

UGRADRESEARCH.UCONN.EDU/FALLFRONTIERS2022

UConn

ENRICHMENT PROGRAMS

OFFICE OF
UNDERGRADUATE RESEARCH

FALL FRONTIERS

UNDERGRADUATE RESEARCH ONLINE EXHIBITION

Welcome

to the 2022 Fall Frontiers Online Exhibition! In addition to a traditional poster exhibition at Storrs, we invited students to submit posters and short video presentations for compilation in this online exhibition program. Links to those materials, hosted on the Portfolium e-portfolio platform, are included in the program alongside the individual project listings.

We invite you to view and comment on the projects in Portfolium; we hope that you will engage with new concepts and possibilities through the materials students have shared to document their learning. We are pleased to have this opportunity to celebrate students' ideas, questions, explorations, discoveries, and creations in multiple modalities this year.

- 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 tenth fall event sponsored by the Office of Undergraduate Research (OUR) and the second held in a hybrid format. This year's exhibition includes 77 projects shared in person and 6 shared online.

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 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 \$560,000 in 2021-22 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:

Radenka Maric

President, University of Connecticut

Anne D'Alleva

Interim Provost and Executive Vice President for Academic Affairs

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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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Rowena Grainger

Assistant Director for Research & Fellowship Programs, Enrichment Programs

PEER RESEARCH AMBASSADORS

Michelle Antony '23 (CLAS)

Anabelle Bergstrom '25 (CLAS)

Erik Choi '23 (CLAS)

Alex Clonan '22 (ENG)

Kira Cuneo '23 (ENG)

Alyssa Daniels '23 (CLAS)

Alexandra Goldhamer '23 (CLAS)

Paul Isaac '23 (CLAS, CAHNR)

Jerome Jacobs '23 (CAHNR)

Ayushi Patel '23 (CLAS)

Stephanie Schofield '23 (CLAS)

Elisa Shaholli '23 (CLAS)

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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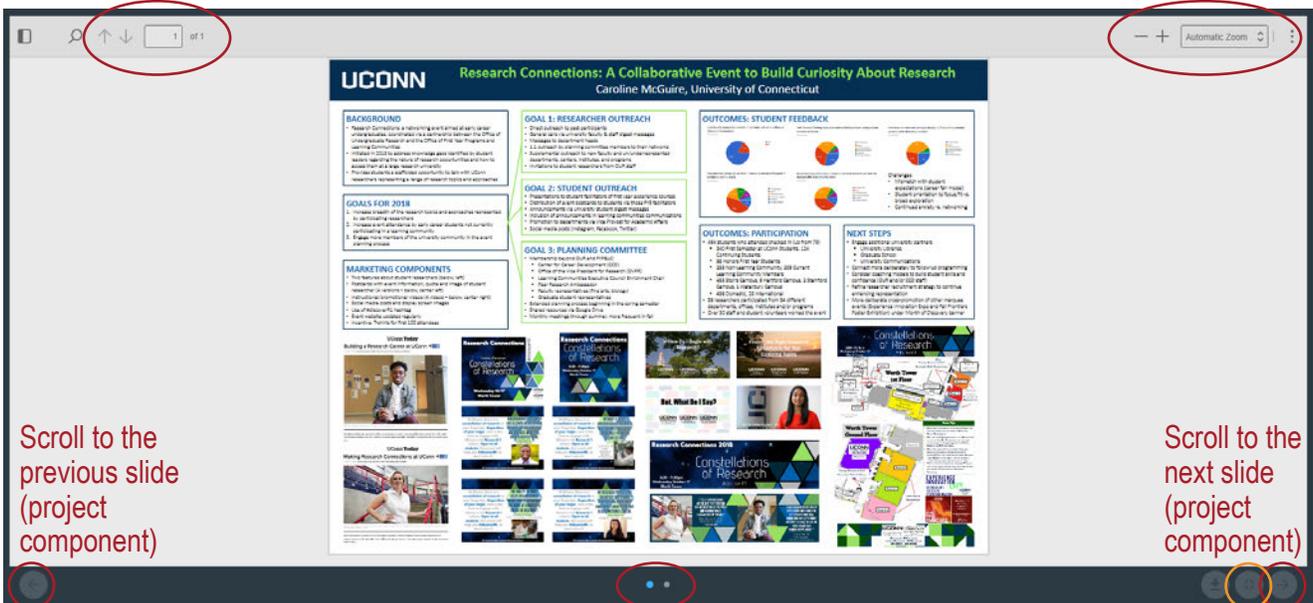
Research Connections: A Collaborative Event to Build Curiosity About Research

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

Online Presentations

Identifying Downstream Targets of P2X4R After ischemic Brain Injury

Kiana Klafter '24 (Physiology and Neurobiology & History, CLAS)

Advisor: Rajkumar Verma, Assistant Professor, Neuroscience

Supported by: Health Research Program

Online Materials: <https://portfolium.com/entry/identifying-downstream-targets-of-p2x4r>

Through the Health Research Program, I had the opportunity to pursue neuroscience research at UConn Health. My project focuses on the identification of proteins that are downstream targets of the P2X4 receptor, which is activated after ischemic stroke.

Promoting Positive Mental Well-Being Among Adolescent Girls of Color Through Engagement in Animal Care Training

Jasmine Morris '23 (Animal Science & Applied and Resource Economics, CAHNR)

Advisor: Tamika La Salle, Associate Professor, Educational Psychology

Supported by: UConn IDEA Grant Program

Online Materials: <https://portfolium.com/entry/idea-grant-project>

This IDEA Grant project stemmed from my want to combat the stigma against mental health in communities of color while also sharing her love for animals with others. Throughout the summer, I worked with 30 middle school students to teach them about primary animal care and training exercises and help them gain hands-on experience working with animals in order for them to think about their own mental well-being in new ways.

Quantitative Model of Cellular Iron Regulation

Jacob Sauerhoefer '23 (Physics, CLAS)

Advisor: Pedro Mendes, Professor, Cell Biology

Supported by: Health Research Program

Online Materials: <https://portfolium.com/entry/quantitative-model-of-cellular-iron-regulation>

Iron is an essential trace element in human biology. Ferritin, an iron storage protein, and Iron Regulatory Proteins (IRPs), which inhibit Ferritin expression, are two species central to maintaining proper iron levels in the body. While there is a well-developed understanding of iron metabolism and a library of research surrounding it, there is a lack of established mathematical models of the biochemical reactions involved. Here, a mathematical model describing the interactions between Ferritin and IRPs is explored. This model aims to support a quantitative understanding of iron metabolism that could be used to more accurately predict iron levels in the body and better support patient diagnoses and medication dosages.

Handwarmer Heating System For CRISPR-Based Molecular Identification

Daniel Schreiber '23 (Biomedical Engineering, ENG)

Advisor: Changchun Liu, Associate Professor, Biomedical Engineering

Supported by: Health Research Program

Online Materials: <https://portfolium.com/entry/handwarmer-heat-system-for-crispr-identification>

A mostly 3D-printed heating system, powered by a disposable hand warmer, is used to heat up a microfluidic chip for CRISPR-based Identification. The portable system increases the temperature of the chip to about 37 degrees long enough for the CRISPR reaction to occur with a fluorescent indicator under blue light.

The Role of Teachers in How U.S. Youth Evaluate and Respond to Immigrant Biased-Based Bullying

Heena Shafique '23 (Psychological Sciences & Human Development and Family Sciences, CLAS)

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

Supported by: SHARE Virtual Summer Apprenticeship

Online Materials: <https://portfolium.com/entry/role-of-teachers-response-to-immigrant-bullying>

With UConn's SHARE Summer Apprenticeship Program, I was given the opportunity to work under Dr. Alaina Brenick of the Human Development & Family Sciences (HDFS) Department, as well as her team, to contribute to a study on immigrant bullying. To understand the roles of teachers in guiding student intergroup relations, with biased-based bullying that targets the immigrant youth in schools, this study investigates teachers' acceptance and their responses to bullying that is related to the immigrant and non-immigrant students (their judgements, bystander responses of biased-base bullying).

Impact of Heat and Humidity on Aspirin Tablets' Physical Stability

Lyla White '24 (Pharmacy Studies, PHR)

Advisor: Bodhi Chaudhuri, Professor, Pharmaceutical Science

Advisor: C. Michael White, Distinguished Professor, Pharmacy Practice

Supported by: OUR Supply Award

Online Materials: <https://portfolium.com/entry/impact-of-environment-on-aspirin-tablet-stability>

Drug stability and expiration dates are determined by data from medications in their original containers under controlled environments. However, drugs are dispensed in amber vials or prescription adherence aids and stored in high heat and humidity environments like people's bathrooms, cars, and purses. This study aims to determine how stable aspirin tablets are under these types of conditions.

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