

Michigan Research and Discovery Scholars

# SPRING RESEARCH SYMPOSIUM

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Wednesday, April 24, 2024  
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**

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***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 Leshner-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 BEPICOLOMBO 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 Carcassi, 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 Urzyncok (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



**Research Lives Here.**

## **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**