



THE 28TH ANNUAL UNDERGRADUATE RESEARCH SYMPOSIUM

Friday, October 17, 2025
10 am - 2 pm
GSU Metcalf Ballroom

WELCOME TO BOSTON UNIVERSITY'S 28TH ANNUAL UNDERGRADUATE RESEARCH SYMPOSIUM!

We're thrilled to host you for this inspiring celebration of curiosity, innovation, and excellence. Today, we spotlight some of BU's brightest undergraduate minds and the dedicated faculty mentors who guide and support them in their research journeys.

This event highlights the impact of the **Undergraduate Research Opportunities Program (UROP)**, which helps students dive into groundbreaking, faculty-mentored research across every discipline at BU. From the arts to engineering, biology to international relations, if there's a question worth asking, our students are exploring it.

Let's celebrate the incredible work being done by these talented and dedicated student researchers. Enjoy and be inspired!

Phil Haberkern, Faculty Director, UROP

Melissa Johnson, Director, UROP

Molly Powers, Program Administrator, UROP

ACKNOWLEDGEMENTS

UROP is primarily supported by BU's Office of the Provost. We thank our Faculty Advisory Committee for their efforts in reviewing applications and supporting UROP in our mission. We also thank our students; we are inspired by your curiosity and commitment to discovery! Finally, we thank our faculty mentors for providing impactful learning environments for BU undergraduates, thus making UROP possible.



28TH ANNUAL

Undergraduate Research Symposium

Friday, October 17, 2025 | 10am - 2pm
Boston University, Metcalf Ballroom

SCHEDULE OF EVENTS

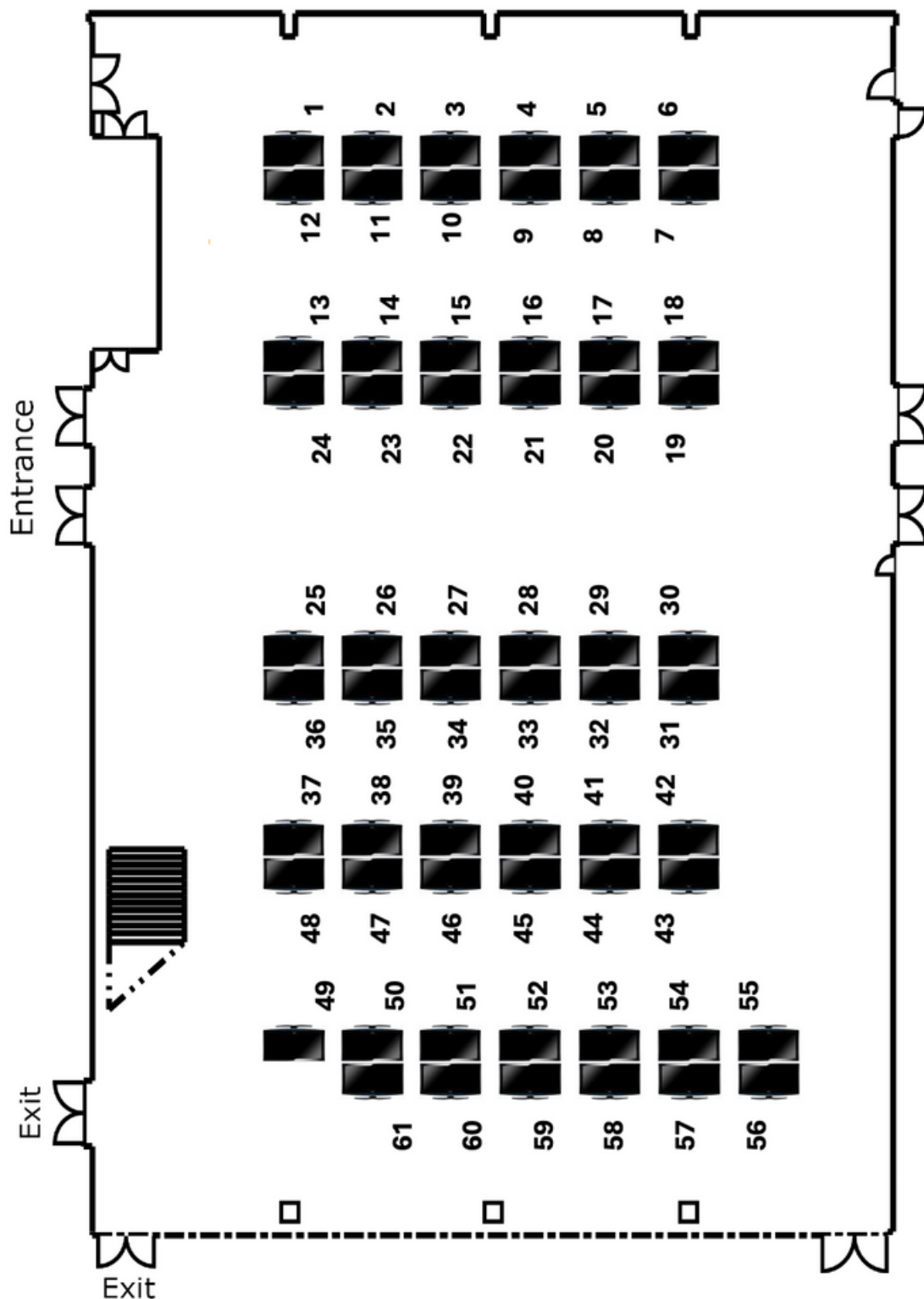
10 AM		Opening remarks
10 - 10:45 AM		Session 1 Presenters
10:45 - 11 AM		Transition
11 - 11:45 AM		Session 2 Presenters
11:45AM - 12PM		Transition
12 - 12:45PM		Session 3 Presenters
12:45 - 1PM		Transition
1 - 1:45PM		Session 4 Presenters

Additional thanks to our generous financial sponsors!

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Funds from faculty research grants
Mark and Ruth Nelson
National Science Foundation
New England BioLabs*

EVENT MAP

GSU METCALF BALLROOM



SESSION 1 — 10 – 10:45AM**Hafsa Ahmed**

RoboArt: Integrating Low-Cost Robotics and Visual Programming

Mentor: Sabrina Neuman

Poster Number: 1

Jueshan Ji

RoboArt: Integrating Low-Cost Robotics and Visual Programming

Mentor: Sabrina Neuman

Poster Number: 1

Paul Bae

Isolating and Culturing Methanotrophic Consortia from Chilean Methane Seeps

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Chelseigh Bond

Using RFID Tagging to Investigate Mortality and Behavior of River Herring in a Threatened Tribal Fishery

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Lara Bulut

Age-Related Differences in the Response to Tumor Necrosis Factor Alpha (TNF- α): Apoptosis vs. Necroptosis

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Ariya Chang

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Matthew Chen

CRISPR Detection of Urinary Circular RNAs for Prostate Cancer Diagnosis

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Andrew Chen

HMI-LNCRNA as a Novel Regulatory Target for Fetal Hemoglobin Induction in Sickle Cell Disease

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SESSION 1 — 10 – 10:45AM**Sarah Datta**

Extending Paleontological Methods with Machine Learning

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Sophia Donath

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Hiba Eddaif

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Emmanuella Erhunmwunsee

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Wahaaj Farah

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Kelly Fietz

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Sophia Francisco

Neuroplasticity linked to fear and safety learning across development

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Elisa Giuffrida

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SESSION 1 — 10 – 10:45AM**Can Gokmen**

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Ainsley Gray

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Yashvi Grover

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Reese Hotten-Somers

*The Comparative Gut Viromes of Wild Lowland (*Lagothrix tschudii*) and Yellow-tailed Woolly Monkeys (*Lagothrix flavicauda*)*

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Jack Hutchison

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Aleksandra Kimball

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Christian Lanier

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SESSION 1 — 10 – 10:45AM**Magdalena Lazowski**

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Arnav Mankad

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Sofia Marzullo

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Tayla McDonald

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Varoone Meduri

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Declan Nerney

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Mae Nest

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John Osmond

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Valentina Pannarale

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Joseph Pearlman

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Susanne Pompei

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Vivikta Rao

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Avani Rebbi

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Rinat Rizvanov

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Emma Sanchez

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Emma Santos

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Jerald Shin

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Will Stride

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Kayden Thomas

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Mentor: Cheryl Knott

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Charles Van Hook

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SESSION 1 — 10 – 10:45AM**Ella Wagner**

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Elaina Wang

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Tingyu Wang

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Yile Wu

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Kun Yan

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Sitong Yan

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Jimmy Zheng

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Linxuan Zhou

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Mentor: Marc Rysman

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Decoding Neural Dynamics from Movement Using Machine Learning

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Jennifer Alonzo Moreno

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Mentor: Jeffrey Considine

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Srikrishna Ammu

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Joshua Ayivor

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Etieneabasi Bassey

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Colin Boboce

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Mentor: Yves Atchade

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Madeline Bodor

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Mentor: Karen Allen

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Joely Brammer-DePuy

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Mark Castro

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Shelby Cavanaugh

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Nathan Chai

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Jasmine Chan

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Enoch Chang

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Ariane Chen

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Cameron Chieppo

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Sierra Koerber-Marx

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Julian Paris

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Sasiru Pathirana

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Patricio Rodriguez

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Taijah Chavis

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Karim Elzokm

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Zitong He

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Ely Hochfelder

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Shaotai Hu

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Ranbir Jain

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Sungah Kong

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Stef Linden

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Zhiwen Liu

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Maggie Ma

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Oluwatobi Oyinloye

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Filip Pajevic

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Divya Patel

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Mentor: Juan Fuxman-Bass

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SESSION 3 — 12 - 12:45PM**Esha Patel**

Deciphering the cellular mechanisms that drive clonal plasma cell derived-light chain induced cardiotoxicity

Mentor: Camille Edwards

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Abigail Rosario

Generations Apart: The Impact of Puerto Rican Residency in the United States on Identity and Perceptions of Latinidad

Mentor: Pamela Zabala Ortiz

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Sophia Schaffer

Bioinspired Underwater Robot for Multi-Modal Marine Exploration

Mentor: Tommaso Ranzani

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Jamila Rodriguez

Historic Geographies of Resistance: The 1948 Motorist Green Book and Contemporary State-Level Subjective Cognitive Decline

Mentor: Tanisha Hill-Jarrett

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Jonathan Sedarski

APOL1-Mediated Nephropathies in High-Risk African American Populations

Mentor: Jin Wei

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Lukas Shan

Development and Testing of an e-Dietary Fiber Tracker

Mentor: Nicola McKeown

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Chinmay Sharma

Reversals in Volatility Spillovers: Evidence from 2008 and 2025

Mentor: Andrea Vedolin

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Rishi Shetty

Serial Monitoring of Engineered Cartilage Growth Via Raman Spectroscopy

Mentor: Michael Albro

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SESSION 3 — 12 - 12:45PM**Katherine Smith**

*Genetic Structure and Dispersal Dynamics in *Radianthus magnifica* Anemones*

Mentor: Zoé Chamot

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Megan Suttell

Investigating Mycorrhizal Fungi Colonization Under Burned Conditions in California Oak Woodlands

Mentor: Jennifer Bhatnagar

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Amithi Tadigadapa

Investigating the Role of Hippocampal Astrocytic Activity in Trace Fear Conditioning

Mentor: Steve Ramirez

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Kumudha Tiriveedhi

Development of a Spiral Soft Balloon Actuator for Underwater Grasping

Mentor: Tommaso Ranzani

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Devansh Vajpayee

Forecasting Crop Yield Beyond the Black Box

Mentor: Changseung Yoo

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Kayla Valladares

The Effects of Circular RNAs After Lung Inflammation

Mentor: Yang Jin

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Ashleigh Washington

Does Neighborhood Context Influence Children's Beliefs About Social Mobility?

Mentor: Tara Mandalaywala

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Cameron Webb

Using National Forest Inventory Data to Advance Carbon Cycle Model-Data Assimilation

Mentor: Michael Dietze

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SESSION 3 — 12 - 12:45PM**Ellie Westphal**

2D Bilayer Model for Investigating Fibroblast-Epithelial Interactions

Mentor: Jeroen Eyckmans

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Fiona Winarto

Anthologizing Modern Japanese Literature: Literary Aesthetics as Expressions of Anxiety in Early-20th Century Fiction

Mentor: Sarah Frederick

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Julia Yankee

Site-Directed Mutagenesis of Keap1 Binding Site Residues to Elucidate Origins of Protein Stability

Mentor: Adrian Whitty

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Claire Zhang

Evaluating the Relationship between Household Composition, Household Stability, and Male Pubertal Development

Mentor: Carolyn Hodges-Simeon

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SESSION 4 — 1 - 1:45PM

Ocean Adhikari

Macroalgae decomposition stimulates benthic methane emissions under hypoxia

Mentor: Robinson Fulweiler

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Mehmet Akharman

Determination of The Expansion Rate of The Universe Through Early Universe Element Synthesis and Large-Scale Structure

Mentor: Hongwan Liu

Poster Number: 2

Sebastian Alfreds

Optimizing oxidation-responsive polymer coatings for a biocompatible, optically compatible, and drug-releasing chronically implanted medical device

Mentor: Tim O'Shea

Poster Number: 3

Emma Applegate

Environmental regulation of glucosinolate biosynthesis in Arabidopsis and related species

Mentor: Chip Celenza

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Seher Arora

Mobility Diplomacy: Negotiating Passport Power in the Gulf

Mentor: Noora Lori

Poster Number: 5

Hedaya Badr

Brown Fat Dysfunction Drives Metabolic Aging

Mentor: Nabil Rabhi

Poster Number: 6

Lauren Bell

Programmable B Cell Interactions Using Metal–Organic Framework–Hydrogel Depots

Mentor: Michelle Teplensky

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Yuvika Bhalla

Effects of Bromodomain Protein Inhibition on Pancreatic β -cell Function

Mentor: Jude Deeney

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SESSION 4 — 1 - 1:45PM**Kaivalya Bhatt**

Expanding Dependency-Layered Ontology for Radiation Oncology (DLORO) to Enhance Bayesian Network Models for Radiotherapy Treatment Plan Quality Assurance

Mentor: Samuel Luk

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Annabelle Brauer

Alternative JAK2/STAT3 signaling mechanisms linked to epilepsy in primary hippocampal rodent neurons

Mentor: Shelley Russek

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Ariel Brown-Ogha

Investigating the role of GPM6A in synaptic pruning and schizophrenia development

Mentor: Kim McCall

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Payton Bryant

Cryptic coral lineages exhibit differences in physiology

Mentor: Sarah Davies

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Reese Cargo

Impact of State Medicaid Policies on Health Disparities Across Income Groups

Mentor: Deborah Carr

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Ronald Chambergo

Assessment of a Computational Fluid Dynamics Code for Turbofan Fan-Stage Modeling

Mentor: Sheryl Grace

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Kyeongseo Choi

An Unidentified Conserved Density at Thr118 in Tissue-derived Transthyretin Amyloid Fibrils Suggests a Previously Unknown Glycosylation Site

Mentor: Olga Gursky

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SESSION 4 — 1 - 1:45PM**Zack Coombs**

Solar Proton Access into the Earth's Inner Magnetosphere and Atmosphere

Mentor: Wen Li

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Sean Cottrell

Viral Peptides Modulate Apoptosis Likely Through a p53-Dependent Mechanism

Mentor: Juan Fuxman Bass

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Lauren Dang

Developing an analysis pipeline to investigate the relationship between LFP oscillations and activity of CaMKII+ and PV+ neurons in post-stroke mice

Mentor: Xue Han

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Govind Devadoss

Toward Reliable Motion Analysis: A Comparison of Video and IMU-Based Tracking Approaches

Mentor: Claudio Ferre

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MaKenzie Elliott

Clearing the Cosmic Dust: Evaluating Milky Way Dust Maps for Type Ia Supernova Cosmology

Mentor: Dillon Brout

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Matthew Finnerly

The Woody Plant Preferences of Native Bees and Honey Bees

Mentor: Richard Primack

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Reetom Gangopadhyay

p2gNMF: A non-negative matrix factorization approach to identifying enhancer-gene regulatory links in individual cells

Mentor: Pawel Przytycki

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Shannon Ganoë

*Investigating the role of ATR1 uORF in regulating glucosinolate gene expression in *Arabidopsis thaliana**

Mentor: Chip Celenza

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SESSION 4 — 1 - 1:45PM**Tianyi Gao**

Modeling Ecological and Epidemiological Systems Using Predator-Prey Dynamics

Mentor: Matthew Moore

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Guthrie Harris

My Contributions to BU SSW Study on Implementation Strategies to Increase Hispanic Workers' Access to and Use of Paid Family and Medical Leave

Mentor: Pamela Joshi

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Payton Harvill

MIRACLS At CERN: Precision Collinear Laser Spectroscopy of Exotic Radioactive Nuclei

Mentor: Zeynep Demiragli

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Micaela Henry

Understanding the Social Worker's role in assisting LGBTQ Caribbeans in Massachusetts.

Mentor: Celeste Curington

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Lina Hinostroza

Validation of transgenic mouse lines for the targeting of spatially and transcriptionally distinct neuronal subpopulations in the lateral habenula

Mentor: Michael Wallace

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Joshua Holtzberg

Neural Mechanisms of Phonological Working Memory in Autism: An fMRI Study of Non-word Repetition

Mentor: Jennifer Zuk

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Chan Yu Huang

Semi-Automated Segmentation and Proofreading Accelerate Large-Scale Neural Circuit Reconstruction

Mentor: Jerry Chen

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SESSION 4 — 1 - 1:45PM**Monica Iordanov**

Spatiotemporal Characterization of Amyloidosis-Associated Microglial States During Alzheimer's Disease Progression

Mentor: Tuan Leng Tay

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Bradley Kang

Investigating the Cardiovascular Toxicity of Pyrethroid Insecticides

Mentor: Jennifer Schlezinger

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Anushka Kelshiker

Contact Localization of Forces exerted on a Soft Robotic Sleeve for Colonoscopy

Mentor: Sheila Russo

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Deborah Kim

Enhancing older adults' speech perception in noise using noninvasive brain stimulation

Mentor: Tyler Perrachione

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Alexia Koulikourdis

Analyzing Post-Stroke Pins n' Needles sensation for identifying Novel Transcranial Magnetic Stimulation (rTMS) therapy: "Map & Zap"

Mentor: James Lewis

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Pranjal Kumar

The Kalinga Blueprint: Transforming Bihar's Fight Against Human Trafficking

Mentor: Mohammad Zaman

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Xixuan Li

Assessing Wildfire Risk in Massachusetts Using Administrative Data

Mentor: David Demeritt

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Easton Liaw

Identifying the Pesticide Responsible for Kidney Injury: A Translational Investigation of Chronic Kidney Disease of Unknown Etiology (CKDu)

Mentor: Jie Zhang

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SESSION 4 — 1 - 1:45PM**Yufan Liu**

Linking Data and History: Demographic Shifts in Boston's North End

Mentor: James Pasto

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Lantz Martin

*Bioluminescent Bacterial Reporters for Studying Immune Response Variability in *Drosophila melanogaster**

Mentor: Zeba Wunderlich

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Callum Neher

Joint Dynamics in Global Precipitation and Vegetation Productivity Across Four Decades from Satellite and Climate Data

Mentor: Mark Friedl

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Bora Oo

Glial and Ciliary Morphological Changes in Apoer2 Exon 19 Splicing and APOE Isoforms in Alzheimer's Disease

Mentor: Angela Ho

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Leah Park

Impact of Intraoperative Crystalloid Use on Hemostasis in Severely Bleeding Trauma Patients

Mentor: Crisanto Torres

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Jessica Qiu

Development of Nonlinear Vibrational Imaging Systems for Chemical-Specific Microscopy

Mentor: Ji-Xin Cheng

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Tejas Rama

Quantified Multifactorial Analysis of Soccer Transfers: A Data-Driven Transfer Success Probability Mode

Mentor: Vidit Munshi

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Arya Reddy

Strategies Towards a Redox-Mediated, Cobalt-Catalyzed Semi-Hydrogenation of Alkynes

Mentor: Joseph Derosa

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SESSION 4 — 1 - 1:45PM**Fyn Rhoades**

The Future of Queer Storytelling: A Creative Model for Inclusive Filmmaking

Mentor: Scott Thompson

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Shirley Rodriguez

Design Optimization of Micropillars to Increase Displacement Signal in Microtissue Wound Healing

Mentor: Emma Lejeune

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Sharleen Sandhu

What is the Sikh Legacy?

Mentor: Benjamin Siegel

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Amirtha Santhosh

Beliefs About Social Mobility Across Shifting Social Contexts: Does Housing Context Shape the Development or Consequences of Children's Beliefs about the Likelihood of Upward Mobility?

Mentor: Tara Mandalaywala

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James Schipfer

*Cryptic Lineages and Disease Susceptibility in *Siderastrea siderea* Corals*

Mentor: Sarah Davies

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Zoe Solberg

Community Health Organization Resilience Amid Federal Funding Cuts

Mentor: Joseph Harris

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Avyukta Srikrishna

Development of a Low-Power Wireless Sensor Network for Real Time Bioreactor Monitoring

Mentor: Rabia Yazicigil

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Maria Steis

Constructing a CRISPR-Cas12a-Based VLP System for Multiplex Genomic Perturbation Using Transient Delivery

Mentor: Samagya Banskota

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SESSION 4 — 1 - 1:45PM**Carly Stiller**

Analysis of the Interactions Between eIF3c and eIF5 by NMR and their Role in Start Codon Selection Stringency

Mentor: Assen Marintchev

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Sumire Takeya

Developing Hydrogels as a Platform for Investigating Arterial Wrinkles

Mentor: Abigail Plummer

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Meghan Violet

Assessing the Feasibility of Utilizing Uprooted English Ivy (Hedera helix) for Supplemental Applications: A Study of Heavy Metal Accumulation in the G

Mentor: Nathan Phillips

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Abigail Wagner

Characterizing Reelin's Role in Learning and Memory

Mentor: Uwe Beffert

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Tyler Williams

A New Mo(pinF) Species and the Search for a Heterobimetallic Mo/V Species

Mentor: Linda Doerrer

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Kathleen Wyverson

Parents' Home Reading and Music Practices in relation to Subsequent Reading Skills among Preschoolers with and without Risk for Reading Difficulties

Mentor: Jennifer Zuk

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