



# RESEARCH & CREATIVITY SYMPOSIUM

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Honoring Excellence in Research and Creativity



April 20, 2023

**SIMPSON COLLEGE**



It is my pleasure to welcome you to Simpson's thirteenth Undergraduate Symposium.

There is no better marker of excellence in undergraduate education, than the relationships formed between students and faculty that lead to these accomplishments.

Today, as you attend these sessions, you will see the results of the hard work and collaboration from our amazing students and faculty.

Please join me in congratulating all of today's participants, both students and faculty.

Sincerely,

John W. Woell, Ph.D.

Senior Vice President and Academic Dean

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## Symposium Overview

### Morning Schedule

1. 8:00-9:00 AM - Registration, Kent Campus Center, Atrium
2. 9:00-10:00 AM – Concurrent Oral Performances and Presentations 1  
Locations: Carver Science Building, Cowles Center, and McNeill Hall
3. 10:15-11:15 AM – Concurrent Oral Presentations and Performances II  
Locations: Carver Science Building, Cowles Center, and McNeill Hall
4. 11:30 AM-12:30 PM – Keynote Address. Kent Campus Center, Black Box Theater

### Afternoon Schedule

1. 12:30-1:30 PM – Lunch Break
2. 1:45-2:45 PM Concurrent Oral Presentations and Performances III  
Locations: Carver Science Building, Cowles Center, McNeill Hall, Black Box Theater, and Lekberg Hall
3. 3:00-4:00 PM – Poster Session. Kent Campus Center, Hubbell Hall
4. 4:00-4:15 PM – Awards and Remarks. Kent Campus Center, Hubbell Hall

## Keynote Presentation

Chris Jones is a Research Engineer with IIHR-Hydroscience and Engineering at the University of Iowa. He has a PhD in Analytical Chemistry from Montana State University and BA in chemistry and biology from Simpson. His research focuses on contaminant hydrology in agricultural landscapes. He writes a popular blog on Iowa agriculture and the environment, and is the author of the forthcoming book, *The Swine Republic*. He previously worked at Des Moines Water Works and the Iowa Soybean Association. His keynote address is titled: *This Land is Their Land: Iowa Agriculture and the Struggle for Clean Water*



### **Abstract:**

Almost all Iowa land is 'working land' dedicated to the production of crops and livestock. One manifestation of this has been the degradation of the state's water resources—lakes, streams and aquifers. The effects of Iowa's production system can be seen not only locally, but also 1500 miles away in the Gulf of Mexico, where a seasonal dead zone forms every year as a result of nutrient pollution transported from the corn belt via the Mississippi River. This presentation will focus on the evolution of Iowa's farming systems since European settlement and the resulting consequences for water and the rest of the environment. Dr. Jones will also address the role of science within the context of Iowa's water politics, and the environmental justice issues created by the impairment of the public's water.

**8:00-9:00 A.M. - Registration, Kent Campus Center, Atrium.**

## **Oral Presentations**

Each student's oral presentation will last between 12 and 15 minutes, with five minutes for a Q&A session. Please note that this time limit does not apply to individual presentations within a class panel.

**9:00-10:00 A.M. – Concurrent Oral Presentations and Performances I**

**Natural Sciences, Carver 205**

**Moderator:** JACKIE BRITTINGHAM

JEFFREY ROBERTS, CHRISTINA DIETRICH, JASON WHITE, Data Augmentation for Tabular Data Sets

SAMUEL MCCOY, Predicting whether a Function Contains a Vulnerability Using Abstract Syntax Trees and Graphical Neural Networks

DANIEL ORDAZ, Identifying Autophagy in Zebrafish Cardiomyocytes

**Class Panel: Rage Against the Machine: ChatGPT's War on Higher Education, Carver 215**

Kegan Trebilcock, Dylan McChesney, Eldred Boria, Mallory Burkhart, Hannah Foster, Dylan Holland

**Social Justice, Cowles 171**

**Moderator:** CYD DYER

ALLIE TUBBS, "Menaces to Society": Coercive Sterilizations in Iowa from 1948-1952

JAKE SWEETEN, Higher Education: A Lackluster Commitment to Social Justice

**Politics and Social Change, Cowles 172**

**Moderator:** JEREMY GRIFFIN

COLBEE CUNNINGHAM, Digital Authoritarianism: How Authoritarian Regimes Use Social Media as a Weapon

ANDREW JAMES RUSSELL, Social Media and Political Polarization

CLAIRE SCHNEIDER, Music: A Catalyst for Social Change

**Class Panel: Building Capacity for HSL capstone internships, McNeill 109**

Judith Meyer, Donovan Kinghorn

**Technology and Society, McNeill Pioneer**

**Moderator:** SET ANDERSEN

ALYSSA WHITHAM, The Inequities of Technological Progression

TRENITY ROSENBERG, The Technological Bias of Violence: A Cross-Cultural Analysis Between the United States and Spain

**10:15-11:15 A.M. – Concurrent Oral Presentations and Performances II**

**Education: Funding and Gender Gap, Carver 205**

**Moderator:** LUKE BEHAUNEK

KATE HUISINGA, The Gender Gap in Higher Education

JOSEPH BUTCHER, Past, Present, and Future of the Pell Grant

MALLORY BURKHART, Vicious Vouchers: How Voucher Programs are Impacting Low-income Families

**Music, Cowles 171**

**Moderator:** MARILYN VAZQUEZ

LYZA CUE, Jazz, The Rubber Hose Cartoon, and Early Animation

JASON BELL, Bob Dylan: Uncovering Blood On the Tracks

TRENITY ROSENBERG, NOEL ROBERTS, Black

**Class Panel: Internship Panel, Cowles 172**

Katie Burns, Zach Harnden, Lexi Johnston, Ana Davis, Allie Tubbs

**Class Panel: Is Time Running Out For TikTok?, McNeill Pioneer**

Ethan Humble, Brenden Godbout, Madison Wiertzema, Caleb Geer, Andrew Gibb, Taylor Brommel

**11:30 A.M.-12:30 P.M. – Keynote Address, Kent Campus Center, Black Box Theater**

**12:30-1:30 P.M. – Lunch Break**

**1:45-2:45 P.M. – Concurrent Oral Presentations and Performances III**

**Class Panel: Honors Program Capstone Presentations, Black Box Theater**

Maya Gault, Caleb Geer, Ethan Humble, Kylie Jones, William Keck, Donovan Kinghorn, Paisley Kintigh, Madison Luderman, Noah Nelson, Scout Peery, Alyssa Whitham

**Class Panel: An Artist's Answer: Health at Every Size, Black Box Theater**

Layna Depping, Mary (Elly) Flaherty, Maya Gault, Ellie Gray, Katherine Hendrickson, Kylie Jones, Donovan Kinghorn, Jadyn Mortenson, Hannah Mulligan, Sarah Roberts, Katelyn Smith, Jessica Stringer, Victoria (Tori) White, Alyssa Whitham, Madison Wiertzema, Madelyn (Mad-die) Williamson, Emma Winterboer

**DEI in Higher Education, Carver 205**

**Moderator:** CORYANNE HARRIGAN

CLAIRE SCHMITZ, DEI in Catholic Higher Education

JAKE EDENBURN, DEI Issues in Higher Education: Male Collegiate Athlete Mental Health

**Racial Equity and Inclusion, Carver 215**

**Moderator:** JED FORMAN

MADDY LYNN STINSON, Why are There Low Percentages of Faculty of Color in Higher Education?

SKYLER BLESSMAN, Race and College Admissions

LANE SUNDBERG, Racism in Golf: It still exists

**Business Adaptation, Carver 231**

**Moderator:** DEREK LYONS

ESTHER ESCALANTE, EAE Enterprises

GABRIEL MADSON, Ninjago: Putting a New Spin for LEGO's Innovation in the 21st Century

BETHANY LACHONA-LUDA, Lululemon Rebranding Project



**Class Panel: Editing and Performing Forgotten Renaissance Works, Lekberg Hall  
(Music Building)**

Lyza Cue, John Galm, Abby Jennings, Drew Lundquist, Eric Martin, Dylan McKinley, Max Meyers, Claire Schneider, Aaron Scholes, Tanner Striegel, Max Wearmouth-Gweah, Halle Wulfsuhle, Miranda Young

**Poster Session**

**3:00-4:00 P.M. – Poster Session, Kent Campus Center, Hubbell Hall**

1. PAUL LLAMAS, Polyglycylation Impact in Ciliary Motility on Tetrahymena
2. JESS DOSTER, Props Design Cabildo and Cendrillon
3. MAYA GAULT, The Effects of Menstrual Phase on Physical and Perceived Performance in Eumenorrheic Female Athletes
4. ABIGAIL HINTZ, Stage Manager - Little Women
5. DALANEY REESE, Accessibility of Safe Sex Products on Simpson College's Campus
6. JARED OOSTERHUIS, Capturing art and design in the hidden world through microscopy
7. TRENITY ROSENBERG, BRODY CROUSE, DAYTON GATEWOOD, KATIE PANTZAR, KYLE WERNER, SKY DELZELL, ELIJAH KEOPUHIWA-CARVALHO, The Compounding Effects of Agriculture on the Water Quality Crisis in the State of Iowa, USA: A Local and Global Ecological Crisis
8. CHRISTIAN FRENCH, Gender Differences in Strength and Conditioning Coaching
9. KENNETH NORRIS, Lighting Design Twilight Bowl
10. KATELYN SMITH, ALLISON YOUNG, KENNETH NORRIS, Access to Care for Individuals with Down Syndrome
11. RYAN MAGALHAES, For the Workers: Appeal to Reason and the marketing of socialist ideas in America
12. JENNA PFEIFFER, What is Abortion? Individuals' perceptions of abortion versus medical procedures
13. SAM DERNING, DILLON BERG, Fluorescent Protein Synthesis
14. WILLIAM DEBOER, Entomotoxicology
15. MOLLIE HINKLE, Props Design - Trouble in Tahiti/Gallantry

16. TANNER STRIEGEL, Props Designer Little Women
17. ASHLEY KIENTOFF, Stage Manager Trouble in Tahiti & Gallantry
18. MASUMO MWENYI, Sound Designer - Twilight Bowl
19. FRANCESCA DEVORE, Multiple Choice vs Short Answer
20. CLARISSA HUISMAN, Uncovering the Catalytic Mechanism of Sortase A Using Molecular Dynamics Simulations
21. EMMA LOWDEN, The maintenance running behaviors through estrogen-mediated signaling in the dorsal striatum of female rats
22. PARKER LEE, JACE HOWARD, JOEY SAMS, Data Engineering Databases of Biology Experiments
23. KAYLA JENSEN, JEFFREY ROBERTS, KATE HUISINGA, Automated Computation of Pollen Germination
24. AIMEE GRAHAM, Variations of Nim: How to Always Win
25. GABRIEL MADSON, Our Story, Our Show: Dramaturg Presentation for the production of Little Women
26. TANNER TILLOTSON, Trouble In Tahiti/Gallantry Set Design
27. LARA KALLEM, Categories and Gender
28. BUCK EAGLEBURGER, Quantum Eraser Experiment Using Quantum Optics
29. HAYLEE KING, AMELIA BOTHWELL, CASSANDRA HAUSER, Carver Living Wall Project
30. ALEXIA TEBBEN, Costume Designer: Trouble in Tahiti/Gallantry
31. ALLISON BLADES, Costumes, Hair, and Makeup Designer Twilight Bowl
32. DORIAN BURKE, Twilight Bowl Props Design

**4:00-4:15 PM – Awards and Remarks. Kent Campus Center, Hubbell Hall**

## Acknowledgements

The 2023 Simpson College Research and Creativity Symposium was organized by the Undergraduate Research and Creativity Committee, including Aswati Subramanian, committee Chair, Judex Hyppolite, committee secretary, John Pauley, committee member, co-directors of undergraduate research Katherine Vance and Ali Madanipour, and student representative Hannah Duncan. The committee would like to thank Dr. Chris Jones, Simpson College alumni, for delivering the keynote lecture, as well as the faculty session moderators and evaluators for sharing their expertise and time. We are grateful to Simpson College's Office of Marketing and Strategic Communication, Conferences Office, and Information Technology Services for their support. We would also like to thank Becky Hastie for logistical support. Finally, we extend our thanks to all of the students who participated in this year's Symposium and to the faculty members who mentored their projects and organized class panels.

The Symposium organizing committee wants to specially thank Justin Nostrala and his entire Graphic Design class including Kendrick Achebe, Avery Dickerson, Luke Haugen, Abby Hintz, Eli Jauron, Madison McDonald, Nayeli Mejia, Kate Minette, Max Mitchell, Kyrsten Rehberg, Morgan Rosenbeck, Tenley Schroeder, Alyssa Whitham, and Juan Zamora. Inspired from the topic of the keynote address, the students prepared for the committee attractive and innovative designs for the symposium t-shirts. The t-shirts given to presenters were designed by Avery Dickerson, a second-year student majoring in Graphic Design.

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