



# 24th ANNUAL STUDENT RESEARCH CONFERENCE

Sponsored by the UHD Scholars Academy



**April 25, 2025**

The Student Research Conference (SRC) is a showcase of academic excellence demonstrated by University of Houston – Downtown (UHD) undergraduates and graduates majoring within the Colleges of Marilyn Davies College of Business, Humanities and Social Sciences, Public Service, and Sciences and Technology.

## SRC Program Schedule for April 25, 2025

8:00 AM	Registration	Mural Area
	Continental Breakfast	Skyline Lounge
9:00 AM	Introductory Remarks - Executive Director, Dr. Mary Jo Parker Recognition of the 2025 SRC Co-Chairs & Committee members Recognition of any Special Guests	Robertson Auditorium
9:15 AM	Introduction of UHD President TBD Introduction of Provost TBD Introduction of CST Dean, Dr. Akif Uzman	
9:30 AM	Introduction of STEM Keynote Speaker – Dr. Michael Tobin	
9:35 AM	STEM Keynote Speaker – Dra. Evelyn Valdez-Ward <i>Presentation title</i>	
10:00 AM	Oral Presentations Begin Introductions by SRC Chairs	
11:45 AM	Dr. Mary Jo Parker Remarks	
12:00 PM	Lunch	Welcome Center & Milam/Travis Rooms
1:00 PM	Poster Sessions Begin	A300
1:00 PM	Session I	
2:30 PM	Session II	
3:30 PM	SRC closes – Receive Conference Gift with Survey	

### Conference Co-Chairs:

Dr. Katherine Shoemaker  
Dr. Michael Tobin

### Conference Planning Committee:

Dr. Liza Alonzo  
Dr. Amy Baird  
Dr. Maria Benavides  
Dr. Shahnjayla Connors  
Dr. Weining Feng  
Dr. César Garza  
Dr. Poonam Gulati Salhotra  
Dr. Judith Harris  
Dr. Katarina Jegdic  
Dr. Mian Jiang  
Dr. Yuan Yuan Kang  
Professor Mitsue Nakamura  
Dr. Laura Ruth Parker  
Dr. Dvijesh Shastri  
Dr. Katherine Shoemaker  
Dr. Jorge Tito-Izquierdo  
Dr. Michael Tobin  
Dr. Saveena Veeramoothoo  
Ms. Mercedes Gonzales  
Dr. Mary Jo Parker

### Special Guests

Ms. Sangeeta Gad, UHD Mathematics  
Kevin Anthony, Texas Southern University  
Stephen Rodriguez, VGXiii, Director of Process  
Development

## UHD Alumni Keynote Speaker

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### **Dra. Evelyn Valdez-Ward**

Adjunct in NS | UHD

Postdoctoral Fellow | University of Rhode Island

National Science Foundation STEM Education Postdoctoral Fellow

ReclaimingSTEM Institute | Executive Director

**Presentation Title:** “Narratives as Data, Identity as Method: How My Journey Through STEM Shaped My Research”

### **Bio-sketch**

Dra. Evelyn Valdez-Ward is a Mexican and formerly undocumented scholar dedicated to amplifying voices in science. She earned her B.S. in Biology from the University of Houston-Downtown, where she was a Scholar Academy member, and completed her Ph.D. at the University of California, Irvine, focusing on the narratives of scientists and their use of science communication. As an NSF STEM Education Postdoctoral Fellow at the University of Rhode Island, her research continues to explore the intersections of identity, communication, and experiences in STEM.

Dra. Valdez-Ward is the co-founder of the ReclaimingSTEM Institute, a global initiative that has trained over 3,000 participants through science communication workshops. Through RSI, she conducts research, and evaluation focused on community building.

### **Presentation Abstract**

Her current work investigates how scientists' personal and professional environments shape their STEM identities, self-efficacy, and career trajectories. Drawing on STEM Identity Theory, the Communication Theory of Identity, and Social Cognitive Career Theory, she explores how scientists define their identities, navigate complex environments, and reimagine what is possible in STEM.

## Oral Presentations

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**1 - Ana Diaz**, "AI-Powered Failure Analysis of the Deepwater Horizon Oil Spill "

Co-Authors: **Cole Brasher, Daniel Castillo, Blake Moss**

Research Mentor(s): **Dr. Mahmud Hasan**

Project Location: University of Houston-Downtown

**2 - Connor Durrenberger**, "Eisenstein Triples and their Genealogical Trees"

Research Mentor(s): **Dr. Sergiy Koshkin**

Project Location: University of Houston-Downtown

**3 - Sergei Gabrielov**, "H\* Algorithm: A New Approach to Improve A\* Algorithm for Faster Robot Navigation"

Research Mentor(s): **Dr. Azadeh Izadi**

Project Location: University of Houston-Downtown

**4 - Tina Prajapati**, "Screening Compounds for Their Anti-Cell Proliferation Properties"

Co-Authors: **Audrey Rubio, Jude Campbell, Dr. Vaishali Chaubal, and Dr. Rachna Sadana**

Research Mentor(s): **Dr. Vaishali Chaubal, Dr. Rachna Sadana**

Project Location: University of Houston-Downtown

**5 - Ryan Price**, "What's Your Favorite Dinosaur? Statistical Analyses for Use in Determining Museum Educational Programming"

Co-Authors: **James Washington III**

Research Mentor(s): **Ms. Joyce Hallaway**

Project Location: University of Houston-Downtown, Houston Museum of Natural Science

## Poster Presentation Session I (1:15PM-2:30PM):

### 1 - Jonathan Aguilar, "Higher Pythagorean Presentation"

Research Mentor(s): **Dr. Sergiy Koshkin**

Project Location: University of Houston-Downtown

### 3 - Arvin Allahyari, "Assessing Thermal Tolerance in Guinea Grass, Johnson Grass, and Common Wild Oat: Using Chlorophyll Fluorescence as an Indicator of Plant Damage"

Research Mentor(s): **Dr. Michael Tobin**

Project Location: University of Houston-Downtown

### 5 - Patricia Amador, "Anti-Cancer Effects of Fungal and Plant Extracts on Lung and Breast Cancer Cells"

Co-Authors: **Mesias Pedroza, PhD**

Research Mentor(s): **Dr. Mesias Pedroza**

Project Location: University of Houston-Downtown

### 7 - Dorothy Arogunjo, "Polarized Light Microscopic Studies of Polymerizable Catanionic Surfactants"

Co-Authors: **Dr. Robin Jose**

Research Mentor(s): **Dr. Robin Jose**

Project Location: University of Houston-Downtown

### 9 - Wendy Beal, Emily Perez, Daniel Odejimi, Margarita Garcia, "Heat and Cold Stress in Grasses: Thermal Tolerance of the Photosynthetic System"

Co-Authors: **Camaya Ezeike, Daniel Odejimi, Emily Perez, Margarita Garcia**

Research Mentor(s): **Dr. Michael Tobin**

Project Location: University of Houston-Downtown

### 11 - Kayla Campbell, Giovanni Rodriguez, Stiven Traore, "Studies of transition metal ions with aromatic amino acids"

Research Mentor(s): **Dr. Mian Jiang**

Project Location: University of Houston-Downtown

### 13 - Mercy Clement Akioyamen, "Trajectories of Adulthood Body Mass Index (BMI) and Cognitive Function: A Cross-Sectional Analysis of the National Health and Nutrition Examination Survey 2011-2014"

Research Mentor(s): **Dr. Song Ge**

Project Location: University of Houston-Downtown

### 15 - Ana Diaz, "AI-Powered Failure Analysis of the Deepwater Horizon Oil Spill"

Co-Authors: **Cole Brasher, Daniel Castillo, Blake Moss**

Research Mentor(s): **Dr. Mahmud Hasan**

Project Location: University of Houston-Downtown

### 17 - Khang Doan, Stacy Salinas, Ganiyat Raheem, Alice Quay, Brenda Molina, Jennifer Rodriguez, Cassie Licea, Bailey McCann, "Molecular cloning and expression of actinophage, Zolita genes"

Research Mentor(s): **Dr. Sanghamitra Saha**

Project Location: University of Houston-Downtown

### 19 - Thomas Duong, "Taking Advantage of Advanced Placement (AP) Statistics for College Admission: A Study of High School Students in the Houston Area"

Research Mentor(s): **Dr. Timothy Redl**

Project Location: University of Houston-Downtown

### 21 - Connor Durrenberger, "Classical Algorithms in Quantum Computers"

Research Mentor(s): **Dr. Cesar Garza**

Project Location: University of Houston-Downtown

### 23 - Jz Kamille Eclarin, Krishnaraj Narayanan, "The role of Lactobacillus in combination with Bifidobacterium strains in mitigating obesity-related effects: A systematic review of studies in mice and humans"

Co-Authors: **Alec Arbona**

Research Mentor(s): **Dr. Nagendran Tharmalingam**

Project Location: Methodist Academic Institute

### 25 - Aimalohi Edeghere, "Validation of Quantitative Trait Locus In Drosophila Melanogaster"

Research Mentor(s): **Dr. Yuan Yuan Kang**

Project Location: University of Houston-Downtown

### 27 - Adora Eko, Hanya Navarrete, "Comparative study of two pan-neural Gal4 drivers in Drosophila melanogaster"

Research Mentor(s): **Dr. Yuan Yuan Kang**

Project Location: University of Houston-Downtown

### 29 - Ashely Espinoza, Huriel Bautista, "Analyzing the Viability of PS Series Compounds in MOLT4 and A549 Cancer Cell Lines: Advancements in Chemotherapy Efficacy"

Co-Authors: **Maximiliano Perez, Tina Prajapati**

Research Mentor(s): **Dr. Rachna Sadana**

Project Location: University of Houston-Downtown

### 31 - Ingrid Funes, Odette Jaramillo, "The Impact of Parenting Style on Children's Self-esteem and Mental Health"

Research Mentor(s): **Dr. Jianling Xie**

Project Location: University of Houston-Downtown

### 35 - Danna Garcia, Jz Eclarin Kamille, "HPLC Analysis of Nucleosides and Nucleobases"

Research Mentor(s): **Dr. Jacob Theruvathu**

Project Location: University of Houston-Downtown

### 37 - Kenneth Garcia, "Quantum mechanical investigation of Stability and Properties of 1,3,4-Oxadiazolyl-5-yl Thiones using DFT"

Research Mentor(s): **Dr. Maria Benavides**

Project Location: University of Houston-Downtown

### 39 - Jessica Gonzalez, Edgar Llanas, John Esparragoza, "Faster Verification Process of Properties in Higher Dimensional Algebraic Structures with C++ and Python"

Research Mentor(s): **Ms. Mistue Nakamura**

Project Location: University of Houston-Downtown

### 41 - Yaqueline Gutierrez, "The role of Tfam loss in mitochondrial metabolism during retinogenesis"

Co-Authors: **Amy Nguyen, Ross A. Poché**

Research Mentor(s): **Dr. Elda M. Rueda**

Project Location: University of Houston-Downtown

### 43 - Maggie Ha, "Galois Groups of Polynomials"

Research Mentor(s): **Dr. Jean Nganou**

Project Location: University of Houston-Downtown

### 45 - Alexandra Hernandez, Alexandria Estimable, Junior Tankoh, "Population Genetics of Bowhead Whales"

Research Mentor(s): **Dr. Amy Baird**

Project Location: University Of Houston-Downtown

### 47 - Cristina Hernandez, "Genetic and environmental effects on the development of socially- and ecologically-relevant behaviors in the house fly *Musca domestica*"

Co-Authors: **Jesus A. Villalobos**

Research Mentor(s): **Dr. Pablo Delcios**

Project Location: University of Houston-Downtown

### 49 - Adolfo Jaimes, Daniela Solorzano, "Food Driven Aggression in Different Drosophila Species"

Co-Authors: **Laurie Neuman**

Research Mentor(s): **Dr. Yuan Yuan Kang**

Project Location: University of Houston-Downtown

### 51 - William Martinez, Jacqueline Nunez, "Screening the antibiotic activity of synthetic Compounds"

Co-Authors: **Dr. Rachna Sadana**

Research Mentor(s): **Dr. Gabriela Bowden**

Project Location: University of Houston-Downtown

### 53 - Kibru Menore, Samuel Holden, "Enhancing A\* Search for Robotic Pathfinding by Integrating Velocity and Advanced Search Techniques"

Research Mentor(s): **Mr. Sergei Gabrielov, Dr. Dr. Azadeh Izadi**

Project Location: University of Houston-Downtown

**55 – Robert Reinartz, Justin Cline, Mark Garcia, Christina Hamilton, Shikyna William,** “Using Artificial Neural Network Models to Understand and Predict Baseball Results”  
Research Mentor(s): **Dr. Katarina Jegdic**  
Project Location: University of Houston-Downtown

**57 - Alexi Soto, Mike Hampton, Christian Tuffelmire, Ana Vicente,** “Developing a Small-Scale Anaerobic Digestion System for Sustainable Food Waste Management and Methane Energy Production”  
Research Mentor(s): **Dr. Lisa Morano, Dr. Vassilios Tzouanas**  
Project Location: University of Houston-Downtown

**59 – Eva Williams, Ayanna Davis,** “Adolescent School Experiences for Black Men and Later Outcomes”  
Research Mentor(s): **Dr. Jianling Xie**  
Project Location: University of Houston-Downtown

## Poster Presentation Session II (2:30PM-3:30PM):

**2 - Thomas Duong, Maggie Ha,** “Solving Complex Equations using Newton's Method with MATLAB”  
Research Mentor(s): **Maggie Ha, Dr. Timothy Redl**  
Project Location: University of Houston-Downtown

**4 - Connor Durrenberger,** “Eisenstein Triples and their Genealogical Trees”  
Research Mentor(s): **Dr. Sergiy Koshkin**  
Project Location: University of Houston-Downtown

**6 - Krishnaraj Narayanan,** “A new vitamin C quantification based on the iodometry modification”  
Research Mentor(s): **Dr. Mian Jiang**  
Project Location: University of Houston-Downtown

**8 - Laurie Neuman,** “Comparative Analysis of Food-Induced Aggression in Drosophila Species with Varying Dietary Preferences”  
Co-Authors: **Dainet Arencibia, Tammy Duong, Juan Magadan**  
Research Mentor(s): **Dr. Yuan Yuan Kang**  
Project Location: University of Houston-Downtown

**10 – John Nobles, Jiya Desai, Mateen Hakeem, Juandedios Hernandez, Syed Khalil, Enrique Martinez, Valeria Salgado, Saul Santander, Stephanie Torres,** “Lessons from Wall-E: Addressing Pollution, Waste, and Climate Change”  
Co-Authors: **Edward Sanchez, CJ Nwachukwu**  
Research Mentor(s): **Ms. Mitsue Nakamura**  
Project Location: University of Houston-Downtown

**12 – Judah Okolie,** “Synthetic Data Generation's Applications in Cybersecurity”  
Co-Authors: **Damilola Whedan**  
Research Mentor(s): **Dr. Emre Yilmaz**  
Project Location: University of Houston-Downtown

**14 – Andrea Olguin Ledezma,** “Healthcare Inequalities from the Male Perspective”  
Research Mentor(s): **Dr. Yajaira Ceciliano-Navarro**  
Project Location: University of Houston-Downtown

**16 – Omar Omar,** “A Study of Electrolyte Solutions Using the Vernier Go Direct Conductivity Probe”  
Research Mentor(s): **Dr. Eszter Trufan**  
Project Location: University of Houston-Downtown

**18 – Isha Patil,** “Validation and Characterization of Quantitative Trait Locus Mapping for Circadian-Regulated Locomotor Activity in Drosophila melanogaster”  
Co-Authors: **Pedro Rodriguez Navarro, Delwin Sunil**  
Research Mentor(s): **Dr. Yuan Yuan Kang**  
Project Location: University of Houston-Downtown

**20 – Mandy Payan, Daniela Mejia,** “Assessing Thermal Tolerance in Johnson Grass: Relationship of Temperature and Exposure Duration”  
Research Mentor(s): **Dr. Michael Tobin**  
Project Location: University of Houston-Downtown

**22 - Maximiliano Perez,** “Screening TZ62, TZ70, and TZ71 for Inhibition of Metastasis”  
Research Mentor(s): **Dr. Vaishali Chaubal, Dr. Rachna Sadana**  
Project Location: University of Houston-Downtown

**24 - Tina Prajapati,** “Screening Compounds for Their Anti-Cell Proliferation Properties”  
Co-Authors: **Audrey Rubio, Jude Campbell, Dr. Vaishali Chaubal, Dr. Rachna Sadana**  
Research Mentor(s): **Dr. Vaishali Chaubal, Dr. Rachna Sadana**  
Project Location: University of Houston-Downtown

**26 - Ryan Price,** “What's Your Favorite Dinosaur? Statistical Analyses for Use in Determining Museum Educational Programming”  
Co-Authors: **James Washington III**  
Research Mentor(s): **Ms. Joyce Hallaway**  
Project Location: University of Houston-Downtown, Houston Museum of Natural Science

**28 - Alondra Ramirez, Miranda Santiago, Jennifer Ocampo,** “Concrete and Anchor Strength Testing”  
Research Mentor(s): **Dr. Jorge Tito-Izquierdo**  
Project Location: University of Houston-Downtown

**30 - Andre Ramirez, Meagan Bachman,** “Synthesis of 6,6'-di(aminomethyl)-2,2'-diethyl-oxybi-1,10-naphthalene”  
Research Mentor(s): **Dr. Robin Jose**  
Project Location: University of Houston-Downtown

**32 - Charzjon Rice,** “Computational and Thermal Studies on the Conversion of Waste Polyethylene into High Performance Graphitic Carbon”  
Co-Authors: **Alfredo Rodriguez**  
Research Mentor(s): **Dr. Maria Benavides, Dr. Jacob Theruvathu**  
Project Location: University of Houston-Downtown

**34 – Giovanni Rodriguez, Kayla Campbell, Stiven Traore,** “Spectrophotometric studies of proteogenic aromatic amino acids”  
Research Mentor(s): **Dr. Mian Jiang**  
Project Location: University of Houston-Downtown

**36 – Pedro Rodriguez Navarro, Delwin Sunil,** “Analysis and Validation of Quantitative Trait Locus Mapping of Locomotive Behaviors in Drosophila species”  
Co-Authors: **Delwin Sunil**  
Research Mentor(s): **Dr. Yuan Yuan Kang**  
Project Location: University of Houston-Downtown

**38 - Victoria Romero,** “Effects of Mycorrhizal Fungi and Plant Growth Promoting Rhizobacteria on Post-Germination Growth in Cotton and Cucumber Plants”  
Co-Authors: **Melanie Sosa**  
Research Mentor(s): **Dr. Lisa Morano**  
Project Location: University of Houston-Downtown

**40 – Eisha Saleem,** “Refugee-Learning and Welcome”  
Research Mentor(s): **Dr. John Linantud**  
Project Location: University of Houston-Downtown

**42 – Yuliana Santos Ventura,** “Community Needs Assessment to Develop Community Education and Navigator Programs”  
Co-Authors: **Katherine Torres**  
Research Mentor(s): **Dr. Mesias Pedroza**  
Project Location: University of Houston-Downtown

**44 – Simonsha Shrestha, Zachary Castro,** “LoRaMesh: Data Transmission”  
Research Mentor(s): **Dr. Weining Feng**  
Project Location: University of Houston-Downtown

**46 - Alexi Soto,** “Effects of sex, temperature, and genotype on the production of cuticular hydrocarbons in the house fly *Musca domestica*”  
Research Mentor(s): **Dr. Pablo Delcios**  
Project Location: University of Houston-Downtown

**48 – Alex Soto, Alejandra Alvarado,** “Social Media Engagement and Motivation for Use Impact on Body Image, Self-Esteem, and Well-Being”

Research Mentor(s): **Dr. Danya Serrano**  
Project Location: University of Houston-Downtown

**50 – Jonathan Stola-Lerma**, “Optimizing BPW34 Photodiodes for Gamma Ray Detection: Efficiency and Schematic Evaluation”  
Research Mentor(s): **Dr. Weining Feng**  
Project Location: University of Houston-Downtown

**52 – Fatima Tanvir**, “HypnoBayes: A Bayesian Neural Network Framework for Sleep Stage Prediction”  
Research Mentor(s): **Dr. Hong Lin**  
Project Location: University of Houston-Downtown

**54 – Janis Tenyah, Aileen Sanchez Medina**, “Synthesis of N,N-Didodecylaniline for the preparation of an azo dye-based surfactant.”  
Research Mentor(s): **Dr. Robin Jose**  
Project Location: University of Houston-Downtown

**56 – Christian Tuffelmire**, “Evaluating Microbial Solutions as Alternatives for Artificial Fertilizers”  
Co-Authors: **Dr. Lisa Morano, Mariah Rangel, Danya Chapa, Amanda Chavez, Odell Evans, Fantasia Ford**  
Research Mentor(s): **Dr. Lisa Morano**  
Project Location: University of Houston-Downtown

**58 - Valeria Vazquez, Lisa Franco**, “Plant Growth Responses to Solutions of Mycorrhizal Fungi and Plant Growth Promoting Rhizobacteria”  
Co-Authors: **Marlene Berrios**  
Research Mentor(s): **Dr. Lisa Morano**  
Project Location: University of Houston-Downtown

**60 – Melanie Solano**, “Histological Characterization of Heart Defects in an Avian Model of Maternal Phenylketonuria”  
Co-Authors: **Nikki Seagraves**  
Research Mentor(s): **Dr. Adriana Visbal**  
Project Location: University of Houston-Downtown

## **Poster Presentation Session II – Graduate Level Projects (2:15PM-3:00PM):**

**33 - Sergei Gabrielov**, “H\* Algorithm: A New Approach to Improve A\* Algorithm for Faster Robot Navigation”  
Research Mentor(s): **Dr. Azadeh Izadi**  
Project Location: University of Houston-Downtown



## Acknowledgments

The SRC event provides an opportunity to experience a professional conference simulation while still on the UHD campus. Most conferences do not state or outline a conference dress code, but rather allow the attendee to infer, through standards upheld by their disciplines' professional societies, the most appropriate dress expectations. SRC will adopt this approach in keeping with the nature of the disciplines comprising the conference and in keeping with the UHD mission/strategic plan supporting student inclusion.

It is a great pleasure to recognize the many individuals, organizations, and institutions supporting our UHD students in their research endeavors. These include significant funding of research over the past year from the Texas Workforce Commission (2824WPB005), The Brown Foundation, Inc., National Science Foundation (Award No. 0934913), DOED MSEIP (P120A190069, P120A220015, P120A230070), and University of Houston-Downtown.

Many students conducted their research during summer research programs on and off-campus. Faculty and staff members of these and other academic institutions, as well as personnel at industrial facilities, have generously supported/mentored our UHD students.

In addition, we would like to thank the UHD faculty and staff who have worked tirelessly to support undergraduate and graduate research experiences as well as the UHD staff, faculty and administrators who have helped make this conference a success.

**Thank you for participating in the 24<sup>th</sup> Annual UHD Student Research Conference.**

### **Thanks to the generous supporters of this student conference:**

Texas Workforce Commission (2824WPB005)  
The Brown Foundation, Inc.  
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DOED MSEIP (P120A190069, P120A220015, P120A230070)  
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**Please share your impressions of the SRC by completing a conference evaluation.**

### **Post-Conference Evaluation Survey**

Please complete the electronic Student Research Conference 2025 Post-Evaluation Survey by visiting the following web link and receive a Scholars Academy aluminum water bottle for your invaluable feedback:

[https://uhd.qualtrics.com/jfe/form/SV\\_3z2Y7IIYpHQB1bo](https://uhd.qualtrics.com/jfe/form/SV_3z2Y7IIYpHQB1bo)

