9th Annual
FALL FRONTIERS
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 Chakravarty, 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
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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)
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Claire Fresher ’22 (ENG)
Kynza Khimani ’22 (CLAS)
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Lauren Rudin ’22 (CAHNR)
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Drew Tienken ’22 (CLAS)
Humza Zaidi ’22 (CLAS)
Chloe Zampetti ’22 (CAHNR)