Michigan Research and Discovery Scholars

SPRING RESEARCH SYMPOSIUM

WEDNESDAY, APRIL 19, 2023
Biomedical Science Research Building

M | **LSA** MICHIGAN RESEARCH
AND DISCOVERY SCHOLARS
UNIVERSITY OF MICHIGAN

Welcome to the Annual

Michigan Research And Discovery Scholars
SPRING RESEARCH SYMPOSIUM

Program

6:00–6:45 p.m. Research Poster Presentations, Session I
Atrium

6:55–7:35 p.m. Oral Presentations
Auditorium

7:45–8:30 p.m. Research Poster Presentations, Session II
Atrium

Oral Presentations

Zoey Brookbanks
Photonic Crystal Nanobeam Cavity Coupled with Exciton Emission from MoSe2
Research Mentor: Chulwon Lee, postdoctoral research fellow, Physics

Mercedes Morin
Studies to Understand the Link Between Obesity & Breast Cancer
Research Mentor: Erin Giles, Assistant Professor, Kinesiology

Andrei Ursu
Nanoparticle Based Sensor Development
Research Mentor: Mark Hammig, Associate Research Scientist, Nuclear Engineering and Radiological Sciences

Poster Presentations

Jane Ablove (Session I-12)
Driver Interface Research: Describing Driving Driving Performance
Research Mentor: Paul Green, Research Professor, University of Michigan Transportation Research Institute

Vivica Addrow (Session II-28)
Michigan Mitral Research Group
Research Mentor: Steven Bolling, Cardiac Surgeon, The Department of Cardiac Surgery

Anvesh Agrawal (Session I-45)
Covariance predicting models of RNA and DNA in single blood cells
Research Mentor: Fadhl Alakwaa, Research Investigator, Internal Medicine Department

Rawaa Al-Zehairy (Session I-22)
Remote Patient Monitoring Following Radical Cystectomy
Mentor: Jeffrey Montgomery, Professor, Urology

Myrra Arya (Session I-39)
Mechanisms of adipocyte loss in mouse models of familial partial lipodystrophy 2 (FPLD2)
Research Mentor: Jessica Maung, PhD Candidate, Department of Molecular & Integrative Physiology

Keegan Balcerzak (Session II-39)
Capuchin (Cebus imitator) Vocal Diversity Assessed Through Passive Acoustic Monitoring in a Tropical Dry Forest in Costa Rica
Research Mentor: Thore Bergman, Professor, Psychology

Hythem Beydoun (Session I-29)
Integration of a Customizable, Modular Payload into a Pixhawk-Based Unmanned Aerial Vehicle (UAV)
Research Mentor: Kimberlee Kearfott, Professor, NERS/BME

Marcela Billingslea Durini (Session II-12)
Developing Antiracist Scenario-Based Mathematics Assessments
Research Mentor: Jennifer Randall, Dunn Family Chair of Psychometrics and Test Development, Educational Studies

Sam Blum (Session II-29)
Manufacturing and Evaluation of an Artificial Lung Optimized for CO_2 Removal
Research Mentor: Alvaro Rojas-Peña , Assistant Research Scientist, Department of Surgery-Transplantation

Madison Boyd (Session I-40) with Rohan Vyas (Session **II**-49)
Michigan Sport Tourism Strategy Project - Inventory Phase
Research Mentor: Judith Grant Long, Associate Professor of Sport Management and Urban Planning, Sports Management

Hailey Brady (Session II-17)
Minimally-Invasive Tissue Engineering for Demystifying the Allogeneic Immune Niche in Pregnancy
Research Mentor: Russell Urie, Postdoctoral Research Fellow, Biomedical Engineering

Glenn Brye (Session I-1)
Cognitive Spaces and Data Science
Research Mentor: Efren Cruz Cortes ,Data Science Fellow, Michigan Institute for Data Science

Charlotte Butler (Session II-18)
COVID-19 Experiences among People with Multiple Sclerosis
Research Mentor: Anna Kratz,Assistant Professor of Physical Medicine and Rehabilitation, Medical S, Library,Physical Medicine and Rehabilitation

David Cano (Session II-23)
Form-Focused Instruction through Captioned Grammar in L2 Spanish: An Experimental Study
Research Mentor: Lorenzo Garcia-Amaya, Assistant Professor, Romance Languages and Literatures

Yunwoo Chang (Session II-33)
Natural Language Processing for Understanding Persuasive Arguments
Research Mentor: Lu Wang, Assistant Professor, Computer Science and Engineering

Meghana Choragudi (Session I-24)
Self-regulation of reward responding: A literature review
Research Mentor: Meghan Martz, Research Assistant Professor, Psychiatry

Aysha Chowdhury (Session I-18)
KCNH2 variants associated with cardiac arrhythmia and in epilepsy alter nuclear activity
Research Mentor: David Jones, Associate Professor, Pharmacology

Hana Chrenka (Session II-1)
Sustainable algal biofuel production via hydrothermal liquefaction (HTL) and upgrading
Research Mentor: Taehoon Han, Research Fellow, Mechanical Engineering

Avelo Cohen (Session I-13)
Quantifying the spin transfer torque induced by GaAs1-xBix thin films
Research Mentor: Rachel Goldman, Professor, Materials Science and Engineering

Grace Darlak (Session I-30)
Building an artificial neuron - exploring dynamic self-assembly of colloidal electronic devices
Research Mentor: Albert Liu, Assistant Professor, Chemical Engineering

Jace DeRosia (Session II-30)
The Emotional Trajectory of IVF Patients
Research Mentor: Sheau Yun Melody Ku, Director, Patient Experience
Research - Technology and Service Design, Design Science/UMHS

Alexander Devine (Session I-34) with Joshua Mendoza (Session II-42)
Developing a Machine Learning Algorithm using Pattern Recognition to Analyze Experimental Data from Photoelectrochemical Systems
Research Mentor: Stephen Maldonado, Professor, Chemistry

Eric Dorman (Session II-34)
Electrochemistry Web Platform Redesign
Research Mentor: Stephen Maldonado, Professor, Chemistry

Malcolm Draper (Session I-19)
The Use of a Facebook Advertisement Campaign to Recruit Diverse Populations for Health Research
Research Mentor: Lenette Jones, Assistant Professor, Health Behavior and Biological Sciences

Mohid Durrani   (Session I-17)
Preventative Monitoring using Unobtrusive Sensor Data
Research Mentor: Winston Zhang, PhD student, DCMB

Erik Flaspohler (Session I-14)
Solid-state reaction to increase capacity utilization of LMNO cathodes in lithium-ion batteries
Research Mentor: Richard Laine, Professor, Materials Science and Engineering

Lydia Frasz (Session II-24) with Joon Young Sohn (Session II-10)
From 51 Billion to Zero: Challenges in Reducing our Emissions of Greenhouse Gases
Research Mentor: Stephane Lafortune, Professor, EECS Department/ECE Division

Prakhar Gupta (Session I-35)
Developing Computer Vision Tools for Automatic Animal Behavioral Classification
Research Mentor: Ada Eban-Rothschild, Assistant Professor, Psychology

Rishab Gupta (Session II-35)
Web Extensions: Patching Broken Links on the Web
Research Mentor: Yulia Sevryugina, Chemistry Librarian/Senior Associate Librarian, Library

Kaylin Hanna (Session II-14)
Studying pathways/markers involved in the lung fibrosis during/causing lung transplant rejection.
Research Mentor: Fatima Fattahi, Research Lab Specialist Intermediate, Department of Internal Medicine, Division of Pulmonary & Critical Care Medicine

Akira Hasegawa (Session I-36) with AJ Nieto (Session I-37)
Computational Analysis of Pop Music Across Cultures
Research Mentor: Winston Wu, Postdoctoral, Computer Science

Daniel Heilman (Session II-45)
Spectroscopic Analysis of 2M0856: A 10 Myr old Brown Dwarf with a Primordial Disk
Research Mentor: Michael Meyer, Professor, Astronomy

Adrian Helmerci (Session II-6)
Solidworks Design for a Lower Limb Powered Prosthesis
Research Mentor: Robert Gregg IV, Associate Professor, EECS

Brian Ho (Session I-15)
Anti-fouling Membranes
Research Mentor: Anish Tuteja, Professor, Material Science and Engineering

Nick Holcomb (Session I-41)
Herbicide impacts on germination rate of invasive Phragmites
Research Mentor: Wesley Bickford, Research Biologist, U.S. Geological Survey

Jian Ming Huang (Session I-25)
Role of rat auditory cortex in processing relevant self-generated sounds during locomotion
Research Mentor: Gideon Rothschild, Assistant Professor, Psychology

Joy Huang (Session II-41)
HOPE Village Storytelling via Social Media
Research Mentor: Debbie Fisher, Executive Director, HOPE Village Revitalization

Rafiqul Islam (Session I-7)
Contracting within multinational firms
Research Mentor: Yue Zhou, Associate Professor, Strategy

Tisha Jain (Session I-46)
ORION: Observatory for Cyber-Risk Insights and Outages of Networks
Research Mentor: Michael Kallitsis, Research Scientist, Merit Network, Inc.

Leah Jankoska (Session II-25)
How do viruses in extremophilic fungi impact their host?
Research Mentor: Jillian Myers, Research Laboratory Specialist, Ecology &
Evolutionary Biology

Mateo Jimenez (Session I-31) with Martin Stier (Session II-38)
Driver Interface Research: Describing Driving Driving Performance
Research Mentor: Paul Green, Research Professor, University of Michigan
Transportation Research Institute

Ethan Johnson (Session I-42)
*Comparative Analysis of Ecological Replacement of Pachycormiformes by
Modern acanthomorph Fishes*
Research Mentor: Lindsey Dehaan, PhD Candidate, Earth and Environmental
Sciences

Juliette Johnson (Session I-26)
The Story of Three Mile Island: Cleanup of Unit 2
Research Mentor: Lynn Carpenter, Lecturing Faculty, EEB/MCDB

George Johnson II (Session II-15)
Investigating the Morphological Diversity of the Upper Pharyngeal Jaw
Research Mentor: Samuel Borstein, Postdoctoral Fellow, Department of Ecology &
Evolutionary Biology

Joanne Jung (Session II-26)
*Markers for viable donor hearts during long term normothermic ex-vivo
perfusion*
Research Mentor: Alvaro Rojas-Peña, Assistant Research Scientist, Department of
Surgery-Transplantation

Eshan Kapoor (Session II-7) with Matteo Pettinato (Session II-8)
Mapping Institutional Cultures in Global High-Tech R&D Institutions
Research Mentor: Muzammil Hussain, Assistant Professor, The Big-DIG Research Lab
@ The Institute for Social Research

Farah Kareem (Session I-27)
Closely Examining Teachers' Use of Questioning and Discussion Techniques
Research Mentor: Matthew Ronfeldt, Associate Professor, Educational Studies

Emerson Krause (Session II-46)
Assessing the potentials and societal impacts of hydrokinetic turbines
Research Mentor: Mohammadreza Amini, Assistant Research Scientist, Naval Architecture and Marine Engineering

Dora Kuflu (Session I-47)
Utilization of Proxmox Virtual Environment for Resource-Intensive Computing Applications
ResearchMentor: Alanson Sample, Associate, Computer Science and Engineering

Isabelle Lamug (Session I-2)
Investigating interactions between Sstx and other mouse X- and Y-linked amplified genes
Research Mentor: Jacob Mueller, Assistant Professor, Human Genetics

Katherine Li (Session II-2)
Transcriptomic Analysis of Human Tissue
Research Mentor: Lam Tsoi, Assistant Professor, Dermatology / Computational Medicine and Bioinformatics

Jun Kit Lim (Session I-3)
Classifying Cyclic Voltammograms using Machine Learning techniques
Research Mentor: Stephen Maldonado, Professor, Chemistry

Alayna Marvin (Session II-47)
Code Review: Reproducibility in Experimental Linguistics
Research Mentor: Lisa Levinson, Lecturer IV, Linguistics

Joshua Mendoza (Session II-42) with Alexander Devine (Session I-34)
Developing a Machine Learning Algorithm Using Pattern Recognition to Analyze Experimental Data from Photoelectrochemical Systems
Research Mentor: Stephen Maldonado, Professor, Chemistry

Kevin Miller (Session II-27)
Selection of social partners by Paper wasps
Research Mentor: Emily Laub, Graduate Student, Ecology and Evolutionary Biology

Carly Mistick (Session I-48)
Refining the Scaling Relations in Galaxy Cluster Velocity Dispersion Bias Empirically
Research Mentor: August Evrard, Professor, Physics

Tanush Mittal (Session II-48)
Analyzing Language Frequency Patterns in Chemistry Curriculum Materials
Research Mentor: Yulia Sevryugina, Chemistry Librarian/Senior Associate Librarian, Library

Ryan Montgomery (Session I-16)
Work Experience of Male Members of Boards in California
Research Mentor: Cindy Schipani, Professor, Business Law

Mena Nasiri (Session II-36)
Her Last Fight
Research Mentor: John Valadez, Professor, Film, Television, & Media

AJ Nieto (Session I-37) with Akira Hasegawa (Session I-36)
Computational Analysis of Pop Music Across Cultures
Research Mentor: Winston Wu, Postdoctoral, Computer Science

Cecelia Occhipinti (Session II-3)
The Role of SRCAP in Hematopoiesis and Leukemogenesis
Research Mentor: Terrence Wong, Assistant Professor, Internal Medicine

Jehan Patel (Session II-37)
Tensor-based Methods in Data Science
Research Mentor: Ali Zare, Postdoctoral Research Fellow, Computational Medicine and Bioinformatics

Sohum Pavaskar (Session I-8)
Comparing the accuracy of different AI-based automatic speech transcription services for fieldwork in neurolinguistics
Research Mentor: Jonathan Brennan, Assistant Professor, Linguistics

Kevin Pena (Session I-28)
Exploring the Contact Between Domains of the Thyroid Hormone Precursor Protein Required in its Intracellular Trafficking
Research Mentor: Cinta Citterio, Research Investigator, Internal Medicine

Matteo Pettinato (Session II-8) with Eshan Kapoor (Session II-7)
Mapping Institutional Cultures in Global High-Tech R&D Institutions
Research Mentor: Muzammil Hussain, Assistant Professor, The Big-DIG Research Lab @ The Institute for Social Research

Grant Preves (Session I-9)
There's a Price to Growing Up: How Status-based Constraints to Increasing Production Volume Shapes High-Status Firm's Profit-seeking and Growth Strategies
Research Mentor: Jusang Lee, Ph.D. Candidate, Strategy

Diego Ramirez-Gomez (Session I-38)

Quantifying aviation environmental impacts due to the Russian airspace closure

Research Mentor: Max Li, Assistant Professor, Aerospace Engineering, Industrial and Operations Engineering

Fanny Raskind (Session I-20)

Understanding the neural circuits responsible for cognitive flexibility in health and disease

Research Mentor: Omar Ahmed, Assistant Professor, Psychology

Lily Ruden (Session II-31)

Elucidating the Functional Role of Mouse Retrogene Phf8l by Mapping Protein-Protein Interactions Using Yeast Two-Hybrid Screening

Research Mentor: Jacob Mueller, Assistant Professor, Human Genetics

Harrison Sanders (Session II-9)

How Socioeconomic Malaise & Decline Fuel Xenophobic Nationalist Extremism

Research Mentor: Robert Franzese Jr., Professor & Associate Chair, Political Science

Abigail Schad (Session II-20)

Relationship of BATF3-Dependent Conventional DC1s to Type 1 T Helper Responses

Research Mentor: Michal Olszewski, Professor, Internal Medicine, Pulmonary and Critical Care Medicine

Eleanor Schlick (Session I-4)

The Partisan and Racial Composition of State Prison Workforces

Research Mentor: Benjamin Goehring, PhD Student, Political Science and Public Policy

Nikita Shishu (Session I-32)

Enhancing Anatomical Education with 3D Scans

Research Mentor: Cristina Prall, LEO Lecturer I, Research Lab Specialist Associate, Division of Anatomical Sciences

Matthew Sinanis (Session I-10)

Manifest Space: Creating the future or repeating the past?

Research Mentor: Vyta Pivo, Postdoctoral/Assistant Professor, Architecture

Joon Young Sohn (Session II-10) with Lydia Frasz (Session II-24)

From 51 Billion to Zero: Challenges in Reducing our Emissions of Greenhouse Gases

Research Mentor: Stephane Lafortune, Professor, EECS Department / ECE Division

Samantha Staudinger (Session II-32)
Characterizing YAP Activation in Acoustically-Responsive Scaffolds via Ultrasound-Induced Matrix Stiffening
Research Mentor: Mario Fabiilli, Research Associate Professor, Radiology

Martin Stier (Session II-38) with Mateo Jimenez (Session I-31)
Driver Interface Research: Describing Driving Driving Performance
Research Mentor: Paul Green, Research Professor, University of Michigan Transportation Research Institute

Ciley Stokes (Session I-43)
Studio Joy: The Joyful Demolition of Oppressive Ideologies
Research Mentor: Rebekah Modrak, Professor, Stamps School of Art & Design

Michael Struk (Session II-4)
Humanity's Next Steps: The Moon and Mars
Research Mentor: Vyta Pivo, Postdoc/Assistant Professor, Architecture

Himari Tamura (Session I-5) with Athena Zhuang (Session II-11)
Mapping Institutional Cultures in Global High-Tech R&D Institutions
Research Mentor: Muzammil Hussain, Assistant Professor, The Big-DIG Research Lab @ The Institute for Social Research

Xuanru Tao (Session II-43)
Political Biases in Reasoning and Exposure to News Information
Research Mentor: Clinton McKenna, Graduate Student, Psychology

Satwika Tattari (Session II-5)
Developing and Implementing Procedures for the Characterization of Magnetometers
Research Mentor: Mark Moldwin, Professor, Department of Climate and Space Sciences and Engineering

Marie Taylor (Session II-16)
Improvements in Processing High Entropy Oxides as Lithium-ion Battery Anodes
Research Mentor: Richard Laine, Professor, Materials Science and Engineering

Thomas Vander Molen (Session I-21)
Innovation in the satellite industry
Research Mentor: Yue Zhou, Associate Professor, Strategy

Pranav Vaya (Session I-49)
Use of a Backchannel in Large Lecture Courses
Research Mentor: Perry Samson, Professor, Climate & Space Sciences & Engineering

Rohan Vyas (Session II-49) with Madison Boyd (Session I-40)
Michigan Sport Tourism Strategy Project - Inventory Phase
Research Mentor: Judith Grant Long, Associate Professor of Sport Management and Urban Planning, Sport Management

Eliot Wall (Session I-50)
Urban Development: An Unexplored Dimension of State Power
Research Mentor: Martin Macias Medellin, PhD student, Political Science

Jasmine Wisniewski (Session I-33)
ESK981 Increases The Effectiveness Of MEK Inhibitors For Therapeutic Treatment Of PDAC
Research Mentor: Caleb Cheng, MSTP Grad Student, Pathology

Daniel Wong (Session I-11)
Developing machine learning methods to predict the severity score in patients with inflammatory bowel disease.
Research Mentor: Flora Rajaei, Postdoctoral research fellow, DCMB

Bo Wen Yang (Session I-6)
System for Opioid Overdose Surveillance (SOS)
Research Mentor: Jason Goldstick, Research Assistant Professor, Department of Emergency Medicine

Winnie Zeng (Session II-22)
The effect of oxidoreductases on proinsulin secretion
Research Mentor: Leena Haataja, Associate Research Scientist, internal medicine

Athena Zhuang (Session II-11) with Himari Tamura (Session I-5)
Mapping Institutional Cultures in Global High-Tech R&D Institutions
Research Mentor: Muzammil Hussain, Assistant Professor, The Big-DIG Research Lab @ The Institute for Social Research

Mark Ziebell (Session II-44)
Validating a Method for Rapid Handling and Measuring of Museum Specimens
Research Mentor: Brian Weeks, Assistant Professor, School for Environment and Sustainability

Michigan Research and Discovery Scholars Staff

Adam C. Simon, Ph.D.
Director

Janae' Collier, Ph.D.
Associate Director

Miaojing Zhang
Graduate Program Assistant

Mona Elghoul
Administrative Assistant

MRADS PEER Advisors
2022–2023

Kyle Heard
Elise Hocking
Ronald Jamieson
Sarah Kabala
Justin Mason
Nur Renollet
Hanna Tuoriniemi
Vincent Wei
Katie Zhao

MRADS PEER Mentors
2022–2023

Mariana Fernández Correa
Kevin Dancey
Jaslin Garcia-Morales
Kerra Hinrichs
Prema Immadisetty
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Brooke Lavoie
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