Iowa Regent Universities present the

16th Annual Research in the Capitol

Monday, March 6, 2023
11:30am - 1:30pm
Iowa State House, Rotunda
Des Moines, Iowa
Welcome to our sixteenth annual Research in the Capitol. In the last decade, over 500 undergraduates from our three Regent’s Universities have come to the Iowa Statehouse to present their work to legislators, members of the Board of Regents, and the public. These students have gone on to contribute to our state as doctors, educators, engineers, lawyers, nurses, and professionals in various disciplines. The opportunity for our students to share their knowledge and exuberance with legislators, Regents, and guests in the Iowa Capitol is a special honor that has stayed with them across the years.

Research involvement plays a central role in undergraduate education. Students who take part in research are more successful academically, are more developed in their career and professional preparation, and are more satisfied with their college experience. Research engagement provides the conditions for collaborative learning and critical thinking that benefit our students as they move into the workforce or on to graduate or professional training. The presentations before you today required countless hours of effort on the part of the students and their mentors outside of the classroom and represent the shared commitment our students, staff, and faculty place on the undergraduate experience.

As you speak with these outstanding students, you will learn first hand the impact research involvement has on Iowa’s students and the impact those students have on the research conducted at our outstanding Iowa Public Universities.

Robert Kirby
Director, Iowa Center for Research by Undergraduates
Schedule

11:30am Opening Remarks
- Bob Kirby - Director, Iowa Center for Research by Undergraduates
- Student Speaker - Mackenzie Wisneski, University of Northern Iowa

11:45am-1:30pm
- Student Poster Presentations

Iowa Regents Universities
Undergrad Research Contacts

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1. Winfred Afeaneku (UNI)
   *SocioApp: Detecting Your Sociability Status with Your Smartphone*
   Hometown – Moline, IL
   Major – Computer Science
   Mentor – Dheryta Jaisinghani

2. Morgan Aitchison (UNI)
   *New Policy Opens Trade with India for Pork Producers in the US*
   Hometown – Elk Run Heights, IA
   Major – Accounting/Finance: Financial Management
   Mentor – Christine Schrage

3. Emily Allen (ISU)
   *Forgery Detection Using Statistical Analysis*
   Hometown – Ankeny, IA
   Major – Statistics
   Mentor – Danica Ommen

4. Andrew Behrens (UofI)
   *Assessment of Metatarsal Joint Structure in Patients With Bunion Deformity*
   Hometown – Polk City, Iowa
   Major – Biomedical Engineering
   Mentor – Cesar Netto

5. Lydia Berns-Schweingruber (UNI)
   *The Effect of K-12 Public Education Spending on Student Academic Achievement in Iowa*
   Hometown – Ames, IA
   Major – Elementary Education/Sociology
   Mentor – Kristin Mack & Marybeth Stalp
6. Kelly Biscoglia (UNI)
   *Analysis of Cytokinin Response Factors in Artemisia tridentata*
Hometown – Waukee, IA
Major – Biochemistry/Env Science: Env Earth Science
Mentor – William Harwood & Anthony Melton

7. Josie Bliss (UofI)
   *Sanibel Captiva Ecology*
Hometown – Ely, IA
Major – Integrative Biology

8. Hannah Blumhoefer (ISU)
   *An Analysis of Variable-Shape Wave Energy Converter Modifications*
Hometown – New Ulm, MN
Major – Aerospace Engineering
Mentor – Ossama Abdelkhalik

9. Denisse Camarena (ISU)
   *Taking a Closer Look at the Hair of a Bumble Bee*
Hometown – Le Mars, IA
Major – Animal Ecology
Mentor – Amy Toth

10. Alison Carr (ISU)
    *Risks and Fear of Falling in Older Adults*
Hometown – Ames, IA
Major – Kinesiology and Health
Mentor – Gregory Welk

11. Karlee Colby (UNI)
    *Her Story, Her Right: Narrative as a Basic Human Right*
Hometown – Cedar Rapids, IA
Major – English/Philosophy
Mentor – Yasemin Sari
12. Emmet Cummings (UNI)
   Underground Iowans
   Hometown – Center Point, IA
   Major – History
   Mentor – Thomas Connors

13. Anthony David (ISU)
   Fabricating Biosensor Platforms for Real-Time Biothreat Detection
   Hometown – Maple Grove, MN
   Major – Mechanical Engineering
   Mentors – Pranav Shrotriya and Todd Kingston

14. Makayla Dove, Mckenzie Sanden (ISU)
   Gene Editing of Human Cells for Alzheimer’s Disease Research
   Hometown – Carol Stream, IL, Plymouth, MN
   Major – Bioinformatics, Genetics
   Mentor – Qian Wang

15. Hugh Duffy (ISU)
   Lowering Carbon Footprint with 3D Printed Concrete Buildings
   Hometown – Cedar Rapids, IA
   Major – Architecture
   Mentor – Chengde Wu

16. Harper Dunne (UofI)
   We Looked at 6,795 Articles So You Didn’t Have To: A Scoping Review of Studies Investigating MSS (Multisensory Sensitivity) in Pain Populations
   Hometown – Fort Worth, Texas
   Major – Spanish, Global Health Studies
   Mentor – Laura Frey Law
17. William Fettkether (ISU)
   Using Glass to Develop the Next Generation of Solid-State Batteries
Hometown – Dunkerton, IA
Major – Materials Engineering
Mentor – Steve Martin

18. Daniel Fu – (UofI)
   RGS6 mediates exercise-induced rescue of impaired cognition and hippocampal neurogenesis in mice with Alzheimer’s disease
Hometown – Johnston, Iowa
Major – Biomedical Sciences
Mentor – Rory Fisher

19. Noah Gilkes (UofI)
   Traumatic brain injury is associated with neurological deficits and leads to activation of the type I interferon pathway
Hometown – Robins, Iowa
Major – Neuroscience, Philosophy
Mentor – Elizabeth Newell

20. Grace Hagedorn (ISU)
   Creating effective G418 antibiotic plates for yeast transformation
Hometown – Ankeny, IA
Major – Biology
Mentor – Mohan Gupta

21. Jenna Heinen (UNI)
   Spectroscopic Characterization of Wind Cave National Park
Hometown – Algona, IA
Major – Biochemistry/Physics: Data Science
Mentor – Joshua Sebree
22. Dela Houssou, Erik Dralle (ISU)
   *Resiliency of Electric Power Network under Wind Event*
Hometown – Iowa City, IA, Oswego, IL
Major – Civil Engineering
Mentor – Alice Alipour

23. Karly Jans (ISU)
   *Mental Health Issues within Iowa Veterinary Clinics*
Hometown – Clutier, IA
Major – Biology and Animal Ecology
Mentor – Mike Rentz

24. Vesha Jayswal (UNI)
   *The Power of Homeownership*
Hometown – Independence, IA
Major – Accounting/Economics: Business Economics
Mentor – Joe Ugrin

25. Elle Jones (UNI)
   *Government and Institutional Changes regarding Human Rights that affect Citizen Involvement*
Hometown – Burlington, IA
Major – Political Science/Pre-Prof: Law
Mentor – Yasemin Sari

26. Emmeline Kraus (UofI)
   *Seasonal effects of the fungal pathogen Tubakia iowensis (bur oak blight) on the photosynthetic capacity of infected Quercus macrocarpa (bur oak).*
Hometown – Iowa City, IA
Major – Environmental Sciences; Geography
Mentors - Matt Dannenberg and Susan Meerdink
27. Victoria Kyveryga (ISU)
   Structure and Energy-Related Properties of Novel Barium-Arsenide Materials
Hometown – Ames, IA
Major – Chemical Engineering and Chemistry
Mentor – Kirill Kovnir

28. Trevor Larkin (UofI)
   Preparation and Evaluation of Lanthanide Catalysts for Oxygen Reduction
Hometown – Dubuque, Iowa
Major – Chemistry
Mentor – Johna Leddy

29. Priscilla Lee (ISU)
   Differences in Working Memory Between Monolingual and Bilingual Learners
Hometown – Schaumburg, IL
Major – Kinesiology
Mentor – Ji-Young Choi

30. Haley Lightfoot (UofI)
   Novel Green Solventless Synthesis of Uranium Metal Organic Frameworks via Temperature Dependent Flux Reactions
Hometown – Lake Zurich, IL
Major – Chemistry
Mentor – Tori Forbes

31. Kobie Long (UofI)
   Identifying Areas of Groundwater-Surface Water Exchange along Camp Cardinal Creek at Ashton Prairie Living Laboratory
Hometown – Des Moines, IA
Major – Environmental Science
Mentor – Ben Swanson
32. Julie Matta (UNI)

*Hidden in Plain Sight: The Influence of Indigenous and Latin Theatre*

Hometown – Marshalltown, IA
Major – Theatre: Performance/ Theatre: Theatre Yth Community
Mentor – Katherine Hahn

33. Rowan McCarthy (UNI)

*Development of a Water Quality Index Calculation Tool using Excel*

Hometown – Windsor Heights, IA
Major – The Study of Religion/ Env Science: Env Earth Science
Mentor – Mohammad Iqbal

34. Tamara McConnell, Mia Riddley (ISU)

*Biological and Geochemical Controls on Iron Deposition in an Intermittent Stream*

Hometown – Kansas City, KS, Byram, MS
Major – Geology, Environmental Engineering
Mentor – Elizabeth Swanner

35. James McMillan (UofI)

*Impact of Violence over the Life Course*

Hometown – Iowa City, IA
Major – Public Health, Ethics and Public Policy
Mentor – Stephanie DiPietro

36. Jesse Miller (UofI)

"License to do Evil in the Name of Good": Political Radicalization and Rhetorical Adaptation During the Wilmington Coup

Hometown—Solon Iowa
Major—History, Social Studies Education
Mentor—Alyssa Park and Nick Yablon
37. Aracely Miron-Ocampo (UofI)  
*Searching for Novel Antifungal Treatments and Regulatory Pathways via the Characterization of a Fluphenazine Derivative Against C. albicans*  
Hometown – Des Moines, IA  
Major – Microbiology, Global Health Studies Certificate  
Mentor – Damian Krysan and Sarah Beattie

38. Ryleigh Mulcahey (UofI)  
*Sanibel Capitva Ecology*  
Hometown – North Liberty, IA  
Major – Chemistry, Environmental Science

39. Diana Mulder (ISU)  
*Verification of a qPCR Assay for Detection of Phialophora gregata in varied Soybean Tissue and Brown stem rot suspect samples*  
Hometown – Parkersburg, IA  
Major – Microbiology, International Agriculture  
Mentor – Leonor Leandro

40. Stephanie Orellana (UofI)  
*We are listening: Educator experiences during COVID-19*  
Hometown – Muscatine, Iowa  
Major – Psychology  
Mentor – Emily Thomas

41. Zach Palmer (UofI)  
*Captive Labor Market: Addressing Iowa’s school-to-prison pipeline*  
Hometown – Huxley, IA  
Major – English & Creative Writing  
Mentor – Heather Erwin
42. Jacob Parker (UNI)  
*Using an Aminimide Functional Group to Selectively Uptake Lithium*  
Hometown – Bettendorf, IA  
Major – Biochemistry/ Psychology  
Mentor – Martin Chin

43. Jeanetta Plotzke (ISU)  
*Drainage District Main Improvements in Iowa*  
Hometown – Osage, IA  
Major – Environmental Science and Global Resource Systems,  
Mentor – Matthew Helmer

44. Olivia Poppen, Tatum Englund, Madison Bemis (ISU)  
*Ergonomic Assessments via Virtual Reality: Is it Possible?*  
Hometown – West Branch, Marshalltown, Fairfield, IA  
Major – Industrial Engineering, Industrial Engineering  
Mentors – Kathryn Lieffrig, Stephen Gilbert

45. Tristen Prouse (UNI)  
*How to Not Save the World From COVID-19: The Dire Consequences of Giving Away the Vaccine Formula*  
Hometown – Buckingham, IA  
Major – Economics: General Economics/Pre-Prof:Law  
Mentor – Lisa Jepsen

46. Tanzeel Ur Rehman (UNI)  
*IoT in the Air: Thread-enabled Flying IoT Network for Indoor Environments*  
Hometown – Lahore, Pakistan  
Major – Computer Science  
Mentor – Dheryta Jaisinghani
47. Matthew Shafer (ISU)  
*Creating Curriculum to Inspire Young Scientists*
Hometown – Solon, IA  
Major – Biology  
Mentor – Jeanne Serb

48. Megan Smith (ISU)  
*Structural Analysis of a Tyrosine Kinase-Substrate Complex*  
- *a Target of Cancer Drugs*
Hometown – Cedar Falls, IA  
Major – Biochemistry  
Mentor – Amy Andreotti

49. Grayson Talaski (Uofi)  
*The Impact of 3D Foot Alignment on Detection of Distal Tibiofibular Syndesmotic Widening after Injury using Comparative Contralateral Distance Mapping*
Hometown – Bloomington, Il  
Major – Biomedical Engineering  
Mentor – Cesar de Cesar Netto

50. Eric Thomas (Uofi)  
*Comparison of Intentionally Planted Species to Observed Population: Survey of plant biodiversity at Ashton Prairie Living Laboratory Prairie Restoration*
Hometown – Iowa City, IA  
Major – Environmental Sciences  
Mentor – Benjamin Swanson

51. Abigail Tibben, Megan McGuire (ISU)  
*Producing Mock Crime Scene Footwear Impressions Dataset*
Hometown – Marshalltown, Ankeny, IA  
Major – Genetics, Criminal Justice  
Mentor – Stacy Renfro
52. Zach Vig (UofI)

*Detecting Iowa's CO2 in the Stratosphere using the High Altitude Near Infrared Spectroscopy Experiment (HA-NICSE)*

Hometown – Mount Vernon, IA  
Major – Geoscience, Physics  
Mentor – David Miles

53. Morgan Wickman (UNI)

*Secondary Traumatic Stress: Therapists' Past Trauma and Workplace Intervention*

Hometown – Winterset, IA  
Major – Psychology  
Mentor – Elizabeth Lefler

54. Raquel Wilhelm (UNI)

*Investigation of Unexpected Purple Substance Extracted from Newsprint Paper*

Hometown – Cedar Rapids, IA  
Major – Chemistry  
Mentor – Shoshanna Coon

55. Mackenzie Wisneski (UNI)

*Using Color with Care: An Exploration of the Application of Psychological Color Theory within Language Classrooms*

Hometown – Le Claire, IA  
Major – Tchg Eng to Spkrs of Othr Lang  
Mentor – Hilal Ergül