

UNDERGRADUATE RESEARCH DAY 2014

Thursday, October 9
4:00 p.m.

Elizabeth D. Rockwell Pavilion & The Honors College
2nd Floor, M.D. Anderson Library

UNIVERSITY of **HOUSTON** | OUR



Receive information regarding:

- Research opportunities
- Scholarships for research, undergraduate, and graduate studies
- Internships
- Meetings and events for office's student organization, **HURN**
- Events on and off campus

[Facebook.com/UHUndergradResearch](https://www.facebook.com/UHUndergradResearch)

[Facebook.com/HURN.UH](https://www.facebook.com/HURN.UH)

SAVE THE DATE

PURS Spring 2015 Application Deadline:
November 14, 2014

..... Undergraduate Research Mentor
Award Application Deadline:
February 2, 2015

SURF 2015 Application Deadline:
March 27, 2015

UNDERGRADUATE RESEARCH DAY 2014

October 9, 2014

Elizabeth D. Rockwell Pavilion

M.D. Anderson Library

The Honors College

4:00-4:20 p.m. Introductions

Stuart Long, Ph.D.

Associate Dean of Undergraduate Research and
The Honors College, University of Houston

Welcome and Opening Remarks

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

Mary Ann Ottinger, Ph.D.

Associate Vice Chancellor for Research, University of Houston System
Associate Vice President for Research, University of Houston

4:20-5:50 p.m. Viewing of Student Posters

5:50-6:00 p.m. Audience's Favorite Posters Announcement

Karen Weber

Director, Office of Undergraduate Research and the Honors College
University of Houston

5:30-7:00 p.m. Oral Presentations

Location: The Honors College Classrooms

Thank you to the **Provost's Office**, the **Division of Research**, and the **Honors College** for their generous support of the Office of Undergraduate Research.

And special thanks to the **Gerald D. Hines College of Architecture** for printing the posters for the event.

WELCOME



STUART LONG, PH.D.
Associate Dean, Undergraduate Research
and The Honors College
Professor, Electrical & Computer
Engineering



KAREN WEBER
Program Director
Office of Undergraduate Research

Thank you for joining us today for the ten-year anniversary of the University of Houston's Undergraduate Research Day. Over 1000 students have presented at our event over the years, and we are delighted that the event continues to grow in size and stature. At today's celebration, we are highlighting the achievements of our 61 Summer Undergraduate Research Fellowship (SURF) students, and 80 other students who are presenting on their research projects through poster and oral presentations.

It has been an exciting year for the Office of Undergraduate Research. We have enjoyed growth and expansion within our programs thanks to the generous contribution of our campus community partners.

We extend our sincere gratitude to the Provost's Office, Division of Research, and The Honors College for their continued support of our Office's programs. We also are appreciative of the support of our campus community partners: Biology of Behavior Institute (BoBI), Cullen College of Engineering, College of Liberal Arts and Social Sciences, Gerald D. Hines College of Architecture, Hobby Center for Public Policy, Medicine and Society Program, Texas Obesity Research Center, and the following UH Departments: Biology & Biochemistry, Chemical & Biomolecular Engineering, Civil & Environmental Engineering, Computer Science, Construction Management, Electrical Technology, Health and Human Performance, Mathematics, and Mechanical Engineering. By their contributions to the Provost's Undergraduate Research Scholarship (PURS) and the SURF programs, we were able to sponsor over 120 students in the 2013-2014 academic year.

We also thank our faculty selection and advisory committee for the time and effort they spend reviewing the applications we receive for our scholarship and award programs. Their input and feedback enable us to refine and revise our policies and procedures, and adhere to the ever changing needs of the UH community.

Undergraduate Research Day is an opportunity for our campus community to support mentored research activities, recognizing that building mentor relationships with professors is pivotal to students' academic and professional path. One of the most impressive aspects of this event is the wide range of projects represented by our student researchers. This year's cohort includes projects on imaging and analyzing blood vessels within the brain for Alzheimer's disease, mapping neurons to better understand neurodegenerative diseases, and creating mathematical models that simulate various biochemical and metabolic pathways, to analyzing leadership traits of university-age LGBT youth, studying the role of gender for primary elections, and determining the effect of peer mentorship programs for cancer survivors.

Our UH researchers are bright, motivated, engaged students who represent our future leaders. We congratulate them on their achievements and wish them the best in their future endeavors. Thank you again for joining us today at Undergraduate Research Day.

UNIVERSITY of
HOUSTON

OFFICE OF UNDERGRADUATE RESEARCH

Undergraduate Research Day

October 9, 2014

4:00 - 6:00 p.m. Welcome and Poster Presentations

5:30 - 7:00 p.m. Oral Presentations

Elizabeth D. Rockwell Pavilion

M.D. Anderson Library

and the Honors College

The Office of Undergraduate Research

The Honors College

University of Houston

211 M.D. Anderson Library

Houston, TX 77204-2001

(713) 743-3367

UndergraduateResearch.uh.edu

Booklet created by:

Julia Brown, Graduate Assistant
Office of Undergraduate Research

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35 Oral Presentations

OFFICE OF UNDERGRADUATE RESEARCH

OUR PROGRAMS

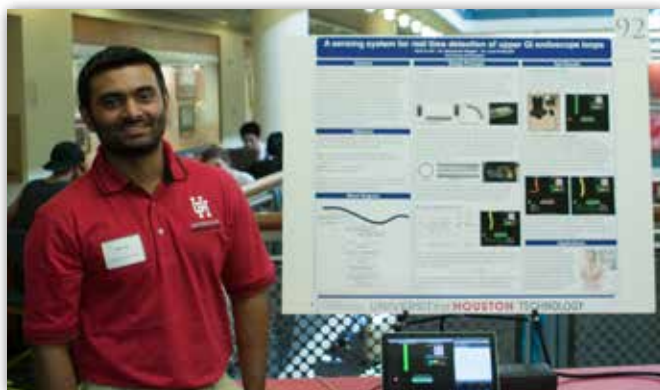
THE PROVOST'S UNDERGRADUATE RESEARCH SCHOLARSHIP (PURS) is a part-time semester research program for juniors and seniors, and awards a \$1,000 scholarship for students to work one-to-one with a faculty mentor. This scholarship is open to students from all colleges and disciplines. Candidates must have at least a 3.0 grade point average to apply. For more information and to view the online application, visit the PURS website at UndergraduateResearch.uh.edu/purs.

THE SUMMER UNDERGRADUATE RESEARCH FELLOWSHIP (SURF) program is a full-time, ten-week summer research program, open to all continuing students, and provides a \$3500 stipend for students to conduct research under the mentorship of a UH faculty member. Students from all disciplines are encouraged to apply. The deadline for SURF is in the middle of March each year. For more information and to view the online application, visit the SURF website at UndergraduateResearch.uh.edu/surf.

THE SENIOR HONORS THESIS is a capstone program for a student's undergraduate career in research. Student participants enroll in 3399H and 4399H, a total of six hours of coursework, which is typically applied toward their major degree requirements during their senior year. A second reader and Honors reader also serve on the student's thesis committee, offering advice during the research and writing process as well as at the student's defense of the thesis. For more information, visit the thesis website at UndergraduateResearch.uh.edu/thesis_guidelines.

HOW TO GET STARTED IN RESEARCH

- Peruse your department's website to find out about the research faculty within your discipline are conducting.
- Talk to current and past professors (during their office hours) from courses you have excelled in and have enjoyed. Even if the professor is not currently seeking an undergraduate researcher, he or she may know of a colleague who is seeking an undergraduate research assistant.
- Consult an academic advisor from your department to inquire about faculty members currently conducting research in your discipline.
- Check OUR web page of faculty members currently seeking undergraduate researchers, UndergraduateResearch.uh.edu/facultyresearch.
- Join the UH Undergraduate Research Facebook page and/or the Office of Undergraduate Research's list serve. You will receive postings on available research positions and scholarships for undergraduates.
- Join HURN, the student organization for undergraduate research. This will allow you to connect and network with other UH undergraduate researchers.



WELCOME, JENNIFER ASMUSSEN!



JENNIFER ASMUSSEN
Coordinator of Nationally Competitive
Scholarships
Office of Undergraduate Research

As the new Coordinator of Nationally Competitive Scholarships at the University of Houston Honors College, I would like to introduce myself. I am a graduate of the University of California San Francisco, where I completed my doctorate in cancer biology and pharmaceutical science. I am also a University of Houston and Honors College alumni, with a bachelor's degree in biochemistry and a minor in chemistry.

As an undergraduate student, I participated in UH's inaugural Summer of Undergraduate Research Fellowship (SURF) program. I clearly remember the excitement of that summer, my first taste of academic research. As a SURFer, I performed research in the laboratory of Dr. Dar-Chone Chow, characterizing the dimerization of ciliary neurotrophic factor protein. Looking back, I am extremely grateful for the research opportunities I was provided as a student at UH. I understand the importance of participating in undergraduate research and applaud the current SURFers for their dedication and hard work this past summer!

Upon graduation, I moved to San Francisco where I initiated my doctorate studies in pharmaceutical science and cancer research. My thesis research focused on dissecting the phenomenon of oncogene addiction in chronic myeloid leukemia (CML). CML cell survival is dependent on the activity of BCR-ABL, an aberrant fusion protein created by a specific chromosomal translocation event. I employed targeted therapies, which selectively inhibit BCR-ABL activity, to dissect which cellular pathways are critical for CML cell survival. My research revealed that persistent physiologic negative feedback signaling is likely responsible for the clinical success of these agents.

After completing my graduate studies, I returned to the University of Houston Honors College as the Coordinator of Nationally Competitive Scholarships. I am here to help undergraduate students achieve their future career goals. As one of the most promising groups of students on campus, you are going to accomplish great things. Please reach out to me for information on graduate school funding and other national scholarship opportunities. Send me an email (jkgajan@uh.edu) or drop by between classes so that we can meet to discuss where you are going and how you want to get there!

FACULTY MENTORING AWARDS



NORMA OLVERA

The Office of Undergraduate Research congratulates the three 2014 Faculty Award recipients: **Dr. Norma Olvera** (Lifetime Faculty Mentoring Award), **Dr. Jeffery Rimer** (Early Mentoring Award), and **Dr. Carla Sharp** (Early Mentoring Award).

NORMA OLVERA

Dr. Norma Olvera, Associate Professor in the College of Education, is a nationally recognized leader in the field of health, and a strong supporter of undergraduates in research. Her award-winning program, Behavior Opportunities Uniting Nutrition Counseling and Exercise (BOUNCE), is a four-week camp that empowers Hispanic and African-American girls and their families to adopt healthy lifestyles by incorporating healthy food choices, daily exercise, and positive self-esteem in a supportive environment. Olvera is a former president of the Hispanic Health Coalition in Houston and winner of the American Public Health Association's 2013 Distinguished Nationally Known Health Professional Award.

Working with Undergraduate Researchers

In addition to mentoring her students in undergraduate research projects, Dr. Olvera offers them additional training experiences in the form of specialized workshops on research designs, data entry, SPSS, reference software, and manuscript development. She also has strong working relationships with various external institutions in the Texas Medical Center, which results in additional opportunities for undergraduates to conduct research. Dr. Olvera encourages her students to write theses, contribute to peer-reviewed publications, and pursue advanced degrees in health-related fields.



JEFFREY RIMER

JEFFREY RIMER

Since joining the University of Houston's Department of Chemical and Biomolecular Engineering in the fall of 2009, **Dr. Jeffery Rimer** has emerged as an outstanding researcher, teacher, and citizen. An Ernest J. and Barbara M. Henley Assistant Professor of Chemical Engineering, Dr. Rimer actively mentors students in the area of crystal engineering with

applications in biomedicine and energy. More specifically, the Rimer Group focuses on kidney stone drug development and the rational design of zeolite catalysts. He recently published an article in *Science* that outlines an *in situ* method for visualizing the growth of zeolites.

Working with Undergraduate Researchers

Dr. Rimer provides his undergraduate students with a structured training program when first conducting research in his lab. The first few months are spent training undergraduates in materials synthesis and characterization. Once the students are comfortable with the techniques, they are assigned individual projects. Their work often yields substantive results, which has led to peer-reviewed publications and conference presentations. Dr. Rimer has also been an energetic participant in the Cullen College of Engineering summer programs sponsored by the National Science Foundation for Research Experience for Undergraduates (REU) and Teachers (RET).



CARLA SHARP

CARLA SHARP

An associate professor of clinical psychology and director of the Developmental Psychopathology Lab at the University of Houston, **Dr. Carla Sharp** is both an accomplished educator and researcher. She has received the National Alliance for Research on Schizophrenia and Depression's Young Investigator Award and the University of Houston Research Excellence Award. She also serves as director of research for The Menninger Clinic's Adolescent Treatment Program. Dr. Sharp has contributed to over 100 publications to the field of behavioral health and the socio-cognitive bases of psychiatric problems.

Working with Undergraduate Researchers

Dr. Sharp considers undergraduate students indispensable to her work. Her students participate in all facets of her work—transcription of diagnostic interviews with psychiatric patients, data entry, data management, literature searches, data collection and manuscript preparation. In addition, her students participate in lab meetings, which allows them to observe the inner workings of a dynamic lab setting and further understand the scientific process. Since she began at UH in the fall of 2009, Dr. Sharp has mentored over 40 undergraduates. She aims to instill in students a passion for the scientific process and to expand their horizons beyond graduation: nearly a fourth of Dr. Sharp's mentees have continued on to graduate school, with more in the process of applying.

THE HONORS COLLEGE

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 finest 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 The 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.

Contact Information:

Sarah Bhojani, Assistant Director: sabhhojani@uh.edu

SURF BROWN BAG LECTURE SERIES

Each summer, as part of the SURF program, the Office of Undergraduate Research offers a Brown Bag Lecture Series in which UH faculty present a wide range of interdisciplinary topics, such as research ethics, and applying to graduate and professional school. The Office of Undergraduate Research thanks our 2014 presenters for their participation in this year's lecture series.

Week 1

Developing a Plan for Your Research Project

Christina Gola and Christie Peters,
M.D. Anderson Library

Week 2

Research Ethics

Dr. Jeremy May, Chemistry

Week 3

Student Research Panel

Undergraduates and recent graduates share their research experiences with current SURFers

Research Tour: Laboratory for Noninvasive Brain Machine Interface Systems

Dr. Jose L. Contreras-Vidal's team of researchers,
Electrical & Computer Engineering

Week 4

Faculty Roundtables

Faculty-led discussions on considering and applying to graduate and professional school

Week 5

4th of July Week

Week 6

Developing Effective, Eye-Catching Résumés

James Mable and Sydney Webster,
University Career Services

Developing an ePortfolio

Karen Weber, Office of Undergraduate Research

Week 7

Cross-Disciplinary Research: Groundwater Flow, Risk Assessment, and Urban Storm Water

Dr. Hanadi Rifai, Civil & Environmental Engineering

Research Tour: Biology of Behavior Institute

Dr. Gregg Roman, Biology & Biochemistry

Week 8

Terrestrial Laser Scanning Targets

Dr. Craig Glennie,
Civil & Environmental Engineering

Week 9

Creating a Research Poster

Dr. Stuart Long and Karen Weber,
Office of Undergraduate Research

Week 10

SURF Luncheon: Lunch for Students and Mentors

Rockwell Pavilion, M.D. Anderson Library

2014 SURF POSTER PRESENTATIONS



RADHINI ABEYSEKERA



PREETHI GUNARATNE

Radhini Abeysekera

Mentored by Preethi Gunaratne
Biology & Biochemistry

Investigating the anti-metastatic role of
microRNA in osteosarcoma



MOHAMMAD ALI



KALYANA NAKSHATRALA

Mohammad Ali

Mentored by Kalyana Nakshatrala
Civil & Environmental Engineering

On Chemo-Thermo-Mechanical Modeling of
Degradation of Infrastructural Materials



MERCEDES ANDERSON



SAMUEL MCQUILLIN

Mercedes Anderson

Mentored by Samuel McQuillin
Educational Psychology

Measurement of Career Self-Efficacy in STEM
Fields for Middle School Adolescents

Seyed Arshad

Mentored by Elebeoba May
Biomedical Engineering

Modeling Bacterial Iron Homeostasis



SEYED ARSHAD



ELEBEoba MAY

Haley Boyd

Mentored by Carla Sharp
Psychology

The dynamics of psychopathy:
Affective versus cognitive theory of mind



HALEY BOYD



CARLA SHARP

Hadill Calderon

Mentored by Elizabeth Simas
Political Science

Partisanship and the Gender Dynamic:
Their roles in electoral campaign strategies



HADILL CALDERON



ELIZABETH SIMAS

Tanya Chen

Mentored by Mark Tomforde
Mathematics

Improving Google's Search Algorithm



TANYA CHEN



MARK TOMFORDE



SARAH CHILDRESS



LORRAINE REITZEL

Sarah Childress

Mentored by Lorraine Reitzel
Educational Psychology

Homelessness Onset in Relation to
Substance Use and Mental Illness in
Homeless Adults



CHARLOTTE CHRISTIAN



PATRICK SHEA

Charlotte Christian

Mentored by Patrick Shea
Political Science

Gender in Legislatures and Humanitarian
Interventions



AISHA DESLANDES



BRUNO BREITMEYER

Aisha Deslandes

Mentored by Bruno Breitmeyer
Psychology

Probe-Specific Encoding and Retrieval Effects
on Visual Working Memory Performance



SARA ELCHEHABI



ALISON MCDERMOTT

Sara Elchehabi

Mentored by Alison McDermott
Optometry & Vision Sciences

The Efficacy of Contact Lens Solution with
Added LL-37 in Preventing Biofilm Formation
on Contact Lenses

Aya Elsaadi

Mentored by Pat Cirino

Chemical & Biomolecular Engineering

Analyzing Mevalonate-Responsive AraC
Variants to Better Understand Mutation
Roles



Stephanie Erickson

Mentored by Wendy Nelson

Earth & Atmospheric Sciences

FTIR Analysis of Ethiopian Xenoliths: Water
Abundance Evidence for an Unaltered,
Ancient Mantle Source



Hannah Feng

Mentored by Qian Lu

Psychology

Peer Mentorship in Healthcare



Katherine Fischer

Mentored by Iain Morrisson

Honors College, Philosophy

Max Weber's Theory of Drives





Zachary Garvey

Mentored by Daniel Onofrei

Mathematics

Local Control of the Heat Equation

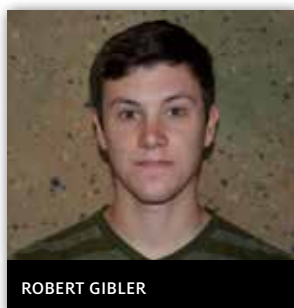


Cassandra Gianni

Mentored by Brenda Rhoden

Honors College, Leadership Studies

Queer Youth Leadership Development



Robert Gibler

Mentored by Alan Brandon

Earth & Atmospheric Sciences

Water Content in SW USA Mantle
Lithosphere: FTIR Analysis of Dish Hill and
Kilbourne Hole Pyroxenites



Nghi Hang

Mentored by Lisa Penney

Psychology

Abusive Supervision and Life Satisfaction: A
Mediation through Burnout and Engagement

Julie Heffler

Mentored by Kevin Morano
Biology & Biochemistry

The importance of substrate binding by
the nucleotide exchange factor and protein
chaperone Sse1 in *S. cerevisiae*



JULIE HEFFLER



KEVIN MORANO

David Ibague

Mentored by Bora Gencturk
Civil & Environmental Engineering

Understanding the Behavior of Reinforced
Concrete under Accelerated Aging



DAVID IBAGUE



BORA GENCTURK

Rita Idugboe

Mentored by Kirill Larin
Biomedical Engineering

Assessing Age-related Biomechanical
Properties of Rabbit Lens Using Co-
focused Ultrasound and Optical Coherence
Elastography



RITA IDUGBOE



KIRILL LARIN

Anson Jablinski

Mentored by Ioannis A. Kakadiaris
Computer Science

BrickSpace: Planning a Lego Model with RGB
Images and the Structure Sensor for Depth



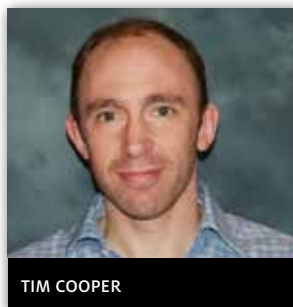
ANSON JABLINSKI



IOANNIS A. KAKADIARIS



NOOR KHAN



TIM COOPER

Noor Khan

Mentored by Tim Cooper
Biology & Biochemistry

Mutation Rates in
Escherichia coli: LacI v. LacO1



MICHAEL LENMARK



SAMANTHA KWAN

Michael Lenmark

Mentored by Samantha Kwan
Sociology

Gendered Frames of Sexual Assault: An
Analysis of Resources for Survivors



DALIA LEZZAR



SERGEY SHEVKOPLYAS

Dalia Lezzar

Mentored by Sergey Shevkoplyas
Biomedical Engineering

Stability of the Paper-based Assay for
Sickle Cell Disease



JULIA LIN



LI SUN

Julia Lin

Mentored by Li Sun
Mechanical Engineering

Tribological Enhancements of Polyurethanes
Through Addition of Nanoparticulate Fillers

Lydia Liou

Mentored by Jay Neal and
Sujata Sirsat
Hotel & Restaurant
Management

Reducing Cross
Contamination
at a Farmers Market



LYDIA LIOU



JAY NEAL



SUJATA SIRSAT

Andrew Maicke

Mentored by Leonard Trombetta
Electrical & Computer Engineering

Development of an Attitude Detection
System for CubeSat Nano-Satellites



ANDREW MAICKE



LEONARD TROMBETTA

Jorge Martorell

Mentored by James Meen
Chemistry

Phase Relations in Fe-Al-Si



JORGE MARTORELL



JAMES MEEN

Andrea Meado

Mentored by Wendy Nelson
Earth & Atmospheric Sciences

Mantle Melt Relationships Recorded
By Abyssal Peridotite Trace Element
Abundances



ANDREA MEADO



WENDY NELSON



Gage Murray

Mentored by Peter Vekilov
Chemical & Biomolecular Engineering

The Effects of Crystallization Agents on
Protein-rich Clusters



Khanh Nguyen

Mentored by Zachary Kilpatrick
Mathematics

How neuronal network architecture
impacts spatial navigation



Hyaneyoung Olvera

Mentored by Julia Babcock
Psychology

Female Perpetrated Intimate Partner
Violence, Romantic Attachment, and
Physiological Reactivity in a Community
Sample



Rosie Ortiz

Mentored by Ali Kamrani
Industrial Engineering

Understanding development and
interpretation of phase diagrams

Staci Ouch

Mentored by Hanako Yoshida

Psychology

New Perspectives on Early Verb Learning



STACI OUCH



HANAKO YOSHIDA

Matthew Patton

Mentored by Yan Yao

Electrical & Computer Engineering

Characterization of Solar Cells with ABX_3
Light Absorbing Layer



MATTHEW PATTON



YAN YAO

Hanh Phan

Mentored by Gila Stein

Chemical & Biomolecular Engineering

Wetting at Polymer Surfaces



HANH PHAN



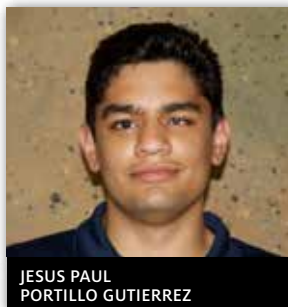
GILA STEIN

Jesus Paul Portillo Gutierrez

Mentored by Svetlana Tikunova

Pharmacology & Pharmaceutical Studies

Mice Expressing Mutant of Cardiac
Troponin C Recapitulate Phenotype of
Dilated Cardiomyopathy (DCM)



JESUS PAUL
PORTILLO GUTIERREZ



SVETLANA TIKUNOVA



Edgar Rivera

Mentored by Peter Zweig
Architecture

Risky Habitat: Houston's 3D Solutions to the Ship Channel



Brittney Robinson

Mentored by Norman Johnson
Decision & Information Sciences

Players and Audience: What Twitch TV Tells



Walter Rodriguez

Mentored by Cunjiang Yu
Mechanical Engineering

Printing on PDMS substrates



Brandon Schmalfeldt

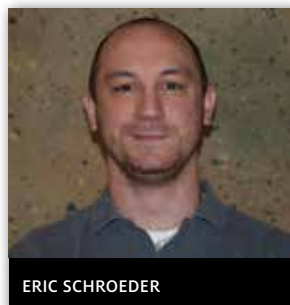
Mentored by Jesse Rainbow
Honors College, Religious Studies

Pharaoh's Hardened Heart in Modern Theology: Human Free Will and Divine Determinism

Eric Schroeder

Mentored by Natalia Zhivan
Economics

Interstate Variation
in Mental Illness Disparities



ERIC SCHROEDER



NATALIA ZHIVAN

Brian-Tyler St. Hilaire

Mentored by Hye-Jeong Yeo
Biology & Biochemistry

Structural Studies of the Novel Lipoprotein
Cj1649 of *Campylobacter jejuni*



BRIAN-TYLER ST. HILAIRE



HYE-JEONG YEO

Christina Stegemoller

Mentored by Lawrence Pinsky
Physics

A Filtering Algorithm for the Timepix
Radiation Detector



CHRISTINA STEGEMOLLER



LAWRENCE PINSKY

Chloe Stowell

Mentored by Brad Smith
Educational Psychology

The Benefits of Field Trip Preparation on
Student Interest and Information Retention



CHLOE STOWELL



BRAD SMITH



Teresa Tse

Mentored by Jose Contreras-Vidal
Electrical & Computer Engineering

Decoding of Interaction Behaviors Using
Scalp Electroencephalography (EEG) in
Freely-behaving Infants



Bobby Varghese

Mentored by Loi Do
Chemistry

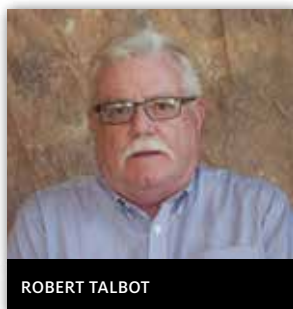
Preparation of Water-Soluble Ligands for
Potentially Bioactive Metal Complexes



Cesar Vasquez Flores

Mentored by Yashashree Kulkarni
Mechanical Engineering

Thermal Conductivity of Graphene from
Atomistic Simulations



Christine Vo

Mentored by Robert Talbot
Earth & Atmospheric Sciences

Isoprene: A Natural Contributor to Houston's
Air Pollution Problem

Abigail Zinecker

Mentored by Haleh Ardebili
Mechanical Engineering

Thermomechanical properties
of flexible batteries



ABIGAIL ZINECKER



HALEH ARDEBILI

Lejla Zoronjic

Mentored by Rich Meisel
Biology & Biochemistry

Are Genes Relocated between
Drosophila Chromosomes Essential for
Spermatogenesis?



LEJLA ZORONJIC



RICH MEISEL

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

- Biology and Biochemistry
- Biology of Behavior Institute (BoBI)
- Biomedical Engineering
- Chemical and Biomolecular 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
- Cullen College of Engineering
- Data Analytics in Student Hands (DASH), *Summer of Apps*
- Division of Research
- Earth and Atmospheric Sciences
- Electrical and Computer Engineering
- Engineering Technology
- Gerald D. Hines College of Architecture
- Health and Human Performance
- Hobby Center for Public Policy
- Honors College
- Industrial Engineering
- Mathematics
- Mechanical Engineering
- Medicine and Society Program
- Political Science
- Provost's Office
- Psychology
- Texas Obesity Research Center (TORC)

2014 BoBi POSTER PRESENTATIONS

The **Biology of Behavior Institute (BoBi)** promotes research directed at understanding animal behavior from four different perspectives:

1. The molecular, neural, and endocrine mechanisms of behavior,
2. The acquisition or development of the behavior with the organism,
3. The function of the behavior for the organism, and
4. The evolution of the behavior within and among species.

Faster progress and a more complete understanding of the biology of a behavior can only be achieved through the application of all four perspectives. Each single perspective informs the other three, and together they provide deep and intellectually satisfying insights into animal behavior. BoBi provides support for undergraduates to conduct full-time summer research experiences with faculty affiliated with the Institute.



Ola Alhatem
Mentored by Gregg Roman
Biology & Biochemistry

The ethanol binding protein *unc13* is regulator of ethanol sedation sensitivity in *Drosophila melanogaster*



Bisola Awotunde
Mentored by Brigitte Dauwalder
Biology & Biochemistry

Dopamine 2-like receptor Mutation and Male courtship

Omar Harmouche

Mentored by Gregg Roman
Biology & Biochemistry

Genetic Mapping of Exploration Using
Recombinant Inbred Populations



OMAR HARMOUCHE

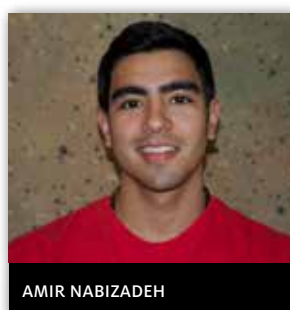


GREGG ROMAN

Amir Nabizadeh

Mentored by Gregg Roman
Biology & Biochemistry

Mapping the Neurons Required in *rutabaga*
Activity for Normal Levels of Habituation



AMIR NABIZADEH



GREGG ROMAN

Sina Rezaei

Mentored by Jason Eriksen
Pharmacology & Pharmaceutical Studies

Using FARSIGHT to Quantitatively Measure
Changes in the Neurovasculature of an
Alzheimer's Mouse Model



SINA REZAEI



JASON ERIKSEN

Khadeeja Tarique

Mentored by Gregg Roman
Biology & Biochemistry

Imaging ethanol induced changes in the
presynaptic activity of *Drosophila* olfactory
receptor neurons



KHADEEJA TARIQUE



GREGG ROMAN

2014 TORC POSTER PRESENTATIONS

Launched in the fall of 2007, the mission of the **Texas Obesity Research Center (TORC)** is to conduct basic and applied research in obesity prevention, treatment and control. TORC educates students in an interdisciplinary approach to topics related to obesity and its comorbidities. TORC collaborates with members of the University community, health professionals, and social agencies on projects related to obesity. TORC provides support for undergraduates to conduct full-time summer and part-time semester research experiences with faculty affiliated with the Center.

**Yanelly Alonso**

Mentored by Daphne Hernandez
Health & Human Performance

Body Composition Measures Among
Hispanic Mothers at Risk for Food Insecurity

**Ngan Ly**

Mentored by Tracey Ledoux
Health & Human Performance

Psychosocial Predictors of Excess
Gestational Weight Gain

2014 SUMMER OF APPS



SUMMER OF APPS PARTICIPANTS (LEFT TO RIGHT): GRACE SCHWARTZ, FATEMEH MIRGHASSEMI, SHERIE RUTER, DR. PEGGY LINDNER, SUNEIL TANDON, SASHA ICHOONSIGY, DR. DAN PRICE, CORBIN SPRING, CASEY HALL, JAIRO VERA, DAN VO, ISME CORREA, CHRIS ROBINSON, GABY CRUZ, ROBERT VO, CARLSON STEVEN
NOT PICTURED: NIKALA ASANTE, CHRISTIAN MADISON, TYLER SWENSEN

The inaugural project of Honors' new **Data Analytics in Student Hands (DASH)** program, the **Summer of Apps** gave 17 students the opportunity to work on five mobile apps for gathering and sharing data. They worked in small teams with specific community partners to implement projects for each organization. DASH will be able to host the Summer of Data next year, where students will face new challenges around analysis, visualization, and decision-making based on the data collected using the apps from this year.



Public Art on Campus translates a museum experience into an app, providing full interaction for adult tour groups, answers to follow-up questions, and educational components that teachers can share with students on group tours.



The **Farmers' Market** App was developed in conjunction with the Hilton College of Hotel and Restaurant Management, and provides guides to local Farmers' Markets, information about food prep and safety.



Local Leaves makes finding the perfect plant for your garden simple. This app finds compatible plants by including preferences for native species, wildlife and insect habitats, water conservation, and year-round beauty.



Volunteer Management designed apps for three end users: SHAPE Community Center, Bonner Buzz, and Habitat for Humanity, each tailored to the specific to the needs and aesthetics of each organization.



The **Healthy Homes** app is meant to make inspections easier by allowing inspectors to make their floor plans on a tablet using various tools to make the process faster and more efficient.

2014 EXTERNAL POSTER PRESENTATIONS

Karla Acosta

Mentored by Jay Neal, Sujata Sirsat

Hotel & Restaurant Management

Restaurant Food Safety Practices

Christopher Al-Jumah

Mentored by Ziad Quershi

Interior Architecture

Cavern: An Exploration in Intuitive Design and Human Comfort

Travis Alexander

Mentored by Mequanint Moges,
Engineering Technology

GROUP PROJECT 1: Team H.I.T.S.
Automated Pill Dispenser

Joey Almaguer

Mentored by Preethi Gunaratne
Biology & Biochemistry

Using Dictyostelium Discoideum as a Model Organism to Study Anticancer Drugs

Maneesh Anand

Mentored by Jeffrey Rimer

Chemical and Biomolecular Engineering

Mechanisms of Zeolite Analcime Crystallization and Dissolution

Dylan Bailey

Mentored by EunSook Kwon

Industrial Design

PowerClip

Evan Brass

Mentored by Mequanint Moges
Engineering Technology

GROUP PROJECT 1: Team H.I.T.S.
Automated Pill Dispenser

Timothy Burt

Mentored by Margaret Cheung
Physics

Heterogeneous $G\bar{\sigma}$ -model captures robust folding nucleus of wild-type LysM domain and circular variant

Matthew Caballero

Mentored by Gregory Marinic, Ziad Qureshi
Interior Architecture

Transcontinental Consumerism: Growth and
Development of Indoor Malls within Major U.S.
Cities, 1940-2010

Katrina Chan

Mentored by Ricardo Azevedo
Biology & Biochemistry

Analysis of Mutation Accumulation Experiments in
Tetrahymena Thermophila

Jeffrey Clark

Mentored by Jay Neal, Sujata Sirsat
Hotel & Restaurant Management

Food Safety Practices of Produce Processors

Steven Dang

Mentored by Margaret Cheung
Physics

A Network Model for Exome-Mediated Cancer
Immunity Communication

Denny Dao

Mentored by Daphne Hernandez
Health & Human Performance

Food Stamp Challenge: How Well Do Nutrition
Majors Fare on a Food Stamp Diet?

Minelya De León

Mentored by Gregory Marinic, Ziad Qureshi
Interior Architecture

Spatial Transformations: North American Consumer
Culture from Arcades to Shopping Malls

Nicholas Dias

Mentored by Yingchun Zhang
Biomedical Engineering

Manual Quality Improvement of a Finite Element
Bladder Model

Eric Diaz

Mentored by Mequanint Moges
Engineering Technology

GROUP PROJECT 1: Team H.I.T.S.
Automated Pill Dispenser

Robyn Douglas

Mentored by Hanako Yoshida
Psychology

The Effects of Bilingualism on Lexical Categorization
Abilities in 3-year-olds

Denitza Dramkin

Mentored by Hanako Yoshida
Psychology

Cultural Implications of Parental Rating Scales and
Their Predictive Nature on Tasks Assessing Executive
Functioning

Joseph Echavarria

Mentored by Gregory Marinic, Ziad Qureshi
Interior Architecture

Consumer Culture: Trends + Products + Malls

Cindy Elias

Mentored by Hanako Yoshida
Psychology

Dimensional Change Card Sort (DCCS)

Lenaya Flowers

Mentored by Margaret Cheung
Physics

Exploring Calmodulin's Role in Cell Proliferation,
Apoptosis, and Autophagy

Raphael Freas

Mentored by Mequanint Moges
Engineering Technology

GROUP PROJECT 1: Team H.I.T.S.
Automated Pill Dispenser

Kayode Gbadamosi

Mentored by Mequanint Moges
Engineering Technology

GROUP PROJECT 2: Integrated Control Unit System
Integrated Control Unit System (ICUS)

Eddie Gil

Mentored by Mequanint Moges
Computer Engineering Technology

Substation Security Drone

Arianne Gonzato

Mentored by Gregory Marinic, Ziad Qureshi
Interior Architecture

Consumer Culture: Trends + Products + Malls

Corinne Green

Mentored by Andrea Burrridge, Liz Richey, and
Timothy Nokes-Malach
College of Pittsburgh & Carnegie Mellon
University Learn Lab

Coding for Analogy and Self-Explanation in Math
Classrooms

Courtney Gremmel

Mentored by Norma Olvera
Educational Psychology

The Influence of Acculturation and Weight-Related
Teasing on Disordered Eating Behaviors in Hispanic
Preadolescent Girls

Matthew Heart

Mentored by Norma Olvera
Educational Psychology

Eating Attitudes and Behaviors in Minority
Preadolescent Girls

Corey Helfand

Mentored by Hanako Yoshida
Psychology

Now You See It, Now You Don't: The Effects of
Saliency and Labeling on Children's Early Word
Learning

Rodney Helm

Mentored by Margaret Cheung
Physics

Exploring co-evolution in a toy Potts Model of protein sequence selection

Joshua Hollie

Mentored by Gregory Marinic, Ziad Qureshi
Interior Architecture

Transcontinental Consumerism: Growth and Development of Indoor Malls within Major U.S. Cities, 1940-2010

Terence Jackson

Mentored by Mequanint Moges
Engineering Technology

GROUP PROJECT 2: Integrated Control Unit System
Integrated Control Unit System (ICUS)

Emily Keller

Mentored by Gregory Marinic, Ziad Qureshi
Interior Architecture

Dead Mall Syndrome: An Exploration of American Shopping Malls through the Lens of Time

Jaelyn Kelly

Mentored by Margaret Cheung
Physics

Leader cell influence on collective cell migration and alignment of motility forces

Matthew Kelly

Mentored by Samina Salim
Pharmacological & Pharmaceutical Sciences

Coping deficits in postpartum female rats

Eunjin Grace Kim

Mentored by Ziad Qureshi
Interior Architecture

Travelife: A Stable Life in a Mobile Family Home

Camden Kirkland

Mentored by Alexandre Freundlich
Physics

All That Glitters: Electrodeposition of Gold Front Contacts for High-Efficiency Solar Cells

Roni Kop

Mentored by Gregory Marinic, Ziad Qureshi
Interior Architecture

Dead Mall Syndrome: An Exploration of American Shopping Malls through the Lens of Time

Ton La, Jr.

Mentored by Ryan Kennedy
Political Science

The Politics of Fear: Biology, Environment, and Public Opinion

Jared Lindsey

Mentored by Mequanint Moges
Engineering Technology

GROUP PROJECT 2: Integrated Control Unit System
Integrated Control Unit System (ICUS)

Christina Luna

Mentored by Norma Olvera

Educational Psychology

Eating Attitudes and Behaviors in Minority
Preadolescent Girls

Maira Luna-Flores

Mentored by Hanako Yoshida

Psychology

Cultural Influences on Cognitive Task Performances:
A Study on 3-Year-Old Children from the U.S.,
Argentina, Vietnam, and China

Ana Mandic

Mentored by Margaret Cheung

Physics

The Thermodynamic & Intermediate State Properties
in Electrostatic Variants of the Reduced Model of an
RNA Pseudoknot

An Nguyen

Mentored by Mequanint Moges

Computer Engineering Technology

Substation Security Drone

David Nguyen

Mentored by Mequanint Moges

Computer Engineering Technology

Substation Security Drone

Tam Nguyen

Mentored by Jeffrey Rimer, Peter Vekilov

Chemical & Biomolecular Engineering

Investigation of Hematin-Antimalarial Drugs
Complexation in a Biomimetic Solvent

Mariana Paulo

Mentored by Adam Thrasher

Health & Human Performance

Haptic Guidance for Improving Postural Control in
Parkinson's Disease

Kevin Pham

Mentored by Roya Plauché

Interior Architecture

PetraTetra: an Experiential Installation from
Unorthodox Inspiration

Mike Prevot

Mentored by Mequanint Moges

Engineering Technology

GROUP PROJECT 2: Integrated Control Unit System
Integrated Control Unit System (ICUS)

Madeline Racine

Mentored by Norma Olvera

Educational Psychology

The Influence of Acculturation and Weight-Related
Teasing on Disordered Eating Behaviors in Hispanic
Preadolescent Girls

Rodolfo Reyes

Mentored by Mequanint Moges
Engineering Technology

GROUP PROJECT 1: Team H.I.T.S.
Automated Pill Dispenser

Cara Riffe

Mentored by Jokubas Ziburkus
Biology & Biochemistry

Adenosine A1 receptor agonist reduces mortality and improves social and hippocampal-based learning behavior in a model of Dravet syndrome

Victoria Rios

Mentored by Daphne Hernandez
Health & Human Performance

Stress and Depression among Food Insecure Hispanic Mothers in Southeast Houston, TX

Martin Rodriguez, Jr.

Mentored by Ziad Quershi
Interior Architecture

Gears: Minimizing the Effects of Life Displacement via Time and Day

Cody Ross

Mentored by Raresh Pascali
Engineering Technology

Adaptive Multifactor Routing with Constrained Data Sets

Fiorella Saavedra

Mentored by Daphne Hernandez
Health & Human Performance
Rebecca Lee, University of Arizona

The Impact of a Garden-Based Nutrition Education Curriculum on the Fruit and Vegetable Consumption Among Preschool Children

Francisco Salas

Mentored by Gregory Marinic, Ziad Qureshi
Interior Architecture

Mid-Continental Retail Typologies: Mapping Through the I-35/I-45 NAFTA Corridor

Adriana Salazar

Mentored by Michael Zvolensky
Psychology

Examination of Smoking Inflexibility as a Mechanism Linking Anxiety Sensitivity and Severity of Smoking Behavior among Trauma Exposed Smokers

Joseph Sanchez

Mentored by Mequanint Moges
Computer Engineering Technology

Substation Security Drone

Nancy Shenoi

Mentored by Rick A. Wetsel
University of Texas Health Science Center, Brown Foundation Institute of Molecular Medicine for the Prevention of Human Diseases

C5a and C3a Suppress Type 1 Interferon Beta Signaling

Francesca Sosa

Mentored by Gregory Marinic, Ziad Qureshi
Interior Architecture

Spatial Transformations: North American Consumer
Culture from Arcades to Shopping Malls

Ricardo Sosa

Mentored by Jeffrey Rimer
Chemical and Biomolecular Engineering

Rational Design of Peptides as Drugs Targeted for
Calcium Oxalate Kidney Stone Disease

Ana Sotelo

Mentored by Gregory Marinic, Ziad Qureshi
Interior Architecture

Mid-Continental Retail Typologies: Mapping Through
the I-35/I-45 NAFTA Corridor

Shelley Temple

Mentored by Daphne Hernandez
Health & Human Performance

Children's Physical Activity, Body Composition, and
Maternal Perceptions and Concerns of Children's
Weight Status

Paul Tidjon

Mentored by Mequanint Moges
Engineering Technology

GROUP PROJECT 2: Integrated Control Unit System
Integrated Control Unit System (ICUS)

Belen Turcios

Mentored by Norma Olvera
Educational Psychology

The Influence of Acculturation and Weight-Related
Teasing on Disordered Eating Behaviors in Hispanic
Preadolescent Girls

Michael Vo

Mentored by Mequanint Moges
Computer Engineering Technology

Substation Security Drone

Pascal Vo

Mentored by María Pérez
Hispanic Studies

Impact of Linguistic and Cultural Barriers on
Health Disparities for the Hispanic Population:
Implementation Issues

Peter Vu

Mentored by Bradley McConnell
Pharmacological & Pharmaceutical Sciences

Role of Gravin in Cardiac Hypertrophy

Carlyle Yarbough

Mentored by EunSook Kwon
Industrial Design

PANTO: Boundless Toasting

2014 ORAL PRESENTATIONS

Folayinka Alabi

Mentored by Imani Goffney, Steve Tozer,
Lisa Walker, Sam Whalen, Katonja Webb,
Martha Hebert

Curriculum & Instruction

Exploring Characteristics of High Performing
Principals at an Urban Leadership Program

Vicken Asadourian

Mentored by Ricardo Vilalta
Computer Science

Adapting Predictive Models for Cepheid Variable
Star Classification Using Linear Regression and
Maximum Likelihood

Roshawnci Nicole Blanton

Mentored by Lindita Camaj
Communication

Climate Change and Extreme Weather Patterns in
the News: Media Coverage of Katrina, Sandy, and
the Polar Vortex

Hui-Ling Chang

Mentored by Lorraine Reitzel
Educational Psychology

Sleep Inadequacy and Self-Rated Health among
Homeless Adults

Sarah Childress

Mentored by Lorraine Reitzel
Educational Psychology

Youth-Onset Homelessness, Mental Illness, and
Substance Use In Homeless Adults

Jorge Garza

Mentored by Lorraine Reitzel
Educational Psychology

Implementation and Evaluation of a Tobacco-Free
Workplace Program in Texas Community Mental
Health Facilities

Hantin Lam

Mentored by Michael Zvolensky
Psychology

Main and Interactive Effects of Past-month Alcohol
Consumption and Anxiety Sensitivity on Anxiety and
Depressive Symptoms of Hispanic/Latino School-age
Adolescents

April Lopez

Mentored by George Fox
Biology & Biochemistry

Genome Assembly of *Marinobacter* sp. P4B1 Per-
chlorate and Nitrate Reducer

Brandi Medina

Mentored by Anthony Timmins
Physics

Measurements of energy density at the Large
Hadron Collider at CERN

Antonio Mejia, Jr.

Mentored by Konstantinos Kostarelos
Petroleum Engineering

Characteristic Curvature Determination for Alkyl
Alkoxy Sulphate in Enhanced Oil Recovery Applica-
tion

Alexis Moisiuc

Mentored by Lorraine Reitzel
Educational Psychology

Subjective Social Status Determinants among
Homeless Adults

Minh Anh Nguyen

Mentored by Lorraine Reitzel
Educational Psychology

Clearing the air: Cessation treatment preferences
and barriers to quitting among light versus moder-
ate/heavy homeless smokers

Alexander Oderhowho

Mentored by MariVi Tejada-Simon
Pharmacological & Pharmaceutical Sciences

Stress and Pregnancy: Cognitive and Behavioral
deficits in offspring of stressed female mice

Hiroe Okamoto

Mentored by Lorraine Reitzel
Educational Psychology

Associations between Trait Mindfulness and Stress
among Homeless Adults

Marya Ortiz

Mentored by Michael Zvolensky
Psychology

Positive Subjective Effects of Alcohol Mediates
the Relationships between Anxiety Sensitivity and
Distress Tolerance and Past-month Alcohol Con-
sumption for Latino Adolescents: A Cross-cultural
Multi-group Mediation Analysis

JoAnn Sanchez

Mentored by Michael Zvolensky
Psychology

Behavioral-Cognitive Expressions of Anhedonic
Tendencies are Differentially Associated with the
Recent Consumption of Alcohol, Cigarette, and Mar-
ijuana among Latino and Non-Latino Adolescents: A
Multi-Measure Investigation

Eiman Siddiqui

Mentored by Justin Kirkland
Political Science

A Computational Approach to Studying Framing in
Political Rhetoric: A Case Study on School Shootings
and Issue Framing

Justin Stakutis

Mentored by Anthony Timmins
Physics

Centrality Dependence of Particle Collisions and
Quark Gluon Plasma Dynamics



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