Michigan Research and Discovery Scholars

SPRING RESEARCH SYMPOSIUM

Wednesday, April 24, 2024
Biomedical Science Research Building
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

Mihir Arya
Graph Neural Networks for Drug Design
Research Mentor: Cristian Minoccheri, Postdoctoral Research Fellow, Computational Medicine and Bioinformatics

Jonathan Bryant
Visioning Black Performers in a Lost Film
Research Mentor: Matthew Solomon, Associate Professor, Film, Television, and Media

Sylvia Rodriguez
Assessing Michigan Local Officials' Perspectives On Community Needs For Housing
Research Mentor: Debra Horner, Project Manager, Center for Local, State, and Urban Policy
Poster Presentations

John Adams (Session II-6)
The CHAMP Afterschool Program: Promoting Physical Activity & Health in Children
Research Mentor: Leah Robinson, Associate Professor, Kinesiology

Logan Akbas (Session I-18)
The State of Autonomous Vehicles, their Issues, and their Future Outlook
Research Mentor: Sandy Zalmout, Program Manager and Technical Specialist, ICPSR

Mallory Armstrong (Session II-19)
Using stable isotopes to examine nutrient uptake in harmful algal blooms
Research Mentor: Sara Rivera, Lab Manager, Earth and Environmental Sciences

Rohan Athreya (Session I-24)
Modeling the Historical Average Water Levels of the Great Lakes
Research Mentor: Andrew Gronewold, Associate Professor, School for Environment and Sustainability

Hannah Baker (Session II-30)
Characterization of Minerals in Basalts of the Chilean Andes
Research Mentor: Adam Simon, Arthur F. Thurnau Professor of Earth and Environmental Sciences, Earth and Environmental Sciences

Liam Bressler (Session I-30)
Male Students Perspectives of Gender-Based Team Dynamics
Research Mentor: Laura Hirschfield, Diversity, Equity, and Inclusion Lecturer, Chemical Engineering

Walter Bustelo (Session I-19)
Feasibility of Converting Ann Arbor's Geddes Dam into a Hydroelectric Dam
Research Mentor: Lei Zuo, Professor, Naval Architecture and Marine Engineering

Morgan Caudill (Session II-20)
Novel NO-Releasing Polymer Surface for Extracorporeal Life Support
Research Mentor: Orsolya Lautner-Csorba, Assistant Res Professor, Surgery

Karina Chaidez (Session II-31) with Katie Kinney
Floral traits associated to different foraging strategies in stingless bees
Research Mentor: Aline Martins, Postdoctoral Fellow, Ecology and Evolutionary Biology
Ava Chang (Session I-12)
Applying AI to analyze sound-elicited behavior in Drosophila larvae
Research Mentor: Bing Ye, Professor, Life Sciences Institute

Anthony Chen (Session I-1)
Multiple Pitch Perception with Rate-Place Metamers
Research Mentor: Anahita Mehta, Assistant Professor, Otolaryngology-Head and Neck Surgery

Daniel Dancuta (Session I-41)
Stigmatization of Bank Short-Term Funding: A Historical Perspective
Research Mentor: Edward Kim, Assistant Professor, Finance

Alejandro De Leon (Session I-35)
Microfluidic Mixer for Biomolecules
Research Mentor: Sasha Cai Lesher-Perez, Assistant Professor, Chemical Engineering

Riley DenUyl (Session I-7)
Recommendations for Shared Decision Making in Clinical Practice Guidelines: A Systematic Guideline Review
Research Mentor: Joshua Rager, Clinical Instructor, Internal Medicine, Division of General Medicine

Vitale Diamandis (Session II-1)
Automotive Propulsion Strategies for the 21st Century
Research Mentor: Bruce Belzowski, Managing Director, Automotive Futures

Paulina Diesen (Session II-25)
Aging and Regeneration in the immortal planarians
Research Mentor: Longhua Guo, Assistant Professor, Molecular and Integrative Physiology; Geriatrics Center

Keating Dinsmore (Session II-13)
Development of Low-noise Photodetectors for Quantum Communication and Sensing
Research Mentor: Zheshen Zhang, Associate Professor, Electrical and Computer Engineering

Nisan Dogu (Session II-7)
Assessing 48 Hour Preservation With Serum Supplementation during Normothermic Ex-Vivo Heart Perfusion (NEHP)
Research Mentor: Alvaro Rojas-Peña, Assistant Research Scientist, Department of Surgery-Transplantation
Noemie Durand (Session I-31)
*Does where we talk matter? How physical environments may shape conversation outcomes in romantic couples*
**Research Mentor:** Kathryn Schertz, Postdoctoral Research Fellow, Psychology

Jackson Erne (Session II-36)
*Quantification of cellular heterogeneity in maize*
**Research Mentor:** Alexandre Marand, Assistant Professor, MCDB

Rinny Fan (Session I-8) with Mihir Arya, George Simmons (Session I-34), and Isabella Chittaro (UROP)
*Graph Neural Networks for drug design*
**Research Mentor:** Cristian Minoccheri, Postdoctoral Research Fellow, Computational Medicine and Bioinformatics

Matthew Fernandez (Session I-36)
*Agricultural Waste for Energy Storage*
**Research Mentor:** Richard Laine, Professor, Materials Science and Engineering

Virayne Gandotra (Session II-8)
*Hemolysis observed in ECLS System Utilizing a Surface Anticoagulant Donors*
**Research Mentor:** Alvaro Rojas-Peña, Assistant Research Scientist, Department of Surgery-Transplantation

Hariharan Ganesh (Session II-46)
*Software development for handling super scale 3D biomedical images*
**Research Mentor:** Dawen Cai, Associate Professor, Cell and Developmental Biology; Biophysics; Neuroscience Graduate Program

Drake Ghaderi (Session II-37)
*Development of a Wearable Visual Aid*
**Research Mentor:** James Weiland, Professor, Biomedical Engineering

Lucille Gorbe (Session II-32)
*Morphological variation of leaf traits within individual trees*
**Research Mentor:** Selena Smith, Associate Professor, Earth and Environmental Sciences

Alba Gutierrez Cucurull (Session I-13)
*Size and surface morphology control of bio-active polymer scaffolds*
**Research Mentor:** Dr. Peter Ma, School of Dentistry
Sarah Haddad (Session I-46)
*Whole Health and Integrative Medicine Resource Development and Evaluation for Students, Community Members, Veterans and VA Staff*
**Research Mentor:** Dr. Nikhl Parekh, National VA Whole Health Educator, VA Ann Arbor Whole Health Director

Daniel Han (Session I-37)
*Transparent Aluminum Nanoparticle Development*
**Research Mentor:** Mark Hammig, Associate Research Scientist, Nuclear Engineering and Radiological Sciences

Lyneha Hauswirth (Session I-9)
*Tackling Changes: Examining Competitive Rule Change in Sport through Organizational Learning and Performance Feedback Lenses*
**Research Mentor:** Katherine Babiak, Associate Professor, Sport Management

Matthew Huang (Session II-38)
*Development of software to support Great Lakes environmental 'omics and bioinformatics work*
**Research Mentor:** Erik Kiledal, Assistant Research Scientist, Earth and Environmental Sciences

Chelsea Hyppolite (Session I-32)
*Missing & Murdered Indigenous Women, Girls, and Two Spirit People (MMIWG2S)*
**Research Mentor:** Rebecca Irvine, Program Director for Faculty Research Development, Institute for Research on Women and Gender (IRWG)

Lauren Issac (Session I-2)
*Using Machine Learning and NLP to Understand Skills Development in the Undergraduate Curriculum*
**Research Mentor:** Annaliese Paulson, PhD Candidate, Higher Education

Darby Jones (Session I-38)
*Laser Technology Application to iPSC Passage*
**Research Mentor:** Todd Herron, Research Scientist, Director, Internal Medicine and Cardiology

Alexander Kalman (Session I-25)
*The effects of novel BET degrader ZBC260 on murine TNBC cell line*
**Research Mentor:** Monika Burness, Assistant Professor, Internal Medicine
Armaan Kamat (Session I-20)
*Probing and Modeling Large-Scale Airline Network Disruptions: 2022 Southwest Airlines Scheduling Crisis*
**Research Mentor:** Max Li, Assistant Professor, Aerospace Engineering, Civil and Environmental Engineering, Industrial and Operations Engineering

Ishan Kanade (Session II-14)
*Exploring Oxygen in the Interstellar Medium through X-ray Binaries*
**Research Mentor:** Lia Corrales, Assistant Professor, Astronomy

Nadia Kress (Session II-39) with Ameilia Chung
*The effect of injury models on retinal regeneration in adult mice*
**Research Mentor:** Thanh Hoang, Assistant Professor, Ophthalmology and CDB

Vinh Dien Le (Session II-33)
*The Synthesis and Size Modulation of Monodisperse Copper (I) Sulfide Nanodisks for Nanosemiconductor-base Sensor Development*
**Research Mentor:** Mark Hammig, Associate Research Scientist, Nuclear Engineering and Radiological Sciences

Zoe Levin (Session II-42)
*Black Women’s Perceptions of Racism-Related Risks During Pregnancy*
**Research Mentor:** Emily Dove-Medows, Assistant Professor, School of Nursing

Gina Lin (Session II-26)
*Functional analysis of stem cells in planarian regeneration*
**Research Mentor:** Longhua Guo, Assistant Professor, Molecular and Integrative Physiology; Geriatrics Center

Andy Liu (Session II-2)
*Machine Learning in RNA Velocity*
**Research Mentor:** Sriram Chandrasekaran, Assistant Professor, Biomedical Engineering

Daniel Liu (Session I-3)
*2226 Midwest (net zero emission strategy for buildings)*
**Research Mentor:** Lars Junghans, Associate Professor, Architecture

Edward Lopez (Session I-42)
*Labeling Carbon Emissions for Food Products*
**Research Mentor:** Melanie Reid, Menu Management Administrator, Michigan Dining

James Lu (Session II-47)
*Neural Computation in Robotics*
**Research Mentor:** Bing Ye, Professor, Life Sciences Institute
Marisa Lucero (Session I–26)
*Synthesis of High Quality Membrane*
**Research Mentor:** Wei Lu, Professor, Mechanical Engineering

Charlotte Ma (Session II-3)
*Optimization of radiation-hardened amorphous-based photosensors: charge carrier layers and deposition methods*
**Research Mentor:** Mark Hammig, Associate Research Scientist, Nuclear Engineering and Radiological Sciences

Riya Madabhushi (Session I-4)
*Exploring Mercury's Magnetosphere: Comparative Analysis of BEPCOLOMBO and MESSENGER Mission Trajectory Data*
**Research Mentor:** Jim Raines, Associate Research Scientist, Climate and Space Sciences and Engineering

Scotten Maderal (Session II-21)
*How Do Advocacy Campaigns Affect Policy? (focusing on climate and environmental justice campaigns, but not exclusively)*
**Research Mentor:** Devin Judge-Lord, Assistant Professor, Public Policy

Allison McGovern (Session II-43)
*A Systematic Review of the Relationship Between Sexual Minority Identity Concealment and Substance Use*
**Research Mentor:** Shayan Asadi, PhD Student, Psychology

Callan McKernan (Session II-27)
*Real-Time fMRI Reframe Neurofeedback in Healthy Participants*
**Research Mentor:** David Fresco, Professor of Psychiatry, Research Professor at the Institute for Social Research, Research Director, Michigan Mindfulness

Alexandra Mital (Session II-9)
*Verifying reduced thrombospondin 2 protein in bone tissue from mice with an osteoblast-specific deletion of TSP2s*
**Research Mentor:** Andrea Alford, Research Assistant Professor, Orthopaedic Surgery

Jackson Mitchell (Session I-39)
*Effectiveness of DFT and iFCI Quantum Chemical Methods in Evaluating Criegee Reaction Energy Profiles*
**Research Mentor:** Paul Zimmerman, Assistant Professor, Chemistry

Johnathan Mo (Session I-21)
*Extending general segmentation models to find neurons in 3D brain scans*
**Research Mentor:** Dawen Cai, Associate Professor, Cell and Developmental Biology; Biophysics; Neuroscience Graduate Program
Azfar Mohamed (Session I-14)
Addressing Data Annotation Errors and Leakage in the RVL-CDIP Document Classification Corpus
Research Mentor: Stefan Larson, Senior Machine Learning Engineer, DryvIQ

Varun Nair (Session II-40)
Multiple Laser Wavelength Analysis Using Galvo System for Quantum Science
Research Mentor: Alexander Burgers, Assistant Professor, Electrical Engineering and Computer Science

Samiha Nasrin (Session I-27)
Rosa-Cre Breeding Techniques to Produce Pax Protein Gene Depletion for Studying its Role in Injury Response to Kidney Injury
Research Mentor: Jeffrey Beamish, Assistant Professor, Department of Internal Medicine, Nephrology Division

Mya Navarro (Session I-10)
Experiences and perceptions of diabetes stigma among Spanish-speaking US Latino adults with type 2 diabetes
Research Mentor: Kevin Joiner, Assistant Professor, Dept of Health Behavior and Biological Sciences

Binh Nguyen (Session I-43)
Using the GFP protein to create a CRISPR reporter system for the editing of the E4BP4 gene
Research Mentor: Xin Tong, Research Associate Professor, Molecular & Integrative Physiology

Hayden Noh (Session II-15)
A Correlation Matrix for Gene Pathway Enrichment Analysis
Research Mentor: Matthew Patrick, Research Investigator, Department of Dermatology

Marisa Nygard (Session I-40)
Assumptions of Physics
Research Mentor: Gabriele Caracissi, Research Area Specialist, Physics

Mehmet Osar (Session I-15)
Experimental study on the anisotropic failure behavior of 3D-printed polymers under tensile load
Research Mentor: Minh Hoang Nguyen, Postdoctoral Researcher/ PhD, Aerospace Engineering
Sinna Oumer (Session II-10)
Social Media and Network-Based Recruitment Strategies for Diverse Populations
Research Mentor: Lenette Jones, Assistant Professor, Health Behavior and Biological Sciences

Mira Parikh (Session II-4)
Justice-oriented Math Assessment Scenarios
Research Mentor: Maria Hamdani, VP of Assessment and Research, Center for Measurement Justice

Avi Patel (Session I-11)
Coaggregation Between Freshwater Bacteria Isolated from the Huron River
Research Mentor: Alexander Rickard, Associate Professor, Epidemiology

Anika Ranjan (Session II-44)
Assessing Approximate Phylogenetic Tracking Methods for Large-Scale Parallel and Distributed Evolutionary Simulation
Research Mentor: Matthew Moreno, Postdoctoral Scholar, Ecology & Evolutionary Biology

Lara Rappaport Da Costa Santos (Session II-28)
Characterization of Muller glia-derived neurons after injury in zebrafish retina
Research Mentor: Thanh Hoang, Assistant Professor, Ophthalmology and CBD

Meghan Raykoff (Session II-11)
Prevalence of anti-microbial peptides in Acinetobacter baumannii clinical isolates
Research Mentor: Maria Sandkvist, Associate Professor, Microbiology and Immunology

Arnav Sadasivan (Session I-5)
Development of Gas chromatography for monitoring Body odor for real-time disease diagnostics
Research Mentor: Ruchi Sharma, Postdoctoral Fellow, Biomedical Engineering

Alexander Safir (Session I-28)
Human Anatomy Dissection, Resource Creation, and Variation Analysis
Research Mentor: Mary Orczykowski, LEO Lecturer IV, Department of Surgery, Division of Anatomy

Rohan Satapathy (Session I-33)
Machine learning tools for analyzing animal behavior
Research Mentor: Bing Ye, Professor, Life Sciences Institute
Disha Saxena (Session II-16)
*JWST Early Massive Galaxies and their implications for the early Universe*
**Research Mentor:** Minh Nguyen, Postdoctoral Research Fellow, Leinweber Center for Theoretical Physics, Physics Department

Olivia Schroder (Session I-44)
*Analysis and mitigation of environmental impact of Wolverine Offshore Wind*
**Research Mentor:** M. Javad Javaherian, Postdoctoral Fellow, Naval Architecture and Marine Engineering

Tanay Sharma (Session II-22)
*Development of photonic integrated circuits for quantum communication and sensing*
**Research Mentor:** Zheshen Zhang, Associate Professor, Electrical and Computer Engineering

Nihal Shetty (Session I-47)
*College Student Financial Empowerment*
**Research Mentor:** Angela Ebreo, Program Evaluation Specialist, Center for the Education of Women+ (CEW+)

Mengxiang Shi (Session II-45)
*X-raying the Interstellar Medium With Fe L*
**Research Mentor:** Lia Corrales, Assistant Professor, Astronomy

Mason Shields (Session I-16)
*Biased time perception can be explained by pitch and spatial auditory grouping*
**Research Mentor:** Anahita Mehta, Assistant Professor, Otolaryngology-Head and Neck Surgery

Nathan Shuell (Session II-34)
*Accepting the Olive Branch: Muslim Leadership and the State in Belgium and the Netherlands*
**Research Mentor:** Yehia Sherif Mohamed Mekawi, PhD Candidate, Political Science Department

George Simmons (Session I-34) with Mihir Arya, Rinny Fan (Session I-8), and Isabella Chittaro
*Drug discovery with Graph Neural Networks*
**Research Mentor:** Lingrui Cai, PhD Student, Computational Medicine and Bioinformatics

Gavriil Stavrakas (Session II-5)
*Using AI models to process bird audio for ecological assessments*
**Research Mentor:** Kate Kusiak Galvin, Senior Project Manager, CEE
Oscar Stennes (Session II-48)
*Morphological and Behavioral Changes in Deuterated Palladium Nanocomposites*
**Research Mentor:** Mark Hammig, Associate Research Scientist, Nuclear Engineering and Radiological Sciences

Shaniya Thomas (Session I-22) with Kara Wong (Session I-45)
*2226 Midwest (net zero emission strategy for buildings)*
**Research Mentor:** Lars Junghans, Associate Professor, Architecture

Caspar Touloukian (Session I-6)
*Collegiate Wind Competition 2024*
**Research Mentor:** M. Javad Javaherian, Postdoctoral Fellow, Naval Architecture and Marine Engineering

Linh Tran (Session II-23)
*The Reality of Awkwardness: An Analysis of the Perception of Awkwardness in Social Interactions*
**Research Mentor:** Elizabeth Trinh, PhD Student, Management and Organizations

Lyanna Truong (Session I-48)
*Contracts Within Multinational Firms*
**Research Mentor:** Yue Zhou, Associate Professor, Strategy

Anne-Katrin Urzynicok (Session II-29)
*Restoration of Desmoplakin Expression in a cardiomyocyte model of Desmoplakin cardiomyopathy*
**Research Mentor:** Adam Helms, Assistant Professor, Internal Medicine / Cardiovascular Medicine

Gianpablo Vazquez Calzada (Session II-49)
*Lentivirus Transfected CRISPR-Correction for Hutchinson-Gilford Progeria Syndrome (HGPS) human induced Pluripotent Stem Cells (hiPSCs)*
**Research Mentor:** Andre Monteiro Da Rocha, Research Assistant Professor, Cardiology - CVC Cardiovascular Regeneration Core

Sharif Velasquez (Session I-49) with Marisa Nygard (Session I-40)
*Assumptions of Physics*
**Research Mentor:** Gabriele Carcassi, Research Area Specialist, Physics

Isabella Vitanovich (Session II-12)
*Production of LARP1*
**Research Mentor:** Jailson Brito Querido, Assistant Professor, Biological Chemistry
Eric Wan (Session II-17)
Comparison of a Gelatin Microparticle Slurry Versus Pluronic Acid as Bioprinting Support Material
Research Mentor: Indika Rajapakse, Assistant Professor, Department of Computational Medicine & Bioinformatics

Eric Waswick (Session II-41)
Exploring 0D Exciton-Polaritons From 2D Semiconductors
Research Mentor: Chulwon Lee, Postdoctoral Research Fellow, Physics

Bob Wei (Session I-23)
Design and construction of robotic leg for bipedal robots
Research Mentor: Yanran Ding, Assistant Professor, Robotics

David Wesseln (Session II-35)
The Petruso Archive and the Archaeology of Konispol Cave, Albania
Research Mentor: Michael Galaty, Director and Professor, Museum of Anthropological Archaeology

Kara Wong (Session I-45) with Shaniya Thomas (Session I-22)
2226 Midwest (net zero emission strategy for buildings)
Research Mentor: Lars Junghans, Associate Professor, Architecture

Connor Yang (Session I-17)
Software Development for Supercompute-Scale Agent-based Evolutionary Simulation
Research Mentor: Matthew Moreno, Postdoctoral Scholar, Ecology & Evolutionary Biology

Mason Young (Session I-29)
Multilingual Metadata Sorting
Research Mentor: Christi Merrill, Associate Professor, Comparative Literature/Asian L&C

Avril Yu (Session II-24)
Recent and Future Development of the Chinese Automotive Industry
Research Mentor: Bruce Belzowski, Managing Director, Automotive Futures

Dominik Zhang (Session II-50)
Developing machine learning methods to predict the severity score in Crohn’s disease
Research Mentor: Flora Rajaei, Postdoctoral Research Fellow, DCMB
Evan Zhao (Session II-18)
Building a No-blade, Fish-friendly, Portable Hydrokinetic Energy Harvester: Computational fluid dynamic (CFD) simulations and animations
Research Mentor: Michael Bernitsas, Professor, Naval Architecture & Marine Engineering

Mustafa Zirapury (Session I-50)
Elections Around the World: The Constituency Level Election Archive
Research Mentor: Allen Hicken, Professor, Political Science
STAFF

Adam C. Simon, Ph.D.
Director

Janae’ Collier, Ph.D.
Associate Director

Grant Mullins
Research Engagement
Student Coordinator

Dani Anderson
Administrative Assistant

Abby Liu
Graduate Program Assistant

PEER ADVISORS
2023–2024

Vivica Addrow
Yunwoo Chang
Alexander Devine
Ethan Johnson
Joshua Mendoza
Cecelia Occhipinti
Kevin Pena
Marie Taylor
Daniel Wong