

[UGRADRESEARCH.UCONN.EDU/FALLFRONTIERS2020](http://UGRADRESEARCH.UCONN.EDU/FALLFRONTIERS2020)

**UConn**

ENRICHMENT PROGRAMS

OFFICE OF  
UNDERGRADUATE RESEARCH

# FALL FRONTIERS

UNDERGRADUATE RESEARCH ONLINE EXHIBITION

# 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

## OFFICE OF UNDERGRADUATE RESEARCH STAFF

**Caroline McGuire**

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

**Melissa Berkey**

Assistant Director

**Liza Boritz**

BOLD Program Director

**Jodi Eskin**

Program Coordinator

**Rowena Grainger**

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)

# Event Program



## 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](https://s.uconn.edu/ff2020remarks)

## LIVE PRESENTATION SESSIONS

Monday, October 26, 2020 • 6:00-7:00pm

[s.uconn.edu/ff2020live1](https://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](https://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*

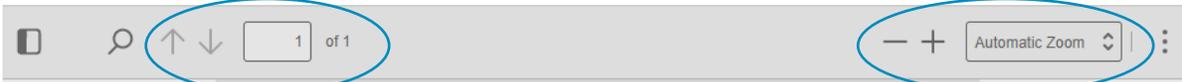
# VIEWING PROJECTS IN PORTFOLIUM

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

Move between pages in a multi-page document

## Standard View

Zoom in or out



Scroll to the previous slide (project component)



Scroll to the next slide (project component)



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Research Connections: A Collaborative Event to Build Curiosity About Research

Show fullscreen slide

Move between pages in a multi-page document

## Fullscreen View

Zoom in or out



Scroll to the previous slide (project component)

Scroll to the next slide (project component)



Scroll between slides (project components)

Exit fullscreen view



# 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

Online Materials: <https://portfolium.com/entry/race-and-gender-in-juvenile-justice>

### **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

Online Materials: <https://portfolium.com/pp/B4E3F871-DBF1-4093-9E48-9FBA5C424C3F>

### **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

Online Materials: <https://portfolium.com/pp/C8210E2D-8E97-4E3A-99AE-13529B1B1FC7>

### **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**

Calli Smith '21 (Cognitive Science, CLAS)

Advisor: Adrian Garcia-Sierra, Assistant Professor, Speech, Language, and Hearing Sciences

Supported by: SHARE Award

Online Materials: <https://portfolium.com/entry/effects-of-presentation-contrast-and-response-hand>

**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>

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