



UNG'S 3RD ANNUAL

research pitch

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Performing Arts Center Auditorium, Rm 108, Gainesville Campus

November 3rd, 2022

5:30 pm to 7:00 pm

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UNG's 3rd Annual Research Pitch



November 3, 2022 5:30 - 7:00 pm

Performing Arts Center - Gainesville Campus

Presenters

Nick Stoltz - *Laricobius nigrinus* Rearing Efficiency in a Lab Setting by Investigating Egg Production of Sexed Breeding Colonies vs. Unsexed Breeding Colonies

Kathryn (Kate) Monheim - Synthesis of Fluorescent Dyes for Incorporation into Silica Nanoparticles for Early Detection of Pathogens

Evelyn Tello-Mendoza - Beyond the Birds and the Bees: Self-Efficacy in Sex Practices within the LGBTQ+ Community

David Olsen - Unravelling the Structure of the Proton with the Electron Ion Collider

Michelle Alvarado - Christian Inversions in the Novel Bless Me, Ultima: The Mythopoeia of the Golden Carp

Sonrisa Reed, Tanner Hodges, & Kat Mayfield - An Analysis of the COVID-19 Pandemic in Georgia

Kyala Shabani - Investigation of the Toxicological Effects of Oral Ingestion of Perfluorobutanesulfonic Acid (PFBS) and Type-1 Diabetes (T1D)

Gerran Collins, Edward Surles, and Elizabeth Colley - Motivational Learning and Cognition in C57BL/6J Mice in the Radial Arm Maze

Dody Matundu - An Examination of the Risks and Frequency of Public Wi-Fi Use

Host and Emcee



Dr. Ric Kabat

Dr. Kabat serves as Associate Dean of the College of Arts & Letters at the University of North Georgia. He earned his Ph.D. in American History in 1995 and is a Professor in the Department of History, Anthropology, and Philosophy. His research interests include the social and political history of the twentieth-century American South focusing on the Progressive Era, Cold War, and Red Scare.

Judges



Dr. Ana Pozzi Harris

Dr. Pozzi Harris holds a Ph.D. in art history from the University of Texas at Austin and is Senior Lecturer at the Department of Visual Arts. She has created courses in Latin American art, Latino Art, international Pop art, and Surrealism. She currently serves as Visual Arts master faculty advisor and as fall/spring internship coordinator. She is co-founder of TimeFrame - UNG Art History Club, and she recently organized two student art exhibitions celebrating Hispanic Heritage Month. In 2021, she received a UNG Teaching Excellence Award and an eHERO Award from the USG eCampus. On 2022, she was awarded a Leap into Action grant. She is currently working on a book project that will document contemporary Latino artist collectives in the North Georgia region.



Dr. Ghulam Hasnain

Dr. Hasnain is an Assistant Professor in the Biology Department at the University of North Georgia, Gainesville Campus. Dr. Hasnain earned his Ph.D. degree in Biology from Leiden University, the Netherlands, and completed a post-doctoral research experience from the University of Florida. He is a molecular biologist/biochemist, and his research focuses on comparative genomics and metabolic engineering. Dr. Hasnain has been teaching Genetics, Plant Physiology, and Principles of Biology I & II.



Dr. Toluwani Oloke

Dr. Oloke is an Assistant Professor in the department of Communication, Film, and Theatre at the University of North Georgia. Dr. Oloke earned her doctoral degree from the University of Florida. Her research focus is in Health Communication and Cultural sensitivity in the development of health campaign messages. Dr. Oloke loves to spend time with her family, cook and read novels in her leisure time.



Prof. Mike Lavender

Professor Lavender is the Associate Dean of Undergraduate Programs for the Mike Cottrell College of Business. He has received his J.D. from Mercer University and his Master's degree in Higher Education Administration from UGA. His research interests include developing model rules for AI, comparing French and US practices in religious freedom, and compensating eminent domain victims when their property was taken for economic purposes as public use. Prior to entering academia, Professor Lavender practiced law in Athens, Georgia, where he focused on advising nonprofit organization boards on best practices, appealing IRS denials, open-records requests, and commercial finance.

Abstracts

Nick Stoltz - *Laricobius nigrinus* Rearing Efficiency in a Lab Setting by Investigating Egg Production of Sexed Breeding Colonies vs. Unsexed Breeding Colonies (Prof. Stacie James)

The gendering of the *Laricobius nigrinus* breeding stock contributes to rearing success in a laboratory setting. The dominant method of rearing these beetles is random assortment in a breeding chamber with a low success rate. New methods such as gendered assortment provide a chance for a direct increase to rearing success rates. Data used from research professionals indicates a 30% rearing rate from traditional methods. This study aims to raise that success rate of rearing this beetle for increased biological control. If successful, its application will be used against the Hemlock Woolly Adelgid affecting the hemlock population.

Kathryn (Kate) Monheim - *Synthesis of Fluorescent Dyes for Incorporation into Silica Nanoparticles for Early Detection of Pathogens* (Dr. Suri Iyer, Georgia State University)

The Iyer group focuses on developing a point of care diagnostic strategy for the early detection of pathogens. To this end, our research examined the synthesis of Janelia Fluor 549 for incorporation into 30-100 nm silica nanoparticles. We synthesized Janelia Fluor according to the procedure reported by Lavis et. al, and modified it to attach the dye to a silica nanoparticle. This dye is highly fluorescent with a quantum yield of 0.88, and an excitation coefficient of 101,000 M¹cm⁻¹, giving it a brightness of 88,880 M¹cm⁻¹. The conjugation to a suitable precursor and subsequent fabrication of the dye encapsulated silica nanoparticle will then be covalently bonded to synthetic nanoparticles to amplify the signal of the p24 antigen for HIV.

Evelyn Tello-Mendoza - *Beyond the Birds and the Bees: Self-Efficacy in Sex Practices within the LGBTQ+ Community* (Co-author: Valeria Jimenez & Mentor: Dr. Efren Velazquez)

Despite the growing amount of literature on the LGBTQ+ community, few studies have focused on marginalized communities within the LGBTQ+ community like people of color (POC). This qualitative study focused on POC LGBTQ+ young adult's access to sexual health resources and information, and compared White LGBTQ+ and POC LGBTQ+ members' accessibility to sexual health resources. Five self-identifying POC LGBTQ+ members and three White LGBTQ+ members were interviewed and asked questions regarding access to sexual health information and resources.



Abstracts Cont.

David Olsen - *Unravelling the Structure of the Proton with the Electron Ion Collider* (Dr. Sonny Mantry)

In particle physics, subatomic collisions are generated through particle accelerators. The proposed Electron Ion Collider (EIC) will study electron-proton collisions to conduct detailed studies of the internal structure of the proton. Protons are composed of smaller elementary particles, called quarks and gluons. Energetic, incoming electrons interact with the quarks to shatter the proton. One-jettiness is a theoretical framework that quantifies and characterizes the energy and momentum distributions of the resulting collision debris. Computational analysis chains are built to test theoretical one-jettiness predictions and to predict the impact these computer simulations will have on the proposed EIC studies.

Michelle Alvarado - *Christian Inversions in the Novel Bless Me, Ultima: The Mythopoeia of the Golden Carp* (Dr. Valerie Surrectt)

Rudolfo Anaya's novel *Bless Me, Ultima* (1972) resist assimilation, using Anya's mythopoeia of the golden carp and Christian inversions. My project aims to demonstrate how the golden carp is a reclamation of the Chicano identity. To accomplish this, I examine how Catholicism has become synonymous with the culture and identity of many Chicano/as while revealing how Ultima, an elderly curandera, plays a significant role against assimilation. Also, a compare and contrast is made to evaluate how the golden carp myth is influenced by both Christian and Aztec mythology.

Sonrisa Reed, Tanner Hodges, & Kat Mayfield - *An Analysis of the COVID-19 Pandemic in Georgia* (Dr. Rana Gautam)

Since World War II, the COVID-19 pandemic has emerged as the worst global crisis with a long-lasting impact on communities. The U.S has reported a staggering 97 million confirmed COVID-19 cases and over 1 million associated fatalities. We present the findings of our ongoing study on the pandemic in Georgia. Unlike many of the southeastern states, Georgia's rate of confirmed COVID-19 cases has been below the U.S case rate. But, like all its neighbors, Georgia's death and fatality rates exceed those of the U.S. We leverage county-level data to explore how socioeconomic disparities shaped the pandemic and influenced social distancing practices in Georgia.



Abstracts Cont.

Kyala Shabani - *Investigation of the Toxicological Effects of Oral Ingestion of Perfluorobutanesulfonic Acid (PFBS) and Type-1 Diabetes (T1D)* **(Dr. Worlanyo Eric Gato, Georgia Southern)**

PFBS (perfluorobutanesulfonic acid) are surfactants found in cleaning products, which can leach into drinking water. The study assesses the association between PFBS exposure and type-1 diabetes (T1D) through analyzing glucose levels, total protein and insulin concentration, and the expression on inflammatory and pancreatitis related genes. In the animals that ingested PFBS, we found serum total protein levels were not significantly altered; however, mean serum glucose concentrations were significantly lower. Further low-dose animals demonstrated over-expression of genes associated with inflammation and adaptive immunity. Ultimately, we found that PFBS ingestion has a mixed effect on the gene expressions, pancreatitis, and inflammatory processes.

Gerran Collins, Edward Surles, and Elizabeth Colley - *Motivational Learning and Cognition in C57BL/6J Mice in the Radial Arm Maze* (Dr. Abby Meyer)

The radial arm maze (RAM) is used to assess cognition and memory in psychological and neuroscience studies using food as a reinforcer for correct arm visitations. In visiting an incorrect arm (arm previously visited), the mouse has made an error and receives no reward in this arm. This novel RAM study has a small shock plate in the arm of the apparatus that is escapable rather than the traditional RAM shock floor or shock clip models. The results indicate that mice that receive shock are learning faster and more efficiently when compared to mice that do not receive shock.

Dody Matundu - *An Examination of the Risks and Frequency of Public Wi-Fi Use*

The field of cybersecurity involves the usage of various methods, technologies, and processes to prevent security breaches and/or protect computer systems, networks and programs from malicious attacks and other threats. While the nature of cybersecurity certainly makes the field broad and expansive in scope, the specific topic that this research would seek to address is the safety and potential risks associated with using public Wi-Fi, which is a common practice for many individuals in a myriad of situations/scenarios.

This research would seek to examine the contributing factors which lead so many individuals to forgo their network and data security by utilizing public Wi-Fi, while also seeking to understand the frequent use of unsecure networks and underlying conditions that lead to the normalcy of their use. Furthermore, this research would also assess the specific dangers and associated risks with accessing a public unsecure network, and the exposure one's computer, data, networks, and systems can face by carelessly utilizing such open networks (especially since many do so without fully understanding the dangers it can pose for a digital network or system).





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