Welcome to the 2020 Fall Frontiers Online Exhibition! Like most aspects of the fall semester, Fall Frontiers looks different in 2020. As we cannot gather safely in person to see students present their research and creative projects, we invited students to submit posters and short video presentations for compilation in this exhibition program. Links to those materials, hosted on the Portfolium e-portfolio platform, are included in the program alongside the individual project listings.

In addition to viewing and commenting on the projects in Portfolium, we invite you to participate in two live, online presentation sessions to hear from student researchers and ask questions about their projects and experiences. Details about the live sessions are available on page 3 of this program.

We thank students, faculty mentors, and staff colleagues for their patience, support, and positivity as Fall Frontiers moved online. We are pleased to have this opportunity to celebrate students’ ideas, questions, explorations, discoveries, and creations in a form that keeps UConn Nation safe, healthy, and connected.

- UConn Office of Undergraduate Research

About Frontiers in Undergraduate Research

The Fall Frontiers Poster Exhibition is a multidisciplinary 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 student researchers to share their exciting work. This is the eighth fall event sponsored by the Office of Undergraduate Research (OUR) and the first held online. This year’s exhibition includes 35 undergraduate students sharing research and creative projects.

Students’ projects span the disciplines. The projects presented reflect the invaluable contributions of research mentors, including graduate students, postdoctoral scholars, staff, and faculty members. We hope you enjoy learning about our students’ innovative projects at this year’s online exhibition!

About the Office of Undergraduate Research

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

Many of the Frontiers presenters have received financial support for their projects; OUR awarded over $620,000 in 2019-20 in support of students’ research and creative endeavors. These awards are funded by OUR 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 donations from alumni, parents, and other friends of UConn and undergraduate research.
Acknowledgments

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 generous donors to OUR and the Honors Program for their support of undergraduate research through contributions to OUR funding programs. In addition, we thank the following individuals for their support:

**Thomas C. Katsouleas**  
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 for Enrichment Programs & Director of the Honors Program

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Health Research Program Manager

**PEER RESEARCH AMBASSADORS**

Alexandra Bettencourt ’21 (CAHNR)  
Mukund Desibhatla ’21 (CLAS)  
Claire Fresher ’22 (ENG)  
Brendan Hogan ’21 (CLAS)  
Anisha Jain ’21 (CAHNR)  
Pavitra Makarla ’21 (CLAS)

Kerry Morgan ’21 (CLAS, CAHNR)  
Shreya Murthy ’21 (CLAS, BUS)  
Oreoluwa Olowe ’21 (ENG)  
Ariana Rojas ’21 (CLAS)  
Sarah Tsuruo ’21 (CLAS)  
Lily Zhong ’21 (CLAS)
PROVOST'S REMARKS
We invite all student presenters and audience members to view remarks made on the occasion of the 2020 Fall Frontiers Exhibition by UConn’s Provost and Executive Vice President for Academic Affairs, Carl Lejuez. View the message from Provost Lejuez at s.uconn.edu/ff2020remarks

LIVE PRESENTATION SESSIONS
Monday, October 26, 2020 • 6:00-7:00pm
s.uconn.edu/ff2020live1

Annika Benedetti ’21 (Natural Resources, CAHNR)
Effects of an Increased Density Treatment on Tadpole Development during Frog Virus 3 Epidemics

Caroline Hebert ’21 (Speech, Language, and Hearing Sciences & Cognitive Science, CLAS)
Effects of Language Experience on Spontaneous Counting as an Augmentative Tool for Mapping

Jacob Krucinski ’24 (Computer Science and Engineering, ENG)
Machine Learning for Missile Streak Tracking

Sarah Platt ’22 (Biological Sciences, CLAS)
Sow, Grow, Savor: An Intergenerational Edible Gardening Program

Calli Smith ’21 (Cognitive Science, CLAS)
Effects of Presentation Contrast and Response Hand on Phoneme Perception

Thursday, October 29, 2020 • 5:00-6:00pm
s.uconn.edu/ff2020live2

Jolene Addi ’21 (Psychological Sciences, CLAS)
The Microbiota-Gut-Brain Axis: Intestinal Inflammation and Psychological Disorders

Kerry Morgan ’21 (Molecular and Cell Biology, CLAS; Allied Health Sciences, CAHNR)
The Effects of Altered FGF8 Signaling on Atoh1 Expression in the Cerebellum

Aidan Riley ’21 (Biomedical Engineering, ENG)
Island Genetic Algorithms for Parameter Estimation in the COPASI Software

Danielle Schwartz ’20 (Ecology and Evolutionary Biology, CLAS)
How Does Habitat Fragmentation Affect Resource Use by Bark Foraging Birds? A Systematic Map

Joseph Tracey ’21 (Materials Science and Engineering, ENG)
Materials VR Incorporated: A VR Materials Characterization Laboratory
VIEWING PROJECTS IN PORTFOLIUM

The following controls are available to you when viewing projects in Portfolium.

**Standard View**
- Move between pages in a multi-page document
- Zoom in or out
- Scroll to the previous slide (project component)
- Scroll to the next slide (project component)

**Fullscreen View**
- Move between pages in a multi-page document
- Zoom in or out
- Scroll to the previous slide (project component)
- Scroll to the next slide (project component)
- Show fullscreen slide
- Exit fullscreen view
- Scroll between slides (project components)
STUDENT PROJECTS
The Microbiota-Gut-Brain Axis: Intestinal Inflammation and Psychological Disorders
Jolene Addi ’21 (Psychological Sciences, CLAS), McNair Scholar
Advisor: Sarah Hird, Assistant Professor, Molecular and Cell Biology
Supported by: McNair Scholars Program
Online Materials: https://portfolium.com/entry/the-microbiota-gut-brain-axis

Effects of an Increased Density Treatment on Tadpole Development during Frog Virus 3 Epidemics
Annika Benedetti ’21 (Natural Resources, CAHNR), LSAMP Scholar
Advisor: Tracy Rittenhouse, Associate Professor, Natural Resources and the Environment
Supported by: SURF Award
Online Materials: https://portfolium.com/entry/effects-of-increased-density-on-epidemics

America’s Faltering Progress Towards Universal Healthcare
Andrew Bogatz ’23 (History & Sociology, CLAS)
Advisor: Michael Wallace, Professor, Sociology
Supported by: SHARE Award
Online Materials: https://portfolium.com/entry/us-faltering-progress-towards-univ-healthcare

Race and Gender in Juvenile Justice: Experimental Evidence on Bias
Jennifer Cooney ’22 (Political Science & Human Rights, CLAS)
Advisor: Virginia Hettinger, Associate Professor, Political Science
Supported by: SHARE Award

Characterization of Ribosomal Frameshifting Elements and their Mechanisms
Samantha DePalma ’21 (Biological Sciences, CLAS)
Advisor: Jean Denis Beaudoin, Assistant Professor, Genetics and Genome Sciences
Supported by: Health Research Program
Online Materials: https://portfolium.com/entry/characterization-of-ribosomal-frameshifts

Percent Composition of Anthropogenic Material in Terrestrial Bird Nests of Connecticut
Hannah Desrochers ’20 (Natural Resources, CAHNR)
Advisor: Morty Ortega, Associate Professor, Natural Resources and the Environment
Supported by: UConn IDEA Grant
Online Materials: https://portfolium.com/entry/desrochers-fall-frontiers-2020

Exploration of Automated Image Analysis in iPSC Derived Neural Crest Cells
Isaac Faustino ’21 (Molecular and Cell Biology, CLAS)
Advisor: Stefan Pinter, Assistant Professor, Genetics and Genome Sciences
Supported by: Health Research Program

Molecular Approaches to Investigating Genetic Responses to Environmental Variability: Beluga Whales in the Arctic
Alexandra Frenzel ’21 (Marine Sciences, CLAS)
Advisors: Ann Bucklin, Professor, Marine Sciences; Ebru Unal, Assistant Professor in Residence, Marine Sciences
Supported by: SURF Award
Online Materials: https://portfolium.com/entry/molecular-approaches-to-gene-expression
Books For Kids, By Kids
Ellen Fuller ’22 (Chemistry Education, ED; IMJR: Speculative Fiction for Young Audiences, CLAS)
Advisor: Sean Forbes, Assistant Professor in Residence, English
Supported by: UConn IDEA Grant
Online Materials: https://portfolium.com/entry/books-for-kids-by-kids

Finding RNA G-Quadruplexes Within the SARS-CoV-2 Genome
Nitanta Garag ’23 (Biomedical Engineering, ENG)
Advisor: Jean Denis Beaudoin, Assistant Professor, Genetics and Genome Sciences
Supported by: Health Research Program
Online Materials: https://portfolium.com/entry/rna-g-quadruplexes-within-the-sars-cov-2-genome

Genetic Inactivation of the Arp2/3 Complex Results in Mitophagy Defects, DNA Damage, Micronucleus Biogenesis, and Cell Senescence
Elena Haarer ’20 (Molecular and Cell Biology, CLAS)
Advisor: Kenneth Campellone, Associate Professor, Molecular and Cell Biology
Supported by: SURF Award, UConn IDEA Grant

Effects of Language Experience on Spontaneous Counting as an Augmentative Tool for Mapping
Caroline Hebert ’21 (Speech, Language, and Hearing Sciences & Cognitive Science, CLAS)
Advisor: Marie Coppola, Associate Professor, Psychological Sciences & Linguistics
Supported by: SURF Award – Treibick Scholar
Online Materials: https://portfolium.com/entry/effects-of-language-experience-on-counting

Investigating Reading and Language Phenotypes through FOXP2 Genetic Variants
Katie Hooker ’23 (Molecular and Cell Biology, CLAS), Holster Scholar
Advisor: Nicole Landi, Associate Professor, Psychological Sciences
Supported by: Holster Scholars Program
Online Materials: https://portfolium.com/entry/foxp2-reading-and-language

Extending Mechanotransduction Models to the Development of a Novel Tension Sensor
Sarah Kricheff ’20 (Molecular and Cell Biology, CLAS)
Advisor: Yi Wu, Associate Professor, Genetics and Genome Sciences
Supported by: SURF Award – The Coric Family Summer Undergraduate Research Award
Online Materials: https://portfolium.com/entry/development-of-a-novel-tension-sensor

Machine Learning for Missile Streak Tracking
Jacob Krucinski ’24 (Computer Science and Engineering, ENG)
Advisor: Krishna Pattipati, Distinguished Professor, Electrical and Computer Engineering
Online Materials: https://portfolium.com/entry/machine-learning-for-missile-streak-tracking

Partners in Crime: Identifying Potential Biases in K-9 Units
Emily Lucke ’23 (Political Science, CLAS)
Advisor: Kimberly Bergendahl, Associate Professor in Residence, Political Science
Supported by: SHARE Award
Online Materials: https://portfolium.com/entry/partners-in-crime
Camptodactyly-Arthropathy-Coxa Vara-Pericarditis Syndrome and Juvenile Idiopathic Arthritis: Connections to Proteoglycan-4
Ciri Miller ’21 (Biological Sciences, CLAS)
Advisor: Tannin Schmidt, Associate Professor, Biomedical Engineering
Supported by: Health Research Program
Online Materials: https://portfolium.com/entry/cacp-syndrome-and-jia-connections-to-prg4

The Effects of Altered FGF8 Signaling on Atoh1 Expression in the Cerebellum
Kerry Morgan ’21 (Molecular and Cell Biology, CLAS; Allied Health Sciences, CAHNR), University Scholar
Advisor: James Li, Professor, Genetics and Genome Sciences
Supported by: Health Research Program, Institute for the Brain and Cognitive Sciences (IBACS) Undergraduate Research Grant
Online Materials: https://portfolium.com/entry/mechanisms-of-development-in-granule-cells

Attitudes and Beliefs About the Impact of Aerobic Compared to Resistance Exercise Training on Cardiometabolic Health
Shiv Patel ’22 (Allied Health Sciences, CAHNR)
Advisor: Jeanne McCaffery, Associate Professor, Allied Health Sciences
Supported by: SURF Award
Online Materials: https://portfolium.com/entry/views-on-exercise-affecting-cardiometabolic-health

The Effect of Specific Musical Experience on Non-Native Speech Sounds Learning: Preliminary Data
Matthew Phillips ’22 (Speech, Language, and Hearing Sciences & Psychological Sciences, CLAS)
Advisor: Emily Myers, Associate Professor, Speech, Language, and Hearing Sciences & Psychological Sciences
Supported by: Institute for the Brain and Cognitive Sciences (IBACS) Undergraduate Research Grant
Online Materials: https://portfolium.com/entry/musical-experience-and-non-native-speech-learning

Sow, Grow, Savor: An Intergenerational Edible Gardening Program
Sarah Platt ’22 (Biological Sciences, CLAS)
Advisor: Julia Cartabiano, Manager, Spring Valley Student Farm
Supported by: UConn IDEA Grant
Online Materials: https://portfolium.com/entry/sow-grow-savor-intergenerational-edible-garden

Magnitude Comparison and Arithmetic Skills: Effects of Language Experience in Typically Hearing, Deaf, and Hard of Hearing Children
Maryann Quigley ’20 (Speech, Language, and Hearing Sciences, CLAS)
Advisor: Marie Coppola, Associate Professor, Psychological Sciences & Linguistics
Supported by: SURF Award
Online Materials: https://portfolium.com/entry/effect-of-language-on-magnitudecomp-and-arithmetic

Island Genetic Algorithms for Parameter Estimation in the COPASI Software
Aidan Riley ’21 (Biomedical Engineering, ENG)
Advisor: Pedro Mendes, Professor, Center for Quantitative Medicine
Supported by: Health Research Program
Online Materials: https://portfolium.com/entry/island-genetic-algorithm-for-parameter-estimation

Characteristics of Pooled Trips Offered by Ridesourcing Services in Chicago
Lauren Romeo ’21 (Civil Engineering, ENG; Economics, CLAS)
Advisors: Carol Atkinson-Palombo, Associate Professor, Geography; Norman Garrick, Professor, Civil and Environmental Engineering
Online Materials: https://portfolium.com/entry/characteristics-of-pooled-ridesourcing-trips
Environmental Ethics: An Intensive One-Semester Introduction for High School Students  
Robin Rouleau ’22 (Philosophy & Linguistics/Psychology, CLAS), Holster Scholar  
Advisor: Thomas Bontly, Associate Professor, Philosophy  
Online Materials: https://portfolium.com/entry/environmental-ethics-7

How Does Habitat Fragmentation Affect Resource Use by Bark Foraging Birds? A Systematic Map  
Danielle Schwartz ’20 (Ecology and Evolutionary Biology, CLAS)  
Advisor: Chris Elphick, Professor, Ecology and Evolutionary Biology  
Supported by: SURF Award  
Online Materials: https://portfolium.com/entry/resource-use-by-bark-foraging-birds-in-fragments

Family and School Belongingness: Protective Factors for Immigrant Youth Against Bias-Based Bullying  
Sameena Shah ’20 (Molecular and Cell Biology, CLAS)  
Advisor: Alaina Brenick, Associate Professor, Human Development and Family Sciences  
Supported by: SURF Award  
Online Materials: https://portfolium.com/entry/protective-factors-bias-based-bullying

Effects of Presentation Contrast and Response Hand on Phoneme Perception  
Cali Smith ’21 (Cognitive Science, CLAS)  
Advisor: Adrian Garcia-Sierra, Assistant Professor, Speech, Language, and Hearing Sciences  
Supported by: SHARE Award  

School-Based Discriminatory Victimization of Transgender and Gender Non-Binary (T&GN) Youth: Students’, Parents’, and School-Staff’s Evaluations of and Perceived School Climate for T&GN Youth  
Abby Stepka ’21 (Human Development and Family Sciences, CLAS)  
Advisor: Alaina Brenick, Associate Professor, Human Development and Family Sciences  
Supported by: SHARE Award  
Online Materials: https://portfolium.com/entry/school-based-victimization-of-transgender-students

Effects of Restricted Maternal Diet Followed by Re-alimentation on Fetal Mitochondrial Biogenesis in Liver and Muscle Tissue of Sheep  
Gabriella Sulpizi ’20 (Animal Science, CAHNR)  
Advisor: Kristen Govoni, Associate Professor, Animal Science  
Supported by: OUR Supply Award  
Online Materials: https://portfolium.com/entry/restricted-diet-and-fetal-mitochondrial-biogenesis

Investigating the Effects of Perceived Inadequate Cultural Space on Minority Students in a University Setting  
Noor Taweh ’21 (Physiology and Neurobiology & Human Rights, CLAS), BOLD Scholar  
Advisor: Leigh Fine, Assistant Director for Residential Communities and Programming, Honors Program  
Supported by: BOLD Women’s Leadership Network Program  
Online Materials: https://portfolium.com/entry/bold-somewhere-in-the-middle

Materials VR Incorporated: A VR Materials Characterization Laboratory  
Joseph Tracey ’21 (Materials Science and Engineering, ENG)  
Advisor: Jasna Jankovic, Assistant Professor, Materials Science and Engineering  
Supported by: UConn IDEA Grant  
Online Materials: https://portfolium.com/entry/vr-materials-characterization-laboratory
Growing Up in a Racialized Environment: Risk and Protective Factors in the Development of Youth of Color
Irma Vivar ’21 (Human Development and Family Sciences & Psychological Sciences, CLAS)
Advisor: Annamaria Csizmadia, Associate Professor, Human Development and Family Sciences
Supported by: SHARE Award
Online Materials: https://portfolium.com/entry/growing-up-in-a-racialized-environment

Omnes Viae: An Analysis of Cultural Paradigms through Translational Interpretations of the Catullus Anthology
Jacob Webber ’22 (Classics and Ancient Mediterranean Studies, Linguistics/Philosophy, & Anthropology)
Advisor: Joseph McAlhany, Assistant Professor, History
Supported by: UConn IDEA Grant
Online Materials: https://portfolium.com/entry/analysis-of-cultural-paradigms-through-translation

Ruin in Process
Rhiannon Zergiebel ’21 (Art, SFA)
Advisor: John O’Donnell, Associate Professor, Art and Art History
Supported by: SHARE Award
Online Materials: https://portfolium.com/entry/ruin-in-process