

# UNDERGRADUATE RESEARCH POSTER EXHIBITION

**October 20, 2021** 

5:00 - 7:00 p.m.

Wilbur Cross North Reading Room

### Sponsored by the University of Connecticut

Office of Undergraduate Research Enrichment Programs



#### **About Frontiers in Undergraduate Research**

The Fall Frontiers Poster Exhibition is a multidisciplinary research forum showcasing undergraduate research, scholarship, and creative projects at the University of Connecticut. Fall Frontiers complements the longstanding spring Frontiers exhibition, providing an additional opportunity for UConn's student researchers to share their exciting work.

This is the ninth fall event sponsored by the Office of Undergraduate Research (OUR). This year's exhibition includes 47 students presenting posters for 45 research and creative projects at the in-person exhibition. 26 additional projects can be viewed in the online exhibition at ugradresearch.uconn.edu/fallfrontiers2021

Students' projects span the disciplines and include both independent research and work pursued in collaboration with other undergraduates. The projects presented reflect the invaluable contributions of research mentors, including graduate students, postdoctoral scholars, staff, and faculty members. We hope you enjoy meeting our wonderful students and learning about their innovative projects.

#### **About the Office of Undergraduate Research**

The Office of Undergraduate Research is a resource for students interested in enriching their undergraduate experience through participation in research, scholarship, and creative activity. The OUR provides information and advising to assist students in identifying relevant opportunities, as well as several funding programs to support the students and their faculty mentors.

Many of the Fall Frontiers presenters have received financial support for their projects from the OUR, which awarded over \$630,000 in 2020-21 in support of students' research and creative endeavors. These awards are funded by the Office of Undergraduate Research with generous support from the Office of the Provost, the Office of the Vice President for Research, the Deans of the schools and colleges, and private donations from alumni, parents, and other friends of UConn and undergraduate research.

#### 9th Annual Fall Frontiers Poster Exhibition

#### **Poster Exhibition**

Wednesday, October 20, 2021 5:00 p.m. – 7:00 p.m.

#### **Speaking Program**

5:30 p.m.

#### Welcome and Introductions

#### **Caroline McGuire**

Executive Director, Enrichment Programs, and Director, Office of Undergraduate Research

#### **Keynote Speaker**

#### Carl Lejuez

Provost and Executive Vice President for Academic Affairs, University of Connecticut

#### **Presentation of the Mentorship Excellence Awards**

#### 2020

**Laura Bunyan**, Assistant Professor in Residence, Sociology

**J. Peter Gogarten**, Distinguished Professor, Molecular and Cell Biology

**Samantha E. Lawrence**, Ph.D. Student, Human Development and Family Sciences

#### 2021

Bradley Wright, Professor, Sociology

**Beth Lawrence**, Assistant Professor, Natural Resources and the Environment

**Jessica Gutiérrez**, M.S. Student, Ecology and Evolutionary Biology

### **Closing Remarks**

#### Jennifer Lease Butts

Associate Vice Provost, Enrichment Programs, and Director, Honors Program

#### **Sequential Listing of Poster Presentations**

This listing of projects includes the undergraduate student authors and their faculty mentors. Please note that this is not a comprehensive listing of mentors: many projects also reflect the contributions and mentorship of dedicated graduate students, post-doctoral scholars, and research staff members. An alphabetical listing of presenters is included at the end of the program.

### 1. Fitbit-Derived and Self-Reported Sleep Quality and Gestational Weight Gain in Women with Overweight or Obesity

Lauren Rudin, Exercise Science

Advisor: Molly Waring, Associate Professor, Allied Health Sciences

### 2. Flexibility in Timing: The Uneven Meter of Romanian 'Soroc' Music

Maria Mandoiu, Music & Anthropology

Advisor: Daniel Goldberg, Assistant Professor in Residence, Music

#### 3. An Islamic Perspective on the Refusal of Treatment

Fatima Abu Bakr, Individualized Major: Medical Ethics and Genetics Advisor: Thomas Bontly, Associate Professor, Philosophy

#### 4. Keney Park Revitalization Project

Maddie Chasse, Urban and Community Studies & Ecology and Evolutionary Biology

Advisor: Phil Birge-Liberman, Associate Professor in Residence, Urban and Community Studies

### 5. An Analysis of Adherence and Barriers to Medication-Assisted Treatment (MAT) for Opioid Use Disorder in Connecticut

Abigail Leander, Allied Health Sciences

Advisor: Beth Russell, Associate Professor, Human Development and Family Sciences

### 6. The Role of Social-Information Processing in Same- Versus Cross-Race Bullying

Andrea Gonzalez Mendoza, Psychological Sciences & Women's, Gender, and Sexuality Studies

Advisor: Alaina Brenick, Associate Professor, Human Development and Family Sciences

### 7. Impact of Pain on Neurobehavioral Outcomes in Male vs. Female Preterm Infants

Kelsey MarcAurele, Nursing

Advisor: Xiaomei Cong, Professor, Nursing

### 8. The Effect of Casting Expectations on Racial Attitudes and Diversity in Superhero Film

Danielle Cross, Political Science & Psychological Sciences Advisor: Felicia Pratto, Professor, Psychological Sciences

## 9. Mental Wellbeing and Distress in a National Sample During the COVID Pandemic: A Longitudinal Study of Risk and Resilience Factors

Bo Wicklund, Psychological Sciences Advisor: Crystal Park, Professor, Psychological Sciences

## 10. Sexual and Gender Minorities' Lay Beliefs about the Effectiveness and Affordances of LGBTQ+ Student Groups that Prioritize Community or Activism Efforts

Marley Forbes, Psychological Sciences

Advisor: Kim Chaney, Assistant Professor, Psychological Sciences

### 11. The Senator and the Citizen: Comparing the Agendas of the U.S. Senate and Populace

Christian Chlebowski, Accounting

Advisor: Thomas Hayes, Associate Professor, Political Science

### 12. 3D Printing: Personalizing Drug Therapy for Diabetes

Lyla White, Pharmacy Studies

Advisor: Bodhi Chaudhuri, Professor, Pharmaceutical Sciences

#### 13. Socioemotional Learning for Sandy Hook

Melissa Nowak, Psychological Sciences & Human Development and Family Sciences

Advisor: Caitlin Lombardi, Assistant Professor, Human Development and Family Sciences

## 14. Evaluation of Predictive Models for Early Recognition of Pediatric Sepsis in the Emergency Department at Connecticut Children's Medical Center

Sharanya Chandu, Physiology and Neurobiology & Healthcare Management

Advisor: Richelle deMayo, Assistant Professor, Pediatrics Advisor: Andrew Heggland, Assistant Professor, Pediatrics & Emergency Medicine

### 15. Identifying the Impact of the Arp2/3 Complex on Cellular Senescence Signaling Pathways

Shirley Guo, Molecular and Cell Biology

Advisor: Kenneth Campellone, Associate Professor, Molecular and Cell Biology

### 16. Enhancing the Bactericidal Efficiency of Antimicrobial Peptides Through the Conjugation of Ru(II) Complexes

Nichali Bogues, Structural Biology and Biophysics Advisor: Alfredo Angeles-Boza, Associate Professor, Chemistry

### 17. Correlating Sex Steroid Hormones with Gene Expression in the Rat Lateral Amygdala

Shreya Patel, Physiology and Neurobiology & Psychological Sciences Advisor: Linnaea Ostroff, Assistant Professor, Physiology and Neurobiology

### 18. Differential Gene Analysis of Gustatory Receptors in Male vs Female *Drosophila melanogaster*

Jude Icoy, Physiology and Neurobiology Advisor: Karen Menuz, Associate Professor, Physiology and Neurobiology

### 19. Influence of B Chromosomes on Gene Expression in the *Drosophila melanogaster* Germline

Paulo Belato, Molecular and Cell Biology

Advisor: Stacey Hanlon, Assistant Professor, Molecular and Cell Biology

### 20. Physiological Correlates of Synaptic Dysfunction in Alzheimer's Model Mice

Aditi Jogdand, Biomedical Engineering

Advisor: Srdjan Antic, Associate Professor, Neuroscience

### 21. Analysis of Postnatal Neurogenesis in a Hydrocephalic Mouse Model

Sumeet Kadian, Molecular and Cell Biology & Individualized Major:

Healthcare and Society

Michael Martland, Molecular and Cell Biology

Nishant D'Souza, Nutritional Sciences

Amelia Mezger, Physiology and Neurobiology

Advisor: Joanne Conover, Professor, Physiology and Neurobiology

#### 22. Does Dyrk1a Kinase Phosphorylate KCNQ2 Channels?

Shenelle Shaw, Molecular and Cell Biology

Advisor: Anastasios Tzingounis, Professor, Physiology and

Neurobiology

### 23. The Impact of Microbial Interactions on Bacterial Physiology and Antibiotic Treatment Response

Stephanie Schofield, Molecular and Cell Biology

Advisor: Wendy Mok, Assistant Professor, Molecular Biology and

**Biophysics** 

### 24. Make it Green, Make it Simple: A New Approach to a Valuable Class of Molecules

William Brydon, Chemistry

Advisor: Nicholas Leadbeater, Associate Professor, Chemistry Advisor: Rachel O'Neill, Professor, Molecular and Cell Biology

Advisor: Mark Peczuh, Professor, Chemistry

### 25. Investigating CRK9 as a Potential Target of a Phase III Trial Drug for Human African Trypanosomiasis

Katherine Bohner, Molecular and Cell Biology

Advisor: Arthur Günzl, Professor, Genetics and Genome Sciences

### 26. Monoallelic Expression of the Variant Surface Glycoprotein in *Trypanosoma brucei*: Investigating the Role of Subunit CITFA7

Sarah Platt, Biological Sciences

Advisor: Arthur Günzl, Professor, Genetics and Genome Sciences Advisor: Aoife Heaslip, Assistant Professor, Molecular and Cell Biology

#### 27. Synthesis of Voltage Sensitive Dyes for Cell Imaging

Alexa Monroe, Molecular and Cell Biology

Advisor: Ping Yan, Assistant Professor, Center for Cell Analysis and Modeling

#### 28. Molecular Evolution of a Tension Sensor Module

Amy Flis, Structural Biology and Biophysics

Advisor: Yi Wu, Associate Professor, Genetics and Genome Sciences

### 29. Geometric and Chemical Properties Governing the Assembly of Molecular Machines

Maria Menoutis, Biomedical Engineering

Advisor: Leslie Loew, Distinguished Professor, Cell Biology

### 30. When Water and Oil Mix: How the Solubility of Cannabis Increases Its Therapeutic Potential

Phoebe Liou, Biological Sciences

Sarah Erlingheuser, Pharmacy Studies

Advisor: Neha Chavan, Oneness Technologies

#### 31. Efficient Pruning of Deep Neural Networks

Saumya Shah, Computer Science

Advisor: Caiwen Ding, Assistant Professor, Computer Science and

Engineering

#### 32. Black Hole Evolution over Cosmic Time Periods

Rei-Matthew Regala, Physics

Advisor: Jonathan Trump, Associate Professor, Physics

### 33. Development of 3D-Printed Membranes for the Production of Low-Carbon Intensity Biofuels

Rebecca Lee, Chemical Engineering

Advisor: Jeffrey McCutcheon, Professor, Chemical and Biomolecular Engineering

### 34. Modeling Drug Transport in Tumors Using Artificial Neural Network Surrogates

Samuel Degnan-Morgenstern, Chemical Engineering Advisor: Matthew Stuber, Assistant Professor, Chemical and Biomolecular Engineering

### 35. How Do Nitrous Oxide (N2O) Greenhouse Gas Emissions Vary Among Groundwater Seeps?

Fiona Liu, Ecology and Evolutionary Biology & Natural Resources and the Environment

Advisor: Ashley Helton, Associate Professor, Natural Resources and the Environment

### 36. Designing a Portable Particulate Matter Monitor

Shihao Zhai, Chemical Engineering

Advisor: Kristina Wagstrom, Associate Professor, Chemical and

Biomolecular Engineering

### 37. Exploring the Effect of Observational Parameters on the Core Mass Function in Molecular Clouds

Alexis DeMarco, Physics

Advisor: Cara Battersby, Assistant Professor, Physics

### 38. Improving Binary Millisecond Pulsar Distance Measurements with Gaia

Abigail Moran, Physics & Applied Mathematics

Advisor: Chiara Mingarelli, Assistant Professor, Physics

#### 39. Faces of Offshore Wind

Hope Dymond, Environmental Engineering

Advisor: Oksan Bayulgen, Associate Professor, Political Science

#### 40. Humidity Analysis on Conditions in a Lunar Habitat

Neel Chakravartty, Environmental Engineering

Advisor: Ramesh Malla, Professor, Civil and Environmental Engineering

### 41. Heat Analysis of Structural Walls Subjected to Extreme Temperatures on the Lunar Surface

Francesca Irish Esperida, Mechanical Engineering

Advisor: Ramesh Malla, Professor, Civil and Environmental Engineering

#### 42. Simulation and Shape Estimation of Deformable Objects

Rebecca Villanueva, Mechanical Engineering

Advisor: Ashwin Dani, Associate Professor, Electrical and Computer

Engineering

Advisor: Ramesh Malla, Professor, Civil and Environmental Engineering

### 43. Temperature-Dependent Optical Characterization of Sputtered Ge2Se2Te5 Thin Films by Multi-Wavelength Ellipsometry

Derek Lefcort, Electrical Engineering

Advisor: Helena Silva, Professor, Electrical and Computer Engineering

### 44. Mercury and Selenium Interactions in Aquatic Organisms: Global Trends and Human Health Implications

Chloe Zampetti, Natural Resources

Advisor: Jessica Brandt, Assistant Professor, Natural Resources and the Environment

### 45. The Development of Infographics to Communicate Risk of Ultrafine Particle Air Pollution

Kynza Khimani, Physiology and Neurobiology & Individualized Major: Global Health

Janet Wang, Chemistry

Advisor: Doug Brugge, Professor, Public Health

### **Alphabetical Listing of Presenters with Poster Numbers**

#### **Special Thanks**

The Office of Undergraduate Research wishes to thank the deans of the represented schools and colleges, the Office of the Provost, the Office of the Vice President for Research, and the generous donors to Enrichment Programs and to the Honors Program for their support of undergraduate research.

We thank the student volunteers for the Fall Frontiers Poster Exhibition, without whom this event would not be possible. We also acknowledge the Peer Research Ambassadors from past years who served on the committees that selected the recipients of the 2020 and 2021 Mentorship Excellence Awards.

In addition, we thank the following individuals for their support:

Andrew Agwunobi, Interim President, University of Connecticut

Carl Lejuez, Provost and Executive Vice President for Academic Affairs

Michael Bradford, Vice Provost for Faculty, Staff, and Student Development

Jennifer Lease Butts, Associate Vice Provost, Enrichment Programs and Director, Honors Program

#### Office of Undergraduate Research

#### Staff

Caroline McGuire, Executive Director, Enrichment Programs and Director, Office of Undergraduate Research

Melissa Berkey, Assistant Director

Liza Boritz, BOLD Program Director and Advisor

Jodi Eskin, Program Coordinator and Advisor

Rowena Grainger, Assistant Director for Research and Fellowship Programs, Enrichment Programs

#### Peer Research Ambassadors

Michelle Antony '23 (CLAS)

Poorna Balakumar '23 (CLAS, CAHNR)

Alex Clonan '22 (ENG)

Claire Fresher '22 (ENG)

Kynza Khimani '22 (CLAS)

Mahima Mehta '22 (CLAS)

Lauren Rudin '22 (CAHNR)

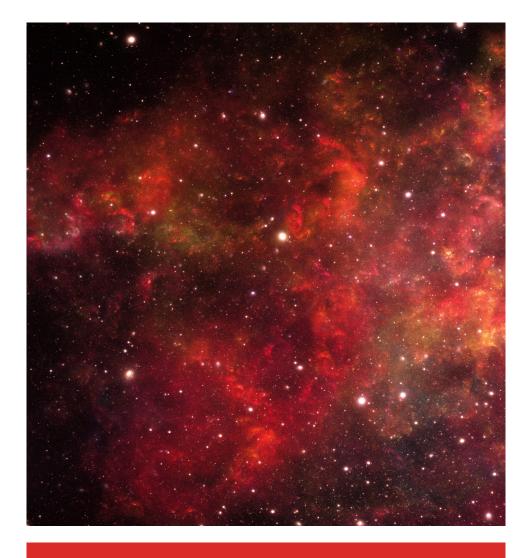
Stephanie Schofield '23 (CLAS)

Elisa Shaholli '23 (CLAS)

Drew Tienken '22 (CLAS)

Humza Zaidi '22 (CLAS)

Chloe Zampetti '22 (CAHNR)



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