



Office of  
**UNDERGRADUATE RESEARCH**  
THE UNIVERSITY OF UTAH

# VIRTUAL PRESENTATIONS

**TUESDAY, APRIL 5, 2022  
9:00AM**



# 2022 UNDERGRADUATE RESEARCH SYMPOSIUM VIRTUAL PRESENTATION

Tuesday, April 5, 2022

We are grateful for the generous support of:



We would like to acknowledge the Office of the President, the Office of the Senior Vice President for Academic Affairs, and the Office of the Vice President for Research.

Finally, we would like to extend our utmost pride and congratulations to the students, graduate students, and faculty mentors without whose efforts and dedication this event would not be possible.

## **THANK YOU, DONORS!**

The Office of Undergraduate Research is grateful for generous support  
from:

**Francis Family Foundation**

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**Parent Fund**

**Emily Adler** (Stella Mosher)

Department of Geography

*Soil Geochemistry and Charcoal Morphotype Response to Paleofire in the South African Fynbos*

**Blayze Ashurst** (Ross Walker)

Department of Electrical and Computer Engineering

*Potentiostat PCB Design and Measurement with Altium*

**Alexander Becraft** (Marissa Diener)

Department of Family and Consumer Studies

*Well-being Elevated/WeBeWell: Mental Health Prevention and Promotion: Leveraging positive psychological interventions and social entrepreneurship to build resilience and well-being in college students*

**Allesandra Bergmark** (Brennan Payne)

Department of Psychology

*An Analysis of the Effects of Background Noise and Supportive Context on Speech Recognition Memory in Older Adults*

**Natalie Caylor** (Valerie Greer)

School of Architecture

*Perspectives on Aging in Place During the Covid-19 Pandemic: A Qualitative Analysis*

**Maria Chavez** (Melodie Weller)

Department of Dentistry

*Do Autoantibody Profiles Correlate with Salivary Gland Focal Inflammation in Sjogren's Syndrome?*

**Bryce Cheek** (Cynthia Furse)

Department of Electrical and Computer Engineering

*Deep Brain Stimulation to Treat Depression*

**Alisha Chong** (Christopher Depner)

Department of Health, Kinesiology, and Recreation

*Identifying Biomarkers of Insufficient Sleep Utilizing Plasma Metabolomics*

**Carter Christensen** (Cynthia Furse)

Department of Electrical and Computer Engineering

*Field Focusing for Implantable Telemetry Antennas*

**Joshua Christensen** (Lisa Diamond)

Department of Psychology

*The LDS Context: Religious Trauma, Social Safety, and LGBTQ+ Health*

**Vanessa Cox** (Rogelio Cardona-Rivera)

School of Computing

*Metaphors We Design Games By*

**Jessica Cuello** (Adrienne Cachelin)

Department of Environmental and Sustainability Studies

*Exploring Food Justice through Qualitative Research*

**Anna Carissa Delos Reyes** (Trafton Drew)

Department of Psychology

*Incorrect Computer Aided Detection (CAD) marks lead to early quitting*

**Emmanuel Diaz** (Katherine Baucom)

Department of Psychology

*Physical Health Consequences of Adverse Childhood Experiences (ACEs): A Narrative Review*

**Victoria Ding** (Bethany Buck-Koehntop)

Department of Chemistry

*Investigating Methylated DNA Recognition by the N-terminal Zinc Fingers of ZBTB38*

**Samantha Eddy** (Shundana Yusaf)

School of Architecture

*Cultural Resource Mapping*

**Annette Ellis** (Sara Simonsen)

Department of Nursing

*Race in Clinical Research*

**Katerina Excell** (Villu Maricq)

Department of Neurobiology & Anatomy

*The role of Amyloid Precursor Protein in a model of Alzheimer's Disease*

**Mickenzie Fleming** (Aaron Fischer)

Department of Psychology

*Evaluating the Efficacy of Asynchronous and Synchronous Problem-Solving Teleconsultation with Teachers who Serve Rural Students with Disabilities*

**Summer Furrer** (Melodie Weller)

Department of Dentistry

*Cellular and Subcellular Localization Patterns of Hepatitis Delta Virus in Sjogren's Syndrome Salivary Gland Tissue*

**Ani Giokas** (Anurag K. Singh)  
Department of Mathematics  
*Noetherian Property of Invariant Rings*

**Rose Godfrey** (Dustin Williams)  
Department of Bioengineering  
*Antimicrobial Blue Light, Oregano Oil, and CZ-01179 Gel Manage Staphylococcus aureus Biofilms at the Skin-Implant Interface of Percutaneous Osseointegrated Prosthetics in an Ex Vivo Setup*

**Andrew Green** (Milad Mozari)  
Department of Multi-Disciplinary Design  
*post sonica*

**Suhyun Hahm** (Michael Conoscenti)  
Department of Neurobiology & Anatomy  
*Chronic stressors of varying properties induce differences in behavior modulation*

**Amelia Heiner** (Jeff Bates)  
Department of Materials Science and Engineering  
*Biodegradable Pressure Sensitive Hot Melt Adhesive*

**Wyatt Hudgens** (Matthew Burbank)  
Department of Political Science  
*Party Image and Intra- Party Dissent in American Politics: The Equal Rights Amendment and Democratic Economic Policy Conflict in the 1980s*

**Dylan Hutchings** (Trafton Drew)  
Department of Psychology  
*Searching Through Memory and Space for the Effect of Repeat Search*

**Seokjin Jeong** (Amy McDonnell)  
Department of Psychology  
*The Effect of Listening to Degraded Speech on Driving Performance*

**Holden Jones** (Claudia Geist)  
Department of Gender Studies  
*Attitudes Towards Gender in Future Health Care Providers*

**Simran Karim** (Yan-Ting Shiu)  
Department of Internal Medicine  
*Analysis of Hemodynamics in Porcine Arteriovenous Fistulas*



**Ireland Kearns** (Karen Wilcox)

Department of Pharmacology and Toxicology

*Effects of TREM-1 Expression on Acute Phase Seizures in a Mouse Model of Viral-Induced Epilepsy*

**Sameer Khan** (Ben Bromley)

Department of Physics & Astronomy

*Exploration of Dusty Debris at the L1 Lagrange Point of the Earth-Sun System*

**YUNG-CHI LAN** (Markus Babst)

Department of Biological Sciences

*The Role of Slm1 in Mitochondrial Function*

**Ian Lavin** (Rajeev Balasubramonian)

School of Computing

*Online learning with Spiking Neural Networks for Data Prefetching*

**Cindie Lee** (Yang Bai)

Department of Health, Kinesiology, and Recreation

*Structured versus Non-structured Days: Physical Activity Among Adolescents during COVID-19*

**Teasha Luu** (Joel Trinity)

Department of Nutrition and Integrative Physiology

*Reactive-Hyperemia and Microvascular Function: A Comparison of Methods*

**Angelica Madsen** (Jeffrey Bates)

Department of Materials Science and Engineering

*Hydrogel-Based Dehydration Sensor Adhesive*

**Sophia Martinez** (Monisha Pasupathi)

Department of Psychology

*Narrative Agency and Distress Regulation in Youth*

**Sanila Math** (Edmund Fong)

Department of Ethnic Studies

*The Hypervisibility/Invisibility Paradox of the South Asian Community and the Impact of Colorism on South Asian Health in the United States*

**Annie Matzke** (Brenda Bowen)

Department of Geology and Geophysics

*The Depositional History of the Bonneville Salt Flats from the Geochemical Analysis of Ostracodes*

**Tiare Mitchell** (Angela Robinson)  
Department of Gender Studies  
*The Intergenerational Effects of Hawaiian Sovereignty*

**Hannah Munding** (Kimberly Kaphingst)  
Department of Communication  
*Rare Disease, the Diagnostic Odyssey, and Normality Reconstruction*

**Ethan Murdock** (Aaron Puri)  
Department of Chemistry  
*Predicting Quorum Sensing Signals Using Enzyme Co-Occurrence Analysis*

**Samantha Nestel** (Michael Werner)  
Department of Biological Sciences  
*Development meets Metabolism: Investigating how Diet and Nutrition Influence Developmental Decisions*

**Benjamin Orkild** (Rob MacLeod)  
Department of Bioengineering  
*The Role of Right Ventricular Shape in Tricuspid Valve Regurgitation*

**Jeff Perry** (Roseanne Warren)  
Department of Mechanical Engineering  
*A Residual Stress Analysis of Two-Photon Polymerized Thin Films*

**Shaylie Platten** (Sara LoTempio)  
Department of Psychology  
*Neither worry nor cognitive load affects how our brains process errors*

**Benson Pulver** (Yong Lin Kong)  
Department of Mechanical Engineering  
*Magneto-electroactive Soft, Continuum, Compliant, Configurable (MESo-C3) Robots for Medical Applications Across Scales*

**Katelyn Pyper** (Shawn Owen)  
Department of Pharmaceutics & Pharmaceutical Chemistry  
*Testing of Split-beta-Lactamase Constructs for Therapeutic Application*

**Makena Reynolds** (Andra Harbold)  
Department of Theatre  
*The Emily Dickinson Musical*

**Saul Rivera-Flores** (Eileen Hwang)  
Department of Ophthalmology & Visual Sciences  
*Wide-angle Vitreous Imaging in Familial Exudative Vitreoretinopathy*



**Duke Ross** (Miriam Sobrino)  
Department of Film & Media Arts  
*STRINGS*

**Ana Rowe** (John Parkinson)  
Department of Biological Sciences  
*Suppression of Chemoreceptor Signal-Switching Defects*

**Gabriel Santana** (Caleb Thomson)  
Department of Bioengineering  
*Data augmentation of electromyography data to improve machine-learning performance*

**Andie Sieja** (Rob MacLeod)  
Department of Bioengineering  
*Comparison of Left Atrial Shape between the Sexes Diagnosed with Atrial Fibrillation*

**Mary Smith** (Cynthia Benally)  
Department of Education, Culture & Society  
*The Effects of Mathematics Education in Indian Boarding Schools, 1950-1970*

**Koriann South** (Eliane Wiese)  
School of Computing  
*Teaching Ethics in AI*

**Alexander Sperber** (Martin Tristani-Firouzi)  
Department of Pediatrics  
*A Novel Approach to Differentiating Cardiac Fibroblasts from iPSCs*

**Brynn Staker** (Elizabeth Craft)  
School of Music  
*The Cohan Narrative: Examining the Reach of George M. Cohan*

**heba sultan** (John Dave Symons)  
Department of Nutrition and Integrative Physiology  
*The influence of time-restricted feeding on arterial function in obese mice*

**Hayley Tankersley** (Jamesina Simpson)  
Department of Electrical and Computer Engineering  
*Literature Search on Women in Early Antennas Research*

**Nathaniel Thomas** (Naina Phadnis)  
Department of Biological Sciences  
*IFITM3, SAMHD1, and the IFN Response to Viruses*

**Lauren Thurgood** (Lisa Diamond)

Department of Psychology

*Psychological Distress of Transgender and Gender Diverse Populations: The Role of Proximal Gender Minority Stressors and Rumination*

**Carmencita Totua** (Annie Fukushima)

Department of Ethnic Studies

*Mental Health in Pacific Islander Communities*

**Michael Turja** (Shad Roundy)

Department of Mechanical Engineering

*Design of Low-cost, Long-life, Wireless, In-situ Soil Sensing Network Handheld Display*

**Bailey Van Wagoner** (Robert Bowles)

Department of Bioengineering

*Decreasing Nociceptive Sensitivity Through Downregulation of ASIC1 Gene*

**Tessa Vu** (E-Sok Andy Hong)

Department of City & Metropolitan Planning

*Spatial Investigation of Toxic Sites and Water-A Focus on Racial Equity*

**Olivia Walker** (Rob Macleod)

Department of Bioengineering

*The Effect of Variable Conductivity on Cardiac Excitation*

**Shiyu Wang** (Julia Dunn)

Department of Bioengineering

*Limited Shoulder Range of Motion and Trunk Compensatory Movements*

**Hannah Willis** (Man Hung)

Social Work

*Assessing Influence of The Human Rights Guidelines for Pharmaceutical Companies in relation to Access to Medicines: A Case Study of GlaxoKlineSmith (GSK) 2009 & 2020 Annual Reports*