2020 UNDERGRADUATE RESEARCH DAY

Tuesday, September 29, 2020  10 a.m.
Online    www.uh.edu/urday
To enroll in the **Senior Honors Thesis** program for Spring 2021, students must submit their Verification of Eligibility Form and General Petition by **December 1, 2020**.

Students continuing in the thesis program must register for 4399 (or department equivalent) for Spring 2021.

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**PURS**

The Spring 2021 Provost’s Undergraduate Research Scholarship deadline is **November 2, 2020**.

Visit [uh.edu/PURS](http://uh.edu/PURS) for more information.

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**SURF**

The 2021 Summer Undergraduate Research Fellowship deadline is **March 12, 2021**.

Visit [uh.edu/SURF](http://uh.edu/SURF) for more information.

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**Subscribe to the Undergraduate Research Listserv**

Send an email to [undergrad-research@uh.edu](mailto:undergrad-research@uh.edu) with your full name and email address to receive information about events and deadlines related to undergraduate research opportunities and national fellowships and major awards.
September 29, 2020
www.uh.edu/urday

10 a.m. | Viewing of Student Posters

Welcome and Remarks to Presenters

Paula Myrick Short, Ph.D.
Senior Vice Chancellor for Academic Affairs, University of Houston System
Senior Vice President for Academic Affairs and Provost, University of Houston

Amr Elnashai, FREng
Vice Chancellor for Research and Technology Transfer, University of Houston System
Vice President for Research and Technology Transfer, University of Houston

Stuart A. Long, Ph.D.
Associate Dean of Undergraduate Research and the Honors College,
University of Houston

Brittni MacLeod, M.Ed.
Associate Director, Office of Undergraduate Research and Major Awards,
University of Houston

Thank you to the Office of the Provost, the Division of Research,
the Honors College, the Cullen College of Engineering, and the College of
Liberal Arts and Social Sciences for their generous support of the Office of
Undergraduate Research and Major Awards.

Special thanks to the Gerald D. Hines College of Architecture and Design
for printing the posters for the event.
Welcome to Undergraduate Research Day.

Welcome to the 19th Annual Undergraduate Research Day.

This year has been a whirlwind, to say the very least. We planned to hold Undergraduate Research Day in the spring semester and were looking forward to seeing posters placed throughout the Honors College, the Elizabeth D. Rockwell Pavilion, and M.D. Anderson Library. As COVID-19 cases appeared in the United States, we postponed our spring research event until September 29th, with hopes that we might be able to have some type of on-campus event. However, cases continued to climb in the U.S., and we made the decision to take the event 100% online. In order to bring you the most engaging research event possible, we have partnered with ForagerOne to bring Undergraduate Research Day to you virtually, wherever you may be at this time. In selecting the format for today, our team took into consideration how you might interact with posters beyond simply viewing them online. We encourage you to comment or reach out to individual presenters with any questions about their work.

Undergraduate Research Day is an event that showcases the diverse range of impressive research projects completed by University of Houston undergraduate students. Today’s presenters include students from the Summer Undergraduate Research Fellowship (SURF) Program, the Mellon Research Scholars Program, and many others who conducted research under the guidance of University of Houston faculty during the past year. We are incredibly proud of our undergraduate researchers’ accomplishments, and they are eager to share their research projects with you.

Over the past year and a half, the Office of Undergraduate Research and Major Awards has supported students from across the University of Houston through faculty-mentored research programs. The SURF program had over 100 participants in 2019 and over 140 in 2020. The Provost's Undergraduate Research Scholarship was awarded to over 85 students between Spring 2019 and Spring 2020. In 2019 and 2020, over 90 exceptional students learned how to conduct effective and ethical research through the Houston Early Research Experience (HERE). The Mellon Research Scholars Program welcomed two more undergraduate researchers in the 2020 cohort of Mellon Scholars. Scholarship was awarded to over 85 students between Spring 2019 and over 140 in 2020. The Provost's Undergraduate Research Scholarship was awarded to over 85 students between Spring 2019 and Spring 2020. In 2019 and 2020, over 90 exceptional students learned how to conduct effective and ethical research through the Houston Early Research Experience (HERE). The Mellon Research Scholars Program welcomed two more undergraduate researchers in the 2020 cohort of Mellon Scholars. The programs featured here today would not be possible without the support of our campus partners. For more information about the Mellon Research Scholars Program and Houston Early Research Experience, please contact Dr. Brittni MacLeod to learn more about getting started in research, the SURF, PURS, and ARC programs, and the Senior Honors Thesis program.

The Office of Undergraduate Research and Major Awards welcomed two new staff members in 2019. Brittni MacLeod joined as the Associate Director and provides guidance and support to students who wish to pursue research opportunities at the University of Houston. She has previously served in advising roles and managed student leadership, campus involvement, and academic support programs. Please contact Mrs. MacLeod to learn more about getting started in research, the SURF, PURS, and ARC programs, and the Senior Honors Thesis program.

Dr. Ben Rayder joined as the Program Manager and serves as the Associate Director of the Mellon Research Scholars Program. Dr. Rayder works directly with the Mellon Scholars as they conduct individual research projects in the humanities and apply to competitive graduate programs and national fellowships. For more information about the Mellon Research Scholars Program, please contact Dr. Rayder.

The Office of Undergraduate Research and Major Awards would like to thank the Office of the Provost, the Division of Research, the Honors College, the Cullen College of Engineering, the College of Liberal Arts and Social Sciences, and the many other colleges and departments on campus for their support of undergraduate research programming at the University of Houston. The programs featured here today would not be possible without the support of our campus partners. (Please see page 4 for listing of supporters.)

Thank you for joining this year’s virtual celebration of the University of Houston’s undergraduate research community. As you engage with the 281 presenters online, we hope you learn something new and make lasting connections rooted in scholarship. A strong, resilient research community is more important than ever before, and that is the type of community we believe you will witness today through our students’ work.
Undergraduate Research Day
September 29, 2020
10 a.m. Poster Presentations
Online
www.uh.edu/urday

The Office of Undergraduate Research and Major Awards
The Honors College
University of Houston
M.D. Anderson Library
4333 University Drive, Room 212W
Houston, TX 77204-2001
(713) 743-6433
UndergraduateResearch.uh.edu
undergrad-research@uh.edu

Booklet created by
Julia Brown,
Communications Coordinator,
The Honors College

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OFFICE OF UNDERGRADUATE RESEARCH AND MAJOR AWARDS

A special thanks to our campus and community partners for their support of the Office of Undergraduate Research and Major Awards over our 15 years of serving undergraduate researchers:

- Office of the Provost
- Division of Research
- Cullen College of Engineering
- Honors College
- Andrew W. Mellon Foundation
- Biology & Biochemistry
- Biology of Behavior Institute (BoBI)
- Biomedical Engineering
- Chemical & Biomolecular Engineering
- Chemistry
- Civil & Environmental Engineering
- College of Education
- College of Liberal Arts and Social Sciences
- College of Natural Sciences and Mathematics
- College of Pharmacy
- College of Technology
- Computer Science
- Construction Management
- Data Analytics in Student Hands (DASH) and Honors in Community Health (HICH)
- Earth & Atmospheric Sciences
- Electrical & Computer Engineering
- Engineering Technology
- Gerald D. Hines College of Architecture and Design
- Health & Human Performance
- Hobby School of Public Affairs
- Industrial Engineering
- Mathematics
- Mechanical Engineering
- Medicine & Society Program
- Physics
- Political Science
- Psychology
- Texas Center for Superconductivity (TcSUH)
- Texas Obesity Research Center (TORC)
- The Writing Center
- University of Houston/MD Anderson Cancer Program

OURMA PROGRAMS

The Houston Early Research Experience (HERE) is a two-week research program in May intended to orient rising sophomore and junior undergraduates to the fundamentals of conducting research. HERE awards $1,000 scholarships to students with at least a 3.5 GPA. [uh.edu/hereprogram](http://uh.edu/hereprogram)

The Summer Undergraduate Research Fellowship (SURF) is a full-time, ten-week summer research program for students and provides a $4,000 scholarship to conduct research under the mentorship of a UH faculty member. Students from all disciplines with at least a 3.0 GPA are encouraged to apply. [uh.edu/surf](http://uh.edu/surf)

The Provost’s Undergraduate Research Scholarship (PURS) is a part-time, semester-long research program for juniors and seniors and awards a $1,000 scholarship for students to work one-on-one with a faculty mentor. This scholarship is open to students from all colleges and disciplines. Candidates must have at least a 3.0 grade point average to apply. [uh.edu/purs](http://uh.edu/purs)

The Mellon Research Scholars Program is for underrepresented juniors interested in conducting research and attending graduate studies in the humanities. Mellon Scholars participate in a faculty-led seminar series to learn more about research opportunities in the humanities, receive $1,100 to participate in a two-week camp on applying to graduate school, earn $3,900 to conduct a full-time summer research project under the mentorship of a University of Houston faculty mentor, and conclude the program by either completing an independent study or senior honors thesis during their senior year. [uh.edu/mellonscholars](http://uh.edu/mellonscholars)

The Senior Honors Thesis is a capstone program for a student’s undergraduate career in research. Student participants enroll in 3399 and 4399, a total of six hours of coursework, which is typically applied toward their major degree requirements during their senior year. For more information, visit the thesis website at [uh.edu/seniorhonorsthesis](http://uh.edu/seniorhonorsthesis).

The Action Research in Communities (ARC) Program at the University of Houston is a collaborative effort supported by the Cougar Initiative to Engage and the Office of Undergraduate Research and Major Awards. ARC is a one-year research program that awards a $1,500 scholarship and offers exceptional undergraduates with opportunities to conduct faculty-mentored action research based on service projects in the Greater Houston Community. The goal of action research is continuous improvement, reflection, and growth. Students from all majors with at least a 3.0 GPA are encouraged to apply. [uh.edu/arc](http://uh.edu/arc)

Contact Information:
Brittni MacLeod, Associate Director
bsmacleod@uh.edu
THE HONORS COLLEGE PHILOSOPHY
The Honors College at the University of Houston serves the intellectual needs of gifted undergraduates in more than 100 fields of study. We provide the careful guidance, flexibility, and personal instruction that nurture excellence. We offer the University’s finest students the best of both worlds—the community and advantages of a small college together with the resources and rich diversity of a large research university. Our faculty and staff believe that a university education should offer more than the acquisition of skills for the workplace. The Honors College challenges students to develop the attributes of mind and character that enhance all facets of life.

HONORS CURRICULUM
Our curriculum is designed to coordinate with all majors and degree plans offered at the University of Houston. You will fulfill many of your University core requirements through Honors courses that take the place of regular required classes. One key sequence of courses, The Human Situation, is team-taught by Honors faculty and is designed to ensure that you are introduced to the great books of the Western tradition. For many Honors students, the Senior Honors Thesis represents the exciting culmination of a bachelor’s degree. A thesis provides an excellent opportunity for you to work under the direction of faculty in your chosen field of study, applying your skills and knowledge toward the completion of a scholarly or creative project.

THE HONORS COLLEGE COMMUNITY
Special Classes and Course Selection
We draw on the talents of the brightest faculty members within the University to provide a wide range of special courses with limited enrollment. Honors courses encourage student participation, interaction, and discussion.

Membership in a Community
You will enjoy special privileges, including Honors College scholarships, priority course registration, computer facilities, reserved lounge and study areas, study abroad opportunities, and special housing in Honors College residence halls. Many intangible benefits also come with participation in the Honors community—the friendships that develop in the classroom carry over into other areas of student life. We foster an atmosphere of collegiality and a spirit of camaraderie through informal gatherings, social activities, and on- and off-campus cultural events.

Talented Classmates
When admitted to the Honors College, you will enter the company of the most academically talented undergraduates at the University. Members bring a variety of interests, aptitudes, and ambitions to their studies. Through daily association with other Honors students, you will discover the broad range of academic programs at the University.

Apply Now at www.TheHonorsCollege.com/apply

Contact Information:
Honors College
Office for Student Recruitment
(713) 743-1766
honorsadmissions@uh.edu
Consider applying for one of these opportunities.

**BARRY GOLDWATER SCHOLARSHIP**
For sophomores and juniors who demonstrate academic excellence and intend to pursue research careers in mathematics, the natural sciences, or engineering. This competitive scholarship covers eligible expenses for undergraduate tuition, fees, books, and room and board, up to a maximum of $7,500 annually. 
Campus Deadline: Nov 2, 2020

**HARRY S. TRUMAN SCHOLARSHIP**
For college juniors with exceptional leadership potential who are committed to careers as change agents in government, the nonprofit or advocacy sectors, education, or elsewhere in public service. Each Truman Scholar receives up to $30,000 for graduate study.
Campus Deadline: Nov 2, 2020

**MORRIS K. UDALL & STEWART L. UDALL SCHOLARSHIP**
For sophomore and junior level students committed to careers related to the environment, tribal public policy or tribal health care. Awards of up to $7,000 and access to the Udall Alumni Network.
Campus Deadline: Feb 1, 2021

**CRITICAL LANGUAGE SCHOLARSHIP**
Language immersion program for undergraduates from all academic disciplines. Sponsored by the U.S. Department of State, this summer program allows students to study one of 15 critical languages abroad, including Arabic, Chinese, Korean, and Russian.
National Deadline: Nov 17, 2020

**NSF GRADUATE RESEARCH FELLOWSHIP**
For graduating seniors who intend to pursue a research-based master’s or doctoral degree in the natural sciences, engineering, mathematics, or STEM education. The award includes a $34,000 living stipend and $12,000 cost-of-education allowance.
National Deadline: Oct 19-23, 2020

**FULBRIGHT U.S. STUDENT PROGRAM**
For graduating seniors, current graduate students, and alumni. Students may apply to teach English, enroll in a graduate degree program, or conduct research for one year in more than 140 countries. Recipients are awarded a living stipend, travel accommodations, and basic health insurance.
Campus Deadline: Aug 31, 2021

Application for these awards requires a strong academic, leadership, and service record. In some instances, you must be nominated to apply. For more information, visit the Office of Undergraduate Research and Major Awards or contact Dr. Ben Rayder (btrayder@uh.edu).
FULBRIGHT GRANTS FOR TEACHING ASSISTANTSHIPS OR STUDY/RESEARCH ABROAD

http://www.uh.edu/fulbright/

2021 CAMPUS DEADLINE:

August 31, 2021

FOR MORE INFORMATION, CONTACT:

Dr. Benjamin Rayder
Director, Office of Undergraduate Research and Major Awards
btrayder@uh.edu www.us.fulbrightonline.org

The Fulbright U.S. Student Program provides grants for individually designed Study/Research projects or for English Teaching Assistant Programs. During their grants, Fulbrighters meet, work, live with, and learn from the people of the host country to foster mutual understanding. Fulbright is one of the largest academic exchanges in the world, providing approximately 2,200 grants annually in more than 140 participating countries.
The Office of Undergraduate Research and Major Awards congratulates the 2019 Undergraduate Research Mentor Award recipients: **Aaron Becker, Jakoah Brgoch, and Hanako Yoshida.**

**AARON BECKER**
Assistant Professor Aaron Becker has made a substantial impact on his field of swarm robotics, as well as the Electrical and Computer Engineering Department in the Cullen College of Engineering at UH. His work has been recognized by numerous NSF grants, including the prestigious NSF CAREER Award in 2016-2021, seven NSF REU awards, and participation in a three-professor team that was awarded a one million dollar grant from the Office of Naval Research. Many of these awards have been used to further undergraduate research at UH, and he has trained numerous undergraduates through the PURS and SURF programs. In his lab, Professor Becker works on the theory and foundational tool set for swarms of under-actuated robots. Professor Becker’s investment in undergraduate students is among his top priorities. His students have been coauthors in seven high-quality, peer-reviewed journal publications, six conference papers, four software products, and countless presentations. “Our students at the University of Houston have great potential,” writes Professor Becker. “The best of our undergraduates rival the best at any university I have worked at.”

**JAKOAH BRGOCH**
Assistant Professor Jakoah Brgoch’s research in materials chemistry explores topics ranging from luminescent materials to super hard molecular compounds. His research has garnered significant funding through a National Science Foundation CAREER award, a Petroleum Research Fund grant, two National Science Foundation grants, as well as three highly competitive internal grants at UH. His research has generated 22 publications, including contributions to prestigious, peer-reviewed journals such as *Nature Communications* and *Journal of the American Chemical Society*. In 2018, Professor Brgoch received a Young Chemist Award from the American Chemical Society. The undergraduate research conducted in Professor Brgoch’s lab has resulted in six peer-reviewed publications, two of which have a UH undergraduate listed as the first author. He encourages all of his students to apply for awards, fellowships, and study abroad opportunities, and he frequently introduces his students to future graduate research advisors and employers. Whenever possible, he provides support for students to present at national conferences, to help them, as he says, “learn the true scope of the scientific community.”

**HANAKO YOSHIDA**
Associate Professor Hanako Yoshida is an experimental developmental psychologist at UH who investigates the early role of attention in language development by studying infants and young children. In her lab, she uses a variety of innovative techniques and technologies, including a baby-head camera, in order to study attention, memory, and learning. She has received funds from NICHD, NSF, and a variety of internal grants from UH to support her research. Her students are involved in every aspect of research, from design to data collection and coding, to analysis and writing. In her 12 years of teaching at UH, she has mentored over 130 undergraduates, 46 of whom were underrepresented minority students. In addition, 20% of her students have received scholarships to work in her lab. Moreover, 35 of her students have gone on to graduate study in a STEM discipline. “I am committed to fostering research programs that provide a nurturing environment for undergraduate students,” writes Professor Yoshida. “I genuinely enjoy watching our students grow, especially in the context of research and supervision.”
The Office of Undergraduate Research and Major Awards congratulates the 2020 Undergraduate Research Mentor Award recipients: Lars Grabow, Donald Kouri, and Thomas Teets.

**LARS GRABOW**
Dan Luss Professor Lars Grabow has served as a research mentor in the Department of Chemical and Biomolecular Engineering at UH for nine postdoctoral fellows, 18 Ph.D. students, and 30 undergraduate students. He mentors in the area of computational heterogeneous catalysis with applications in chemicals synthesis, clean energy, and environmental sustainability. His scholarly work has appeared in 64 peer-reviewed publications—with 4,648 citations—and his research has been funded by a blend of federal agencies (NSF, DOE), foundations (Petroleum Research Fund of ACS), and industry sponsors (Shell, Sabic, ExxonMobil). Professor Grabow is among the few academics to have received both a NSF CAREER grant and a DOE Early Career Award—both of which he received in the same year. His undergraduate mentees have co-authored two peer-reviewed publications and won many awards, including nine PURS scholarships and a highly competitive presentation award at an ACS National Meeting. “My general attitude toward mentoring is to be supportive and readily available,” writes Professor Grabow, “but I also give students room to explore their own ideas, so that they eventually become independent researchers. My role as a mentor is to inspire and encourage my students.”

**DONALD KOURI**
Professor Donald Kouri has been teaching at UH for 53 years—first in the Chemistry Department, then in the Physics Department, where he has been a distinguished faculty mentor since 1972 and where he is a Hugh Roy and Lillie Cranz Cullen Distinguished Chair of Physics, Chemistry, Mathematics, and Mechanical Engineering. Professor Kouri has published over 500 peer-reviewed research papers, and he has personally mentored 21 undergraduate students in the past 17 years. His students have received many awards, including NSF Graduate Fellowships and the prestigious Goldwater Scholarship, and they have gone on to graduate work at Harvard, MIT, and other top programs in the country. Professor Kouri has a passion for research and mentoring. Not only does he work closely with his undergraduate researchers, he also makes sure they mentor each other. “I strive for my students to enjoy research as an integral part of their education,” writes Professor Kouri. “The students who work with me are among the brightest at UH.”

**THOMAS TEETS**
Associate Professor Thomas Teets manages a large and productive research group at UH, working in the areas of organometallic chemistry and photochemistry. During his last six years in the Department of Chemistry, Professor Teets has mentored two postdoctoral researchers, 14 graduate students, 11 undergraduate students, three visiting students, and five high school students. In his own research, Professor Teets has published 37 peer-reviewed papers, with a few more in review, and his creative research has led to external funding from the National Science Foundation (CAREER award in 2019), Army Research Lab, Robert A. Welch Foundation, and Petroleum Research Fund. In 2019, the UH College of Natural Sciences and Mathematics honored Professor Teets with the Junior Faculty Award for Research Excellence. Many of his undergraduate students are co-authors on papers that have been published, and two are first authors. Professor Teets is passionate about mentoring. “My role in helping undergraduate students prepare for their future careers is as important as the research mentorship they experience while in my group,” writes Professor Teets. “I work closely with each of my undergraduate mentees to make sure they put together strong applications and succeed in whatever they plan to do after UH.”
Senior Honors Thesis

The Senior Honors Thesis is a capstone research experience under the guidance of a faculty mentor. Students of all majors can participate—membership in the Honors College is not required. The Office of Undergraduate Research and Major Awards collaborates with The Honors College and the College of the student’s major to oversee the thesis process and approval.

Get Started!

Step 1:
Ask your professors about their research interests to see if they align with yours. Don’t be afraid to ask for advice!

Step 2:
Talk to students currently enrolled in the Senior Honors Thesis program about their experiences with research.

Step 3:
Ask a faculty member to serve as your thesis advisor.

Step 4:
Complete the Verification of Eligibility Form and a General Petition Form (http://www.uh.edu/academics/forms/).

Step 5:
Enroll in 3399 (or equivalent) Senior Honors Thesis course.

Step 6:
Write your prospectus and identify a second reader for your committee. Then, submit the Prospectus Approval Form to the Office of Undergraduate Research and Major Awards.

Step 7:
Review and submit the Senior Honors Thesis Checklist to the Office of Undergraduate Research and Major Awards.

Step 8:
Create goals for writing and communicate regularly with your readers (and visit http://www.uh.edu/honors/undergraduate-research/honors-thesis/).

Graduate!

Successfully complete and defend your thesis, and graduate with an Honors designation on your transcript!

For more information, contact:
Brittni S. MacLeod, M.Ed.
Associate Director
Office of Undergraduate Research and Major Awards
bsmacleod@uh.edu

Participants must have:
- a 3.25 cumulative GPA
- a 3.5 major GPA
- departmental approval
- Honors College approval
The University of Houston Libraries form a community nurtured by curiosity and creativity that drives lifelong learning and scholarship. With access to more than 3.2 million physical and digital volumes, over 159,000 journals and serial subscriptions, and over 400 databases, the UH Libraries makes research possible!

You can find past works of undergraduate research in the UH Institutional Repository. The UHIR collects, preserves, and distributes scholarly output and creative works produced by the University of Houston community. Collections include “Undergraduate Research Day Projects” and “Senior Honors Theses.”

Contact your Subject Librarian today who can assist you with all of your research needs. They are available by appointment, virtually, or in person: https://libraries.uh.edu/experts/

Thank you to the UH Libraries for supporting Undergraduate Research at the University of Houston.

Writing is thinking. It is an indispensable activity for every discipline conducting research within a university setting and an essential component of a university education. Ongoing instruction in writing helps to initiate students into the changing intellectual demands of university life and introduces them to the complexities of their chosen disciplines and professions. Because writing provides the tools to discover and articulate solutions to intellectual problems, improved writing remains a continual goal of university education.

To address these concerns, the mission of the University of Houston Writing Center includes Assessment, Writing Instruction, Curricular Innovation, Community Outreach, Professional Development, and Research in the Teaching of Writing. Website: writingcenter.uh.edu

Thank you to the Writing Center for supporting Undergraduate Research at the University of Houston.
UNDERGRADUATE RESEARCH PROGRAMS AND PRESENTERS
Undergraduate Research Day showcases the work of hundreds of students pursuing research in their disciplines from all across the University of Houston. Programs offered by the Office of Undergraduate Research and Major Awards and other faculty-mentored research opportunities provide academic and financial support for these students. Students who conduct research with UH faculty amplify their education and gain crucial skills that will serve them beyond their undergraduate career. Whatever your research interests are, the Office of Undergraduate Research and Major Awards can get you connected and starting your research project today!
The **Houston Early Research Experience (HERE)** program recognizes freshman and sophomore students who excel both inside and outside the classroom. This two-week seminar series engages students from all majors in various research methodologies through faculty-led small group discussions and research presentations. Students receive a $1,000 scholarship for participating in HERE.

**HERE 2019**

Forty-nine students participated in the 2019 HERE Program, which focused on flooding and storms in the city of Houston.

**HERE Faculty Mentors:**
- Dan Burleson
- Marc Hanke
- Kelly Hopkins
- Ryan Kennedy
- Luis Medina
- Anna Vershynina
- Liza Watkins
- Matthew Zelisko

**HERE 2020**

Forty-eight students participated in the 2020 HERE Program, which focused on urbanization in the city of Houston.

**HERE Faculty Mentors:**
- Charlie Becker
- Christiana Chang
- Marc Hanke
- Kelly Hopkins
- Amin Kiaghadi
- Rita Sirrieh
- Marina Trninic

The 2021 theme for HERE will be inequality in Houston, and we look forward to welcoming our next cohort! For more information on future HERE programming, contact Dr. Rikki Bettinger at rrbettinger@uh.edu.
The Provost’s Undergraduate Research Scholarship (PURS) program provides talented University of Houston juniors and seniors with the opportunity to participate in a semester-long research project under the guidance of a UH faculty mentor. Students from all disciplines are encouraged to apply. PURS recipients receive a $1,000 scholarship to conduct a one-semester research project with their faculty mentors. For more information, contact Brittni MacLeod at bsmacleod@uh.edu.

The Office of Undergraduate Research and Major Awards, in partnership with the Cougar Initiative to Engage (CITE), offers the Action Research in Communities (ARC) Program. ARC provides selected students with a $1,500 scholarship to pursue a year-long, faculty-mentored action research project focused on a past or current service project the student has participated in. The goal of action research is continuous improvement, reflection, and growth.

ARC participants will develop research questions around issues observed in the community and gain a better understanding of why these issues exist. They will then use that knowledge, coupled with their own service experiences and reflections, to develop an action plan to improve outcomes within the Greater Houston Community. Toward the end of their year in ARC, students will be given the opportunity to present their service-based research projects and apply for an implementation grant of up to $750 to support turning their action plans into reality. Faculty mentors of ARC recipients also receive a $500 stipend.
Students from the Honors Biomedical Sciences joined Pharis Fellows, working with Drs. Peggy Lindner and Dan Price to create community health models that showed the effects of diverse community health interventions at an individual level and across the city. They learned how to construct mathematical models using the computer program R and applied them to a simulated Houston called Sam City, and showed how each intervention would affect individuals within the city. The modeling is the first step in a multi-year project that will enable the visualization of health as a hypergraph—connected individuals acting in community and embedded in the city’s multifaceted social and physical reality.

2019 FELLOWS

Row One: Sarah Ahmed, Christina Gligorova, Surbhi Gupta, Deborah Isola, Kishon Joseph
Row Two: Anut Kandhadai, Amber Nguyen, Helen Nguyen, Layla Shawareb
Not Pictured: Christina Pham, Nicholas Randall, Juventino Valdez

2020 FELLOWS

Row One: Ariel Abudu, Kayla Baham, Rishi Chitturi, Joshua Garcia, Maham Gardezi, Cameron Green, Anjali James, Claire Juhas
Row Two: C. Griffin Litwin, Sakina Mandviwala, Sondos Moursy, Saloni Patel, Madhumitha Periyasamy, Daniel Phu, Salar Sanati, Nabeela Siddeeque
Row Three: Sameer Sidiq, Gundeep Singh, Elaine Tran, Pichvyda Tuy, Manushi Vatani, Brandon Warner
Not Pictured: Ashley Jimenez
UHAND (University of Houston/MD Anderson) Scholars are paired with faculty members from the University of Houston and The University of Texas MD Anderson Cancer Center. Mentors engage scholars in their research projects focused on cancer risk, social determinants of health, clinical, and population cancer research in minority populations. Scholars also participate in various learning experiences (e.g., career and leadership conversations, cancer disparity seminars, and ethics trainings) focused on topics designed to enhance their preparation for future careers in cancer disparities related fields. Please visit UHANDpartnership.com for more information.

2019 SCHOLARS

UH Undergraduates: Shreya Desai, Basant Gamal, Sean Reuven, and Sara Flores (not pictured)

2020 SCHOLARS

Stephanie Ramirez

Karina Serrano

Matthew Taing
In Summer 2019, the following 20 University of Houston Mellon Research Scholars participated in a full-time faculty-mentored summer research experience. They will be presenting their posters at Undergraduate Research Day.

Maria Amador  
**Mentored by Gabriela Baeza Ventura**  
Marta Pérez de Perales’ Historical Footprint

Gilbert Baca  
**Mentored by Roberto Tejada**  
Against Visibly Disappearing: Rethinking the Last Work of David Wojnarowicz

Justin Bui  
**Mentored by Robert Cremins**  
Exploring the Serialized Comic Book as a Narrative Medium

Matt Flores  
**Mentored by Roberto Tejada**  
Poetics of Spiritual Activism

Jacob Foreman  
**Mentored by Margot Backus**  
Radical Faerie Relationality

JaNae Freeman  
**Mentored by Caryn Tamber-Rosenau**  
Jewish Feminism in the United States: A Cultural and Historical Analysis

Syd González  
**Mentored by Keith McNeal**  
Queer Culture in Wellington, Aotearoa

Lida Hedayatpour  
**Mentored by Christine LeVeaux-Haley**  
Epistemic Violence and Black Histories

Wafa Kazmi  
**Mentored by Hayan Charara**  
Voices from the Iraq War: Civilian Narratives Through Oral History

Manuel Martínez Alvarenga  
**Mentored by Mark Goldberg**  

Layla Mayorga  
**Mentored by Luis Oliveira**  
How Does ‘God’ Refer?

Mariah Miller  
**Mentored by Richard Mizelle**  
Space, Time, and a Toxic Environment: The Relationship Between Industry and Residents of Pleasantville

Kiara Minotta  
**Mentored by Dustin Gish**  
Simon Bolivar’s Political Culture

Andrea Orozco  
**Mentored by Christina Sisk**  
The Rebirth of a Nationality

Suad Othman  
**Mentored by Sebastian Lecourt**  
Knowledge + Acknowledgment = Wisdom: The Theoretical Framework for Attaining Wisdom in The Pilgrim’s Progress

Jordanna Park  
**Mentored by Alexey Golubev**  
Comrade Mother: Gender Inequality in Soviet and Post-Soviet Russia

Grayson Parks  
**Mentored by Hosam Aboul-Ela**  
Postcolonial Travel Literature: A Comparative View

Devion Reed  
**Mentored by Marina Trninic and Julia Brown**  
Across the Partition: A Creative Exploration of Black Queer Identity

Lizeth Rivas  
**Mentored by Matthew Clavin**  
How Influential Were Mexican-Americans?: Mexican-Americans and School Desegregation in the United States During the 20th Century

Keagan Wheat  
**Mentored by Michael Snediker**  
FTM Poetry
During Summer 2020, the following 22 University of Houston Mellon Research Scholars participated in a full-time faculty-mentored summer research experience. They will be presenting their posters at Undergraduate Research Day.

**MELTON RESEARCH SCHOLARS PROGRAM**

Ranyah Atwan
Mentored by Tshepo Masango Chéry
State of Defiance: Women’s Role in the Moroccan Liberation Movement

Maya Garza
Mentored by Lorraine K. Stock
Giants, Incubi, and Monstrous Sisters: Ethnocentrism and Sexism in the British Legends of Albion

Rana Mohamad
Mentored by Hosam Aboul-Ela
Black, Arab, Other: The Sudanese Migrant Woman’s Articulation of Identity

Freisha Burke
Mentored by Wei Wang
Between Languages: A Sociolinguistic Analysis of Code-Switching in Bilingual Communication

Karla Grado
Mentored by Jason Casellas

Kat Newman
Mentored by Guillermo De Los Reyes
The Cisnormative Wall: Distinguishing Gazes & Transgender Representations in POSE and Dallas Buyers Club

Kaleb Clark
Mentored by William Monroe
Tolkienian Fantasy in the Modern Era: The Role of Traditional Literature in the Twenty-First Century

Veronica Ordonez
Mentored by Steven Long and Teresa Chapman
When Words Fail: Narrative and Dance in Post-traumatic Stress

Daniela Contreras
Mentored by J. Bryan Cole
Religiosity, Partisanship, and Race: The Effect of History on Contemporary American Voting Patterns

Pishoi Rafaile
Mentored by Tshepo Masango Chéry
Let Us Speak! South African Women as Activists and Revolutionaries in the Anti-Apartheid Movement

Antonio Enriquez
Mentored by Norah Gharala
La Gran Chichimeca: Chichimecan Place in New Spanish Society

Nicole Hart
Mentored by A. Gary Dworkin
Racial Disparities in Black-White Education: A Sociological Conflict Theory Explanation

Jaden Urdiales
Mentored by Andrew Pegoda
Twitterstorians: An Examination of History as It Is Portrayed on Social Media

Paulina Ezquerra
Mentored by Iain Morrison
The Intellectual and Moral Virtues: Against a Consequentialist Account

Jaelynn Walls
Mentored by Natilee Harren
Contemporary Black Portraiture and the Vitality of Self-Making

Paulina Fernandez
Mentored by Johanna Luttrell
Environmental Justice in Houston: A Virtue Ethics Approach

Paulina Fernandez
Mentored by Johanna Luttrell
Environmental Justice in Houston: A Virtue Ethics Approach

Naomi Zidon
Mentored by Robert Cremins
Agnes Varda and the Reinvention of the Flaneuse: The Movement Through Paris

Marco Garcia
Mentored by Johanna Luttrell
The Conception of Freedom in the Green New Deal
Supported by the Office of the Provost and the Honors College, the Houston Scholars program is for high-achieving freshmen and sophomores to receive mentorship and scholarship funding to pursue research, internships, and other distinctive experiential learning opportunities. Through targeted programming, participants benefit from honing their academic and professional skills, developing connections with faculty, engaging in scholarly endeavors, and preparing to apply for nationally competitive scholarships and top graduate school programs.

Houston Scholars are encouraged to participate in self-reflection, critical thinking, passionate inquiry, and the application of theory and research to real-world problems. During the course of the academic year, Houston Scholars will have the opportunity to engage with current events through research, seminar series lectures, and debate activities.

For additional information about the Houston Scholars, please contact Dr. Ben Rayder at btrayder@uh.edu in the Office of Undergraduate Research and Major Awards.
The 2019-20 Houston Scholars program investigated the theme of “Urbanization.” Students attended seminars from academic experts, developed projects intended to address a challenge associated with urbanization in Houston, and independently researched their subjects during the Houston Scholars Research Week in January.

The Houston Scholars theme for the academic year 2020-2021 is Inequality: Creating A More Equitable Houston. In this context, Houston Scholars will explore the challenges and opportunities associated with the rapid changes affecting our city. Students will be encouraged to identify and research contemporary problems such as income disparity, poor infrastructure, lack of access to affordable healthcare, racial discrimination, and many other subjects. Cohort members will present their research findings and policy proposals to a panel of experts on Undergraduate Research Day. We hope that you will join us to learn more about their findings and potential solutions to some of Houston’s most important issues.

**Houston Scholars Participants:**

- Amaris Bobbio-Tarco
- Abby Chopra
- Cade Coligan
- Ricardo Del Rio
- Benjamin Diaz Villa
- Cristobella Durrette
- Carlos Fuentes
- Marco Garcia
- Christina Gligorova
- Nikki Hammond
- Kristen Harris
- David Paul Hilton
- Vincent Laroche
- Daniel Lee
- Clara Martin
- Anushka Oak
- Jordan Pemberton
- Jocelyn Ramos
- Sharan Sabu
- Salar Sanati
- Carl Suerte
- Leonard Wang
- Summer Willig
FrameWorks

FrameWorks is a co-curricular program that offers sophomores and juniors a supportive community of peers and faculty mentors as they conceive, research, write, present, and ultimately publish critical essays that draw on the interdisciplinary humanities. The program will culminate every spring with the FrameWorks Symposium at which FrameWorks Fellows will publicly present their work. Essays that meet editorial standards will be included in the FrameWorks Journal, which will be published around Convocation every fall. The best essay will be awarded the FrameWorks Prize for Excellence in Humanities Research valued at $1,000.

In 2019/2020, FrameWorks Fellows were asked to interpret the theme of “Wall.”

2019 FELLOWS

Zoie Buske (Faculty mentor: Bhavja Tiwari) writes about the democratization of artistic expression via murals with a focus on the “Be Someone” Bridge across the I-45 and “People of the Community” mural in South Central Houston.

Cristobella Durette (Faculty mentor: Laura Bland) situates Joe Sacco’s Footnotes from Gaza as an example of long-form comics journalism and that genre’s capacity to engage readers on critical and empathetic levels.

Paulina Ezquerra (Faculty mentor: Robert Zaretsky) reads Franz Kafka’s The Castle as an allegory through which to understand the experience of immigrants in the era of President Donald Trump’s southern border wall.

Matt Flores (Faculty mentor: Roberto Tejada) theorizes mourning as an aesthetic practice that responds to the humanitarian crisis on the southern border drawing on Teresa Margolles and Ángel Lartigue’s Forensic Burial Maps of Cadavers after Exhumation (Studies 1-5).

Marco Garcia (Faculty mentor: Iain Morrison) thinks through the implications of Friedrich Nietzsche’s analogy in On the Genealogy of Morals between the mind’s digestion of experience (inpsychation) and the body’s digestion of food (incorporation).

Rebecca Hentges (Faculty mentor: David Rainbow) argues against historical claims that Russia should be geographically, politically, ideologically, and culturally understood as “Eurasian” based on Moscow’s Western-European-inspired treatment of Siberia as a colony.

Ayania Hicks (Faculty mentor: Marina Trninic) reads Zora Neale Hurston’s short story “Sweat” as an act of defiance against the creative limitations W.E.B. Du Bois’s notion of “The Talented Tenth” placed on African-American writers during the Harlem Renaissance.

Allison Lee (Faculty mentor: Richard Garner) challenges more traditional feminist readings of Sylvia Plath’s The Bell Jar by drawing on Existentialist philosophy to re-frame Esther’s struggle against the patriarchy and search for identity.

Kat Newman (Faculty mentor: Jess Waggoner) explores the complex representational politics of transgender characters in contemporary television, with particular focus on The Danish Girl, Orange is the New Black, and Euphoria.
The FrameWorks Prize for Excellence in Humanities Research

**FIRST PRIZE: Paulina Ezquerra**  
“Reading Kafka in the Age of Trump”

Ezquerra reads Kafka’s *The Castle* as an immigration narrative in which the protagonist, K, a new arrival, is subject to a system that will not legitimate his presence and locals who will not accept him. Ezquerra argues that the novel has profound contemporary resonances.

**SPECIAL MENTION: Ayania Hicks**  
“Breaking Artistic Boundaries: Zora Neale Hurston and the Harlem Renaissance”

Hicks reads Hurston’s short story “Sweat” as evidence of a radical refusal to sanitize African American experience for the sake of mainstream acceptance. Hurston’s heartfelt rendering of rural African American experience, Hicks argues, insists on the humanity of all African Americans, regardless of their station and circumstance.

What FrameWorks Fellows have said about their experience:

“Participation in the FrameWorks program has allowed me to explore my interdisciplinary research interests while also giving me the chance to refine my writing and editing skills.” – Cristobella Durrette

“The FrameWorks Program has provided me with an opportunity to explore a topic of my choice in-depth. Prior to this program I had very little research experience, and this program has been an exceptional introduction into the world of extensive research.” – Ayania Hicks

The 2020/2021 FrameWorks theme is “Unknown.” If you are interested in learning more, please check out [thehonorscollege.com/frameworks](http://thehonorscollege.com/frameworks) for more information and links to the application form.
Students participating in the SURF program come together each week to learn from UH faculty and staff who present on a wide range of issues, including topics such as research ethics, applying to graduate and professional school, and developing an effective research poster. The Office of Undergraduate Research and Major Awards thanks our 2019 presenters for their participation in the Brown Bag Lecture Series.

**2019 SURF BROWN BAG LECTURE SERIES**

**WEEK 1**
Research Ethics and Conducting Research Responsibly
Hanako Yoshida
Psychology
Jeremy May
Chemistry

**WEEK 2**
Campus Research Tours (continued)
Behzad Khajavi (Kirill Larin’s Lab)
Biomedical Engineering
Michi Umetani
Center for Nuclear Receptors and Cell Signaling
Elizabeth Cruces
Special Collections Tour From Mesopotamia to DJ Screw, M.D. Anderson Library

**WEEK 3**
Applying for Competitive Fellowships
Ben Rayder
Office of Undergraduate Research

**WEEK 4**
Building an Effective CV and Résumé
Caitlin Deis and Morgan Akogyeram
University Career Services

**WEEK 5**
July 4th Holiday

**WEEK 6**
Research Lecture
Jakoah Brg och
Chemistry

**WEEK 7**
Roundtable Discussions on Applying to Graduate School
Faculty from Various Fields of Study

**WEEK 8**
Data Science Across Disciplines
Claude Willian
Digital Research Commons

**WEEK 9**
Developing an Effective Research Poster
Stuart Long and Karen Weber
Office of Undergraduate Research

**WEEK 10**
Celebratory SURF Luncheon for Research Students and Faculty Mentors
2019 SURF PARTICIPANTS

Richard Adams
Mentored by Luca Pollonini
Engineering Technology
Estimation of Inertial Measurement Unit Locations for Neuroimaging Applications

Sehrrish Ahmed
Mentored by Katerina Kourentzi
Chemical and Biomolecular Engineering
Development of a Lateral Flow Assay for the Detection of β-actin in Whole Cell Extracts

Christian Bernard Alarcon
Mentored by Jose Contreras-Vidal
Electrical and Computer Engineering
18-Month Mobile Brain-Body Imaging (MoBI) Data Correlating with Daily Tasks: Findings in Alpha-band Frequencies

Rachel Altman
Mentored by Michael Nikolaou
Chemical and Biomolecular Engineering
A More Robust Assessment of Antibiotic Combinations by Dynamic Susceptibility Model

Emilio Ames
Mentored by Jerrod Henderson
Chemical and Biomolecular Engineering
Photovoice: Investigating Barriers in STEM Retention

Dharun Anandayuvvaraj
Mentored by Bhavin Sheth
Electrical and Computer Engineering
An Electrical Circuit Model of Circle of Willis to Predict Stroke

Devon Bellman
Mentored by Jose Contreras-Vidal
Electrical and Computer Engineering
Data Collection for a Longitudinal Mobile Brain-Body Imaging (MoBI) Study of the Creative Process Over the Span of 18 Months in Real-World Settings

Calvin Betzner
Mentored by Rohith Reddy
Electrical and Computer Engineering
Increasing the Scale of Scanning 3D Objects with Optical Coherence Tomography

Neha Bobby
Mentored by Marc Hanke
Biology and Biochemistry
The Superior Substrate: The Effect of Shell Type on Oyster Restoration

Victoria Brown
Mentored by Roberto Tejada
English
An Afrofuturism Genre Study Using Computational and Literary Methods

Logan Butcher
Mentored by Robert Shimko
Theatre
Dramaturgical Research

Aparna Calindi
Mentored by Tai-Yen Chen
Chemistry
Javier Carretero Murillo  
Mentored by Zheng Chen  
Mechanical Engineering  
Mimicking the Motion of a Seahorse

Sammie Chen  
Mentored by Stacie Louie  
Civil and Environmental Engineering  
Characterizing Physicochemical Properties of Texas Soil Organic Matter

Jakob Claret  
Mentored by Jeffrey Rimer  
Chemical and Biomolecular Engineering  
Tailoring the Physiochemical Properties of SSZ-13 Zeolite with Polyquat Growth Modifiers

Dang Dang  
Mentored by Sheereen Majd  
Biomedical Engineering  
Preparation of Nanoliposomes Filled with Alginate Hydrogels for Drug Delivery Application

Natasha Eades  
Mentored by Michael Zvolensky  
Psychology  
Mindful Attention and Eating Expectancies Among Trauma-Exposed Latinx College Students

Jonathan Ezemba  
Mentored by Alin/Fumurescu/Ette  
Political Science

Lance Fegan  
Mentored by Daniel Onofrei  
Chemical and Biomolecular Engineering  
Two Approaches for Optimal Synthesis of a Thin Wire Antenna

Diego Figueroa  
Mentored by Mehmet Orman  
Chemical and Biomolecular Engineering  
Evolution of Resistant Mutants in Antibiotic Treated Bacterial Cultures

Keegan Freeman  
Mentored by Shishir Shah  
Computer Science  
Linguistic Analysis, Data Mining, and Clustering to Predict Document Age

Joshua Garcia  
Mentored by Jonathan Schwartz  
Psychological, Health, and Learning Sciences  
The Influence of Violent Media Exposure on Male Aggression

Ernie-Anastasia Gentzis  
Mentored by C. "Chip" Raymond  
Psychology  
The Impact of Relatedness on Academic Engagement in Middle-School Students

Christina Gligorova  
Mentored by Dan Price  
Honors in Community Health  
Be Free: Beat H. Pylori.

Ethan Goode  
Mentored by Christopher Clarke  
Economics  
Light Rail Effect on Neighborhood Incomes: A Case Study of Houston’s METRO Rail

Larry Guan  
Mentored by Daniel Onofrei  
Mathematics  
Defect Analysis of 1D Spring-Mass Systems via Laplace Transform and Asymptotics

Samantha Havens  
Mentored by Rose Faghih  
Electrical and Computer Engineering  
A Mind Controlled MiniDrone with Stress Feedback

Kirsten Hilson  
Mentored by Matthew Clavin  
History  
All Men Are Created Equal: Symbols, Slaves, and the Making of American Freedom
Madeline Luong
Mentored by Kerri Crawford
Biology and Biochemistry
Identification and Isolation of Indicator Fungal Endophytes in Alpine Plants Species

Austin Marin
Mentored by Ling Zhu
Political Science
Latino Political Preference

Jordy Martinez
Mentored by Arne Lekven
Biology and Biochemistry
Characterization of Conserved Non-Coding Elements essential for wnt1 expression in zebrafish

Paulomi Modi
Mentored by Gao Xiaolian
Biology and Biochemistry
To examine the combinatorial therapeutic effects of EGFR inhibitor and mTORC2 inhibitor for treatment of pancreatic cancer

Mariam Hosseini
Mentored by Michihisa Umetani
Biology and Biochemistry

Vinh Huynh
Mentored by Rohith Reddy
Electrical and Computer Engineering
Imaging Techniques on Ovarian Cells

Sunkyung Jung
Mentored by Tai-Yen Chen
Chemistry
Synthesis of SOD1-SNAP Fusion Proteins through Molecular Cloning

Anuttham Kandhadai
Mentored by Daniel Price
Honors in Community Health
Be Free. Beat H. pylori

Damian Kao
Mentored by Haleh Ardebili
Mechanical Engineering
Modeling Thermal Runaway in a Lithium Ion Battery

Taher Kapadia
Mentored by Yuhong Wang
Biology and Biochemistry
Amino Acid Purification and Single-Molecule FRET Study of tRNA Translocation

Clare Keating
Mentored by Jack Young
Theatre

Christopher Kessinger
Mentored by Cedric Tolliver
English
Rednecks Without Race: The Forgotten History of Cross-Racial Working-Class Solidarity at Blair Mountain, 1921

John King
Mentored by Melissa Zastrow
Chemistry
The Effect of Zinc and Copper on Probiotic Lactobacillus

Rosemarie Le
Mentored by Michihisa Umetani
Biology and Biochemistry
Interaction between the Proteins Liver X Receptor Beta and Estrogen Receptor alpha Isoforms in vitro

Leandro Ledesma
Mentored by Gunes Avci
Psychology
Would Drawing Boost Testing Effect?

Kai Loh
Mentored by Zheng Chen
Mechanical Engineering

Mariam Hosseini
Mentored by Michihisa Umetani
Biology and Biochemistry

Vinh Huynh
Mentored by Rohith Reddy
Electrical and Computer Engineering
Imaging Techniques on Ovarian Cells

Sunkyung Jung
Mentored by Tai-Yen Chen
Chemistry
Synthesis of SOD1-SNAP Fusion Proteins through Molecular Cloning

Anuttham Kandhadai
Mentored by Daniel Price
Honors in Community Health
Be Free. Beat H. pylori
Sobia Mohammad
Mentored by Craig McAndrews
Marketing and Entrepreneurship
Impact of Social Media Platforms on Sales and Engagement, for Walmart and Target

Kelsey Mussio
Mentored by Kirill Larin
Biomedical Engineering
Evaluating Changes in Murine Fetal Brain Vasculature Due to Maternal Nicotine Exposure Using In Utero Optical Coherence Tomography

Alexis Thuy Nguyen
Mentored by Chin-Yo Lin
Biology and Biochemistry
Targeting Phospholipid Metabolism in Pancreatic Cancer Using Novel LXRβ Ligands

Matthew Nguyen-Lanau
Mentored by Anka Vujanovic
Psychology
Women in the Fire Service: Mental Health Correlates of Workplace Sexual Harassment

Christina Nnabuife
Mentored by Robert Comito
Chemistry
Synthesis of Substituted Pyrazoles and Imidazolium Salts

Gabrielle Olinger
Mentored by Eric Bittner
Chemistry
Quantum Transport in Driven Spin Chains

Cristian Oviedo
Mentored by Mehmet Orman
Chemical and Biomolecular Engineering
Targeting DNA Repair Mechanisms in BacterialPersisters

Praneet Paidisetty
Mentored by Shoujun Xu
Chemistry
Thermostability of Drug-DNA Complexes Revealed by Force Induced Visualization

Kinal Patel
Mentored by John Craft
Biology and Biochemistry
The SRF/NKX 2.5 Regulatory Node

Sunny Patil
Mentored by Anjali Kanojia
Modern and Classical Languages
Effectiveness of Therapy and Virtual Support Networks

Elizabeth Perez
Mentored by Ferenc Bunta
Communication Sciences and Disorders
Speech Sound Production of Bilingual Children With Cochlear Implants

Kristopher Pham
Mentored by Nikolaos Malamataris
Chemical and Biomolecular Engineering
Finite Element Mesh Design With Quadrilateral Transition

Rahul Pillai
Mentored by Bhavin Sheth
Electrical and Computer Engineering
Exploring the Role of Heritability in Human Disease

Karissa Plum
Mentored by Rebecca Zufall
Biology & Biochemistry
Rapid Adaptation to Extreme Temperatures

Sangeetha Ranadeeye
Mentored by Elizabeth Fletcher
Decision and Information Sciences
Heroes Unseen: A Supply Chain Approach to Post-Traumatic Stress Disorder Treatment at the Veterans Healthcare Administration

Devon Rodriguez
Mentored by Muna Naash
Biomedical Engineering
Optimization of DNA Nanoparticle Mediated Gene Therapy for Inherited Ocular Diseases
Jennifer Torres  
Mentored by Meghana Trivedi  
Pharmacy Practice and Translational Research  
**FOXA1 Genetic Alterations in Whites versus Blacks/African Americans in Breast and Prostate Cancer**

Akeil Shams-ul-hooda  
Mentored by Charles Layne  
Health and Human Performance  
**Exploring the Relationship between Postural Control and Brain Activity using Dual-Task Methodology**

Nabeela Siddeequue  
Mentored by Frank McKeon  
Biology and Biochemistry  
**The Role of IL-13 in Chronic Obstructive Pulmonary Disease in Distal Airway Stem Cells**

Efren Silva  
Mentored by Erin Kelleher  
Biology and Biochemistry  
**Reduced Insulin Signaling Promotes Germline Stem Cell Maintenance Under P-Element Hybrid Dysgenesis**

Justus Rooker  
Mentored by Aaron Becker  
Electrical and Computer Engineering  
**Neutralization of Mosquito Larvae with Acoustic Larvasonic**

Shubhangi Singh  
Mentored by Willa Friedman  
Economics  
**Effect of Caste-based Reservation in India on Employment Status of Non-reserved Category**

Bridgett Sinquefield  
Mentored by Sheereen Majd  
Biomedical Engineering  
**Optimization of a Single Emulsion Method for the Encapsulation of an Anti-Cancer Drug in Nanoparticles**

Robert Sipowicz  
Mentored by Yan Yao  
Electrical and Computer Engineering  
**Lithium Niobium Oxide as a Protective Layer on Lithium Cobalt Oxide for Solid State Batteries**

Noah Sladek  
Mentored by Loi Do  
Chemistry  
**Ir(III)-Catalyzed Reductive Amination of Carbonyl Compounds with High Selectivity**

Cristal Solares-Bockmon  
Mentored by Jiming Bao  
Electrical and Computer Engineering  
**Toward a Molecular Orbital Field-Effect Transistor: Sensing and Sieving with Nanoporous Graphene**

Christopher Thang  
Mentored by Chengzhi Cai  
Chemistry  
**Development of a High-Throughput Flow Biofilm Reactor System for the Study of Bacterial Interference Against Uropathogenic Colonization on Silicone Urinary Catheters**

Chaitanya Tolat  
Mentored by Rodolfo Monaco  
Mechanical Engineering  
**CFD Analysis of Windcatchers**

Alejandra Torres  
Mentored by Tracey Ledoux  
Health and Human Performance  
**Influence of Weight Gain Recommendations on the Behavioral Intentions of Pregnant Women**

Jennifer Torres  
Mentored by Chandra Mohan  
Biomedical Engineering  
**Flow Cytometric Analysis of ALCAM-CD6 Expression Profiles in Lupus Kidney Immune Cells**

Tommy Tran  
Mentored by Kalyana Nakshatrala  
Civil and Environmental Engineering  
**Predicting High-Performance Concrete Compressive Strength Using Machine Learning**

Madison Troxler  
Mentored by Sanghyuk Chung  
Biology and Biochemistry  
**The Effect of the E7 Oncoprotein and PKM2 on the Growth of HPV-Induced Cervical Cancer**

David Wang  
Mentored by Erin Kelleher  
Biology and Biochemistry  
**Reduced Insulin Signaling Promotes Germline Stem Cell Maintenance Under P-Element Hybrid Dysgenesis**
Davis Webb
Mentored by Jason Draper
Hotel and Restaurant Management
Houston Destination Image Study

Christopher Williams
Mentored by Loi Do
Chemistry
Heterobimetallic Complex for Homo- and Copolymerization

Maggie Yip
Mentored by Daphne Hernandez
Health and Human Performance
Instructional Video for Collecting Saliva Samples (Video Instructivo para Recolectar Muestras de Saliva)
Despite the challenges presented by COVID-19, the 2020 Summer Undergraduate Research Fellowship (SURF) program launched in June with 87 SURF recipients. When submitting their applications earlier this spring, students were asked to provide remote research and communication plans in the event that social distancing measures continued into the summer months. The students came together on Zoom each week for the virtual lecture series and learned about data science and management, how to seek out and apply to competitive fellowships and graduate programs, and how to develop posters and present their work.

**2020 SURF BROWN BAG LECTURE SERIES**

**WEEK 1**
**Responsible Conduct of Research**
Laura Gutierrez and Penny Maher  
*Division of Research*

**WEEK 2**
**Data Science Across the Disciplines**
Lars Grabow  
*Chemical and Biomolecular Engineering*
Claude Willan  
*University of Houston Libraries*
Lorena Gauthereau  
*Arte Público Press*
Dan Price  
*Honors College*

**WEEK 3**
**University of Houston Library Resources**
Wenli Gao, Andrea Malone, Irene Ke, Edward Gloor, Erica Lopez, and Mea Warren  
*University of Houston Libraries*

**WEEK 4**
**Building an Effective CV and Résumé**
Tanya Farirayi and Adalia Espinosa  
*University Career Services*

**WEEK 5**
**July 4th Holiday**

**WEEK 6**
**Applying for Fellowships and Major Awards**
Ben Rayder  
*Office of Undergraduate Research and Major Awards*

**WEEK 7**
**Applying to Graduate School**
Faculty from Various Fields of Study

**WEEK 8**
**Expectations and Challenges in Research**
Lorraine Reitzel  
*Psychological, Health, and Learning Sciences*

**WEEK 8 (continued)**
Xinli Liu  
*College of Pharmacy*
Marc Hanke  
*Honors College*
Saman Essa  
*Counseling Psychology*

**WEEK 9**
**Developing an Effective Poster and Presentation Etiquette**
Stuart Long, Brittni MacLeod, and Ben Rayder  
*Office of Undergraduate Research and Major Awards*

**WEEK 10**
**Virtual Fellowship Celebration**
2020 SURF PARTICIPANTS

**Ariel Abudu**  
Mentored by Peggy Lindner  
Data Science  
Analyzing Counselor Usage in Texas Elementary Schools

**Bolatito Adeyeri**  
Mentored by Christopher Arellano  
Health and Human Performance  
Quantifying the Net Cost of Transport Curve During Human Walking: How Much Time Is Required?

**Dania Amarneh**  
Mentored by Anka Vujanovic  
Psychology  
The Role of Anxiety Sensitivity in the Relationship Between Childhood Maltreatment and Sleep Disturbance

**Sarah Attia**  
Mentored by Jen Vardeman  
Communication  
Understanding the Perceptions Surrounding Pelvic Floor Disorders within Arab American Communities

**Rabin Bhattarai**  
Mentored by Rodolfo Monico  
Mechanical Engineering  
Blood Flow Simulation through a Rat’s Aortic Arch

**Anna Bibikova**  
Mentored by Jeff Feng  
Industrial Design  
Adjustable Smart Limb Socket

**Drew Boagni**  
Mentored by Shaun Zhang  
Center for Nuclear Receptors and Cell Signaling  
Utilizing Neoantigens to Reinforce the Immune Response in Cancer

**Luay Boulahouache**  
Mentored by Bradley McConnell  
Pharmaceutical and Pharmaceutical Sciences  
Biased Agonist Modulation of Carvedilol & Metoprolol in β-arrestin Pathway

**Linh Bui**  
Mentored by Michihisa Umetani  
Biology and Biochemistry  
Impact of 27-Hydrocholesterol on Brown Adipost Tissue at the Single Cell Level

**Nathan Cao**  
Mentored by Oomman Varghese  
Physics  
Machine Learning for Metal Oxide Gas Sensor Analysis

**Josiah Cherian**  
Mentored by Ognjen Miljanic  
Department of Chemistry  
Energy and Sustainability

**Jared Davis**  
Mentored by Jerrod Henderson  
First Year Engineering Experience  
Increasing the Number of Black Male Engineering Graduate Students

**Krishna Sarvani Desabhotla**  
Mentored by Jose Contreras-Vidal  
Electrical and Computer Engineering  
Automation Process of 3D Scan Based Brace Design

**Benjamin Diaz Villa**  
Mentored by Ralph Metcalfe  
Mechanical Engineering  
Numerical Study of Wing Morphing Aerodynamic Properties in Low Reynolds Number Flow

**Ariel Durham**  
Mentored by Irene Guenther  
History  
Restructuring Elementary School Social Studies Curriculum to Include Black Female Activists

**Cristobella Durette**  
Mentored by Max Rayneard  
Honors  
Zombies, Werewolves, and Vampires, Oh My!: The History of Horror in Comics

**Joanna Elhaj**  
Mentored by Melissa Zastrow  
Chemistry Department  
Effects of Metals on Probiotic Lactobacillus

**Shereen Enan**  
Mentored by Chandra Mohan  
Biomedical Engineering  
Urine Protein Biomarkers of Bladder Cancer Arising from Aptamer-based Screening of 1300 Proteins

**Monica Enriquez**  
Mentored by Kerri Crawford  
Biology and Biochemistry  
Effects of Microplastics and Soil Microbes on Dune Grass Performance

**Queen Epomba**  
Mentored by Melody Li  
Modern and Classical Languages  
The Color of COVID-19: Analyzing Racism During the COVID-19 Outbreak
Aisha Farooque
Mentored by Nouhad Rizk
Computer Science
Using K-Nearest Neighbors to Classify Undergraduate Female Self-Efficacy in Computer Science

Kevin Fleming
Mentored by Praveen Bollini
Chemical and Biomolecular Engineering
MIL-100(Cr): A Novel Adsorbent for CO2 Capture

Christopher Franclemont
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Undergraduate Research Day celebrates the achievements of all University of Houston undergraduates pursuing faculty-mentored research. Congratulations to the following students.

**Michael Allison**  
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Wolynes Research Lab  
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**Nabeeha Asim**  
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**Kayla Baham**  
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**Olivia Baker**  
Mentored by Pinky Shani  
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**Karina Bhattacharya**  
Mentored by Mark Kimbrough and Jon Kelly  
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Human Computer Interaction  
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**Kareema Broussard**  
Mentored by Anita Schulte  
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**Leanna Castaneda**  
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**Luis Cavazos**  
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**Njideka Chidoka**  
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**Ricardo Del Rio**  
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**Shravani Deo**  
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**Sakethram Desabhotla**  
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Elaine Tran  
Mentored by Andrew Kapral  
Engaged Data Science  
Estimating Health Education Instructional Time Within a Texas Public School District

Mallika Tripathy  
Mentored by Chandra Mohan  
Biomedical Engineering  
Inhibiting Fatty Acid Amide Hydrolase (FAAH) Induces Apoptosis in Breast Cancer Cells

Pichvyda Tuy  
Mentored by Nouhad Rizk  
Computer Science  
Using Clustering Techniques to Classify Self-Efficacy of Women in Computer Science

Patrick Uwaezuoke, Jr.  
Mentored by Maria Burns  
Supply Chain and Logistics Technology  
TSA & Airport Security: A Case on Weapons Smuggling in the U.S.

Manushi Vatani  
Mentored by Daniel Price  
Honors  
The Role of Language Barriers in Cancer Screening & Diagnosis

Mallory Walters  
Mentored by Kristen Capuozzo and Michelle Patriquin  
Psychology, Baylor College of Medicine The Menninger Clinic  
Examining the Relationship Between Sleep Problems, Trauma, Anxiety and Executive Function in Youth during Inpatient Psychiatric Treatment

Brandon Warner  
Mentored by Daniel Price  
Honors  
Race, Class, Gender and COVID-19: Identifying Barriers Along Paths Leading to Equitable Health Outcomes

Olivia Wren  
Mentored by Alan Brandon  
Earth and Atmospheric Science  
Nd & Sr Isotopes from the Mid Cenomanian Event (MCE) Derived from the Eagle Ford Group, West Texas

Yusef Zaidi  
Mentored by Tracey Ledoux and Nancy Moran  
Health and Human Performance, Baylor College of Medicine USDA/ARS Children’s Nutrition Research Center  
Carotenoid Measurement in Infant Formula Using a Validated Analytical Method
The students listed below participated in the 2020 SURF program. They have chosen to participate in the Spring 2021 Undergraduate Research Day which will take place on Thursday, April 1, 2021. We look forward to celebrating their work then.

**Mariam Alshaikhly**  
Mentored by Kehe Ruan  
Department of Pharmacological and Pharmaceutical Sciences

**Dhriti Patel**  
Mentored by Sheereen Majd  
Biomedical Engineering

**Americo Avila**  
Mentored by Norah Gharala  
History

**Katherine Pham**  
Mentored by Jinsook Roh  
Biomedical Engineering

**Citlali Bataz**  
Mentored by Muayyad Al-Ubaidi  
Biomedical Engineering

**Haley Rosso**  
Mentored by Andreas Mang  
Mathematics

**Abhaya Chopra**  
Mentored by Emese Felvegi  
Decision and Information Sciences

**Nathan Smith**  
Mentored by Francisco Cantu  
Political Science

**Monica Gebrehiwot**  
Mentored by Elizabeth Simas  
Political Science

**Viet Trinh**  
Mentored by Jaspal Subhlok  
Department of Computer Science

**Shalini Ann Ghurye**  
Mentored by Dr. Luis Medina  
Department of Psychology

**Sharon Zachariah**  
Mentored by Qin Feng  
Biology and Biochemistry – Center for Nuclear Receptors and Cell Signaling

**Abigail Janvier**  
Mentored by Sheereen Majd  
Biomedical Engineering

**Sajid Khan**  
Mentored by Miao Pan  
Electrical and Computer Engineering

**Ted Kim**  
Mentored by Peter Vekilov  
Department of Chemical and Biomolecular Engineering

**Mariana Lopez Martinolich**  
Mentored by Yingchun Zhang  
Biomedical Engineering

**Tuan Nguyen**  
Mentored by Marzia Cescon  
Mechanical Engineering

**Anushka Oak**  
Mentored by Benjamin Tamber-Rosenau  
Psychology

**Daniel Palacios**  
Mentored by Pavan Hosur  
Department of Physics
A supportive environment is important. As a Fulbright English Teaching Assistant in Turkey, I see that I have the opportunity to affect my students' lives in the same way that many people at the University of Houston have affected mine.

Johnny Zapata
History, Political Science, and Spanish Major
Fulbright U.S. Student Program

Whatever your research interests are, the Office of Undergraduate Research and Major Awards can get you connected and starting your research project today.

“Seeing the amazing projects my fellow Mellon Scholars have done reminds me that I am not doing all of this alone. Being in a dual degree program, taking master classes as an undergraduate, and doing an Honors Thesis is tough. But the hard work is all doable, and good preparation for students considering graduate school.”

Layla Mayorga
Philosophy Major
Mellon Research Scholar

“It was the moment when I held my SURF poster on the airplane that I realized: I got to apply my skills as an engineer and I’m representing my university at an out-of-state conference. It’s all so early in my career and it linked me to many opportunities across the nation.”

Christian Alarcon
Biomedical Engineering Major
SURF, Undergraduate Research Travel Fellowship

“Houston Scholars allowed me to work with students from all backgrounds and majors to propose solutions to research questions within our own community. This program has offered me many opportunities and resources to pursue my educational endeavors and to form lifelong friendships.”

Christina Gligorova
Biology Major
SURF, Houston Scholars

THE OFFICE OF UNDERGRADUATE RESEARCH AND MAJOR AWARDS

Christina Gligorova
Biology Major
SURF, Houston Scholars