. Andre Jacobs. <i>Human Experience and the Visual Narrative</i></p> <p>Interdisciplinary Research #4 [3 presentations] (Zoom Room V) Room Moderator: Lisa Wallace & Ethan Ross</p> <p>1. Isis Cowan, Kelsie K. Allison, Kyla Carr, Taylor Webb, Alan Meca. <i>Comparison of Hispanic College and Noncollege Emerging Adults</i></p> <p>2. Noah Tait. <i>Procedure and effects of five supplements on asymbiotic germination of Platanthera dilatata</i></p> <p>3. Ashleigh Joyner & Aurora Gehres. <i>Reading Between the Lines: Outright Books, Virginia Beach's Lesbian and Gay Bookstore</i></p>
12:45 – 1:00 PM	Presenter Check-in
1:00 – 1:55 PM	<p>Session 5. pp. 31-38</p> <p>Science Research #2 [3 presentations] (Zoom Room W) Room Moderators: Alvin Holder & Desh Ranjan</p> <p>1. Jordan Ortman, Jennifer Shipley, Megan Strowger, Abby L. Braitman. <i>Perceived Effectiveness as a Moderator of the Association Between Protective Behavioral Strategies and Alcohol Consumption</i></p> <p>2. Jade Smith, Mariam A. Mhanna, Lisa M. Shollenberger. <i>Analysis of fecal microbiome composition during development of chronic schistosomiasis in mice</i></p> <p>3. Lauren Butler, Charlotte Dawson, Cassidy Sandoval, Kristin Heron. <i>Examining the Feasibility of an Ecological Momentary Assessment Study of Binge Eating among Sexual Minority and Heterosexual Women</i></p> <p>Bioelectric Info Session (Zoom Room X) Room Moderators: Gymama Slaughter & Hannah Kears</p> <p>Interdisciplinary Research #5 [2 presentations] (Zoom Room Y) Room Moderator: Elizabeth Hogue & Raksha Kandlur</p> <p>1. Ryan Malpaya, Rowan Williams. <i>“It’s pretty hard to make friends over a Zoom meeting room”: Understanding the recreational experiences of youth with type 1 diabetes during COVID-19</i></p> <p>2. Lily Daniels. <i>John Donne and the Paradox: An Analysis of “Batter my heart, three-person’d God”</i></p>

	<p>Art #2 Q & A based on Virtual Exhibit [3 presentations] (Zoom Room Z) Room Moderators: Kenneth FitzGerald & Tamara Dunn</p> <ol style="list-style-type: none"> 1. Alexis Blizzard. <i>"Needed Design:" Communication in the Time of COVID-19</i> 2. Aysia Brown. <i>The Crown Act: Natural Hair is Professional Hair</i> 3. Avis Keeling & Amber Wilson. <i>Creating a GIF for HelloRebma</i> <p>Science Research #3 [3 presentations] (Zoom Room AA) Room Moderators: Pinky McCoy & Mohammadali Koorank Beheshti</p> <ol style="list-style-type: none"> 1. Scarlet Aguilar-Martinez, Aleksandar I. Goranov, Hongmei Chen, Patrick Hatcher. <i>Molecular and optical properties of vanillin photo-products identified via advanced analytical techniques</i> 2. Cylah Bruno, Balasubramanian Ramjee. <i>Hollow TiO₂nanoparticles as photocatalysts for organic reactions</i> 3. Curtis Wood, Oumar Sacko. <i>Investigation into the effect of ozonation on biochar as a function of pyrolysis temperature and its applications in dye removal</i> <p>Interdisciplinary Research #6 [3 presentations] (Zoom Room BB) Room Moderator: Chris Zajchoswki & Rowan Williams</p> <ol style="list-style-type: none"> 1. Annika Cerda. <i>Barriers and Constraints for Outdoor Recreation Participation by Children with Physical Disabilities during the COVID-19 Pandemic: A Case Study from Hampton Roads, Virginia</i> 2. Bryce Mahler. <i>An Evaluation of the Junior Sailing Program at the Norfolk Yacht and Country Club</i> 3. Sean Spofford. <i>The perfect dark flaneur in Ian McEwan's "The Comfort of Strangers"</i>
1:45 – 2:00 PM	Presenter Check-in
2:00 – 2:55 PM	<p>Session 6. pp. 38-43</p> <p>Management Research Lab [3 presentations] (Zoom Room CC) Room Moderators: Emily Campion & Sheila Keener</p> <ol style="list-style-type: none"> 1. Info Session 2. Austin Saucer, Philip Yorkman, Devyn Asercion. <i>Deciding Factors for Employees During a Pandemic</i> 3. Camille Rawlings. <i>Student Reactions to The Job Search and AI in Organizations</i> 4. Tamara Lloyd. <i>The Effect of COVID-19 on HR Practices</i> <p>Art #3 Q & A based on Virtual Exhibit [4 presentations] (Zoom Room DD) Room Moderators: Elliott Jones & Tamara Dunn</p> <ol style="list-style-type: none"> 1. Evin Abel (Painting). <i>Concepts, Concrete and Abstract, to Ignite the Imagination of the Viewer</i> 2. Megan Berg (Painting). <i>Carter Mountain Couple</i> 3. Korrine Maher (Painting). <i>The Beginning</i>

	<p>4. Victoria Jensen (Painting). <i>Exploring the Food-Consumption-Dichotomy</i></p> <p>Medical History #1 [4 presentations] (Zoom Room EE) Room Moderators: Annette Finley-Croswhite</p> <ol style="list-style-type: none"> 1. Cate Callis. <i>The Influenza of 1918</i> 2. Rane Fox. <i>Radiation Poisoning and Notable Cases</i> 3. Celina Cejas. <i>When It's Hard to Swallow</i> 4. Bridget Groble. <i>Women's Innate Experiences with Pain: Pregnancy and Childbirth</i>
2:45 – 3:00 PM	Presenter Check-in
3:00 – 3:55 PM	<p>Session 7. pp. 43-50</p> <p>The Language of Conspiracy Theories Panel Discussion [3 presentations] (Zoom Room FF) Room Moderators: Bridget Anderson & Rowan Williams</p> <ol style="list-style-type: none"> 1. Kaelie Polhemus, Maggie Hartzell, Dawntenai Ramsay, Huyen Nguyen, Ella Davies, Ian Siemen, and Bridget Anderson <p>Interdisciplinary Research #7 [3 presentations] (Zoom Room GG) Room Moderator: Suzanne S. Emmons & Kevin Ives</p> <ol style="list-style-type: none"> 1. Jordan L. Staten, Sekoyah M. Mcglorn, and Noelle E. Jessup. <i>Late Bronze Age to Early Iron Age Ceramic Vases: The Documentation and Identification of ODU's Cypriot Vase Collection</i> 2. Mindy Medrana, Natalia Allen. <i>The Effects of Progressive Time Delay on Learning Acquisition in Students with Autism Spectrum Disorder</i> 3. Sofia Calicchio, Taylor Diggs. <i>Third Culture Kids and Digital Culture: Service-Learning Experiences</i> <p>Interdisciplinary Research #8 [3 presentations] (Zoom Room HH) Room Moderator: Sharon C. Stull & Justin Bueche</p> <ol style="list-style-type: none"> 1. Noor Yahya, Marcus Simon. <i>There's an App for That: Promoting Health App Use in Rural Ireland</i> 2. Victoria S. Diaz. <i>Exploring the Inclusiveness of a Sports Camp for Children with Visual Impairments: Athletes' Perspectives</i> 3. Ryan Hiltabrand. <i>Quality Assessment of Scholarly Big Data</i> <p>Art #4 Q & A based on Virtual Exhibit [4 presentations] (Zoom Room II) Room Moderators: Elliot Jones & Tamara Dunn</p> <ol style="list-style-type: none"> 1. Kieran Rundle (Photography). <i>The Sense of the South</i> 2. Chris Valentine (Photography). <i>Futuramismo</i> 3. Sarah Spalsbury (Photography). <i>That Which Brings Us Here</i> 4. Amber Pierce (Photography). <i>Shades of Blue</i>

	<p>Pathogen Biology from Land to Sea [3 presentations] (Zoom Room JJ) Room Moderators: David Gauthier & Ethan Ross</p> <ol style="list-style-type: none"> 1. Xiavana Horton, Christina Hurst, Melodie Laylor, Armoni Mayes, Arielle McGlone, Stephanie Moyers, Yash Patel, Rebecca Ferrara. <i>Microbiome Analysis of Amblyomma maculatum Colony Ticks</i> 2. Cheandri Ackermann, Fenny Chaudhary, Rosemariel Floyd-Vasquez, Jadesia Fludd, India Hawkins, Chloe Smith, Jasmine Walker, Rebecca Ferrara. <i>Analysis of Microbiomes for Captive and Wild Caught Adult Amblyomma maculatum</i> 3. An Ha. <i>Seasonal Pathological Differences of Mycobacteriosis in Striped Bass (Morone saxatilis)</i> <p>Extra Zoom Room [3 presentations] (Zoom Room KK)</p> <ol style="list-style-type: none"> 1. Presenter 1 2. Presenter 2 3. Presenter 3
4:00 – 4:30 PM	<p>Session 7. P. 51 Closing: Student Scholar Closing Panel (Closing Zoom Room)</p> <p>Meet and hear from several rising stars. These students (like many others) have demonstrated resilience and perseverance through conducting research during a pandemic, but their scholarship also focused on COVID and its impact. Moderators (Dean Metzger, Jeremiah Ammons, & Eddie Hill).</p>

This program is available online through ODU Digital Commons, the university's institutional repository: <https://digitalcommons.odu.edu/undergradsymposium/> Students are encouraged to submit their final presentations, posters, and artwork to the repository. Contact Karen Vaughan kvaughan@odu.edu for more information about how to submit.

Session 1

9:00-9:55 AM

Interdisciplinary Research #1

A Qualitative Study of Representations of Socially Stigmatized Individuals in CSI

Elizabeth Harden (Mentor: Tracy Sohoni)

Arts & Letters

In this study, we used a mixed method approach to analyze depictions of socially stigmatized individuals including victims of intimate partner violence (IPV), those who use substances, and those with mental illnesses. A quantitative analysis was used to account for how frequently individuals from the target groups were represented while a qualitative analysis was used to assess those depictions for demographic information as well as how much sympathy was elicited from the audience. The media of focus is television, specifically the crime-drama Crime Scene Investigation (CSI). We chose CSI to analyze because of its popularity across its 15 seasons as well as its ease of access as it is made available for streaming through Hulu. After coding seasons 1, 2, 14, 15, as well as the two finale episodes of season 16 for the target groups, we established thematic categories to determine whether the show contributed to or challenged stigma towards these groups through upholding or defying harmful stereotypes, which affects how sympathy is solicited. Ultimately, we found that CSI did little to challenge stereotypes or stigma faced by the target groups, and that these depictions typically distort what is known about these groups in ways that can undermine addressing these issues in a meaningful way. This research is important as it helps us understand how media sustains the status quo or creates narratives around uncommon experiences that build sympathy and invoke social change.

Fundamentals of Human-Centric Artificial Intelligence (A.I): Comparative Analysis of Europe and the U.S. Landscape

Torre Williams, Cesar Ariel Pinto (Mentor: Cesar Ariel Pinto)

Engineering

This research is a comparative analysis of human-centric Artificial Intelligence (A.I.) in Europe and the U.S. It is established that fundamental pillars of human-centric A.I. are Lawfulness, Robustness, and Ethical. However, current states of attainment and rigor these pillars are pursued are not the same in Europe and the U.S. for various reasons. This research identifies and describes some of these notable reasons and provide relevant use-cases, primarily for technologists, entrepreneurs, and policy-makers to establish emerging risks of the global pursuit towards wider applications of A.I.

Extracting Datasets, methods, and projects for ACL Anthology Papers

Kyle Canady, Jian Wu (Mentor: Jian Wu)

Science

A benefit of the increasingly interconnected world is the amount of information available to pull from, however this also results in an increased volume of noise when trying to find resources related to a particular topic of interest. Resources have been developed over the years to facilitate discovery of previously published research papers containing named entities, such as people, organizations, and locations but in order to find the datasets and methods used in the free text a human must manually read through the entirety of each

document. This project develops a framework to automatically extract datasets and methods from scientific papers in the domain of Computer and Information Sciences and Engineering (CISE). We compared a heuristic method and a deep learning-based method, the latter of which was fine-tuned on a pre-trained language model. The ground truth was built by manually annotating a corpus of 500 abstracts of papers selected from the ACL Anthology, which was used for fine-tuning the deep learning model and evaluation. The deep learning model plus a classifier outperforms the heuristic model in both simple and complex sentences.

INNOVATE Panel

INNOVATE Cyber

Kayla Marbella (Mentor: Jenn Grimm)

Cybersecurity

This experience was different from a traditional classroom setting because the primary focus of our INNOVATE Cyber project was to create a prototype solution around a cyber security related issue while utilizing the human centered design thinking method. Our prototype focused on creating a service for small businesses throughout Hampton Roads to address their unique cybersecurity challenges and promoting cyber's best practices. Design thinking allowed our team to push outside of our comfort zones to reimagine an innovative solution. I realized that developing a meaningful solution took longer than expected and was pleased to discover our outcome really surpassed my expectations when I first started out. This experience has allowed me to think creatively and learn how to develop a unique solution while perfecting it with the help of our stakeholders. I learned how to voice my opinion, develop my leadership skills, take initiative, grow my professional network, and understand the growing need for cybersecurity experts. I would recommend this experience because today's world is full of technology where businesses, companies, and individual users need to be protected by strong, innovative, cybersecurity professionals. The program will allow you to expand your ideas, work with a diverse group of people from different backgrounds and apply cybersecurity knowledge to the real world.

Innovate Monarchs: Experience in the Design Thinking Process

Ashanti Cameron (Mentor: Karen Sanzo, Jen Grimm)

Business

Innovate Monarchs is an experience that focuses on educating students on the process of design thinking in both theory and practice. The hands-on approach with six phases that lead to problem solving uses creative, critical, and logic based thinking. Monarchs express their ideas, and explore solutions to the challenge in an empowering, high-impact team environment. During my time in the program, I have applied the design thinking process in a variety of experiences that showcase the extensive nature of this design thinking process which can be applied to the entrepreneurial process along with other interests or aspects of life.

Coastal and Estuarine Science

Visitor Motivations and Public Health Perceptions during the COVID-19 Pandemic: A Case Study from First Landing State Park

Alexander Burns, Alexander Bitterman, Tim Muraskin, Autumn Kistler, Jennifer Huggins, Christopher Zajchowski (Mentor: Chris Zajchowski)

Education

State and national parks are sites to which, until recently, American citizens enjoyed largely unlimited and uninhibited access. During the COVID-19 pandemic, outdoor recreationists have been forced to make important and difficult decisions about the use of parks they once enjoyed in a blissful, carefree manner. Concerns about the nature of COVID-19, which placed the entire world in a state of disarray, have risen and fallen since March 2020. In the United States, variations between the states' responses to the pandemic have created unique dilemmas for citizens, who still depend on public places such as parks for recreation and exercise. In this study, First Landing State Park (FLSP) was selected to gauge how visitors made decisions about their outdoor recreation participation, specifically their decision to camp at and enjoy the resources of FLSP. During Fall 2020, campers (n = 114) were surveyed for their motivations for visitation, trust in public health messaging from various sources, and compliance with public health guidance. Results indicate visitors exhibit a moderate level of concern about the pandemic, and use of park resources to pursue what they perceive as safe outdoor activities that support mental health and family leisure. Additionally, various public health messaging strategies received varying support dependent on demographic categories (i.e., political affiliation). Using these data, FLSP staff intend to continue to mitigate the spread of COVID-19 and more accurately target certain types of visitors with information about how to recreate in and enjoy public spaces safely.

Direct observations of the life cycle of *Heterocapsa triquetra* in the Elizabeth River

Kayla Marciniak, Chanel Flores-Vargas, Kathryn M. Wiesner, Leah Gibala-Smith, Sophie Clayton (Mentor: Sophie Clayton)

Science

Heterocapsa triquetra is a marine thecate dinoflagellate harmful algal bloom (HAB) species known to bloom during the winter in the Chesapeake Bay. This study aimed to observe the onset and decline of a *H. triquetra* bloom in the Elizabeth River. Water samples were collected near-daily from 21 January 2020 to 13 March 2020 to observe a range of marine phytoplankton species including *H. triquetra*. Cells were identified and quantified using an imaging flow cytometer (IFCB) which produces images of the cells in the various stages of their life and reproductive cycles. To date, very few studies have made direct observations of the different life stages of dinoflagellate species in the field. As part of this study, we were able to observe the different life stages of *H. triquetra* cells in their vegetative states, undergoing binary fission, and ecdysis. The images from the IFCB were compiled, identified, and taxonomically classified using EcoTaxa, an open online platform. Environmental parameters including salinity, water temperature, and chlorophyll were also measured along with the time and location of each water sample. We used these additional data to examine how environmental conditions might impact the lifecycle of *H. triquetra*. We observed a significant change in the amount of vegetative cells in this population, and were able to follow the bloom cycle from initiation to decline. This study provides new insights into how *H. triquetra* populations change during the bloom cycle and can provide further understanding of other HAB species and their life cycles.

The Winter Succession of Phytoplankton in the Elizabeth River

Chanel Flores-Vargas, Kayla Marciniak, Kathryn M. Wiesner, Leah Gibala-Smith, Sophie Clayton (Mentor: Jenn Grimm)

Science

The Elizabeth River feeds into the lower Chesapeake Bay, the largest estuary in the United States, and is known as a site for the initiation of harmful algal blooms (HAB) caused by some phytoplankton species. Routine monitoring for HABs is conducted frequently in the summer and fall, but some HAB species are known to bloom in the winter when monitoring may be paused. In this study, we made observations of winter phytoplankton species succession from January 2020 to April 2020. The methods of this study included daily sampling located at the sailing dock of ODU's Sailing Center. Samples were collected and processed through an Imaging Flow CytoBot (IFCB), which produces thousands of images of phytoplankton cells for each sample. From these images, we can identify individual phytoplankton species and estimate their cell size and biomass. We used an open online platform called EcoTaxa to host the images and facilitate taxonomic identification. We manually identified a subset of the images to produce an automated classification algorithm on EcoTaxa to identify the bulk of the images collected. At the same time as the IFCB water samples were collected, we sampled for chlorophyll a and used a CastAway CTD to measure water temperature and salinity. This study focuses on describing the succession of the whole phytoplankton community during the winter months linking this to both cell physiology (e.g. cell size) and environmental conditions and highlights ephemeral blooms missed by routine but infrequent winter monitoring

Session 2

10:00-10:55 AM

Art History 1: Art at Work

The Cypriot Vase Collection at ODU

Kayla Cochran (Mentor: Jared Benton)

Arts & Letters

ODU's Special Collections Department has a collection of five ancient vases from Cyprus, which were given to the university in the 1960s. Traditionally, such collections of antiquities are considered legally acquired and owned if they have provenance before 1973, when the United States ratified its participation in the UNESCO Act of 1970. Although the vases were gifted to the campus through legal terms, keeping them in the university's Special Collections conflicts with ODU's Monarch values. This predicament is due to the timing of the transaction between Dudley Cooper, the original collector who legally bought the vases and gifted them to ODU, and Cyprus. The island of Cyprus steeped in a violent civil war in the 1960s, when the vases were acquired. Due to the vases being purchased during a state of vulnerability, keeping the vases on the argument of legality fails to maintain the standards and values that ODU claims to uphold. By explaining the civil wars of Cyprus and the consequential looting of these wars, this paper aims to bring to light the truth of how these vases were acquired and how they ended up at Old Dominion University. The author aims to persuade ODU to rethink its ownership of these vases in conversation with Cyprus, whose cultural heritage they belong to.

How Cyprus Vases were influenced by Surrounding Areas

Danielle Jensen (Mentor: Jared Benton)

Arts & Letters

Old Dominion University's special collections has five Cyprus vases dating from the Bronze Age to the early Iron Age. Collections such as these are often thought of as reflections of the institution or the collector that acquired them. I want to reframe ODU's five Cypriot vases as a vehicle for describing the islands history. Each vase was made using a different technique and represents a different period in the islands history. As such, the collection presents evidence for change in pottery production on Cyprus from the late Bronze Age to the early Iron Age, attesting innovations such as the pottery wheel and documenting contact with other cultures such as Phoenicians and Greeks.

Inimitable Lines, Inimitable City: Jacopo de'Barbari's View of Venice

Dee Moses (Mentor: Dr. Anne Muraoka)

Arts & Letters

Maps are very rarely ever just maps. Whether they communicate sophistication, serve as political propaganda, or simply show the interests of their owners, most serve a function beyond wayfinding or home decor. Jacopo de' Barbari's View of Venice is no exception. Measuring a mammoth 5 feet by 10 feet, this oversized woodblock print is one of the largest produced during the Italian Renaissance. Most scholarship has focused on the map's composition, how it may have been surveyed, or in comparing it to other maps of the era. However, very little attention has been given to placing this print in the proper cultural context of the world of Venetian printmaking and its web of official privileges, rivalries, and forgeries. On its face, the map is obvious Venetian propaganda, meant to tap into the city's pride and belief in its own mythical divine favor. However, viewed in light of the rampant illicit counterfeiting of prints and printed items, lax protections for individual designers, and the often nepotistic system used to ensure exclusive printing rights, de'Barbari's View of Venice becomes something more than a larger-than-life map: it becomes an irreproducible work of art designed to frustrate counterfeiters by its multi-block design, exacting registration, and massive size. From the carving of minute details to the equipment needed to create it, de'Barbari has ensured his print would be nearly impossible to copy, either in woodblock print or plate etching, while also showing his mastery of the art of printmaking.

STEAM at the Forefront of Positive Change: A Virtual Exploration of Ted Ellis's Writing a New History

Kayla Everett (Mentor: Dr. Vittorio Colaizzi)

Arts & Letters

Ted Ellis's painting Writing a New History demonstrates how STEAM fields of study can advance communities of color and make a positive change in young African American lives. The term STEAM represents the inclusion of the arts into traditional STEM fields of study, which are science, technology, engineering, and mathematics. Ellis, a recently appointed Old Dominion University Scholar-in-Residence at the College of Arts and Letters, is a self-proclaimed creative historian with ample experience in both science and the arts. His focus on American culture and heritage is deeply rooted in all of his paintings,

including Writing a New History which was recently acquired by the Barry Art Museum. The Barry Art Museum facility and collection were graciously donated to ODU by Richard and Carolyn Barry in 2015. The museum houses a vast variety of glass, American modernist paintings, and the world's only permanent doll exhibition. A Fall 2020 internship presented the challenge of creating a virtual public program that would engage the Barry Art Museum's audience safely given the COVID-19 pandemic. In this context I proposed an interactive exploration of Ellis's painting that highlights its connections to history and Ellis personally. With Ellis's guidance and support, I was able to create a component by which visitors can interface with the painting on the museum's website. This project illuminates Ellis's painting in a way unseen prior in the Barry's public programming by explaining each of its components in a way that is easily digestible and engaging. Users are able to explore Ellis's work at their own pace and gain unique insight into the historic painting that seamlessly fits into the educational setting of the museum.

Monarchs Maximizing Access to Research Careers #2

Evaluating anticancer activity of a cobalt(III) complex with a thiosemicarbazone ligand against triple negative breast cancer cells

Lindsay C. Days, Duaa R. Alajroush, Chloe B. Smith, Jessa Faye Arca, Khadija Faye, Floyd A. Beckford, Stephen J. Beebe Dr., Alvin A. Holder (Mentor: Dr. Alvin Holder)

Science

Cancer is one of the major causes of death in the world. Breast cancer is an uncontrolled growth of epithelial cells of the breast. Triple negative breast cancer (TNBC), a subtype of breast cancer, lacks estrogen, progesterone, and HER2 receptors. Chemotherapeutic options for TNBC which involves cisplatin have severe side effects, e.g., cytotoxicity of normal breast tissue, drug resistance, and breast cancer recurrence. The objective of this study was to determine less toxic treatment options for TNBC by using a cobalt(III) complex, which like most conventional anticancer drugs was designed to disrupt DNA synthesis as a chemotherapeutic agent. Previously, $[\text{Co}(\text{phen})_2(\text{H}_2\text{O})_2](\text{NO}_3)_3 \mathbf{1}$ (where phen = 1,10-phenanthroline) was reacted with 9-anthraldehyde-N(4)-methylthiosemicarbazone (MeATSC) to produce $[\text{Co}(\text{phen})_2(\text{MeATSC})](\text{NO}_3)_3 \cdot 1.5\text{H}_2\text{O} \cdot \text{C}_2\text{H}_5\text{OH} \mathbf{2}$. The hypothesis is as follows: complex 2 will have a higher anticancer effect on TNBC cell line MDA-MB-231-VIM-RFP than cisplatin. In vitro cytotoxicity studies involving complex 2 with MDA-MB-231-VIM-RFP were carried out by using the Cell Counting Kit-8 (CCK-8) assay. The anti-proliferative activity of complex 2 was evaluated after incubating the drug with MDA-MB-231-VIM-RFP cells in increasing concentrations (0, 6.125, 12.5, 25, 50, and 100 μM) for 24 hours, then cell viability was measured by CCK-8 assay. Dose curves and doses required to inhibit 50% of cell growth (IC₅₀ values) were obtained by using Origin Pro software, which revealed that MDA-MB-231-VIM-RFP cell viability was negatively impacted by complex 2 with an IC₅₀ value of ~26 μM .

Evaluating the Anti-Proliferative Effects of Less Toxic Agents against High-Risk Neuroblastoma Cells

Chloe Smith, Yazmin Hernandez, Umesh Sankpal, Raj K. Gurung, Alvin A. Holder, W. Paul Bowman, Anish Ray, Riyaz Basha (Mentor: Dr. Alvin Holder)

Science

Neuroblastoma (NB) is the most common extracranial pediatric cancer. High Risk Neuroblastoma (HRNB) is aggressive with a 40-50% 5-year survival rate (5YSR). Racial and ethnic disparities in NB patients demonstrated 5YSR is lower in African American and Native American children. Our laboratory is testing combination treatments using less toxic agents to induce HRNB sensitization to chemotherapy. Non-Steroidal Anti-Inflammatory Drug, tolfenamic acid (TA) inhibits Specificity protein 1 (Sp1) and survivin, markers associated with resistance to chemo/radiation therapies.

The objective is to identify agents more effective than TA for combination treatments. The hypothesis is as follows: two derivatives of TA will have more efficient anti-proliferative effects on HRNB cells. Anti-proliferative activity of derivatives on HRNB cell lines (LA-155n and SMS-KCNR) and non-malignant (cardiomyocytes) cells was evaluated. Methods include treating cells with TA and TA derivatives (TA-D1 and TA-D2) in increasing concentrations (0, 5, 10, 20, 40, and 80 μM) for 48 hours, measuring viable cells using CellTiterGlo kit, generating dose curves and determining the dose required to inhibit 50% of cell growth (IC50 value) using Sigma-Plot software.

TA-D1 (IC50 = 29 μM) and TA-D2 (IC50 = 3 μM) had lower IC50 values than TA (IC50 = 75 μM). TA and its derivatives had no effect on cardiomyocytes. Western blot results showed decreased expression of Sp1 and survivin in HRNB cells treated with TA-D1. In conclusion, TA derivatives may effectively sensitize certain HRNB cells and induce chemo/radiation therapy response. Further studies to understand mechanisms of these derivatives and safety against non-malignant cells are underway.

Confirming Hardware Accuracy in Eye Tracking Research

Noah Jennings, Desh Ranjan, Shubham Jain, Prateek Prasanna (Mentor: Desh Ranjan)

Science

In the field of Radiology, diagnoses depend on the subjective interpretation of content in medical images like X-Rays. This involves rigorous visual examination and the perception of these images with the goal to come to a definitive conclusion on a person's health. Eye tracking techniques have been used to track and analyze the search patterns of radiologists when they diagnose a patient in this fashion. These techniques include table-mounted or wearable eye-trackers that gather information about a user's pupillary activity to compare interreader search patterns and provide feedback pertaining to the regions the reader had previously gazed upon. These trackers are typically associated with an accuracy depicting the angle formed between the user's pupil, the place they are intending to gaze, and the position at which the hardware predicts they are gazing. Accurate tracker data could provide researchers and readers alike a better understanding of the reader, the stimulus, and the relationship between the two. Without proper procedure and accurate data supplied from the eye-tracking hardware, the discoveries based on the data would be rendered untrustworthy. Our system confirmed the accuracy stated by the GazePoint GP3 manufacturer by designing an experiment in which a user would calibrate and utilize the tracker to store and analyze the captured data in a systematic fashion. This experiment yielded an accuracy similar to that stated in the documentation and serves as a precursor to future conclusions to be drawn from accurate, reliable tracker data.

Engineering Research #1

Artery Wall Physical Properties as Clinical Indices for Detection of Atherosclerosis

Sara M Smith, Justine Marin, Amari Adams, Keith West (Mentor: Julie Hao)

Engineering

Blood circulation in the cardiovascular system is essentially pulse wave propagation in the arterial tree. Pathological changes in the arterial wall alter its physical properties and undermine pulse wave propagation and eventually cause heart diseases. This study aims to establish a comprehensive engineering rationale for the influence of arterial wall physical properties on pulse wave propagation in an artery. The arterial wall is modeled as an initially-tensioned, isotropic, thin-walled tube. Flowing blood is treated as an incompressible, inviscid/viscous fluid. While the governing equations of flowing blood in the artery include the Navier-Stokes and continuity equations, the governing equations of the arterial wall motion arise from Newton's second law and stress-strain relations. The boundary conditions at the blood-wall interface relate the flowing blood variables to the arterial wall variables. A free wave propagation analysis is conducted to derive the frequency equation. The solution to the frequency equation is two complex wave velocities (c_1 and c_2), representing the Young (c_1) and Lamb (c_2) waves propagating in the arterial tree. The real and imaginary components of each complex wave velocity provide the related wave velocity and transmission. With the related values at the carotid artery and the ascending aorta, the influence of arterial wall physical properties is obtained, and the physiological implications of such influence are also identified. The results illustrate clinical values of arterial wall physical properties on detection of arterial abnormalities, which may improve the utility of arterial wall physical properties as clinical indices for detection and treatment of atherosclerosis.

Metadata Based Figure Search Engine for US Patent User Interface

Winston Shields (Mentor: Jian Wu)

Engineering

Most online search engines support searching for text-based documents, such as web pages. In this project, we investigate an approach to build a search engine that allows users to search figures in patents. Besides keyword-based searching, the user interface (UI) offers a set of functionalities allowing users to tag, create customized lists, like patent figures, and perform advanced searches based on metadata of figures, such as patent ID, text reference, figure ID, aspect, and the object depicted in the figure. The metadata is queried by JSON objects that are indexed by the state-of-the-art search platform called Elasticsearch. The interface and functionality are implemented with HTML, CSS, JavaScript, PHP, AJAX, and MySQL. The UI was tested and the items in the search engine result page return relevant patent figures. Such UI can be used for building a large corpus of multi-labeled figures, which can further be used for training and evaluating computer vision models for automatic object recognition.

Session 3

11:00 AM – 11:55 AM

Art History 2: Identity and Society

Only in Bologna: Lavinia Fontana's Self-Portrait at Clavichord

Dee Moses (Mentor: Dr. Anne Muraoka)

Arts & Letters

Lavinia Fontana has long been regarded as one of the foremost female artists of the Italian Renaissance and Baroque era, owing largely to her lengthy and successful career as a portraitist for wealthy families. However, the most likely genesis of her illustrious career tends to be brushed past in her histories: the awkward yet clever Self-Portrait at Clavichord. Traditionally, this painting has been seen as nothing more than a simple self-portrait painted from a mirror. This paper argues that the Self-Portrait functions beyond reproducing the artist's features. It is at once an advertisement, a dowry, and bold self-promotion. First, it exists as an advertisement of her unmarried status to the Bolognese academics for which it was intended. When her marriage to Gian Paolo Zappi was finalized without a dowry, the painting then took the place of a dowry and served as a promise that their marriage and his subsequent move to Prospero Fontana's studio would be a worthwhile investment. We can also see the Self-Portrait as an advertisement to Fontana's eventual customers, the wealthy and powerful women of Bologna for whom she spent most of her life painting. Finally, this painting is a bold, intentional comparison to the reigning female painter of the time, Sofonisba Anguissola. In this fashion, Fontana's Self-Portrait at Clavichord is not a simple self-portrait, but a brilliant piece of advertising and self-promotion, ensuring her status as a competent portraitist, a clever painter, and a woman worthy of respect and admiration.

Hilma af Klint and Hilla Rebay: Adding a New Thread to the Web of Abstraction

Kayla Everett (Mentor: Dr. Vittorio Colaizzi)

Arts & Letters

Hilma af Klint and Hilla Rebay were two women who dedicated themselves equally to non-objective art in very different ways. Af Klint worked on her abstract paintings in seclusion and sought her work's meaning from spiritual "Higher Beings" that she claimed painted through her. Rebay became an important figure who brought spiritually-inflected art to America, not only through collaboration with Solomon Guggenheim but also through her own paintings. Af Klint's obscurity has only recently changed because of the popularity of the exhibit *Paintings for the Future* at the Guggenheim Museum in 2018. Rebay has been excluded because of rumors surrounding her personal life. Neither's absence from the historical record has been adequately explained and attributed to misogyny. Moreover, their work was incompatible with a still predominantly formalist history of modern art. This paper argues that instead of imposing a story on af Klint and Rebay that is untrue to their identities in order to find a "fitting" place for them within the canon of abstraction, it is more interesting to examine their isolation. Af Klint's and Rebay's paintings demand a new way of looking at images that entails a deep understanding of their purposes, resulting in a challenge to the inflexibility of art history itself. An examination of their segregation adds a new thread to the web of abstraction that reflects their selfless dedication to non-objective painting.

Rituals and Sex and Blood: Pioneering Queer and Feminist Performance Art

Eva James (Mentor: Dr Vittorio Colaizzi)

Arts & Letters

The performance art of Carolee Schneemann and Ron Athey are characterized by visceral presentations of sexuality underpinned by autobiography. Schneemann's most famous performance, *Interior Scroll* (1975) entailed painting her nude body, then pulling a scroll from her vagina while reading a sardonic critique of conceptual art inscribed on it. Her later works included blood, film, collage, and various other materials, all of which Schneemann saw as an extension of her roots in action-painting. Athey conducts theatrical spectacles that suggest masochistic religious rites. In the 1990s, his performances incorporated the use of ritual piercing, bloodletting, and religious mythology. Diagnosed as HIV positive in 1986 in the midst of the AIDS pandemic, Athey became a central image in the 1990s Culture Wars over arts funding. Because both artists—a woman in the 1960s and an HIV positive queer man in the 1990s—represent historically marginalized groups, their artworks present their bodies as sexual and political, rather than anonymous. In the 70s, new modes of scholarship applied an affective reading to performance art. Kristine Stiles, Amelia Jones, and Karen Gonzalez Rice attributed to Schneemann and Athey's confrontational performances a communication of the self. By contrasting themselves with the traditional, white-male-dominated performance art's formalistic anonymity, these artists assert their identities as representatives of marginalized groups. They challenge the spectator to encounter, empathize with, and vicariously experience another identity.

The Punk Rocker of the Northern Renaissance: How Pieter Aertsen's Meat Stall Broke the Boundaries

Carla Leanzo (Mentor: Dr. Anne Muraoka)

Arts & Letters

The sixteenth-century Dutch painter Pieter Aertsen completed *The Meat Stall* in Antwerp in 1551. At its surface, *The Meat Stall* appears as a mere visual assault of viscera. However, upon closer examination, several religious metaphors and a biblical scene emerge. Scholars credit Aertsen with creating a unique approach to everyday life scenes, expanding on the genre painting type. However, *The Meat Stall's* significance extends beyond conceptualizing an art movement; it responds to the ongoing Protestant Reformation in Northern Europe. With Martin Luther and his followers weakening the Catholic stronghold in Europe, artists, including Aertsen, were looking for methods to safely criticize the severe tension between the two branches of Christian faith while salvaging their careers. Although scholars have acknowledged the impact of the Protestant Reformation on Aertsen's *The Meat Stall*, this paper examines how he utilized revolting imagery as a form of satire to accessibly share moral lessons to the less privileged working class.

History

Building Nationalism: Germany's use of Propaganda Posters to Unify People

Toni Gaisford (Mentor: Dr. Brett Bebbler)

History

At the onset of World War I, Germany was still building up a national identity across both military and social spectrums. Often, people think of German unity in the context of World War II when nationalism and the Nazi party used propaganda to the extreme to promote a

singular, and superior, German identity. However, this ultra-nationalism did not appear in a vacuum. In order to understand the growth of the German identity, it is important to look back to the Great War for the beginnings of a national identity.

My paper analyzes art and propaganda to understand the development and progression of German national identity during and after the Great War. By looking at propaganda posters, historians can analyze how the German military and government wanted their people to see themselves and the military. Throughout the war, posters and propaganda shifted their focus from regional to national unity, and from the strength of the military to generating civilian support for the troops. A deep analysis of these posters, their art and verbiage, shows the conscious effort to create the idea of being German. Building a sense of German identity became paramount to keeping civilian support for the Great War, and an in-depth evaluation of propaganda posters provide an important insight into how the government created it from the ground up.

Remembering the German Outrages of 1914

Alexa Zavala (Mentor: Dr. Brett Bebbler)

History

During the First World War, mass variations of propaganda occurred, including ideas that supported pro-war, anti-war, gender. However, the worst form of propaganda was atrocity propaganda. Atrocities inspired resistance because they broke the general rules of warfare and engagement and proved socially detestable. In WWI, atrocity propaganda was a specific propaganda technique aimed to gather support for war through highlighting the crimes and atrocities committed by the enemy. This often provided a moral reasoning for supporting the war. Various sources such as The Bryce Report, The German White Book, The Belgian Grey Book, and Lord Bryce's Investigation into Alleged German Atrocities in Belgium demonstrate the use of atrocity propaganda by various nations throughout the war, including the prolonged social effects these works had on society. Overall, the use of atrocity propaganda in WWI highlighted and emphasized the enemy conducting in disturbing and immoral actions, such as rape and murder, in order to provide a moral reasoning for the act of going to war. Atrocity propaganda also promoted war by using good vs evil schemas and tactics, which inevitably influenced social beliefs and identity among its viewers.

The Music of the Great War: How Song Helped Support the War Effort from the Home Front

Noelle Mueller (Mentor: Dr. Brett Bebbler)

History

The outbreak of war in Europe in 1914 inspired a massive propaganda push perpetrated by foreign governments in hopes of recruiting young men to join the armed forces while also promoting positivity for those who were not eligible to serve. Propaganda posters from the Great War have been widely studied from a variety of different angles. However, posters were not the only form of propaganda that were used during this time. This paper looks at music as a popular form of propaganda in Great Britain and the unique ways in which it helped the war effort. With music being a form of entertainment that was a large part of home and social life during this period, music-based propaganda

was able to enter the homes of the British on a level that posters could not. The analysis of thirty pieces of music recorded as either sheet music or audio files revealed propagandized war sentiments about supporting the war effort, the rationing of food on the home front, and taking on work outside traditional gender roles in both popular music and war songs.

Engineering & Science Research #2

Using Software Defined Radio Platforms and Open Source Software to Design and Build an HD Radio Receiver

Rita Meraz (Mentor: Dr. Dimitrie Popescu)

Engineering

Software Defined Radio (SDR) refers to radio systems in which most of the functionality associated with the physical layer is implemented in software using Digital Signal Processing (DSP) algorithms, and has been a subject of extensive research over the past two decades. The purpose of this project is to design and implement an HD radio receiver using the open-source software GNU Radio and the RTL-SDR platform. The work is motivated by the fact that HD radio receivers are expensive, require special hardware, and are difficult to find, while the RTL-SDR is affordable, versatile, and provides multiple different applications. By researching and analyzing the HD radio standard, this project will demonstrate how SDR platforms such as the RTL-SDR can be programmed using GNU Radio software to operate as an alternative to the expensive proprietary HD Radio receivers. Using an RTL-SDR in conjunction with software tools, the user can implement many other applications in the area of wireless communications and networking. The outcome of the project is a radio that can be used and demonstrate more efficient ways of developing and designing HD radio receivers contributing to the field of radio-frequency engineering. Developing hardware solutions was a domain for those able to afford expensive systems and custom designs. But, as technology advanced new devices motivated engineers to get started with digital radio at an affordable price.

Researching, Designing, and Building Multiple Antennas to be used with Receivers

Shane Williams (Mentor: Otilia Popescu)

Engineering

This project covers the research, design, simulation, and construction of several antenna types and their range along a frequency range of 150 MHz to 210 MHz. After being designed, simulated, and built, the process of tuning each antenna will be covered. The antenna models used in this project are the Halfwave Dipole, Folded Dipole, the Colinear Array, the Yagi-Uda Moxon Antenna, and the Quadrifilar Helix Antenna. These antenna types were chosen as they all have varying ranges, and even build upon each other in concept and design. The project details the design, and the simulation models using Feko and Matlab. The ability to tune each antenna is just as vital to antennas as the construction itself and gives a means of design verification.

Deconstructing the Rectifier: A Historical Look at the Diode

Dan Burzek (Mentor: Dr. Otilia Popescu)

Engineering

The history of electronic communications begins with wired technology, but within a few decades, advancements led to the discovery of radio waves allowing for wireless communication. The decoding of this information required a device to sense these waveforms and change them into a usable form. The earliest forms of decoding only allowed for a binary style of information, but the discovery of crystal rectifiers allowed for more complex information to be transmitted and decoded, which led to voice transmission. Although crystal rectifiers are rudimentary in nature, the study of these devices helps demonstrate the difficulties experienced by all researchers, whether in times past or in modern times.

LeADERS Panel

Down the path of LEADERS

Ciyera Allen (Mentor: Jennifer Grimm)

LeADERS

I have always felt like I was underprepared for life after college. Never knowing if I will be able to make a good impression on my future possible employers. The Leaders program gives countless opportunities to learn how to expand knowledge on key components that will help you for life after college. Its a program where you as a student can take that extra step to prepare for life after college.

A Zine and COVID-19: A Journey of Critical Engagement and Its Benefits to Health Sciences Students

Ariana Montemayor and Sydney Scanlon (Mentor: Cathleen Rhodes)

Health Sciences

In the Spring of 2020, we created a zine for our Women and Technology class at Old Dominion University that emphasized the societal inequalities of COVID-19 and how it disproportionately impacts People of Color, women, and low income individuals. What began as a contract course project for the Honors College, has led to a publication opportunity with the Virginia Engage Journal, a forum where students enrolled in colleges and universities across Virginia can share and reflect critically on their own community-engaged experiences. Creating the zine and the nine month process to publication of our results are two separate high impact practices unlike any other experience. It required us to critically engage with current events and apply the knowledge we gained from our course. Through this process, we have come to know the challenges researchers face such as having a limited access to research and adapting with the ever changing nature of information around the topic of COVID-19. We were also able to share the triumphs researchers face when overcoming these obstacles and creating an original project with meaningful research to share with the public. From working closely with our mentor to undertaking the revision process with journal editors, this has been a rewarding experience and we highly encourage other students to seek ways to take their learning outside of the classroom. In this presentation, we critically reflect on our process of creating original research from brainstorming to publication, as well as the ways the coronavirus shaped and changed our journey.

Interdisciplinary Research #2

The Effects of Urbanization on Plant Biodiversity in Southeastern Virginia

Tess Hardesty (Mentor: Lisa Wallace)

Science

This research project investigated the impacts of urbanization on plant species biodiversity within Southeastern Virginia. The hypothesized results of this research were if there was an increase in urbanization, then plant diversity would decrease. Plant biodiversity can increase the decomposition rates, pollination success, and biomass production of the area. Decreasing in plant biodiversity can increase the spread of pathogens through plant populations and increase herbivore damage. There was data compiled from SERNEC herbarium records of four counties, Accomack, Northampton, Norfolk, and Virginia Beach. Virginia Beach had the largest population increase, which was considered the measurement for urbanization in this study. Virginia Beach's population increased from 8,091 in 1960 to 449,974 in 2019. Northampton had the smallest recorded population for both time periods, however, it had similar plant species population as Virginia Beach.

The research supported that there was no clear association between the increasing urbanization and the change in plant biodiversity. The results supported that there was a loss of plant diversity in Norfolk, which was the only human population that experienced a decrease in population from the time periods of 1960 to 2019. The county with the most plant species biodiversity was Accomack County, which had the second lowest recorded population. Norfolk county had the second highest population with the lowest plant species diversity. Northampton and Virginia Beach had a large gap in population sizes, but had similar plant biodiversity, with a difference of only four more species in Virginia Beach. Further research is needed in order to determine whether there was a decrease in biodiversity of native plants and an increase in biodiversity in non-native plants.

The Interdisciplinary Impacts of Technology Semantics and Communicational Bypassing in the Cybersecurity Field

Brooke Nixon (Mentor: Dr. Iria Giuffrida)

Cybersecurity

An undeniable challenge exists within the intersection of the communication and technology fields, particularly in the cybersecurity industry. The implications of this are vast, contributing to social, legal, and ethical dilemmas. A primary contributory factor to such issues lies in semantics and communicational bypassing, which refer to challenges in understanding and interpreting the meaning of words and communication exchanges. These factors call for an interdisciplinary application to growing obstacles of interpreting communications in the cybersecurity field. Scholar William Haney proposed paraphrasing, approachability, sensitivity to contexts, and taking a people-minded, not word-minded approach to be 4 key mechanisms to avoid communicational bypassing challenges. This presentation will utilize Haney's strategies to address the impact and role of semantics and bypassing, practical applications to address previous issues seen with them in the cybersecurity field, and an interdisciplinary case study application of the topics.

Undetermined Coefficients: A Fully Generalized Approach

Taylor Powell (Mentor: Hideaki Kaneko)

Science

In this presentation, I outline the development of a fully-generalized solution of linear, non-homogeneous differential equations with constant coefficients and whose non-homogeneous function is any product of sinusoidal, exponential, and polynomial functions. This particular method does not require the reader to work with annihilator operators or additional related ODEs, and only requires an understanding of summation notation, matrix multiplication, and calculus. Additionally, this method provides a straightforward way to develop a program to implement the technique, and potentially reduces the time-complexity for solutions with comparisons to other methods.

Session 4

12:00-12:55 PM

Art History 3: Matters of Interpretation

Printmaking Towards Reconnection: Art Therapy's Use in Harm Reduction with Substance Abuse Disorders

Eva James (Mentor: Eleanor Lampell)

Arts & Letters

For this paper, what will be presented is the use of Art Therapy in the harm reduction community with substance abuse disorders. What will be discussed is how the introduction of art therapy helps in harm reduction, how art therapy's integrative approach provides clients with creative ways to cope and process individual substance abuse, and evidence to support actual harm reduction. There will be a more specific focus on the use of printmaking in a therapeutic setting and its use in harm reduction, treatment, and recovery. Art Therapy can be considered a non-threatening treatment modality that provides an alternative to verbal processing. The art therapist places the client as the interpreter and expert of their experience. This allows clients to engage in treatment in a non-judgmental environment and focus on self-expression through their art making process. It can be a safe approach to help clients begin to address their traumas, causes of addiction, and consequences of their addiction. Lastly, by using the example of printmaking, what will be shown is the medium creates a therapeutic bridge that would improve both substance abuse and any underlying mental disorders. A brief history of printmaking and its multiple uses with the Gestalt therapeutic approach will show its beneficial implementation to harm reduction, treatment, and recovery.

Bosch's Haywain Triptych: A Glimmer of Hope on the Road to Hell

Kim Hardy (Mentor: Dr. Anne H. Muraoka)

Arts & Letters

Very little is known about the life of the Late Medieval Dutch painter Hieronymus Bosch (1450-1516), leaving room for varied analyses of his work. The Haywain, one of his secular triptychs, generates debate, as scholars attempt to decipher an abundance of unconventional enigmatic imagery. There is broad consensus that this triptych satirizes avarice and lust and predicts damnation without exception for all of humankind. While the Haywain lays out the origin and evolution of sin, from Heaven to Eden to Earth to Hell, this paper argues that it also offers a singular moment of hope in the love scene on top of the hay mound.

There, a woman closes her eyes to the worldly temptations that crowd her and looks within to examine the state of her soul and contemplate the example set by Christ. The reinterpretation of this scene draws from popular theological and contemporary literature and provides the key to understanding the Haywain. In what might be his final work, Bosch depicts an allegory of self-reflection and free will, confronting viewers with both their morality and mortality, which is an objective shared by several of Bosch's other major panels.

Palpable Freedom in Claude Monet's Giverny Home: The Visible and Obscure Manifestations of Japonisme

Kayla Everett (Mentor: Dr. Agnieszka Whelan)

Arts & Letters

The latter half of the nineteenth century in France saw a rise of interest in Japanese culture which visually manifested itself in western art in a variety of ways. Claude Monet was one of the artists fascinated by the new aesthetics. The influence of Japanese art on Monet's paintings has been well documented, especially when considering his lush blue and green paintings from the garden of Giverny. However, scholars have not considered the multiple other ways that Japanese art and culture provided an escape for Monet. This paper examines the avant-garde interior of the Giverny home, how Monet arranged Japanese prints and paintings throughout his home, and argues how Japanese art provided him an escape from reality. Monet was not only influenced by the minimalist outlines and vibrant colors of the prints but also by a desire to distance himself from the French nineteenth-century bourgeois culture. This argument is strengthened when considering other artists that were inspired by Japanese art during the Impressionist period.

Michelangelo's Last Judgment: A Winged Boat and an Ill Omen

Kayla Bruce (Mentor: Dr. Anne Muraoka)

Arts & Letters

Michelangelo painted the Last Judgment on the altar wall of the Sistine Chapel between 1536 and 1541 when the artist was in his early sixties. It has been agreed upon by most scholars that Michelangelo was highly influenced by the Italian poet Dante Alighieri and his Divine Comedy. Prominently displayed in the lower right section of the fresco are the figures of Charon and Minos. In Greek mythology, and featured in Dante's Inferno, Charon was the ferryman who ferries the souls of the damned across the river Styx to hell, where the infernal judge Minos awaits their arrival. However, there is a detail in this section of the painting that although briefly acknowledged by some scholars, has been largely overlooked. Here, Michelangelo added a wing to Charon's boat; a small detail for which there was no precedence. A key to understanding this mysterious iconographic addition can be found in the Roman poet Ovid's Metamorphoses. In the fifth book, Ovid tells the story of Ascalaphus, the gardener and caretaker of Hades' orchards in the underworld, whose transformation into an owl is described by the poet as a bearer of ill omens. By examining the political and social culture of Rome in the years leading up to the creation of the Last Judgment as well as the inner turmoil experienced by Michelangelo as he neared the end of his career and life, it will become evident that Michelangelo included symbolic references to Ascalaphus as a reference to the climate of the time.

Computer Science and its Impact in Science and Engineering

A training module to introduce undergraduate students the analytical pipelines for omics data in biomedical research

Sean Leonard, Jiangwen Sun (Mentor: Jiangwen Sun)

Computer Science

High throughput sequencing techniques bring the opportunity to profile various of cellular activities at the whole-genome level, such as RNA-seq for gene expression, ATAC-seq for chromatin accessibility and WGBS for DNA methylation. The value of the raw data produced by the sequencing equipment in advancing our understanding of important cellular biological processes relies on computational tools that can efficiently preprocess and make sense the data. Given the very large size of omics datasets, both advanced computational techniques and high-performance computing resources need to be utilized. Therefore, to successfully carry out such research, both good understanding of related biological concepts and skills for making use of the computing resources are critical. Here, we present a training module that we developed to introduce analytical pipelines for omics data, aiming at training undergraduate students with diversity background and promoting their interest in carrying out biomedical research in their future study. Three pipelines are covered in our module for processing three distinct types of omics data, respectively, i.e., transcriptomics, whole-genome chromatin accessibility and DNA methylomics. Brief introduction of related biologic concepts is included for training students without biological background. Quizzes are provided at the end of the module to evaluate the students' understanding of the introduced concepts. In addition, programming exercises of running the pipelines on sample omics datasets were developed for students to gain hands on experience. We will deploy this learning module on a server and make it available to all students at ODU.

Encryption and Decryption with a Raspberry Pi Device

Taylor Powell (Mentor: Dr. Ayman Elmesalami)

Cybersecurity

The functioning of our modern digital world relies heavily on the security of modern encryption algorithms and their resistance to systematic attempts to access secure information. For the 2020 Department of Computer Science's Raspberry Pi Programming Competition, I decided to explore encryption and decryption techniques available to any user with some programming knowledge and a desire to secure information from unwanted access.

I developed a program which allows a user to select between three types of encryption algorithms: a Caesar Cipher, a Vigenère Cipher, and a Stream Cipher. I also gave the user the option to further secure their encrypted message using the practice of steganography: hiding information in digital media. Specifically, a user could encode their encrypted message securely into a picture file, which is then suitable for sharing, posting, or sending without risking third-party access to that information. A recipient with the same program could then decode an encrypted photograph, and together with the code for whichever encryption method was used, access the original message.

Connecting a Vintage Macintosh to the Internet

Justin Luckenbach (Mentor: Dr. Ayman Elmesalai, Dr. Soad Ibrahim)

Engineering

This project implements several programs to help bring a three-decade old Apple Macintosh Plus into the modern era. An http proxy server renders modern webpages for the ancient web browser, an ftp server allows the Mac to share files with other devices on the local network, and a smtp/pop server allows the aging email client to send and receive emails.

All the programs used are open source programs for Linux apart from the http proxy server, which is a simple Python script based on Tyler Hicks' MacProxy project.

Set up involved installing/configuring several pieces of server software on the Pi, writing the two scripts for the http proxy, installing the client software on the Mac, and configuring the parameters for the connection to be made.

Development of Informal Learning Channels for Visualization of Cellular and Molecular Images

Thu Nguyen, Jing He (Mentor: Jing He)

Engineering

Visualization of molecular and cellular images is of great importance in demonstrating and understanding molecule and cell structures. Thanks to the advance in science, engineering and technology, many techniques have been developed to visualize and simulate molecular graphics in great details. These techniques play an important role in the study of molecules and cells in many fields; however, they have not been widely distributed to and comprehended by the general public. This project aims at developing educational materials as forms of informal learning channels to promote awareness of science at the interface of computing and biology. This will support public understanding of molecular structures and their properties. With the use of advanced technology, molecular visualization is not limited to 2D depiction, but can be created in 3D, and even simulated in motion. This kind of visual representation will generate interest in discovering the complexity of the natural world, starting from one of the smallest units of matter - molecules. It will also be beneficial to the understanding of bacteria, viruses and diseases, especially when we are living in the COVID-19 pandemic.

Interdisciplinary Research #3

Racial Differences in Associations Among Discriminatory Experiences, Body Dissatisfaction, and Eating Disorder Behaviors Between Young Women Who Identify as Black and White

Cherita Washington, Kelly Romano, Kristin E. Heron (Mentor: Dr. Kristin Heron)

Science

Disordered eating behaviors (DEBs; e.g., binge eating, purging, restricting, excessive exercise, maladaptive muscle building behaviors) are linked to physical and mental health concerns. Although experiences of discrimination have been associated with significant negative psychological effects in general, research examining the connection between discriminatory experiences and DEBs has generally been limited to discrimination based on race or gender alone, rather than the intersection of these social identities. The present

study addresses these research gaps by examining differences in associations between women's experiences with different types of discrimination (e.g., gender-based, race-based) and DEBs as a function of women's racial identities. Young women who identified as Black (n=358) and White (n=377) completed an online survey of discriminatory experiences (based on gender, race, physical appearance, and "other" cultural identities), body dissatisfaction, and DEBs. Multigroup path analysis was used to determine whether associations among different discriminatory experiences, body dissatisfaction, and DEBs differed between women who identified as Black and White. Among all participants, discriminatory experiences based on gender, race, physical appearance, and "other" cultural identities were associated with greater body dissatisfaction and, in turn, greater engagement in all five DEB outcomes (binge eating, purging, restricting, excessive exercise, maladaptive muscle building behaviors). These patterns of association differed between women who identified as Black and White. For example, gender-based discrimination was associated with greater body dissatisfaction among women who identified as Black, but not White. Overall, the present results suggest that race differences exist in associations among discriminatory experiences, body dissatisfaction, and disordered eating which highlights the importance of considering discriminatory experiences from an intersectionality framework.

Virtual School Counseling During the COVID-19 Pandemic

Kaylee Kaznosky (Mentor: Dr. Kristy L. Carlisle)

Education

The COVID-19 pandemic has had far-reaching effects on the operation of schools in which face-to-face interaction has been the traditional modality. Students who have had to adjust to virtual learning outside of the traditional school building may be experiencing stress, anxiety, and depression (Seidel et al., 2020, p. 1260); they worry about their academics (Son et al., 2020; Tasso et al., 2021, p. 3); they have fears beyond their schooling (e.g., contracting COVID-19; Seçer & Ulaş, 2020, p. 2); and to boot they may have barriers accessing helpful resources with these issues (e.g., mental health services, school counseling services; Boudreau, 2020; Savitz-Romer et al., 2020). School counselors are commonly first responders to students' needs (Wake Forest University, n.d.); thus, they also must adapt to helping students virtually to cope with all of the academic and mental health concerns they are experiencing during the COVID-19 pandemic. By getting to the root causes of student distress and using evidence-based resources provided by leading organizations (e.g., American School Counseling Association [ASCA]), school counselors can continue their vital work virtually during the COVID-19 pandemic. This paper explores the challenges students are facing during the pandemic, including implications for diverse populations, provides interventions school counselors can implement to assist students during the COVID-19 pandemic, and presents ideas for future research.

Art #1 Q & A based on Virtual Exhibit

Grounded

Kayla Cochran (Mentor: Elliott Jones, Alison Stinely)

Arts & Letters

My charcoal series titled *Grounded* delves into the process of grounding methods used during an anxiety or panic attack. By locating five things one can hear, four things one can feel, three things one can see, two things one can smell and one thing that one can taste, the sufferer essentially “grounds” herself to her environment. In these confusing and trying times, I often find myself using this method. In this series I chose to depict compositions of things I have personally heard, felt, seen, smelled, or tasted when using the Grounding method. For the first step, one thing you can hear, a wave is depicted cresting, as I often listen to a recording of waves to promote relaxation. For the second step, four things you can feel, wet fabric clinging to a torso depicts the feeling of claustrophobia during an anxiety attack. For the third step, three things you can see, I chose to draw a composition of foliage, which I have dotted throughout my bedroom and studio. Two things you can smell is depicted by a close-up view of a flower, as I use essential oils to help cope with anxiety. The final step, one thing you can taste, is represented by an abundance of coffee beans as I am always drinking coffee. Working in charcoal, my black and white compositions can be described as soft, yet detailed. In my layering I attempt to convey detail and to capture emotion.

Painting Portraits is My Lifelong Passion

Tamara Dunn (Mentor: Elliott Jones, Alison Stinely)

Arts & Letters

Using oil paint to create faithful, meaningful portraits is my lifelong passion. To me, a successful portrait not only conveys an accurate likeness to the subject, but also captures a sense of what kind of person the subject is and what they may be feeling. For this reason, I most enjoy painting myself as a way of reflection and self-expression.

My objectives in the chosen works are to exhibit the emotion of the subject, most commonly but not exclusively manifesting in the eyes, while carefully replicating their features as I see them on the canvas.

I start out with blocks of color, adding more and more definition and colors as I go, carefully blend them together, and then with tiny brushes I add the meticulous details. I always paint background to foreground and large to small to build up layers.

I have always been drawn to the masterful paintings of Rembrandt, Caravaggio, Rubens, Michelangelo, and many more. I frequently visit the many museums and art galleries in the Hampton Roads area for inspiration, as well as browse various art sharing websites.

I have discovered that I create my best paintings after spending considerable time looking at the artworks of others. I also prefer to paint from life whenever possible so I can carefully examine my subject. Lastly, I cannot be overwhelmed by time constraints when I paint, so I will devote many hours to a single painting.

My last four years as a student at ODU have been instrumental in refining my skills as an artist thanks to many of my professors.

There's more than one way to.... make Art: An exploration of medium and technique

Tony Gelardo (Mentor: Elliott Jones, Alison Stinely)

Arts & Letters

An interesting thing: An “Artist” has to have a point. I respect that some people create things because there is something going on in the world that they are trying to bring to the attention of the masses. More times than not, the things they are trying to focus in on are

very valid and need to be recognized. To those Artists, “BRAVO”. Keep doing your thing. I’ll be there at your gallery opening and I’d love the chance to pick your brain.

I am not one of you.

I make “Art” because it focuses my mind. It is an equation but there is also a bit of creativity involved. I want to figure out all the different ways to represent myself, the people in my life and the people in their lives. I want to try everything, see what works and what doesn’t. It’s OK if things don’t go as planned. The point is to do it. I might just make something cool.

I’ll leave the “visions” to other Artists. If they need help on technique, I’ll be here to answer any questions. I’ve probably tried it at some point.

Human Experience and the Visual Narrative

Andre Jacobs (Mentor: Elliott Jones, Alison Stinely)

Arts & Letters

I use painting as a medium to expand the range of possibilities that allow me to express my creativity through visual narrative. I am interested in the human experience and I draw inspiration from life. I believe that a painting should be more than just art, I believe that art should express multiple layers of narrative within a particular work. I strive to achieve this by creating artwork that speaks of trauma, pain, and redemption. I do this with the intent to expose my own personal trauma, in the belief that this will create an environment for healing. I want the viewer to use my art as means to acknowledge our commonality and create understanding. I draw inspiration from artist like Monet because he saw the world through a different lens, and I strive to capture simplicity within chaos. I am a social realist and I draw no lines in the sand, I am here to bear witness and be the voice of our generation. Urna Semper Fidelis

Interdisciplinary Research #4

Comparison of Hispanic College and Noncollege Emerging Adults

Isis Cowan, Kelsie K. Allison, Kyla Carr, Taylor Webb, Alan Meca (Mentor: Dr. Alan Meca)

Psychology

Although a substantive body of research has focused on Hispanic college students, there has been little research regarding the differences between college-attending Hispanics and non-college attending Hispanics emerging adults (EA). Studies have indicated that noncollege emerging adults may be at greater risk compared to college-attending peers (Bailey et al., 2011). Given the differences in SES and daily routine (Schwartz, 2016), the exclusive focus on college-attending Hispanic EA is problematic. Addressing this gap, the current study examined differences between college and noncollege Hispanic EA on acculturative stress, ethnic and US identity, self-esteem, and alcohol use.

The sample consisted of 91 Hispanic EA (52.0% female; Mage= 21.20, range = 18-26; College-Attending = 75.5%). Results from a series of t-tests indicated noncollege Hispanics experience significantly greater Native Language Pressure [$t(96) = 4.799$, $pt(96) = 8.455$, $pt(96) = 5.009$, $pt(97) = 6.018$, $pt(96) = 2.793$, $p = .006$]. Self-Esteem [$t(97) = -2.540$, $p = .013$] and ethnic identity [$t(97) = -2.556$, $p = .012$] were higher among college-

attending Hispanic EA. Given key demographic differences (Schwartz, 2016), it was not surprising to see noncollege Hispanic EA reporting higher English language pressure and pressure to acculturate. However, consistent with prior research (Bailey et al., 2011), noncollege Hispanic EA exhibiting lower self-esteem, greater alcohol use, higher Spanish language pressure and pressure against acculturation. In sum, these findings indicate noncollege may represent a particularly vulnerable population.

Procedure and effects of five supplements on asymbiotic germination of *Platanthera dilatata*

Noah Tait (Mentor: Dr. Lisa Wallace)

Science

Members of family Orchidaceae, or orchids, grow in the wild with the help of a symbiotic mycorrhizal fungus. When grown in vitro, the mycorrhizal element is often removed, and the seeds are germinated within a gel growth medium which provides the nutrients needed for germination. This method is often referred to as “asymbiotic germination”, and it has become an important tool for the conservation of orchids, due to its simplicity and genetic benefits. It is crucial especially to maintaining a larger genetic base for a species. This experiment seeks to determine the best procedure and growth medium for asymbiotic germination of *Platanthera dilatata*, a terrestrial and temperate orchid native to North America. Tests are being run to determine the efficacy of five additives to the growth medium for maximum germination. These additives are coconut water, banana powder, peptone from soymeal, and two amino acids- arginine and tyrosine. Banana powder and coconut water are both well established as efficient supplements for the germination of many orchid species, but the specific efficiency varies by species, and what works for one species may be detrimental to another. Peptone, arginine and tyrosine are less well known as supplements for germination but have been used in some literature and require further testing. If success is found in germinating seeds from *Platanthera dilatata*, the experiment will expand to include other species available from the Kaplan Orchid Conservatory.

Reading Between the Lines: Outright Books, Virginia Beach’s Lesbian and Gay Bookstore

Ashleigh Joyner & Aurora Gehres (Mentor: Cathleen Rhodes)

Arts & Letters

In the fall, my group partner and I conducted research for Outright Books, a lesbian and gay bookstore that operated in Virginia Beach in the 90s. We picked this site because for many LGBTQIA+ people, a bookstore was a way for them to explore themselves in literature when most mainstream literature predominantly focused on heteronormative identities. Our archival research relied heavily on Our Own Community Press, Norfolk’s gay newspaper that ran from 1976 - 1998, and prompted an oral history interview with the owner of Outright Books, Earl Jones. This research, completed for a class-based service-learning project, was presented to the local queer community for the 2020 Queer Walking Tour of Norfolk, a project that uncovers Norfolk’s historic queer history. This experience impacted us because we were able to give back to a community during a vulnerable time, an opportunity that our previous classes did not allow. It showed us how resilient we are during a pandemic to conduct original service-learning research. We would tell other Old Dominion University students that despite the initial frustration of engaging in original

archival research, it is rewarding to put together what you find and piece them to tell important, previously unacknowledged stories.

Session 5

1:00-1:55 PM

Science Research #2

Perceived Effectiveness as a Moderator of the Association between Protective Behavioral Strategies and Alcohol Consumption

Jordan Ortman, Jennifer Shipley, Megan Strowger, Abby L. Braitman (Mentor: Abby L. Braitman)

Science

Purpose: Over half of college students reported drinking, and as many as 33% of students reported binge drinking over the past month. A substantial number of alcohol-related negative consequences are reported annually. It is essential for researchers to develop interventions that effectively reduce alcohol consumption and in turn alcohol consequences. One such intervention component is Protective Behavioral Strategies (PBS) which have been shown to reliably reduce college drinking. However, PBS are not effective in reducing alcohol consumption for all students. As such, this study seeks to understand if perceived effectiveness of PBS moderates the relationship between PBS and quantity of alcohol consumed. It was hypothesized that those who perceived PBS use as more effective would report reduced alcohol consumption when using PBS.

Method: Participants (N = 528) were undergraduates (Mage = 19.85, SD = 1.65). Eligibility criteria included being between 18-24 and consuming an alcoholic drink in the past 2 weeks. Participants in this study were from a larger longitudinal intervention study and only baseline data will be analyzed.

Planned Analyses: The analyses will consist of 3 multiple linear regressions, each corresponding to a PBS subscale ('Avoidance', 'Alternatives to Drinking', and 'Strategies While Drinking') which will be the independent variable in their respective model. The dependent variable will be quantity of alcohol consumed with perceived effectiveness as the moderator. All analyses will control for gender. If there is a significant interaction between the independent variable and moderator ($p < .05$), it will be concluded that the moderation model is supported.

Analysis of fecal microbiome composition during development of chronic schistosomiasis in mice

Jade Smith, Mariam A. Mhanna, Lisa M. Shollenberger (Mentor: Dr. Lisa Shollenberger)

Science

Schistosomiasis is one of the most devastating neglected tropical diseases, infecting an estimated 600 million people worldwide. Infections with parasitic helminths, like *Schistosoma mansoni*, influence modulation of the immune system of the host by shifting the TH1 and TH2 responses, which are likely coincident with changes in the gut microbiome composition. To gain greater insight into the relationship between parasitic

worm infections and their mammalian host gut microbiomes, we monitored the composition of the fecal microbiome of mice experimentally infected with chronic schistosomiasis and compared it to uninfected age-matched mice. To generate operational taxonomic units (OTUs), we analyzed 16s rRNA sequences from fecal samples collected during the establishment of a chronic schistosome infection in mice (10 weeks). Using open-source software (Qiita), we characterized the changes in alpha and beta diversities. We compared gut microbiome compositions between and within groups according to infection status and time. Using bioinformatic analysis, we demonstrate that chronic schistosomiasis in mice is associated with quantitative and qualitative modifications of the fecal microbiomes. These results will allow us to further explore the relationship between schistosomiasis, the gut microbiome, and the host immune response.

Examining the Feasibility of an Ecological Momentary Assessment Study of Binge Eating among Sexual Minority and Heterosexual Women

Lauren Butler, Charlotte Dawson, Cassidy Sandoval, Kristin Heron (Mentor: Kristin Heron)

Science

Stressors experienced by sexual minority women (SMW; lesbian, bisexual, queer, etc.) put them at greater risk of dysregulated eating behaviors (e.g., binge eating) as compared to heterosexual women. However, little is known about factors that contribute to these discrepancies in daily life. This study examined the feasibility of conducting a smartphone-based ecological momentary assessment (EMA) study aimed at collecting information about daily experiences and binge eating among heterosexual and SMW. Participants were heterosexual women (n=9) and SMW (n=15) ages 18-30 who completed brief smartphone surveys for 7 days, including a morning survey, 5 prompted surveys throughout the day, and a user-initiated binge eating survey. Participants provided qualitative feedback through a 1-hour interview via Zoom and a survey at the end of the study. Overall, participants were compliant with the EMA protocol (completing 84% of morning surveys; 71% of prompted surveys). Participants reported an average of 1.85 binge-eating episodes during the week and found it relatively easy to identify binge eating (M=3.95; 0=disagree, 5=agree), and remember to complete the binge eating survey (M=3.71; 0=disagree, 5=agree). At the end of the study, they reported study questions overall captured their experience (M=4.29; 1=not at all, 5=a great deal) and that the smartphone survey app was easy to use (M=5.76; 0=not at all easy, 6=very easy). Findings suggest study feasibility, as participants found EMA study procedures and materials easy to understand and access. This pilot study will inform a larger study to improve our understanding of binge eating in young heterosexual and SMW.

Interdisciplinary Research #5

“It’s pretty hard to make friends over a Zoom meeting room”: Understanding the recreational experiences of youth with type 1 diabetes during COVID-19

Ryan Malpaya, Rowan Williams (Mentor: Dr. Eddie Hill)

Education

Youth with diabetes frequently have limited access to traditional camps because of the need for accessible medical staff (Hill, E., 2019). COVID-19 has made it even more difficult for youth with type 1 diabetes to participate in any youth development programs due to the pandemic restrictions. During the pandemic, it is unknown if youth with T1D are able to

engage in any recreational activities that may teach them resilience and independence in managing their medical condition. The purpose of this study was to see how youth with T1D cope in an altered recreation environment as a result of COVID-19

Using an interpretive phenomenological analysis research approach, semi-structured interviews using Zoom were conducted with three youth living with T1D. Interviews were transcribed verbatim and analyzed using the 3-step methodology (Smith et al., 2009) including: (1) immersion by reading and re-reading of the interview transcription at the case level, (2) reduction of data into emergent themes within that case, and (3) the identification of recurring patterns across cases. Each participant has previously attended a resilience-based medical specialty youth program, allowing them to compare the changes that occurred in an altered environment influenced by COVID-19. Using the conceptual framework of resilience, presence of compensatory protective effects including insight, independence, fulfilling relationships, initiative, creativity, humor, and the capacity to “distinguish good from bad” (Fraser et al., 1999, p. 135) were highlighted in the participants’ reflections about their experiences. The participants described how family support, engagement in positive relationships, and increased technology function contributed to their coping mechanism as youth living with T1D in the midst of a pandemic.

John Donne and the Paradox: An Analysis of “Batter my heart, three-person’d God”

Lily Daniels (Mentor: Kathryn Bennett)

Arts & Letters

A paradox is a statement that appears contradictory but ultimately makes sense. “Sonnet XIV: Batter my heart, three person’d God” (1632) by John Donne reflects the many paradoxes within the Bible and Christian faith. Read within the context of his religious beliefs and the rest of the Holy Sonnets, “Batter my heart, three-person’d God” is a poem that exhibits Donne’s theology of God and the process of salvation. The speaker affirms that the power of the triune God is required to break the bonds of sin. He finds freedom from sin in submitting to God’s will, and he finds innocence in God’s act of saving love (lines 13-14). In the Bible, there exists a tension between the holy nature of God who judges and the merciful nature of God who also saves. Similarly, in this poem, there exists a tension between conflicting poetic devices. Donne uses diction, sound devices and form, figurative language, and explicit paradoxes to illustrate these conflicting statements about the Christian life. Since the abstract meaning of words is more important than their literal meanings, the poem demonstrates that the speaker eventually understands these complex, theological concepts.

The objective of this research is to examine the techniques of building a working crystal rectifier and to compare the outputs of this home-made diode rectifier with more modern, commercially available diodes. This study will demonstrate how rectifier functions using both a DC and an AC voltage and will compare the outputs of a commercially available diode and two different crystal rectifiers. The crystal rectifiers will consist of two types of crystals that were used in some of the first patents for these devices, a galena crystal, and a silicon crystal which will be compared to a modern p-n junction diode. These experiments will reinforce the understanding of how electronic components can be used to manipulate

signals, and transform them into other useful signals and can be further expanded to utilize the rectifier in a crystal radio design.

Art #2 Q & A based on Virtual Exhibit

"Needed Design:" Communication in the Time of COVID-19

Alexis Blizzard (Mentor: Kenneth FitzGerald)

Arts & Letters

During my Design Seminar class there was an assignment called, "Needed Design." My peers and I were asked "what does the world need?" After putting deep thought into it, I feel like the world needs more communication.

When COVID-19 harshly hit the entire world, it affected everyone. Thousands of lives were lost, unemployment rates were rising, and lack of communication. These issues are never ending with the coronavirus attacking the world by the second. Areas such as movie theaters, amusement parks, and other places of entertainment are still closed down for business. With the number of cases rising these places will remain closed due to safety precautions. COVID-19 has taken away families, friends, and loved ones from seeing each other.

I had an idea of bringing a small group of friends together for a socially distanced bonfire during Halloween. I kept the amount of people limited to 10 people because that was the state law for gatherings in Virginia. I had a fire pit for warmth and chairs were spread apart from one another. I also provided drinks, prepackaged food for S'mores, and takeaway bags which included; a mask, hand sanitizer, antibacterial wipes, and candy. For entertainment, I had a protector and a speaker where we played the Nintendo switch. Everyone had their own controller that was sanitized before and after use. I felt like this was a great way for my friends to come together and have fun and feel safe at the same time.

The Crown Act: Natural Hair is Professional Hair

Aysia Brown (Mentor: Kenneth FitzGerald)

Arts & Letters

During my Design Seminar class, one of our assignments was a "Needed Design." For this assignment we were asked to create something we think the world needs. I wanted my "Needed Design" to be Acceptance.

In the United States it is currently LEGAL to deny people from jobs, schools, and other public places solely because of the texture and style of their hair, which greatly effects black people. There are currently only 7 states that have passed laws to ban natural hair discrimination. (Virginia is one of them!) This resulted in Crown Act being created. The Crown Act stands for "Creating a Respectful and Open World for Natural Hair," and it is a law that prohibits race-based hair discrimination, which is the denial of employment and educational opportunities because of hair texture or protective hairstyles including braids, locs, twists or Bantu knots.

I created an informational flyer to bring awareness to this issue. In my art, I love to capture the beauty of diversity, so I included female and male characters with different hairstyles and textures to show the beauty and versatility of natural hair.

As a black woman this really hit home because growing up I often felt pressured to straighten my hair to fit in with society's standards. Representation is extremely important, and all hair textures and styles need to be represented because if people do not see things that represent them, then they may think something is wrong with them. As a result of this assignment, I was able to get people to sign a petition to end hair discrimination and shine light on a problem that many people did not even realize existed.

Creating a GIF for HelloRebma

Avis Keeling & Amber Wilson (Mentor: Kenneth FitzGerald)

Arts & Letters

This is a GIF of a pencil case filled with Adobe Suite themed pens and a pencil and a pen representing the YouTube Channel, HelloRebma. The project's premise was to create a GIF using photoshop that could be used as a learning tool for fellow designers who need a better understanding of tools within Adobe's design software. We set out to help entry-level designers find new ways to engage with their software and cut down on the time it would take to produce the result in other ways. Adobe Illustrator was used to create each component of the gif from the background to the individual pens. Simple shapes and shadows were combined to create a more realistic look. Adobe Photoshop was then used to construct the open and closing motion of the pencil case and the movement of the HelloRebma pen. YouTube is the platform on which the design, along with instructions, currently resides. Our video currently has 43 views, six times the number of people to which we initially presented. Our peers also provided useful feedback toward our instructional video.

Graphic Design Needs to be transparent.

With the growing need for transparency for this year, we asked ourselves the best way to add that transparency to Graphic design. This platform will likely expand our research of what our peers need as they enter the professional field, offering video to educate new and early designers remotely. The videos hosted on the channel also contain subtitles for the viewers who cannot listen but read along. We have noticed that this has been an issue with most videos in the past. There was a lot out there that had the info they needed, but the ones that showed the explanation of the technical resolution did not have the subtitles, or the info was not in a video at all. We figured, if we wanted to see the steps done in action, others would also.

Science Research #3

Molecular and optical properties of vanillin photo-products identified via advanced analytical techniques

Scarlet Aguilar-Martinez, Aleksandar I. Goranov, Hongmei Chen, Patrick Hatcher (Mentor: Dr. Patrick Hatcher)

Science

Studies that further our understanding of the global carbon cycle allow for more reliable predictions of carbon fluxes that affect our environment and ultimately our climate. Terrestrial organic matter is an important contributor to the global carbon cycle, yet once exported into the oceans as natural organic matter (NOM) continues to elude a definitive fate. An analytically challenging material, studies of terrestrial NOM often include further processing. This processing however may remove compounds indicative of its origin or include microbial populations that may diminish the role of photochemical transformation. In this study, our approach is to determine how photochemical transformations affect terrestrial material, such as lignin, through the use of a lignin biomarker - vanillin. To this end, vanillin was photo-irradiated at increasing hours of simulated sunlight and a sample collected at different timepoints. Comprehensive analysis was achieved by measuring carbon loss, evaluating the molecular and structural changes using ESI-FT-ICR-MS and proton NMR, and performing ultraviolet-visible and fluorescence spectroscopic analyses to study the optical properties of the photo-produced molecules. A portion of vanillin was extensively transformed into molecules that are similar to those found in marine environments. Additionally, some of the photo-produced molecules have characteristics belonging to carboxyl-rich alicyclic molecules (CRAM) and non-autochthonous molecules. Results from this study indicate the photochemical coupling of terrestrial and marine organic matter and further enhance our understanding of relations between the soil, riverine, and marine carbon cycles.

Hollow TiO₂nanoparticles as photocatalysts for organic reactions

Cylah Bruno, Balasubramanian Ramjee (Mentor: Dr. Balasubramanian Ramjee)

Science

TiO₂, offering numerous advantages such as abundance, stability, non-toxicity and tunable photoactivity, has been widely used as a photocatalyst in a number of applications from artificial photosynthesis to environmental remediation. TiO₂ based hollow nanoparticles have been recently designed and used in hydrogen production, carbon dioxide reduction, photodegradation of dyes and oxidation of alcohols, among others. However, they have been used rarely in carbon-carbon bond formation reactions. This poster will describe the synthesis of hollow TiO₂ nanoparticles with tunable morphologies and their application in mediating [2+2] cycloaddition reactions.

Investigation into the effect of ozonation on biochar as a function of pyrolysis temperature and its applications in dye removal

Curtis Wood, Oumar Sacko (Mentor: Dr. James W. Lee)

Science

The need to sequester carbon from the global carbon cycle has never been greater; global warming continues unchecked as the world population is predicted to reach 10 billion by 2100. Converting waste biomass generated by agriculture and forestation activities into biochar for soil amendment not only removes carbon from the carbon cycle, but it also locks it in a highly stable form. Beyond biochar's ability to retain soil water/nutrients and reduce fertilizer runoff when introduced into soils, research has indicated that cropland fertility can also be improved by biochars with high cation exchange capacity (CEC). Ozonation of biochar adds the carboxylic functional groups on biochar surfaces necessary for increased biochar CEC without requiring the use of hazardous reagents. To assess the

ozonization methods which yield the greatest improvement to biochar adsorption capacity, a number of biochar sample materials were exposed to cationic and anionic aqueous solutions during a 10-day dye exposure experiment. Three treatments (non-ozonized control, dry-ozonized and wet-ozonized) of four biochar varieties made at different temperatures (P300, P400, P500 and RBC) were exposed to two different dyes, methylene blue (MB) and Congo red (CR). UV-Vis spectroscopy was utilized to determine the unbound dye molecules remaining in solution as a function of time. It was determined that all biochar samples tested had a greater capacity for the cationic dye, MB, than the anionic CR dye, with the RBC and P300 series close to 100% dye removal in solution by the end of 10 days exposure. These results suggest that ozonization not only leads to an increase in CEC but may also affect the biochar's anion exchange capacity (AEC), an important property that needs more investigation

Interdisciplinary Research #6

Barriers and Constraints for Outdoor Recreation Participation by Children with Physical Disabilities during the COVID-19 Pandemic: A Case Study from Hampton Roads, Virginia

Annika Cerda (Mentor: Christopher Zajchowski)

Education

Time spent in nature contributes to intellectual, physical, social and emotional development (e.g., Asah et al., 2018; Brussoni et al., 2017; Lovelock et al., 2016). During the global COVID-19 pandemic, accessibility to outdoor experiences is desperately needed for youth of all abilities; however, children with physical disabilities, who regularly experience barriers and constraints to engagement in physical activity in the outdoors (c.f., Shields et al., 2012), may experience additional challenges in accessing these experiences. We examined the outdoor recreation experiences of children with physical disabilities (ages 6-10) during the COVID-19 pandemic using an Interpretive Phenomenological Analysis (c.f., Howard, Katsos, & Gibson, 2019). We interviewed the parents (n = 4) of children diagnosed with physical disabilities in Hampton Roads, Virginia. Parents were asked questions designed using leisure barrier and constraint theory (c.f., Crawford et al., 1991) and responses were thematically coded first inductively and then deductively using a Martin Ginis et al.'s (2016) typology of factors related to physical activity participation among children and adults with physical disabilities. The parents shared their experiences of accessing outdoor recreation during lockdowns; however, our findings indicate barriers experienced by children with physical disabilities existed before and were exacerbated by the pandemic. Parents in Hampton Roads struggled to find a variety of meaningful outdoor experiences for their children with disabilities, and attribute most of the barriers to institutional level factors. We share actionable steps municipalities can take to provide more inclusive access for children in outdoor and nature-based settings.

An Evaluation of the Junior Sailing Program at the Norfolk Yacht and Country Club

Bryce Mahler (Mentor: Eddie Hill)

Education

With COVID-19 becoming a lingering and dangerous issue in everyday life, youth are struggling to have outdoor outlets for memories, physical health, and to acquire important skills. The Norfolk Yacht and Country Club Junior Sailing Program was created to give the youth the opportunity to learn about sailing and compete. They compete with different

yacht clubs from all over the Chesapeake Bay Area. There are slightly less participants in this fall program due to concerns of COVID-19. Data was collected over roughly a month period (February 21 – March 28). With White Fleet and Blue Fleet meeting Saturday and Green Fleet meeting Sundays. The participants range in age from nine years old to fifteen years old. The focus of this study is to evaluate the Norfolk Yacht and Country Club Junior Sailing Program. The program will be evaluated using three of the American Camp Association youth battery outcomes, responsibility, friendship skills, and affinity for nature. The program is evaluated by giving surveys to the participants, attending the program, and interviewing participants and coaches. Data has not been collected yet, but preliminary findings suggest that similar programs are significant for youth to experience.

The perfect dark flaneur in Ian McEwan's "The Comfort of Strangers"

Sean Spofford (Mentor: Dr. Phillips)

Arts & Letters

I am studying the figure of the *dark flaneur*. Specifically, I am investigating how the dark flaneur is different from its standard flaneur predecessor. My research seeks to frame the character Robert from Ian McEwan's novel *The Comfort of Strangers* as the epitome of the dark flaneur and by doing so draw conclusions about the evolution of the flaneur from the 19th century into the 20th and 21st centuries. My research identifies and defines the standard flaneur and its attributes based on its 19th and early 20th century conceptualization. Then I explain how the dark flaneur evolved from that model and establish Robert as the perfect example. The concept of the dark flaneur reshapes who we consider to be flaneurs, what roles they play in literature and how they can be used to comment on modernity, globalization, gender and a host of other topics.

Session 6

2:00-2:55 PM

Management Research Lab

Deciding Factors for Employees During a Pandemic

Austin Saucer, Philip Yorkman, Devyn Asercion (Mentor: Sheila Keener)

Business

In Fall 2020, 284 undergraduate students were surveyed regarding their search for a professional job. The COVID-19 pandemic made it necessary for many organizations to make changes to their Human Resources (HR) practices. Job applicants may judge organizations by how they reacted/treated their employees during this time. We wanted to know if various HR practices made ODU students more/less likely to accept a job offer. The 56 HR practices we chose to analyze fell into the following categories: accommodating remote work, enhancing communication, enhancing employee relations, work management, job assignments, staffing, and compensation and benefits. The answers to each question were based on a 1- to 5-point scale (1 = "significantly less likely to accept the job offer" and 5 = "significantly more likely to accept the job offer"). Survey responses indicated that certain HR practices would influence students' decisions. For example, if a company required employees to work at home, except essential workers, 57.09% of students responded that they would be more likely to accept the job offer. On the other

hand, this percentage increased to 79.43% when the ability to work from home was optional to non-essential workers. Also, 83.45% of respondents felt that the company conducting layoffs made them less likely to accept the offer, and 73.24% of respondents either felt neutral or less likely to accept the offer if the company was actively recruiting and hiring full-time or part-time employees to replace workers that were laid off. These responses are relevant and useful for local organizations actively recruiting undergraduate students during the COVID-19 pandemic.

Student Reactions to The Job Search and AI in Organizations

Camille Rawlings (Mentor: Emily Champion)

Business

In Fall 2020, 297 undergraduate business students were surveyed on their professional job search and their opinions on how organizations are using artificial intelligence (AI). Of the 297 students, 119 (40.07%) were actively searching for a new job. While searching for a job is usually stressful, searching for a job during a pandemic is particularly difficult. We asked students about how much they agreed with statements regarding their anxiety level when searching for a job on a scale of 1 (strongly disagree) to 5 (strongly agree). The average rating was 3.07 (SD = 1.20). We also asked students about whether companies using artificial intelligence in their human resource (HR) systems would impact their opinion of the company and change the likelihood that they would accept a job offer from that company. For example, would students be more or less likely to accept a job offer from an organization that used AI chatbots rather than a real person to answer candidate questions? The average rating for chatbots use was 2.29 (SD = 1.16). In other words, students were slightly less likely to accept a job offer from a company that uses chatbots. On the other hand, we found that students would perhaps be more slightly more likely to accept a job where the company used AI computer programs to evaluate employees to recommend new jobs, career paths, or leaning opportunities within the company (M = 3.55, SD = 0.98). Taken together, students appear to be apprehensive about how companies use AI.

The Effect of COVID-19 on HR Practices

Tamara Lloyd (Mentor: Emily Champion)

Business

In Spring 2021, 1,356 Human Resource (HR) Professionals responded to a survey about human resource agility practices they used in response to the pandemic. This is the third of a four-wave data collection tracking HR practices since mid-2020. The list included 56 agility practices that ranged from remote work to making changes to employees' compensation and benefits plans to manage the financial disruption caused by COVID-19. Compared to September 2020, fewer employees worked from home in January 2021, fewer training and development opportunities were offered, and fewer workers were affected by changes in job assignments. Findings suggest the majority of HR changes occurred between March and September 2020, with fewer changes in fall 2020 and spring 2021 as employees and managers found new routines for how to work under these new conditions. We also asked about employee morale and adaptability. HR professionals reported that morale was low between March and September 2020 (M = 2.57, SD = 0.96; 5-point scale), but has improved (M = 2.80, SD = 0.82; 5-point scale). However, while morale was

relatively low between March and September 2020, employee adaptability was high ($M = 3.89$, $SD = 0.92$; 5-point scale), as was their willingness to cooperate ($M = 3.47$, $SD = 0.87$; 5-point scale). Both have declined slightly since that time. In all, this research tells us that while organizations and employees were willing and able to adapt at the beginning of the pandemic, organizations and employees have perhaps settled into their old ways since.

Art #3 Q & A based on Virtual Exhibit

Concepts, Concrete and Abstract, to Ignite the Imagination of the Viewer

Evin Abel (Mentor: Elliott Jones, Alison Stinely)

Arts & Letters

My artistic endeavors initially began with graphic design. As a graphic designer, I understood the importance of detail and the mathematical placement of elements to effectively communicate an idea.

Over time I shifted from digital to more traditional art. Oil painting offers freedom from the pursuit of perfection as the nature of the medium is flexible and forgiving. My paintings allow me to run full speed in any direction and then later change my mind. Through my work I mediate and balance my innate creative desires and create pieces that speak abstractly of my concepts and concretely of my individual growth.

My paintings vary greatly in subject matter, from the curves of faces to almost indiscernible landscapes. Each piece explores the relationships between light and color and space and matter, always aiming to emote in a way that ignites the imagination of the viewer.

Carter Mountain Couple

Megan Berg (Mentor: Elliott Jones, Alison Stinely)

Arts & Letters

Pandemic Portraits is a series investigating companionship and social conventions in the COVID era. Masks and social distancing have become the new norm. People are advised to stay home, isolate, and avoid interacting with people outside of their own households. Humans have an innate need to connect with others, and that connection can give us comfort, especially during stressful times. Outdoor gatherings have become the safest way to do so. These portraits are of friends or people I have met in my community while socializing outdoors. I have found myself making introductions to strangers to ask if I can take their photos for reference for paintings. People have been surprisingly open to becoming one of my subjects and welcome me to take their picture. I always invite them to follow my Instagram page for progress updates. I have made some lasting connections as they see the paintings come to life through social media. Jordan Casteel is an artist that has influenced my paintings. Her portraits reveal a sense of the artist's connection with the subject and that is something I try to convey in my own work. Connection has become something harder to attain nowadays but we still find ways to achieve it because it is in our nature.

The Beginning

Korrine Maher (Mentor: Elliott Jones, Alison Stinely)

Arts & Letters

I am a traditionalist artist from Northern New Jersey. I served in the United States Navy as a helicopter mechanic and survived something that many would not have. I fell 20ft from

a helicopter while performing routine maintenance, on April 12th, 2013. On that day, I lost my old self and woke up a completely different person, one I could not stand to even look at in the mirror, and that was just the beginning.

To portray the horrific journey, I had to go through, I chose to paint the images of my memory in a very disturbingly surrealist way. I wanted the viewer to try and understand the hell I was put through. H.R. Giger was a major influence in trying to get that surrealist sickening image across to the viewer. Throughout the process of painting these memories and images, I was very open about my mental health and making sure to communicate with professionals. The series “Unwanted Events,” ended up being very therapeutic and releasing many emotions I did not know I was still holding on to. It also brought a sense of relief because many people were starting to understand more about what had happened.

“The Beginning” - Imagine waking up to this. I woke up lying on the flight line confused, in extreme pain, and was unable to move anything. This was the beginning of a horrific journey I literally fell into.

“Tunnel of Rage” - Days after my accident, I sat staring out my barracks window for hours. I was bubblingly with rage and felt like I was slipping down a tunnel. I was slowly losing myself and did not recognize the new person I was forced to become. I hated her with a passion.

“Force Fed” - I was on nineteen different medications within the first year after my accident. Between the traumatic brain injury, post traumatic migraines, inflammation, chronic pain, insomnia, anxiety and depression, I was a mess. The doctors just kept throwing medications at me in hopes that something would fix me.

“Rock Bottom” - Some doctors still tried to figure out what was going on with me, while others gave up. I had completely lost myself and all color was drained from my world. All my artistic ability was sucked out of me. I wanted it to be over. I was done.

Exploring the Food-Consumption-Dichotomy

Victoria Jensen (Mentor: Elliott Jones, Alison Stinely)

Arts & Letters

Art has always been a means for my voice and a way of trying to make the world better, through celebrating culture or exploring wishes and fantasies. My art is dynamic, colorful, and tends to focus heavily on conceptual themes.

My work explores the unnaturalness that is obsession with food and its consumption; however, it also reflects my own personal obsession. Food as a whole, especially the act and idea of eating, has always been central in my life both culturally and personally. Enjoying and celebrating food is one of the driving forces of that culture. Food is what brings people together.

Instead of creating pieces that either celebrate food or demonstrate its importance in culture, I wanted to take a more satirical stance and create pieces that comment on this food-consumption-dichotomy in an abstract way. The type of satire that this series uses is Horatian. I use a variety of mediums including oil and acrylic paint, permanent markers, magazines, and items such as tires and plastic silverware. Integrating similar types of food ties each piece together, as will the strange aesthetics and techniques, such as cutting holes, animal heads with human bodies, and similar color schemes. Through traditional painting and drawing techniques, forms and foods are rendered realistically in a satirical, fantastical setting. Using traditional techniques and figures to create unique pieces produces an

amusing contrast. Through anthropomorphism, body morphism, and food, it highlights the uncomfortable and amplifies the ridiculous nature of obsession and consumption. I have discovered that I create my best paintings after spending considerable time looking at the artworks of others. I also prefer to paint from life whenever possible so I can carefully examine my subject. Lastly, I cannot be overwhelmed by time constraints when I paint, so I will devote many hours to a single painting.

My last four years as a student at ODU have been instrumental in refining my skills as an artist thanks to many of my professors.

Medical History #1

The Influenza of 1918

Cate Callis (Mentor: Dr. Annette Finley-Croswhite)

Arts & Letters

This paper addresses the historical significance of the 1918 Influenza and its effect on society. This paper focuses on the beginning or appearance of this illness and the spread of it. Known to be extremely fatal, the influenza killed a major portion of the United States and global population. Labeled and still sometimes known as the “Spanish Flu,” puts false and thoughtless blame on to a group and country that this illness did not even originate from. Furthermore, this paper brings recognition of the three waves or outbreaks of this virus and the effects it had on society during the time period. Preventative measures put into place also saw a decrease in cases, however, without any real treatment or cure, people were confined to their homes or those who fell sick ultimately would not recover. This virus had and has a major impact on society not only in the past but today. The overshadow of war and other historical events do not allow for the significance of this period in time to be understood, until facing the same or similar issue. The need to teach the history of the Influenza of 1918 is crucial for future generations to understand the long-term impacts of pandemics and their effects on society as a whole.

Radiation Poisoning and Notable Cases

Rane Fox (Mentor: Dr. Annette Finley-Croswhite)

Arts & Letters

Throughout the history there have been diseases and illnesses that have eradicated cities and taken lives at large numbers. While there have been many diseases that have spread from both animals and insects, there have been a handful that were created by man. Although of all diseases, one has been spread through carelessness, warfare, and disasters; and that is radiation poisoning. This disease does not discriminate or only affect certain classes but can lead to long lasting effect not only to generations affected by it but the environment and wildlife as well. There have been many notable cases of the effect of radiation poisoning which includes The Radium Girls, Tokaimura’s employee Hisashi Ouchi, and two of the most famous cases, the bombing of Hiroshima and the Chernobyl Nuclear Power Plant explosion. These cases not only lead to large numbers of death, but in the latter of the two, caused generations and the land to be affected for years to come. While these events could have been avoided, a large amount of covering up of information and unethical handling of the cases and victims are what make them all the more tragic. It can be argued that the effects of radiation poisoning are not only traumatic to those directly affected but can also have long term effects that come after the original fallout.

When It's Hard to Swallow

Celina Cejas (Mentor: Dr. Annette Finley-Croswhite)

Arts & Letters

According to the American Speech-Language and Hearing Association (ASHA), dysphagia is defined as “problems involving the oral cavity, pharynx, esophagus, or gastroesophageal junction” (American Speech-Language-Hearing Association, n.d.). More commonly recognized as a swallowing disorder, this malady has been known to cause problems like those of malnutrition, chronic lung disease, choking, and in extreme cases, death. While this disorder does not have a specific etiology or noted first appearance, epidemiologic reports show that it has been known to target the elderly and people who have recently suffered a stroke. In order to investigate this disorder and its effect on these communities, this report analyzes: the pathology of dysphagia, the processes and anatomic mechanics of typical swallowing, historical treatment of dysphagia, and how treatment of this disorder has been altered as a result of the developing field of Speech-Language Pathology.

Women's Innate Experiences with Pain: Pregnancy and Childbirth

Bridget Groble (Mentor: Dr. Annette Finley-Croswhite)

Arts & Letters

The history of women’s experience during pregnancy and childbirth is important in understanding the current conditions women face when receiving reproductive healthcare. There have been many studies and reports on the history of obstetrics, as well as on the social implications of past obstetrics practices and beliefs. Despite the medical advances that have been made to make childbirth much safer and less painful, there are still large disparities in care among marginalized women. These women are also more likely to face abuses during their pregnancies and childbirth. This report investigates the history of abuses towards women during pregnancy and childbirth and compares this history to the current status of obstetrics care in order to identify the disparities that still exist, and their causes. This report using historical records, retrospective medical studies, and modern medical journals to compare and contrast obstetrics practices and the experience of pregnant women. These findings will help women and healthcare providers understand how biases and structural inequalities still impact natal care, so as to help avoid these abuses and make care safe and comfortable for all women.

Session 7

3:00-3:55 PM

The Language of Conspiracy Theories Panel Discussion

Kaelie Polhemus, Maggie Hartzell, Dawntenai Ramsay, Huyen Nguyen, Ella Davies, Ian Siemen, and Bridget Anderson

The FBI defines extremist conspiracy theories as an “attempt to explain events or circumstances as the result of a group of actors working in secret to benefit themselves at the expense of others” which are “usually at odds with official or prevailing explanations

of events.” This panel will discuss the language features that can be used to recognize conspiracy theories. Panelists will also address circumstances that make people vulnerable to conspiracy theories, the spread of conspiracy theories, and how conspiracy theories are an assault on expertise and a threat to the rule of law and a democracy. We conclude with strategies for raising awareness about the danger of conspiracy theories.

Interdisciplinary Research #7

Late Bronze Age to Early Iron Age Ceramic Vases: The Documentation and Identification of ODU's Cypriot Vase Collection

Jordan L. Staten, Sekoyah M. Mcglorn, and Noelle E. Jessup (Mentor: Jaren Beton & Lara Canner)

Arts & Letters

ODU's Special Collections department has in its care a collection of five Cypriot vases, dating to the late Bronze Age or Early Iron Age on the island of Cyprus. The vases in Special Collections and University Archives came to ODU in 1968 from Dudley Cooper, who received them from the government of Cypress in 1963. This collection has never been studied intensively before. As a group, we have drawn to scale, measured, photographed, and created three-dimensional renderings of each vase in the collection. Through careful documentation of the vases, we have been able to identify reasonable comparanda for them among the corpus of Cyprus vases, allowing us to refine their dating and place them within a typology, helping us understand their function and purpose. One such function could be to hold wine, evidenced by the trefoiled lips made for pouring and the handles. Studying the appearances of these vases can help in further identification efforts. The amount of preservation seen in the vases has led us to the conclusion that they must have originally been found in tombs. This would point to them being used for funerary feasting and drinking. Based on these observations, the next steps for providing more insight into the history of these vases could be examining materials, stylized decorations, and their cultural context.

The Effects of Progressive Time Delay on Learning Acquisition in Students with Autism Spectrum Disorder

Mindy Medrana, Natalia Allen (Mentor: Dr. Annemarie Horn)

Education

This session will highlight research on an evidence-based practice used in the field of special education, progressive time delay (PTD). Specifically, we will share findings from a historical review of the literature spanning a 30-year period where we evaluated empirical research measuring the effects of PTD on learning outcomes in students with autism spectrum disorder (ASD). PTD is a near-errorless time delay procedure whereby the interventionist initially provides a controlling prompt immediately after presentation of the discriminative stimulus, hence the “near-errorless” description. After the student is successful with prompts, the interventionist gradually increases the delay interval (e.g., 2-6 seconds) to promote an independent correct response. Our research focused on effectiveness and efficiency data related to the implementation of PTD when teaching students with ASD. Published studies were analyzed by participant characteristics, experimental design, measures, and results, including follow-up and generalization data. Findings from our review confirm that PTD is an effective instructional approach for

special education teachers to use when teaching students with ASD. Session attendees will understand 1) the definition of PTD, 2) how and why we conducted this extensive review of the literature on PTD to teach students with ASD, 3) how our findings contribute to the literature, and 4) how our review can be used to guide special education teachers who work with students with ASD.

Third Culture Kids and Digital Culture: Service-Learning Experiences

Sofia Calicchio, Taylor Diggs (Mentor: Dr. Lee Slater)

Education

The interconnectedness of culture and the digital space has redefined questions of representation and inclusion within migrant and refugee communities. When considering ‘third culture’ communities, the influence of different media technologies and the impact of social media are central to individual adaptations, as immigrants and refugees. We explore the relationships through direct service-based research experiences that took place at two non-profit organizations in the Hampton-Roads area. In the timespan of two months, we each observed how digital platforms impact ‘third culture’ children's behavior and communication with their educators. Drawing from research conducted during our field experiences, where children hail from Chinese and Rwandan backgrounds respectively, we identified communicative patterns such as code-switching and language blending. These strategies, along with new communication technologies, including Whatsapp, WeChat, and online translators, helped the children adapt to the new culture and better convey their ideas. We discovered that social media platforms play a large role in allowing multicultural children to find their identity by allowing them to become part of a shared digital community of ‘third culture’ kids. Our research found that these young individuals obtain a sense of agency and self-direction by developing, accelerating and embedding a shared identity on a global stage. Through the use of familiar platforms, ‘third culture’ children are able to identify with people having similar experiences regardless of geographic location. We contend that these interrelated platforms play vital roles in supporting the transition to and assimilation within a new culture, particularly for youth in their formative identity stages.

Interdisciplinary Research #8

There's an App for That: Promoting Health App Use in Rural Ireland

Noor Yahya, Marcus Simon (Mentor: Sharon Stull & Janice Hawkins)

Health Sciences

Problem Statement: Smartphones and mobile applications (commonly referred to as apps) were first introduced in the late 20th century and early 21st century. Due to the public's time constraints, lack of transportation, lack of medical insurance, and a growing desire for healthier lifestyles, the total global mHealth market forecast to reach 100 billion dollars in 2021 – a fivefold increase from 21 billion in 2016. mHealth apps have been successfully used for health promotion activities but barriers such as lack of knowledge and comfort in using health apps exist.

Purpose: Evaluate readiness of a rural community and the effectiveness of health-related app educational sessions on increasing knowledge, comfort in using mHealth apps, and intent to use mHealth apps.

Methodology: A one-group pre-test/post-test design was used to evaluate mHealth app educational sessions offered at a community center in rural Ireland. A convenience sample of 56 individuals (middle/high school students) and adults who routinely access services at the community center participated in a mHealth app educational session.

Procedure: 56 participants were enrolled in the study, 36 females and 20 males. Participants ranged in age from 16-67 with a mode of 17. Nearly all of participants (96.4%) reported having access to a smart phone with time spent per day using the smartphone averaging 2 hours and 43 minutes. The majority (92.9%) of the participants used apps on their phones but only 41.1% used health-related apps. Ninety-eight percent of the participants have internet access at home but only 23.2% conducted health related research online and even fewer have electronic access to health records (7.1%) or communicate with a health care provider electronically (3.6%). Twenty one percent of participants reported using “wearables” to monitor their personal health. There were no changes in procedures or to the anticipated risks or benefits.

Results: After the educational session, participants reported they were more knowledgeable about mHealth apps, more comfortable using mHealth apps and were more likely to use mHealth apps. The self-reported post education knowledge mean was 68.09% on a scale of 0-100. The self-reported knowledge mean increased by 30, statistically significant at p

Conclusion: Providing educational sessions with hands-on demonstrations and practice is an effective strategy to increase knowledge, comfort and intent on utilization of mHealth apps for health promotion activities. Removing some of the common barriers to the utilization of mHealth apps increased the likelihood of their use and offers an accessible tool for health promotion activities to underserved populations in rural communities.

Exploring the Inclusiveness of a Sports Camp for Children with Visual Impairments: Athletes’ Perspectives

Victoria S. Diaz (Mentor: Justin A. Haegele)

Education

This study examined how children with visual impairments experienced Camp Spark, an adaptive sports camp located in the Pacific Northwest of the United States. Specifically, the campers were asked to describe their experience of inclusion (or lack thereof) while at camp and how it pertained to the feelings of acceptance, belonging, and value, according to Stainback and Stainback’s (1990) interpretation of inclusion. Four children with visual impairments were enrolled in this study (aged 12-13 years; three males, one female). Data collection included semi-structured, audio-recorded interviews that were conducted via telephone and/or video call and then transcribed verbatim. The data collected was analyzed using steps that were inspired by the three-step process used in a study conducted by Coffey et al. (2020). Three interrelated themes were constructed from the data: (a) social barriers are different depending on context, (b) participatory barriers in different contexts, and (c) positive feelings of inclusion while at camp. Each of these themes highlighted the experiences of the participants and how they felt included at camp compared to other

environments where they participate in physical activity; which were not as inclusive, according to the participants' feelings of acceptance, belonging, and value.

Quality Assessment of Scholarly Big Data

Ryan Hiltabrand (Mentor: Dr. Jian Wu)

Science

Scholarly big data is the rapid growth of scholarly data placed into digital networks and libraries. Some of the data associated with this research includes Scholarly Open Research Corpus data, Microsoft Academic Graph, and the US National Library of Medicine. These all use automated information extraction tools to collect metadata from scholarly articles. This automation introduces many sources of error due to the imperfections of models in extraction libraries. These various libraries are used for many areas in analytical research like citation analysis, citation prediction, information extraction, and link analysis. This research will come from the use of metadata provided by Semantic Scholar Open Research Corpus (S2ORC) which is compared to a ground truth dataset that is focused on assessing the data quality including document conflation (near-duplicate identification), paper linkage, author name disambiguation, coverage, and freshness. We found that the data linking of S2 quality is high but not perfect. The accuracies range from 0.91 to 0.99 depending on subject domains and data curation methods. Given that there are 200 million paper records in S2, data users should take this into account when performing data coverage and network analysis between S2 and other databases.

Art #4 Q & A based on Virtual Exhibit

The Sense of the South

Kieran Rundle (Mentor: Greta Pratt)

Arts & Letters

COVID19 coiled around each town and group of people differently. As a photographer living through the pandemic, I felt called to record it.

Over the summer of 2020, I received the Undergraduate Research and Creativity Grant. I embarked on a journey across the southern states as a journalist studying the social and economic impacts of the virus on tiny remote towns. For a month, I drove through the south with my camera and notebook in hand. The places I visited were remote and outside of the main clutches of sickness. I entered homes and businesses to discover just how far COVID19 reached into the personal lives of people in remote areas. Concluding my documentation, I wrote a book, A Sense of the South. Through my own words, quotes from people I met along the way, and facts about the opening phases and the virus as a whole merge together for a whole story.

More COVID19 related photographs and the book can be found at <https://www.kieranrundleproductions.com/pandemic>.

Futuramismo

Chris Valentine (Mentor: Greta Pratt, Brendan Baylor)

Arts & Letters

With this series, I hoped to create a psychedelic view of a future in which space exploration and colonization plays a large role in our way of life. These images are constructed of digital photographs I have taken myself.

The process of collage allows images that would never exist in the same place to interact. They have their own symbology, implication, and context, and when combined, they take on new meaning.

Anaglyph 3D is an antiquated technology that still seems vaguely futuristic. When you watch old movies about the future, i.e., movies taking place in 2000-2020, it is interesting to see how fantastically wrong most of their predictions were. It is even more interesting, the predictions these movies get right, or almost right. My mind goes to *Back to the Future II*, a movie that takes place in 2015. We don't have hoverboards, or flying cars, but video chat, rapid access to entertainment, and virtual reality are all commonplace, albeit in different forms than they take in the movie.

I chose to make this series in 3D to illustrate that no matter how technologically advanced we are, the way we continue to conduct ourselves as a species is outdated. We continue to consume more than we need, disrupt the balance of countless ecosystems, and cause general destruction in most of our exploits. My hopes are that all these anachronisms, and clashing iconography work together to construct a thought-provoking set of landscapes that are fun to look at.

That Which Brings Us Here

Sarah Spalsbury (Mentor: Brendan Baylor)

Arts & Letters

Though these works were all done for different classes using different printmaking and other various methods, the unifying theme they all share is reflecting my own life. I found I had unintentionally been exploring my distant and most impactful memories as my life was reaching a turning point. The most extensive and intimate dissection was my book project *For Your Service*. This 10-foot rambling accordion sheet is locked tight inside a wooden box. Stretching it out, you walk chronologically through my Army career featuring maps, patches, and representational images of my experiences.

Memory Lane is another extensive journey through nostalgic images of many places long gone. Roadside food stands, highway tourist attractions, and all the sticky messy memories of family road trips presented in that hazy, Technicolor way cherished memories appear in my mind. A view from within, *Wide Awake and Dreaming* is a snapshot of that perfect start the day of a camping trip. Looking up at the sun-dappled leaves and smelling the remains of last night's campfire. This was a laser cut wood block, printed in 5 layers as areas were carved out to create a sense of depth and texture. I always seek to use colors I feel are connected to the subject and present them in a way that speaks about the piece before even seeing the details.

Shades of Blue

Amber Pierce (Mentor: Richard Nickel)

Arts & Letters

My current ceramic work explores traditional ways of making that are informed by personal and cultural anecdotes relevant to my own narrative within our current times. I seek to explore the combining of traditionally “craft” mediums such as ceramics and fibers with qualities of “Fine” art such as drawing and painting. My goal is to create a visual language influenced by ephemeral thoughts and feelings while grounding them in form through sculpting and materializing. Methods such as research, journaling, sketching, drawing, sewing, painting, forming, carving, and firing are all included in the process of creating these works. Each work embodies a line of thought that has been inspired by the history of the material juxtaposed with the contemporary atmosphere of my present narrative. Outcomes of the work vary from journal like-explorations that challenge my own ideas of what is conceptually worthy of being considered important, artistic, or relevant. My research within traditionally craft materials combined with my art education background also leads me to explore the parameters of artistic “success”, “high-art”, and cultural ideals of artistic standards.

Pathogen Biology from Land to Sea

Microbiome Analysis of *Amblyomma maculatum* Colony Ticks

Xiavana Horton, Christina Hurst, Melodie Laylor, Armoni Mayes, Arielle McGlone, Stephanie Moyers, Yash Patel, Rebecca Ferrara (Mentor: David Gauthier)

Science

This study investigates the bacterial microbiomes of *Amblyomma maculatum* colony ticks and how the microbiomes change depending on life stages and generations. A microbiome is defined as all the genetic material of microorganisms living in and on another organism. CUREs, a Course-based Undergraduate Research Experiences involve classes of students addressing real-world research questions without pre-defined outcomes. BIOL380/381, Research in Pathogen Biology, was designed as an advanced CURE for 300-level Biology students at ODU. In semester I of the 2020-2021 cycle, we addressed two main research questions associated with tick microbiomes:

- 1.) Does OTU composition differ between F1 and F2 generations?
- 2.) Does OTU composition differ between larva, nymph and adult life stages?

Unfed adult ticks were collected from field sites. A captive colony of *A. maculatum* was established at ODU by mating wild-caught *A. maculatum* to produce F1 larvae. Bioinformatic tests were run on Qiita and included Bray-Curtis beta diversity, a principal coordinate analysis, a phylogenetic bar-plot, a permutational multivariate analysis of variance and a dispersion test. Generations F1 and were widely distributed across the three-dimensional plots and did not present a large amount of clustering. Both null hypotheses are rejected and a significant variance in OTU composition is observed between different generations and life stages. This analysis serves as an ongoing effort to research OTU compositions among ticks to determine the transmission of pathogen *R. parkeri*.

Analysis of Microbiomes for Captive and Wild Caught Adult *Amblyomma maculatum*

Cheandri Ackermann, Fenny Chaudhary, Rosemarie Floyd-Vasquez, Jadesia Fludd, India Hawkins, Chloe Smith, Jasmine Walker, Rebecca Ferrara (Mentor: David Gauthier)

Science

Course-based Undergraduate Research Experiences (CUREs) involve classes of students addressing real-world research questions without predefined outcomes. BIOL380/381, Research in Pathogen Biology, was designed as an advanced CURE for 300-level Biology students at ODU. In semester 1 of the 2020-2021 cycle, we addressed two main research questions associated with tick microbiomes. The microbiome of colony ticks (raised in the lab) and ticks from Mackay Island (MI), Smith Island (SI) and Centerville (CV) were examined to determine how their operational taxonomic unit (OTU) compositions differed from each other. An OTU is a grouping of closely related taxa found within the microbiomes of these ticks. The Principal Coordinate Analysis (PCOA) showed differences in grouping between the MI, SI, CV, and colony ticks. Our PERMDISP and PERMANOVA analyses indicated there were differences among groups due to dispersion, but it was ambiguous whether the differences were also due to centroids (OTU composition). This led us to conduct further analyses that tested for the difference between OTU compositions of wild caught ticks (MI, SI, and CV collectively) and colony ticks. When wild caught ticks were grouped together, there was a clear difference in the OTU composition between wild caught and colony ticks.

Seasonal Pathological Differences of Mycobacteriosis in Striped Bass (*Morone saxatilis*)

An Ha (Mentor: David Gauthier)

Science

Striped bass (*Morone saxatilis*), also called rockfish, is a treasured species in sportfishing in Chesapeake Bay and helps to maintain the stability of the estuarine food webs. Starting in 1997, many striped bass captured from Virginia and Maryland waters of the Chesapeake Bay were observed to have poor body conditions and ulcerative skin lesions. It was soon to be discovered that this infection was connected to the acid-fast Mycobacteria. Due to the late discovery of this disease, there is little knowledge of prevalence and pathogenesis in the aquatic ecosystems.

Since 2003, the Chesapeake Bay Multispecies Monitoring and Assessment Program (ChesMMAP) from the Virginia Institute of Marine Science has collected spleens from striped bass caught from the Chesapeake Bay for the study of mycobacteriosis. On-site physical observations were made of each capture and each size class was then further analyzed for visual sex-determination and otolith-based aging. After processing of spleens, histological observations of splenic mycobacteriosis such as quantifying granuloma count, granuloma size, and the average number of granulomas per spleen were recorded.

Data analysis was performed with the data collected to form connections between the seasonal factors and the disease manifestation for the sample. From the logistic regression and model averaging analysis, the age of the fish was a significant factor associated with disease prevalence. Suggestions for future analysis includes studying the pattern of manifestation in specific year class and evaluating any possible correlations between water quality and disease prevalence.

Session 8

4:00-4:30 PM

Student Scholar Closing Panel

Meet and hear from several rising stars. These students (like many others) have demonstrated resilience and perseverance through conducting research during a pandemic, but their scholarship also focused on COVID and its impact.

Moderators (Dean Metzger, Jeremiah Ammons, & Eddie Hill).