CSU MONTEREY BAY PRESENTS
the 7th Annual

FALL RESEARCH COMPETITION

THE UNDERGRADUATE RESEARCH OPPORTUNITIES CENTER

ALUMNI & VISITORS CENTER, ZOOM

THURSDAY, NOVEMBER 18, 2021
3:00 – 6:00 PM
- Program -

Welcome.............................................................................................................................. 1

Judges.................................................................................................................................. 3

Schedule................................................................................................................................ 4

Presenters............................................................................................................................. 5

Acknowledgments................................................................................................................ 9
The Fall Undergraduate Research, Scholarship, and Creative Activity Competition is designed to highlight scholarly work at CSUMB. Modeled after the CSU Student Research Competition, students, under the guidance of one or more faculty members within their department, or multiple departments for interdisciplinary projects, are eligible to submit a project to be considered for the competition.

All presenters, especially winning presenters, will be strongly encouraged to apply for the statewide CSU Student Research Competition, held each spring to promote and recognize outstanding student accomplishments throughout the 23 campuses of the CSU system.

To learn more about the CSU Student Research Competition visit: [https://tinyurl.com/CSUSRC](https://tinyurl.com/CSUSRC)

**UROC FUN FACTS**

**51**
UROC students have won prestigious national scholarships & fellowships including:
- 25 NSF Graduate Research Fellowship Program (GRFP) awards and 8 honorable mentions
- 18 Sally Casanova Pre-doctoral Scholars and 4 honorable mentions
- 6 Goldwater Scholar and 7 Honorable Mentions

**800+**
Number of students who have been in UROC professional development programs.

**113**
20% of UROC alumni completed graduate degrees
Professional degrees: 7
Master’s degrees: 95
Doctorate degrees: 11

**82%**
Of UROC students have been from traditionally underrepresented groups including:
- 42% Traditionally underrepresented minority
- 45% First-generation in college
- 44% Pell Grant recipients
- 41% Transfer students

**500+**
Students research presentations at national conferences funded by UROC.

**2000+**
Number of funded undergraduate research opportunities for CSUMB students.
Judges

Jose Pablo Dundore-Arias, Assistant Professor, Department of Biology & Chemistry, CSUMB
Dr. JP Dundore-Arias, Assistant Professor of Plant Pathology, received his B.Sc. in Agronomy from the University of Costa Rica. He completed his M.S. and Ph.D. degrees in Plant Pathology with a minor in Entomology at Iowa State University and the University of Wisconsin-Madison, respectively. He later received a Postdoctoral Fellowship from the National Science Foundation to conduct research related to agricultural microbiomes at the University of Minnesota. His research interests center on investigating the biology, ecology and management of plant-associated microbes, with the ultimate goal of developing practical applications for enhancing plant and soil health and promoting biological suppression of plant pathogens.

Jenny Lin, Assistant Professor, College of Business, CSUMB
Dr. Meng-Hsien (Jenny) Lin studies individual differences in sensory (olfaction, haptic, visual) perceptions and its impact on consumer decision making and consumer well-being outcomes using a combination of surveys, behavioral experiments, neuroscience methods and in-depth interviews. Her other research interests involve understanding children’s cognitive and emotional processing of online advertising and the influence of social media with the focus of empowering parents (mothers in particular) through understanding their use of social media. Dr. Lin’s work has been published in European Journal of Marketing, Journal of Advertising, Journal of Consumer Affairs and other outlets. Her research has implications for marketers, retailers, advertisers, and public policymakers.

Kelly Medina-López, Assistant Professor, School of Humanities & Communication, CSUMB
Dr. Kelly Medina-López, Assistant Professor of Composition Studies in the School of Humanities and Communication, has a PhD in Rhetoric and Professional Communication with an emphasis in Cultural Rhetorics and Composition Studies from New Mexico State University. Her research interests include decolonial research methods, critical making, Chicano/Latino rhetorics, border studies, and language politics. You can find her writing in Constellations: A Cultural Rhetorics Publishing Space, the edited collection Querencia: Essays on the New Mexico Homeland, and two forthcoming publications, Latinx Rhetoric and Writing Studies and Decolonial Conversations in Posthuman and New Material Rhetorics.

Erin Ramirez, Assistant Professor, Department of Education and Leadership, CSUMB
Dr. Erin Ramirez, Program Coordinator of Secondary Teacher Education in the Department of Education and Leadership, teaches post-grad courses in English methods, literacy, cross-disciplinary methods, and Masters level research methods. She also mentors Masters’ students through their thesis projects. Most recently, she received a 4.89 million dollar Department of Education grant to increase the recruitment/retention of new teachers from underrepresented populations, increase k-12 student literacy and STEM achievement, and provide professional development to teachers throughout Monterey County. Her research interests include teacher self-efficacy, content-area literacy, secondary literacy instruction, student reading achievement, teacher education, and research methods.

Yvette Lopez Brooks, Mayor for the City of Capitola, Guest Judge
Yvette Lopez Brooks is from San Jose, CA and the first Latina Mayor for the City of Capitola. In 2006, Yvette received a Bachelor of Arts in Sociology and a minor in Education from the University of Santa Cruz. In addition, Yvette is the Executive Director for the non-profit, Your Future Is Our Business, a wife and proud mother of a seven year old. Since her tenure on the City Council, Yvette has created strong policy with a focus on equity. She successfully created a Code of Conduct, allocated funding for Anti Bias training for Council Members and Staff and banned the sales of flavored tobacco products. Yvette is a member of the Executive Board of Directors for the League of Cities, LAFCO, Capitola’s Finance Advisory Council, the Monterey Bay National Marine Sanctuary Foundation, The Children’s Network, Childhood Advisory Council and the Central Coast Early Childhood Advocacy Network. As a policy maker, Yvette is committed to building a safe and healthy community.
Opening Remarks | 3:00 - 3:05

**Avalon Surratt** | 3:05 - 3:20
Bioremediation of Pesticides: Applying Molecular Genomic Techniques to Uncover Efficient, Eco-friendly Methods of Cleaning Toxic Agricultural Waste

**Morgan Raimondo** | 3:20 - 3:35
Characterizing The Composition and Function of Soilborne Streptomyces from the Salinas Valley

**Jocelyn Chavez Diaz** | 3:35 - 3:50
Bilingual Heritage Speakers and Their Formed Identity in the United States

**Alicia Del Toro** | 3:50 - 4:05
Population Densities of Black Abalone Along the Monterey Peninsula

**Break**

**Saray Garcia*** | 4:15 - 4:30
Business For 2030: A Content Analysis of Firm’s Statements on The UN Sustainable Development Goals (SDG)

**Erika Hernandez-Gonzalez** | 4:30 - 4:44
Green Skepticism: Examining the Role of Social Media Influencers on Consumer Attitudes Towards Green Brands

**Charles Scrivner** | 4:45 - 5:00
Discriminating Green, Benthic Endmembers in Coastal Systems Using Novel Hyperspectral Satellite Imagery

**Break**

**Lily Amador & Korina McKinley** | 5:10 - 5:25
Location Of History and Civics in Salinas Ethnic Studies Classrooms

**Spencer Winter** | 5:25 - 5:40
Adults Neurogenesis in the Fish Model Speckled Sanddab

**Alma Leon** | 5:40 - 5:55
Observing Beaked Whale Foraging Behavior with Acoustic Localization

**Awards and Closing Remarks** | 5:55 - 6:00

*Presentation will be virtual, not in person.*
Bioremediation, the process of microorganisms breaking down pollutants, overcomes the limitations of traditional pollution remedies. It is more efficient and eco-friendly since it relies on naturally occurring organic conversions as opposed to induced physicochemical reactions. Therefore, it is a desirable method for cleaning toxic agricultural waste. My research focuses on bacteria microorganisms that can remediate the pollutant pesticide. I am identifying the functional genes that enable the bacteria to metabolize carbon sourced from pesticides in order to divulge the genetic mechanisms of bioremediation. This identification began with my extraction of DNA of bacteria that grew in a bacterial growth promoter containing Salinas Valley agricultural runoff and thus were likely to source carbon from pesticides. I used a DNAeasy Power Soil Kit to complete DNA extractions of nine strains. I then assessed DNA concentration and fragment size via a Qubit 4 Fluorometer and Advanced Analytical Fragment Analyzer. All concentrations were above 35 microliters per nanogram and all fragment sizes were above 10,000 picometers, allowing me to proceed with NBD104 seq analysis of separate studies done on bilingualism and self-identification. Authors such as Potowski (2004) and Geerlings et al. (2014) have compared several groups of Spanish speakers and their preferences on how to self-identify. Potowski and Geerlings et al. demonstrate that heritage speakers tend to identify themselves with their dominant language. For example, if the individual is Spanish dominant, then they will identify as person rather than an American. Ultimately, this project will draw attention to the importance of speaking a second language, and how this may affect one’s formed identity. In contemporary times, equity, diversity, and racial justice are at the forefront of our social and political dialogues, and my research contributes to these key conversations.
Population Densities of Black Abalone Along the Monterey Peninsula
Alicia Del Toro1, Leta Dawson1, Dr. Fiorenza Micheli2, & Dr. Alison Haupt3
1Department of Marine Science, California State University, Monterey Bay
2Hopkins Marine Station, Stanford University
Abalone fisheries south of San Francisco have been closed since 1997; however, populations in the Monterey Bay have not seen enough improvement to reopen these fisheries. Despite fisheries closures, black abalone (*Haliotis cracherodii*) were moved from the species of concern list to the endangered list under the US Endangered Species Act (ESA). In 2003, the Department of Fish and Wildlife established the Abalone Recovery and Management Program and a study in 2002 found that black abalone in Monterey Bay did not meet any of the recovery criteria. For this study, we examined black abalone densities at seven locations along the Monterey Peninsula on the central coast of California: Pescadero Point, China Rock, Sea Palm, Carmel Point, Point Pinos, Hopkins Marine Station, and Cannery Row. Our main focus is to determine if black abalone populations have further declined or now meet the recovery criteria outlined in the ARMP. This semester we will run statistical analysis to determine trends in black abalone populations. By using previous data, as well as data from this year, we will compare the black abalone populations over time using several sites along the Monterey Peninsula. With our findings, we will gain a better understanding of the local black abalone communities and how to better protect this endangered species.

Business for 2030: A Content Analysis of Firms’ Statements on The UN Sustainable Development Goals (SDG)
Saray Garcia1 & Dr. Ishva Mineeef2
1College of Business, California State University, Monterey Bay
2Gies College of Business, University of Illinois, Urbana-Champaign
Multinational corporations (MNCs) continue to face pressures from stakeholders to assist governments and international organizations in ensuring sustainable development across the globe. Adoption of the United Nations’ Sustainable Development Goals (SDGs) started in 2016, but researchers have yet to see how MNCs specifically address or investigate “how” the goals are implemented and communicated. Through a content analysis, we assess 61 MNCs’ communication of their progress on the Business for 2030 initiative, which emphasizes the role of MNCs in helping to achieve the SDGs. Among our preliminary findings, four distinct themes encompass the SDG initiatives taken by MNCs: the use of evidence-based statements, the lack of specificity in communication, the importance of public-private partnerships, and the adoption of sustainable practices in corporate strategy. In particular, we found an abundance of evidence-based statements that detail various firms’ initiatives towards pre-SDG initiatives, including timestamps dating before 2015, providing internal company demographics, and stating management commitments. This also suggests that although many MNCs communicate numeric outcomes related to the SDGs, they often do not offer details on how they achieve those outcomes. Thus, we aim to provide recommendations for improving MNCs’ communication in line with stakeholders’ expectations.

Green Skepticism: Examining the Role of social media influencers on consumer attitudes towards green brands
Erika Hernandez-Gonzalez1, Brishana Nader1, Iris van Hest2, & Dr. Jenny Lin2
1College of Business, California State University, Monterey Bay
2Department of Business, Fontys University of Applied Science, Eindhoven
Faces in an advertisement are a common design method to promote social stimuli that communicate emotions, alertness, and intentions. The green ad focuses on the relationship between a product and the environment and may contain characteristics to promote a green lifestyle. Companies found that they gained a competitive edge when they claimed that their product, services, and practices were considered “green.” The unethical application of companies claiming to be a “green” business is known as greenwashing, causing many customers to become wary of green claims in general, also known as green skepticism. Our previous research, which included an eye-tracking and behavioral study, found that faces in green ads resulted in a lower positive attitude than green ads with no face. This result contradicts past research findings, which found that ads with faces that conveyed happiness positively correlated with attitude towards ads, increasing consumer purchasing intentions. In this current study, we examine how brand image plays a role in using faces in green ads. To study the impact of social media influencer faces on consumer attitudes towards green brands, we use a 2 (brands: green-oriented vs. non-green-oriented) by 2 (ad design: with face vs. no face) between subject behavioral experiment design. Findings are expected to be helpful for marketers with the use of social media influencers and ad design to deliver green messages to consumers effectively.
Zostera marina -

Determine whether cell ty processes in the speckled sanddab contribute to satellite remote sensing technology and will lead the way for future global missions intochiometry and visualized via genic niches. The talty of the brain to grow and reorganize. In contrast with mammals, many fish display more beds in communities, and California State University, Monterey Bay physiological and behavioral adaptations in a constantly changing environment, with potential implications for survival knowledge gained from our studies can be used to determine whether neuroplasti
confocal microscopy. Further studies will be necessary to identify the cell fate of these new cells and to identify the neuro izing process. The widespread and generated in these niches are indistinguishable from perinatal-generated neurons, as they can integrate into the brain circuitry, receive functional inputs, and display morphological and electrophysiological properties. The widespread and abundant cell proliferation in fish makes them ideal models to study neurogenesis in the vertebrate brain. We aim to develop a brain map of the neurogenic zones in a new nonstandard and ethologically relevant fish model, the speckled sanddab (Citharichthys stigmatus), a species native to Monterey Bay. To this end, we will first determine whether cell proliferation exists in the brain of the sanddab. Newborn cells in the brain will be labeled with two thymidine analogs.

5-bromo-2’-deoxyuridine (BrdU) and 5-ethyl-2’-deoxyuridine (EdU). Brain slices will be processed by immunohistochemistry and visualized via confocal microscopy. Further studies will be necessary to identify the cell fate of these new cells and to identify the neurogenic niches. The knowledge gained from our studies can be used to determine whether neuroplasticity processes in the speckled sanddab contribute to physiological and behavioral adaptations in a constantly changing environment, with potential implications for survival.
Cuvier’s beaked whales (Ziphius cavirostris) are a deep-diving, cosmopolitan species, which are regularly found in underwater acoustic recordings. Since it has been difficult to study them visually, their contribution to ocean ecosystems is still not fully understood. By localizing Zc echolocation clicks, we can gain insight into their behavior and measure signal characteristics necessary for population density and distribution estimates. Two arrays of four hydrophones were deployed offshore of southern California to collect acoustic data over a four-month period. Echolocation clicks were detected using a high-pass filter and energy threshold. Once echolocation clicks were detected, the time-difference of arrival (TDOA) was calculated for each detection on both arrays. A MATLAB interface called "Where’s Whaledo" was used to associate echolocation clicks from the same individual whale on both hydrophone arrays and recreate the whale’s path in three dimensions. This method allowed us to produce multiple whale tracks. However, the high number of false detections from dolphin sounds limited the number of usable beaked whale encounters. Future work may include developing a detector that removes dolphin sounds based on differences in dolphin and beaked whale signal characteristics. By analyzing the tracks that were successfully obtained, we can observe foraging behavior and calculate the necessary signal characteristics to get population density estimations. These methods can be applied to other datasets, allowing us to compare beaked behavior at different sites and under different conditions.
Thank you to all students, faculty, and community for participating in this year’s Fall Research Competition!

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