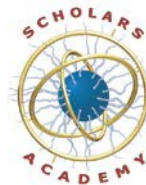# STUDENT RESEARCH CONFERENCE

University of Houston-Downtown
Friday, April 25, 2025

INDIVIDUAL PROJECT ENTRY FORM

SRC Online Application

Final application deadlines: ORAL & POSTER	**Monday, March 17, 2025**
POSTER only	**Friday, March 31, 2025**
SRC Online Application Submission: https://uhd.qualtrics.com/jfe/form/SV_cNhsgPEce21g3vo 	
All applications MUST include electronic abstract in MS Word format	
Check **SRC 2025 Guidelines** for additional details	

Abstract (200 word limit), along with this Entry Form, must be uploaded with SRC application to:
https://uhd.qualtrics.com/jfe/form/SV_cNhsgPEce21g3vo

UHD FACULTY SPONSOR:
By signing below, I agree to serve as the faculty sponsor for the above applicant. I agree to review the applicant's abstract (due March 17th or March 31st, accordingly), poster/other type files (due April 14th), and oral presentation (March 17th, if applying and/or selected) and ensure that these are in accordance with standards similar to those in my academic discipline. I also agree to attend the conference on April 25, 2025 to support this student (unless other arrangements are made) and to encourage other students and faculty to participate.

_____

UHD Faculty Research Sponsor or Other Research Sponsor (please print name and sign)   Date
[Electronic signatures are appropriate in pdf format]

_____

Applicant Signature   Date

If accepted to present, I fully intend to attend the SRC on April 25, 2025 and meet all deadlines and requirements as stated within the SRC guidelines. If accepted, I further authorize full use of photos/videos, submitted/presented material, and release of information deemed necessary for publications by the university and the SRC staff/sponsors.
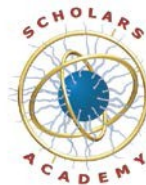
THIS FORM MUST BE COMPLETE AND SIGNED BY ALL INDICATED SPONSORS ABOVE, PRIOR TO ATTACHING TO THE SRC ONLINE APPLICATION 2025; THIS FORM IS NOT TO BE PHYSICALLY TURNED IN TO THE SA OFFICE

1. **Stabilization of Thiol/Acrylate Systems Using N-PAL**
Hilda Hinojosa, Christopher Lopez, Colin Carandang, and Lucio Patino
Dr. Byron Christmas, Research Mentor, Center for Applied Polymer Science Research, UHD
Abstract: Using *tris*-nitroso-N-phenylhydroxylamine (N-PAL) as a free radical polymerization inhibitor, an investigation was conducted to characterize the shelf-life stability and relative reactivity of UV-polymerizable, thiol/acrylate-based formulations containing various concentrations of N- PAL. These formulations were characterized for their relative reactivity using differential photocalorimetry (DPC) techniques. The shelf-life stability data generated thus far indicate that N-PAL provides adequate stability without significantly reducing the relative reactivity of the formulations.

2. **The Good Samaritan**
Tudon Martinez, Alisha Romero
Dr. Heidi Ziemer, Research Mentor, Department of Social Sciences, UHD
Abstract: We studied whether gender determines the likelihood of a driver stopping to assist a casually dressed gentleman stranded on the side of the road. Many studies report differences between men and women when helping others is involved. The probable explanation lies in the nature of the help required in the situation. Active doing, spontaneous, and anonymous acts are more likely to be carried out by men than by women. Women are more likely to help than men when helping is more planned, formal, personal, and less likely to involve direct intervention. We considered a number of variables: situation, type of help necessary, time of the day, physical condition of the person offering help, and previous experiences. Some studies have found that interveners in several kinds of dangerous events had more exposure to crime, both in personal experience and in witnessing others' victimization, they were also taller, heavier, better trained to cope with emergencies (e.g. trained in life saving skills, medical and/or police trained) and were more likely to see themselves as physically strong, aggressive, emotional and principled.

3. **Diatoms as Indicators of Wetland Mitigation Success**
David Lang
Dr. Brad Hoge, Research Mentor, Department of Natural Sciences, UHD
Location: UHD, Greens Bayou Wetlands Mitigation Bank, and Anahuac National Wildlife Refuge
Abstract: Diatoms were chosen to assess wetlands mitigation success in The Greens Bayou Wetlands Mitigation Bank, a project of The Harris County Flood Control District. Diatoms respond rapidly to environmental changes, thus diatom succession provides a good model of wetland mitigation success. Samples were collected from surface water and the first 10 centimeters of soil at the GBWMB and The Anahuac National Wildlife Refuge, a relatively undisturbed wetland comparable to those at the GBWMB. Results show statistically different assemblages at the GBWMB compared the ANWR. These results suggest the GBWMB, although planted with climax community plants, is still undergoing succession.

4. **Combating Spam Through Proofs of Effort**
Cyril Harris III
Dr. Ping Chen, Research Mentor, Department of Computer and Mathematical Sciences, UHD
Abstract: Spam is rapidly degrading the value of the Internet. Current methods to block spam are becoming less and less effective. Because of this several researchers from Microsoft Research proposed a new type of solution at Crypto 2003. To combat spam these researchers proposed that prices be accompanied with the act of sending email. These prices are easy to verify proofs of computational effort which would be hard to compute for the sender but easy to verify for the receiver.

5. **Lower Bounds on the Matching Number of Bipartite Graphs**
Iride Gramajo
Dr. Ermelinda DeLaVina, Research Mentor, Department of Computer and Mathematical Sciences, UHD
Abstract: This presentation is a summary of an undergraduate research project in graph theory that involved resolving conjectures on the matching number of bipartite graphs generated by a computer program called Graffiti.pc, designed by Dr. Ermelinda DeLaVina. One main objective of this project was to obtain a collection of lower bounds on the matching number involving other easily computed graph invariants, which collectively predict the matching number of bipartite graphs. We present the collection of lower bounds obtained. A couple of the results were found in texts and research papers, and some were mathematical applications of Hall's Marriage Theorem and Berge's M-Augmenting Path Theorem; however, many were resolved with seemingly original strategies.

6. **Cheating; Yes Unicellular Organisms Do It Too**
Tek Williams and Vedangi Sample
Dr. Akif Uzman, Faculty Mentor, Department of Natural Sciences, UHD
Dr. Gad Shaulsky, Research Mentor, Department of Molecular and Human Genetics, Baylor College of Medicine
Abstract: Altruistic behavior is exhibited in *Dictyostelium* during reproduction. This form of group selection, also observed in higher organisms, ensures that genetic traits shared by a related group of individuals persist through subsequent generations via the sacrifice of some members. Certain mutations often become over-represented compared to other mutants. Mutants were created using restriction enzyme-mediated integration. Cultures containing different mutants were randomly mixed, then allowed to undergo 10 rounds of replication. Cultures were then characterized using cheating assays to screen for dominant mutants. *Dictyostelium* strain AX4 was used to compare the level of cheating. Swindling ones way into the spores ensures that your genetic make up will be directly passed on to the next generation.

Sponsored by the UHD Scholars Academy.
Funded by: The Brown Foundation, Inc.; NRC MSIP; and UH-Downtown.

Revised 11/27/2024 3:38 PM